

INVESTIGATING THE IMPACT OF PROFESSIONAL DEVELOPMENT ON  
TURKISH EARLY CHILDHOOD TEACHERS' PROFESSIONAL GROWTH  
ABOUT EDUCATION FOR SUSTAINABLE DEVELOPMENT THROUGH  
CRITICAL MEDIA LITERACY

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Approval of the Graduate School of Social Sciences

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**I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.**

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## ABSTRACT

### INVESTIGATING THE IMPACT OF PROFESSIONAL DEVELOPMENT ON TURKISH EARLY CHILDHOOD TEACHERS' PROFESSIONAL GROWTH ABOUT EDUCATION FOR SUSTAINABLE DEVELOPMENT THROUGH CRITICAL MEDIA LITERACY

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The aim of the present study was to determine changes in early childhood teachers' Education for Sustainable Development (ESD) awareness and Critical Media Literacy (CML) levels, their practices targeting ESD through CML and their conclusions drawn from their practices after a specifically designed professional development training (PDT). To reach this aim, a case study design in the light of Bronfenbrenner's Ecological System Theory (based on its ECEfS adaptation version develop by McCrea & Littledyke (2015) was carried out. The participants of this were four early childhood teachers who were working at public preschools in Ankara, Turkey. Data were collected from various sources, namely interviews, stimulated recall interviews, teacher documentations (daily and monthly plans) and field notes. The findings of this study indicated that after PDT there were changes in teachers' awareness of ESD and CML levels. They started to design and implemented activities focusing on ESD through CML. Moreover, the great majority of them believed that ESD should start in the early years. They also advocated that CML should give a place in early childhood education. What's more, they shared their observation about changes in children awareness of ESD issues (such as animal breeding, gender equity, global warming, and recycling) and children's CML regarding access, analyze & evaluate and create competencies.

**Keywords:** education for sustainable development; critical media literacy; teacher education; early childhood teachers; early childhood education

## ÖZ

# MESLEKİ GELİŞİM PROGRAMININ ELEŞTİREL MEDYA OKURYAZARLIĞI ARACILIĞIYLA TÜRK OKUL ÖNCESİ ÖĞRETMENLERİNİN SÜRDÜRÜLEBİLİR KALKINMA İÇİN EĞİTİM İLE İLGİLİ MESLEKİ GELİŞİMLERİNE ETKİSİNİN ARAŞTIRILMASI

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Bu çalışmanın amacı mesleki gelişim eğitimi (MGE) sonrasında okul öncesi öğretmenlerin Sürdürülebilir Kalkınma için Eğitim (SKE) ile ilgili farkındalıklarında, Eleştirel Medya Okuryazarlığı (EMO) seviyelerinde, EMO aracılığıyla SKE'yi hedefleyen uygulamalarında ve bu uygulamalarından çıkardıkları sonuçlardaki değişimi incelemektir. Bu amaca ulaşmak için Brofenbrenner'ın ekolojik sistemler teorisi ışığında (McCrea & Littlely tarafından 2015 yılında sürdürülebilirlik için okul öncesi eğitimine adapte edilmiş versiyonu baz alınarak) durum incelemesi dizaynı kullanılmıştır. Bu çalışmanın katılımcıları Türkiye, Ankara'da devlet anaokullarında çalışan dört okul öncesi öğretmenidir. Veriler; görüşmeler, hatırlatma seansları içeren görüşmeler, öğretmen dökümantasyonu (günlük ve aylık planlar) ve alan notları olmak üzere çeşitli kaynaklardan toplanmıştır. Bu çalışmanın bulguları MGE sonrasında öğretmenlerin SKE farkındalığında ve EMO seviyelerinde değişim olduğunu göstermiştir. Dahası, eğitimciler EMO aracılığıyla SKE'yi odaklayan aktiviteler dizayn edip uygulamaya başlamışlardır. Ayrıca, öğretmenlerin çok büyük bir kısmı SKE'in erken yaşlarda başlaması gerektiğine inanmaktadır. Buna ek olarak, EMO'na da okul öncesi eğitiminde yer verilmesi gerektiğini savunmaktadırlar. Bunun dışında, öğrencilerinin SKE farkındalıklarındaki ve erişim, analiz & değerlendirme ve

yaratım yeterlilikleri aısından EMO seviyelerindeki deęiřim ile ilgili gözlemlerini de payla mıřlardır.

**Anahtar Kelimeler:** sürdürülebilir kalkınma için eęitim; eleřtirel medya okuryazrlığı; öğretmen eęitimi; okul öncesi öğretmenini, okul öncesi eęitimi

*Dedicated to My Mother*

*&*

*To My Father*

*&*

*To My Brother...*



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## **LIST OF ABBREVIATIONS**

**EE:** Environmental Education

**EfS:** Education for Sustainability

**ECEfS:** Early Childhood Education for Sustainability

**ESD:** Education for Sustainable Development

**7Rs:** Reduce, Reuse, Respect, Reflect, Rethink, Recycle and Redistribute

**GW:** Global Warming

**ML:** Media Literacy

**CML:** Critical Media Literacy

**MLE:** Media Literacy Education

**CMLE:** Critical Media Literacy Education

**ECE:** Early Childhood Education

**MoNE:** Ministry of National Education in Turkey

**OMEP:** World Organization for Early Childhood Education

**UNESCO:** The United Nations Educational, Scientific and Cultural Organization

**TEMA:** The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats

**NAEYC:** The National Association for the Education of Young Children

**NAMLE:** The National Association for Media Literacy Education

**ICMPG:** Interconnected Model of Professional Growth

**PDT:** Professional Development Training

## CHAPTER 1

### INTRODUCTION

*“The world we have created today as a result of our thinking thus far, has problems which cannot be solved by thinking the way we thought when we created them”*  
*Albert Einstein*

#### 1.1 Background of the Study

In recent years, given that the Earth’s natural resources have continued to be expended faster than they are being created or restored, human beings have had to struggle with crucial issues impacting local, regional and global environments, as well as the intertwined issues related to social and economic development (Siraj-Blatchford, 2009). Consequently, there are increasing calls for urgent action to conserve and protect the Earth’s natural environment (Paprotna, 1999). In Turkey, there are specific issues around sustainability that need to be addressed such as energy security, deforestation, soil erosion, waste management, and cultural integrity (keeping Turkish culture alive) (Günay, 2008; Ministry of Environment and Forestry, 2010). Paprotna also emphasized that this need for urgent action can be only satisfied by developing environmental knowledge, awareness, and attitudes, which instill humanity with a greater sense of responsibility towards the present and future state of the environment. In other words, humans should make adjustments to their unsustainable lifestyles or "frames of mind" that affect thoughts, decisions and actions (Bonnet, 2004; Elliot, 2010). Education plays a crucial role in achieving such change, and thus, all branches of education—including early childhood education—must be involved in the process of re-imagining and transforming public practices concerning sustainability (Elliott & Davis, 2009).

To emphasize the significant contributions of education to sustainable development efforts, the United Nations General Assembly had proclaimed the period of 2005–2014 to be the Decade on Education for Sustainable Development (UNDESD) (UNESCO, 2005), which has now been extended into Education 2030, a set of learning objectives aligned with the Sustainable Development Goals, “an ambitious and universal agenda to transform our world” (UNESCO, 2017, p 6). This Declaration called for the development of “interdisciplinary and holistic”, “values-driven”, “multi-method” and “locally relevant” educational principles emphasizing “critical thinking and problem-solving”, “participatory decision-making” and “applicability”. Some researchers especially pointed out that the interdisciplinary approach to ESD which encompasses multiple perspectives, theories, methods, and tools are very beneficial not only regarding teaching and learning but also in research, an integrative approach has the potential to create outcomes that could not make evident through the use of by monolithic approaches (Filho, Brandli, Kuznetsova & Finisterra do Paço, 2015). According to these authors, one of the potentials of this approach is that it enhances the possibility to cover the range of environmental elements, social problems, economic issues, and political impacts that diffuse through ESD. Another benefit of the integrative approach is that it utilizes various teaching and learning techniques that can come from face to face classroom discussions, outdoor learning, as well as using e-learning to promote understandings of the many contexts of ESD. Critical media literacy is one such integrative approach tool or technique that is discussed further in this study. Additionally, the integrative approach does not ignore the needs and requirements of distinct stakeholders that are in the leader position to target the action giving importance to individuals' characteristics, abilities, and specifications.

#### *Education for sustainable development in early childhood education*

Early childhood education cannot ignore these policy initiatives especially since the characteristics of education for sustainable development have some quite close alignment with early childhood pedagogies (Arthur, Beecher, Death, Dockett & Farmer, 2008; Stuhmcke, 2012). Drawing on these similarities, OMEP (World Organization for Early Childhood Education) (2010), the largest international professional association for early childhood educators that has a significant role in addressing education for

sustainability at the early childhood level, has assembled a set of pedagogical practices for ESD in early childhood education called the “7Rs” of resource conservation; these are “Reduce”, “Reuse”, “Respect”, “Reflect”, “Rethink”, “Recycle” and “Redistribute”. While the 7Rs are just one way that early childhood educators might engage with ESD, they are easily understood and have the support of an international professional association to assist early childhood educators to implement ESD. These seven practices, which straddle across the three pillars of sustainable development—namely environmental protection, socio-cultural, and economic development— offer possibilities for early childhood education to join in the task of contributing to sustainable development, and form the basis of this research. The 7Rs are summarized below (Duncan, 2011; OMEP, 2011). (Table1.1)

Table 1.1

*7Rs and related Three Pillars of Education for Sustainable Development*

7Rs	Explanation	Related Pillar
Respect - the rights of the child	regarding learning to be enthusiastic about nature, and to respect nature, but also to respect children and their capabilities.	Socio-cultural
Reflect- on cultural differences in the world	regarding presenting children an opportunity to reflect on how their peers in other countries dwell	
Rethink- the changes in people's values throughout the time	regarding trying children to be creative	
Reuse – by exploring new uses for old things	regarding proposing creative ways of not wasting resources	Environmental
Reduce – by doing more with less	regarding instructing children to be aware of what they use	protection
Recycle – through this waste materials can be converted into something usable	regarding sorting waste to determine materials that can be repurposed	Economic development
Redistribute – by this way resources can be used more equally	regarding sharing the opportunities with disadvantaged individuals/ groups	

In 2010, the 7Rs were introduced to all OMEP committees across its global membership via a project launch letter, along with a call for participation in efforts to introduce these guidelines to children, since it has been recognized that education on environmental or sustainable development issues should begin during early childhood when children's fundamental values, attitudes, skills, behaviors, and habits are being formed (NAAEE, 2010; Paprotna, 1999; UNESCO, 2008; Tilbury, 1994; Wilson, 1994). In other words, “environmental experience in the critical phase of the early learning years can determine subsequent development in environmental education”, and thus these years may “prove to be critical for the environmental education of the child” (Tilbury, 1994, p.11). These comments are supported by research on the brain, which estimates the number of dendrite connections formed in the first five years of life to be over 100 billion (Miller & Cummings, 2007), and this rapid brain development prompts children "to explore, to discover, to play and to make natural connections between self, others and their surrounding worlds" (Rusthon, Juola-Rhuston & Larkin, 2010, p.353). Hence, as stated by Wilson (1995), effective environmental education that fully engages young children is crucial in this early period. The alternative -sporadic environmental education like “Earth Day celebrations and isolated environmentally oriented activities” (p.107)- will not result in a permanent impact on children’s attitudes and behavior; that is, learned attitudes and behaviors would not become a way of life unless children are actively and deeply involved in environmental learning.

Further, researchers have also pointed out the effect of children on adults’ environmental knowledge, attitudes, and behaviors (Ballantyne, Connell & Fein, 1998; Leeming, Porter, Dwyer, Cobern & Oliver, 1997). In other words, children act as catalysts of change on sustainable thinking and behavior in their homes and communities (Davies, Engdahl, Otieno, Pramling-Samuelson, Siraj-Blatchford & Vallabh, 2009; UNESCO, 2008). Chapter 25 of the United Nations Environmental Programme’s (UNEP) *Earth Summit: Agenda 21*, titled “Children and Youth in Sustainable Development”, also emphasizes that “children need to be taken fully into account in the participatory process on environment and development in order to safeguard the future sustainability of any actions taken to improve the environment” (United Nations, 1992, p.200). In other words, the education of young people on environmental issues is vital for the future survival of

our planet (Louv, 2005) since, according to a 2006 Organization for Economic Co-operation and Development (OECD) report, *Starting Strong II*, investment in the early years provides significant returns not only to children but also to their families and the society at large. Another way this has been expressed is that “investment in early childhood is the most powerful investment a country can make, with returns over the life course many times the amount of the original investment” (Irwin, Siddiqi & Hertzman, 2007, p.16). In this thesis, I argue that early investments in ESD will also reap the rewards for individuals and societies in the future.

Thus, environmental education among preschool-aged children arises as a developmental necessity because these children will learn the foundations for taking an active role in the environmental improvement and protection—as well as associated sustainable socio-cultural and economic developments. For this reason, children and adults (e.g., teachers, parents as well as others), should be embraced as active participants in ESD, while integrating education for sustainable development (ESD) into early childhood education (ECE) curricula around the world (Davis et al., 2009).

In further support of this argument for ESD in early childhood education, according to Bronfenbrenner’s Ecological Systems Theory (1979), and An ECEfS Adaptation of Bronfenbrenner’s Ecological Approach (McCrea & Littledyke, 2015), the child is found at the center of the systems and his/her development is influenced by five distinct systems namely, microsystem, mesosystem, exosystem, macrosystem and chronosystem. For instance, the early childhood teacher, who is one of the components of the microsystem—the innermost system that impacts the child—plays a crucial role in a child’s development in relation to learning about and ultimately taking action for the environment. This is because the teacher offers “a pattern of activities, roles and interpersonal relations experienced by a developing person in a given setting with particular physical and material characteristics” (Bronfenbrenner, 1979, p.22). Furthermore, the teacher is also a part of Bronfenbrenner’s mesosystem (such as preschool). In this system, s/he interacts with other components (such as parents), thus reinforcing learning for sustainable development (SD). The third system in Bronfenbrenner’s ecosystems model, exosystem, contains more extensive components (such as media) that influence the components of microsystem; and thus, the child. As



McCrea and Littledyke (2015) suggest, the ecosystems proposed by Bronfenbrenner is also covered with ECEfS/ESD and its components (environmental, societal/cultural and economics/ political).

*The role of Critical Media Literacy in environmental learning*

The National Association for the Education of Young Children (NAEYC) (2012) states that “when used wisely, technology and media can support learning and enhance relationships” (p.1). Appropriately selected and used technology can both develop children’s critical thinking skills and trigger their interest and involvement in the world surrounding them. Early childhood teachers can integrate technology and media with environmental education via activities which promote children’s exploring, creating, problem-solving, communicating, collaborating, documenting and indicate their comprehension about the world except for their class. When teachers utilize the existing media in the classrooms in an interactive way, it also encourages children to construct engagement in and tendencies toward the natural environment since educators provide them opportunities to discover and use virtually limitless resources (Willis, Weiser & Kirkwood, 2014).

A study conducted with pre-service teachers also reached similar outcomes as those describing children’s learning about the environment. For instance, the results of research on Finnish, Swedish, Norwegian and Lithuanian pre-service teachers indicated that students gained the highest amounts of knowledge about animal and plant species from media (66%), with the internet (48%) and television (42%) being two of the most important sources of media for students (Palmberg, Berg, Jeronen, Karkkainen, Norrgard-Sillanpaa, Persson, Vilkonis & Yli-Panula, 2015). On the other hand, most adults perceived media, especially local television news programs, as a consistent environmental information source that may enhance their awareness, but not their knowledge related to environmental issues (Coyle 2005, PRCPP 2008).

Thus, critical media literacy becomes a crucial issue for learning about SD since a media-literate individual is knowledgeable not only about how to read and write but also how to distinguish misinformation and propaganda. (Cooper, 2011). The National Association for Media Literacy Education (NAMLE) elucidated the aim of media literacy

with these words: "The purpose of media literacy education is to help individuals of all ages develop the habits of inquiry and skills of expression that they need to be critical thinkers, effective communicators and active citizens in today's world" (NAMLE, 2009, p.1). The examination of the essential norms of media literacy in education declared by NAMLE (2009) reveals that there are six principles regarding media literacy education that have significant implications for educational practice. A key principle is that media literacy education (MLE) enlarges the notion of literacy (such as reading and writing) to contain *all types of media* (such as books, magazine, television, mobile phones, e-mails), with the implication that "MLE should be taught across the pre-K-12 curriculum. It can be integrated into nearly any subject area" (NAMLE, 2009, p.3). Overall, the ML movement has been effective in supporting notions of semiotics, as well as intertextuality, and, recognizing that popular culture is a part of public education. Further, critical media literacy enlarges ML concepts in that it "critically analyze relationships between media and audiences, information and power;...skills in analyzing media codes and conventions, abilities to criticize stereotypes, dominant values and ideologies and competencies to interpret the multiple meanings and messages generated by media text... and constructing alternative media" (Kellner & Share, 2007, p.4). These are important skills in relation to understanding the diverse views and ideas related to ESD.

#### *The role of teacher education*

The above arguments for ESD and CML have implications for teacher education, including the teacher education of early childhood (EC) teachers since technology especially digital media can bespeak distinct learning styles "by helping students understand their experiences through verbal, written, spatial, quantitative, and/or graphical means" (Willis, Weiser & Kirkwood, 2014, p.143). In other words, when technology infused teaching is given more place, students mostly involved in the learning process (Laird & Kuh, 2005). To illustrate, blending environmental and media literacy into the current curriculum will foster EC teachers raise children as future active citizenships Thus, it is a crucial element of all technology plans to provide teachers "developmentally appropriate resources and strategies" which promote environmental and media literacy (Willis, Weiser & Kirkwood, 2014).

At this juncture, why MLE is required should be investigated closely. One of the implications regarding the principles of MLE is that MLE should not focus on changing students' viewpoints and simply replace it with somebody else's ideas (such as a teacher's, a media critic's, an expert's...). Thus, it is vital that the skills which students require to criticize media analytically for themselves should be shared through MLE practice. This cannot be realized via tendering media literacy materials (i.e., videos, films, books...) instead of teaching critical inquiry skills (NAMLE, 2009). On the other hand, CMLE instruct students to ascertain from media, to struggle manipulation of media and to utilize media resources constructively, in addition to these it focuses on raising skills which will promote to generate good citizens and by this way support individuals being more reinvigorated and capable people in social life (Kellner & Share, 2007). While conducting activities related to ML, teachers should give students support to “read between the lines” of the message on the media, inquiry the interest at the back of them, comprehend how to find alternative ways to be knowledgeable and/or amused (Torres & Mercado, 2007, p.549). This means that teachers should be media literate themselves in order to promote children’s critical thinking actively in all learning environments from preschool to university in MLE (NAMLE, 2009) because not only teachers but also students are found in the most vulnerable communities to be affected primarily by the mass media but this effect is frequently not beneficial for them (Torres & Mercado, 2005).

It is vital to raise media literate children since the Paris Agenda, or 12 Recommendations For Media Education constituted by UNESCO in 2007 declared that media literacy is a skill, which provides for individuals to be involved in democratic life and to comprehend society, and should be developed throughout life (Bartolomé & Macedo, 1997). Hence, critical media literacy education should start from early childhood education (Altun, 2009; Kellner & Share, 2007). In other words, early childhood educators have a significant influence on not only on children's but also their parents' lives.

Moreover, UNESCO (2007) in "Teacher Training and Awareness Raising of the Other Stakeholders in the Social Sphere" report highlighted that teachers playing a pivotal role in the educational system should learn theoretical dimensions and have practical skills related to CMLE because this is necessary for forming a basis to raise knowledgeable young people on media uses. To put it another way, a key aim of teacher education should

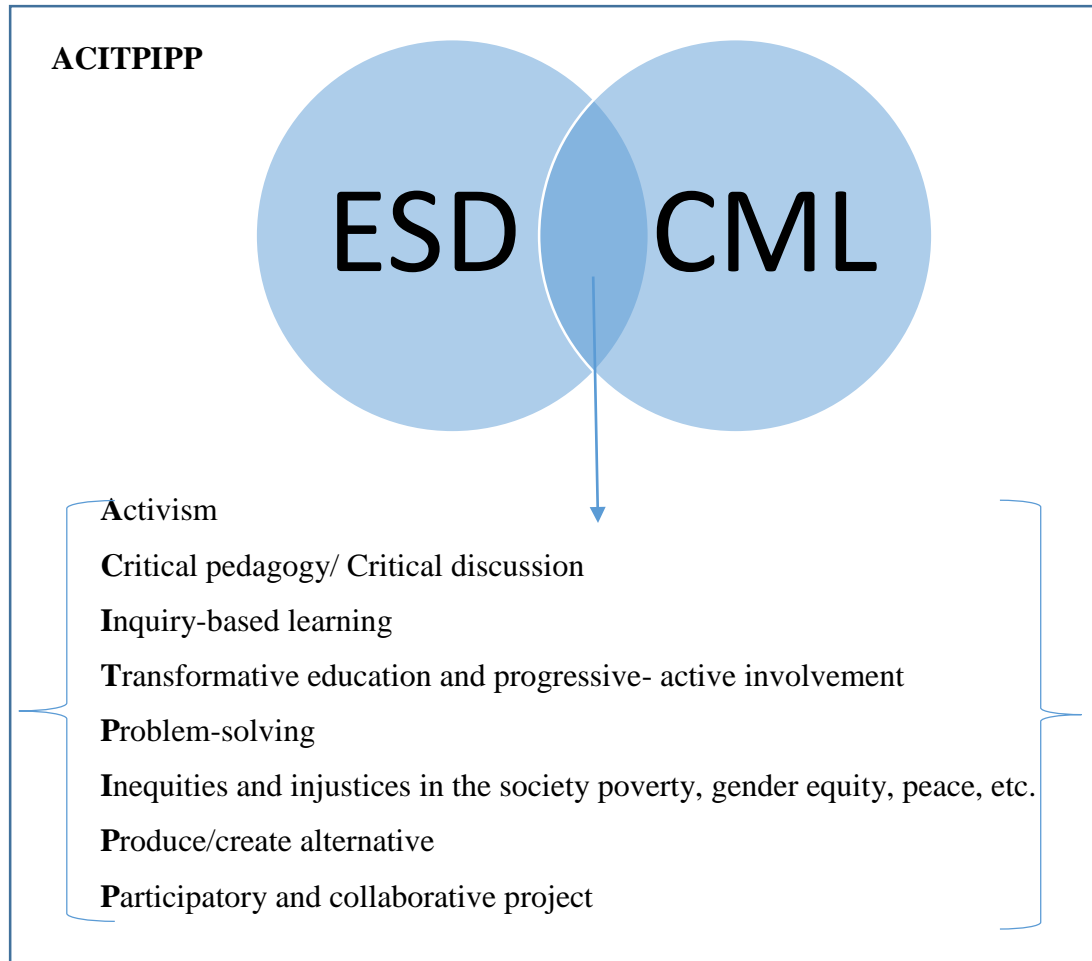
be to develop educational leaders who raise their students as media-literate civilians who can critically analyze and see beyond the surface of technological actors and more creative as well as responsible roles (Goetze, Brown, & Schwarz, 2005). To reach this aim, a democratic approach using critical pedagogies that are relevant to progressive education and transformative pedagogy as strongly advised by Dewey (1916) offers most appropriate teaching pedagogy (Kellner & Share, 2007).

*The intersection points of ESD and CML*

Willis, Weiser, and Kirkwood (2014) promote that we, educators, can utilize media to enhance skills and interest in environment although these two disciplines are seemed as opposite ones of each other since the ultimate goal of them is literacy that encourages children to be media literate and environmentally literate citizenships in the future. Similar to CML, <sup>1</sup>EfS/ESD is established on the values “critical inquiry, empowerment, participation, democratic decision making, action taking” which promotes sustainable lifestyles and social change, which also means transformative education (Davis, 2015, p.37). It is important to note that both CML and ESD have been informed by critical theory which when applied to education offers tools for educational and pedagogical change and social transformation (Kemmis & Carr, 1986). This perspective complements the overarching theoretical frame of this study which is Bronfenbrenner’s ecological systems theory. In other words, CMLE and ESD use similar critical pedagogies derived from transformative education. When the characteristics of EfS/ESD and CML are considered, it can be seen that both forms of education advocate for “critical thinking and reflection (inquiring into the existing systems), systemic thinking (being aware of complex relationships and trying to explore possible solutions to issues), establishing partnerships (teacher, children, and parents...etc. learning together, collaboration) and participation in decision making (to promote all participants (e.g. teacher, children, parents) to be part of decision making process)” (Kellner & Share, 2007; Tilbury & Wortman, 2004; Torres & Mercado, 2007). These synergies are illustrated in figure 1.1.

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<sup>1</sup> This term is used for environmental education in Australia and New Zealand while ESD term is utilized in European countries.



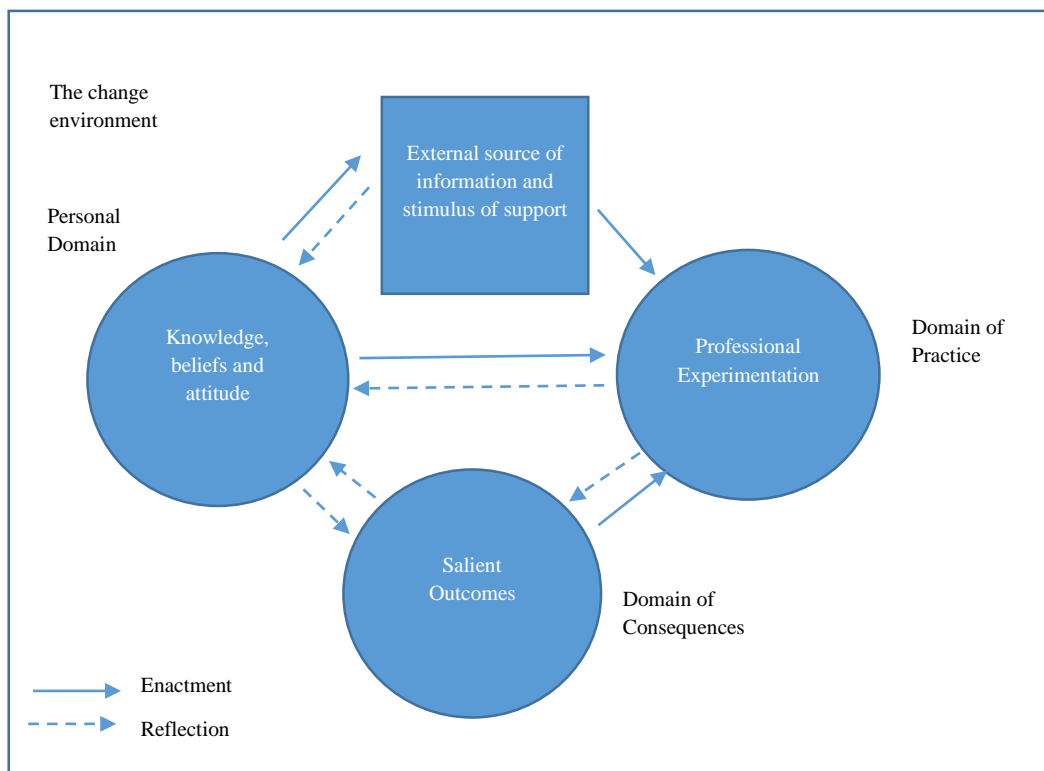
*Figure 1.1* The intersection points of ESD and CML (Alıcı, 2018)

*Interconnected Model of Professional Growth*

In light of these intersection points, the present study focused on ESD, CML and the professional development of early childhood educators. Combining all these components, the Interconnected Model of Professional Growth (ICMPG) (Clarke & Hollingsworth, 2002; Hollingsworth, 1999) was used to explain about teachers’ professional change and/or growth related to ESD and CML. This model was chosen because it was found to be useful in elucidating the results related to change in early childhood educators’ knowledge, comprehension and confidence about content (such as ESD) and pedagogies (personal domain) as the outcomes of PD on early childhood education for sustainability (ECEfS) (external domain). Throughout this PD, early childhood teachers were encouraged to learn and share views related to theoretical

background and practical implementations of sustainability in general; and, ECEfS in particular (Dyment, Davis, Nailon, Emery, Getenet, McCrea & Hill, 2014).

The ICMPG is a nonlinear model (means that ongoing interaction and multiple entrances are there) and points out the sophistication of professional growth by explaining the multi-dimensional growth between various domains (external domain, personal domain, the domain of practices and domain of consequences). Change in one domain leads to change in another domain through reflection (with broken arrows) and enaction (with solid arrows) processes. (See Figure 1.2 and 2.7)



*Figure 1.2* The Interconnected Model of Professional Growth (Clarke & Hollingsworth, 2002)

Briefly, the components and the mediating process can be summarized in the following. The external domain (professional development training for the present study) is a stimulus coming from out of the teachers' world. Domain practice, one of the key components, is about teachers' experimentations (teachers' implementations related to

ESD through CML for the present study) in their own classes. Domain consequences, salient outcomes (selection of topic, teaching strategies...etc. for the current study), are related to teachers' values and experiences coming from their classroom practices. The last one, personal domain, indicates teacher's practical knowledge covering their knowledge, awareness, skills...etc. (teachers' ESD awareness and CML level for the current study) (Clarke & Hollingsworth, 2002; Hollingsworth, 1999).

What's more, "the mediating process of the model" occurs with two processes. One of them is "enaction process" which is different from merely "acting" such as putting into practice of a newly met practice/a new idea/ belief. One of them is found the link between external domain and domain of practice, see figure 1.2 with solid arrows. The second mediating process is "reflection process". This can be explained with an example. To illustrate, one of the potential reflective connection is between the external domain and the personal domain. (See Figure 1.2) This means that an educator might reflect the new experiences gained from in-service training to his/her beliefs and s/he might change his/her implementation(s) in his/her classroom (Clarke & Hollingsworth, 2002).

In this model, "the change environment" is also added but independently from the model components to demonstrate how a change in every domain and the effect of every mediating process are fostered or precluded with the opportunities and barriers of the working conditions for each teacher (or other professionals) (Clarke & Hollingsworth, 2002). (For a detailed explanation see Chapter II, Section 2.4.2.1)

All in all, in the present study, through ICMPG it was aimed to promote early childhood teachers' ESD awareness and CML levels (personal domain), their ESD practices through CML in their class (domain of practice) and their assessment process via talking about their applied activities (on ESD via CML) with stimulated recall interviews (salient outcomes) by starting the professional change/ growth with giving professional development training on ESD and CML (external domain).

## **1.2 Significance of the Study**

The analyses of existing literature about the relationship between media and ESD has revealed that some researchers have found that media and their school were the two primary sources that influenced young peoples' environmental knowledge (Blumler,

1979; Hausbeck, Milbrath & Enrigh, 1992; Connell, Fien, Lee, Sykes & Yencken, 1999). One study conducted with 256 school children (aged 7 to 9) in Mexico and England indicated that children acquired their environmental knowledge mostly from the media at 45 % (such as television and books) (Barraza & Cuaron, 2004). Bonnet and Williams (1998) also identified that the primary sources of 4-6 years old children's environmental knowledge were their school, parents, relatives, and television. The media (especially television) presents a vital avenue for environmental education (Ballantyne & Packer, 2005). According to Huckle (1995), people can obtain awareness and perceptions about both near and far environments and environmental issues since the images and sounds in visual media play a significant role in forming individuals' belief, attitudes, and identities. For Roth (1992), the major aim of ESD is to raise an “*environmentally literate citizenry*” who have the perceptions, skills, attitudes, and habits of minds that promote long-running actions for sustainable development. To obtain this purpose and present a rich multi-sensory experience which educates and inspires people about the environment and environmental issues, the media is a well-suited means (Zimmermann, 1996) and thus should be considered as a vital part of any school ESD curriculum. Although the media has a positive effect on individual's knowledge, perceptions, attitudes, and skills, mostly media messages remain as hidden and unfamiliar like in children's entrainment program. For example, children may learn about “values, stereotypes, prejudices” from entertainment even if they were not targeted (Torres & Mercado, 2007). When average computer and internet using start at six years old as well as mobile phone using begins at seven years old; and, 52% of 6-10 years old children watch TV more than 3 hours in a day and mostly watch cartoon on TV in Turkey (TÜİK [Turkish Statistical Institute], 2013) were considered, there is a need for (C)ML to foster learning in individuals to guard against the potentially negative influence of media (Potter, 2013). Education then should play a key role to develop CML since “media literacy education empowers young people, from kindergarten to college, to apply reasoning and critical thinking to everything they read, see, hear, and interact within complex media environments” (NAMLE, 2014, p.7) and the “reconstruction and democratization of education and society” (Kellner & Share, 2007, p.4). To raise (C)ML in society requires the efforts of both individuals and guidance



from experts (Potter, 2013). First of all, the teacher should be media literate, and then, s/he can play a guiding role for children to be media literate individuals (Hobbs, 2010).

According to Reding (2007), the previous European Commissioner for Information Society and Media, media literacy is also a precondition of effective involvement in technologically-advanced communities where changes in knowledge and communication services are occurring at a rapid rate. Digital technologies are at the center of many communications services; thus media literacy is seen as vital to obtaining the wide range of skills in the present digital age as well as in traditional media which allow us to have a role in all aspects of today's society. Unless individuals can catch these developments, day by day an increasing separation will occur between individuals who are skillful and well-connected and those who are not. Hence, the NAEYC/Fred Rogers Center (2012) emphasized that pre-service and in-service teacher education should cover in-depth, hands-on and minds-on media experiences, continuing support, access to the newest technology and interactive media in order to provide them to be knowledgeable about the current changes in media and their use in the program. The opportunities should be supplied for teachers to explore and to have an experience how to use and integrate these tools into EC curriculum with effective, intentional and developmentally appropriate ways. As stated by Hobbs and Jensen (2009), in the future studies pertaining to ML will be conducted around two issues: (a) the correlation between media literacy and the inclusion of educational technology into the K-12 curriculum and (b) the connection between media literacy education, the human sciences and art, as well as sciences.

The analysis of the relevant literature on critical media literacy has revealed that researchers have proposed quite distinct views on how critical media literacy and/or media literacy can be described as well as how educators should promote their students' critical media literacy level. For instance, Rogow (2015) declares that the integration of MLE into EC programs can be possible with effective teaching approaches which are explained with teacher takeaway messages. These are (a) to construct effective ML plans and teaching methods that support children enhance the "habits of inquiry" and "skills of expressions" they require to be successful in the media-saturated world, (b) to comprehend that why we, educators, require to integrate media into our lives via healthy and productive ways

since media surround us that also affect our culture, (c) to provide opportunities for children to comprehend the concept that all media are created, (d) to teach children think critically via active participation in decision making and reflection process related to media children construct and consume and (e) to promote children learn to inquire relevant questions on media that we, educators and children, use and construct via modelling them how to ask and find their answers. On the other hand, Kellner and Share (2007) advocate that raising CML includes the development of skills on “analyzing media codes and conventions, abilities to criticize stereotypes, dominant values and ideologies, and competencies to interpret the multiple meanings and messages generated by media text”, understanding how media (e.g., film or video) can be utilized affirmatively, instructing various types of contents (such as multicultural comprehending and education) (p.4). This type of education can be seen as offering a critical pedagogy approach based on a transformative education such as ESD (Davis, 2015; Tilbury & Wortman, 2004).

Using ML intervention in education is not a new concept. There have been numerous attempts utilizing ML interventions related to alcohol consumption (Hindmarsh, Jones & Kervin, 2015), body image (Diedrichs, Atkinson, Steer, Garbett, Rumsey & Halliwell, 2015), eating disorders (Wilksch, 2015), news (public service announcement) (Vraga & Tully, 2016), computer gaming and Internet use behavior (Walther, Hanewinkel & Morgenstern, 2014), social media effect on students’ eating disorders (McLean, Wertheim, Masters, Paxton, 2017) and sexual health education (Scull, Malik & Kupersmidt, 2014; Scull, Kupersmidt, Malik & Keefe, 2017). In these studies, various interventions were carried out to affect the university, high school, elementary school students’ knowledge, views, attitudes, behavior, critical thinking skills about distinct topics as mentioned above. However, examining the literature on CML and ESD indicates that there are no studies that explore the impact of conducting ESD through CML in early childhood context, not only at international but also at the national level. Moreover, in Turkey, the studies pertaining to media literacy only started in 2004 with the support of “The Radio and Television Supreme Council” (RTUK) (Altun, 2014) although the media have also started to cover more place and time in children’s lives and at least one or more than one medium/media and/or media tools have been one of the important

things in their daily lives (MoNE, 2013; RTUK, 2013). In the light of Altun's (2014) research analyzing the studies conducted from 2004 to the present, it is evident that there are few studies on early childhood education and media literacy, teachers and media literacy, and interdisciplinary studies are pertaining to media literacy. Similarly, Toran (2017) carried out a study analyzing research focusing on ESD in Turkey from 2007 to 2017. He found that it is necessary to conduct research and projects to describe the impact of ESD programs on teachers to improve ESD training in Turkey. Although in Turkey a few studies related to media literacy in teacher education in the field of early childhood have been undertaken, there is no specific study on ESD via CML targeting EC teachers, and especially, there are no studies investigating in the same area through the lens of ICMPG (Clarke & Hollingsworth, 2002; Hollingsworth, 1999).

Thus, the current study makes a contribution to the research literature regarding investigating early childhood teachers' existing awareness of ESD and their CML levels and how they utilized their CML skills gained via professional development training (PDT) to integrate ESD concepts into their classroom curricula. Specifically, the study looked at how teachers used OMEP's framework of the 7Rs as a basis for learning about SD in conjunction with the development of critical media literacy. In summary, the current study developed findings and discussion derived from the analyses of the data collected through four cases ICMPG based on the researcher's intervention through the professional development training of four early childhood teachers already in classrooms. In particular, the study's focus was on enhancing their CML levels in the context of ESD (global warming). The impacts of the training on these early childhood educators' implementation of ESD through CML in their classroom (domain practice) and their awareness of ESD and CML level (personal domain) and their salient outcomes such as teaching strategies, resource use, etc. (domain consequences) were analyzed and discussed through the ICMPG model. Thus, the current study exemplifies how a holistic approach to teaching and learning can be used to describe how teacher professional change and/or growth related to ESD and CML might occur. In conducting the study, multiple data collection tools were used. These included stimulated recall interviews, interviews, teachers' daily and monthly plans and field notes. Also, the effects of the training on early childhood educators were examined via their views and applications in their classrooms.

The findings of the study also serve to shed light on the stronger and weaker aspects of the present research especially related to the impact of PDT based CML in the context of ESD on early childhood educators' related ESD applications through CML in their classrooms. It has been founding as a result of this study that other researchers could carry out studies investigating the impact of a range of programs and in-service training covering ESD and CML within the early childhood context.

### **1.3 Purpose of the Study**

In light of previous research and line with OMEP's principles for sustainability education as implemented through the 7Rs, the purpose of the present study was to apply a qualitative research method to determine changes in early childhood teachers' awareness of ESD, their CML levels, their implementations focusing on ESD through CML and their conclusions drawn from their implementations after a specifically designed professional development training (PDT). To examine teachers' ESD awareness and implementation of ESD through CML before and after PDT, the related literature was investigated and criteria related to ESD implementations' scope (weak to strong) and CML levels (basic to advanced) were described and presented in Appendix E. To portray EC teachers' CML levels before and after the PDT, the criteria described by the European Commission Directorate General Information Society and Media and Hobbs's Essential Competencies of Digital and Media Literacy (2010) were used. According to these criteria, teachers' critical media literacy levels were then categorized as basic, medium or advanced. (See Appendix E)

The following main research questions and sub-questions guided the overall study:

1) To what extent have early childhood teachers' Critical Media Literacy (CML) levels changed as a result of professional development training aimed at improving the effectiveness of their Education for Sustainable Development (ESD) practices in terms of their personal domain, domain of practice, and domain of consequences?

1-a) How have early childhood teachers' awareness of ESD changed before and after the professional development training?

1-b) What is the level of early childhood teachers' CML before and after the professional development training? (personal domain)

1-c) What changes in early childhood teachers' implementation of ESD through CML in early childhood learning environments have occurred after professional development training? (domain of practice)

1-d) What changes in early childhood teachers' outcomes derived from their implementation of ESD through CML in early childhood learning environments occurred after professional development training? (domain of consequences)

#### **1.4. Researcher's Background and Standpoint**

As a researcher, she determined to conduct the present study owing to her experiences during her master thesis. In this thesis, she focused on recycle, reduce and reuse (3Rs) education for 60-72-month children. While carrying out the thesis, the researcher studied with children, their parents, and teacher and made interviews with them. The findings of teacher interview revealed that if she was aware of ESD issues that the researcher implemented in this study, she also could apply similar ones to the researcher's activities. Further, she stated that she had a chance to observe how to conduct ESD activities to promote children's active learning, their awareness of ESD issues, and their attitude as well as behavior toward these issues. What's more, throughout the master thesis, during informal dialogue with parents, the researcher perceived that they generally complained about their children's heavy media usage and did not use effective strategies to solve this problem. Based on these experiences, the researcher decided to work on ESD, CML and teacher education for her dissertation.

When it comes to researcher standpoint, her position as a researcher was a change agent to provide that teachers better understand ESD and CML and provoked them to reflect their comprehensions to their daily and monthly plans and in-class implementations. Besides, the researcher played a role as a facilitator and a guide while the teachers were planning and conducting their activities and projects targeting ESD through CML. She is also practicing to critical reflection about her research and her role throughout the current study.

## 1.5 Definition of Important Terms

**Education for Sustainable Development:** It "seeks to integrate the tenets, values, and practices of sustainable development into all aspects of education and learning. ESD aims at providing every individual with the opportunity to acquire the values, competencies, knowledge, and skills that enable him or her to contribute to a humane, socially just, economically viable and ecologically sustainable future" (UNESCO, 2009. p.1).

**Education for Sustainability (EfS):** This term is used for environmental education in Australia and New Zealand while ESD term is utilized in European countries. There is not a just one way this concept. The universal principles that encompass this word are "holistic, experiential, critically-reflective, collaborative, problem-based, systemic and participatory" ( Davis & Elliot, 2014, p.9).

**Early Childhood Education for Sustainability (ECEfS):** It is an emerging area and approach that promotes "children to co-construct knowledge, participate and exercise agency can facilitate education for sustainability within the early childhood sector" (Stuhmcke,2012, p.10).

**Media Literacy:** "The ability to access, analyze, evaluate, and communicate information in a variety of forms-is interdisciplinary by nature. Media literacy represents a necessary, inevitable, and realistic response to the complex, ever-changing electronic environment and communication cornucopia that surround us" (NAMLE, 2009, p.1).

**Critical Media Literacy:** It includes three dimensions:

- "1) The development of a critical understanding of how to cooperate for-profit media work, driven by their political and economic vested interest
- 2) The search for and support of alternative, non-profit media
- 3) The characterization of the role of teachers in helping students and their parents to become media literate users and supports of alternative media" (Torres & Mercado, 2007, p.537).

**Mass Media:** According to Dutton, Brian, O'Sullivan, Tim, Rayne and Phillip (1998), mass media has four essential characteristics, which are a) distance, (b) technology, (c) scale and (d) commonality.

a) Distance: Communication occurs between individuals who send and receive the message.

b) Technology: A vehicle (i.e., television) is necessary for mass communication.

c) Scale: This includes simultaneous communication with many individuals.

d) Commonality: This reflects the price of the availability of vehicle (e.g., television) and communication means (such as cable, license free).

**Interactive Media:** This term stands for “digital and analog materials, including software programs, applications (apps), broadcast and streaming media, some children’s television programming, e-books, the Internet, and other forms of content” constructed to promote young children’s active and creative usage and to foster their social participation among other children and adults (NAEYC, 2012, p.1).

**Non-interactive Media:** This term contains “certain television programs, videos, DVDs, and streaming media now available on a variety of screens”. Non-interactive media tools are not utilized to facilitate active involvement and interactions and can cause for young children to be passive viewers and to be exposed to screen time excessively (NAEYC, 2012, p.2).

**Early Childhood:** It covers the period from birth to eight years old that is “a time of remarkable growth with brain development at its peak” (UNESCO, 2017, p.1).

**Early Childhood Care and Education:** This is more than preparing kids for the primary schools. Its purpose is to support children’s social, emotional, cognitive and physical needs within a holistic development view to construct “a solid and board foundation for life learning and wellbeing” (UNESCO, 2017, p.1).

## CHAPTER 2

### LITERATURE REVIEW

*“Reading the worlds always precedes  
reading the word, and reading the  
word implies continually reading  
the world”  
(Freire & Macedo,1987).*

This chapter focuses on a related literature review that describes the theoretical framework concerned with the aim of this study which is to describe early childhood teachers’ understandings, practices, when bringing together education for sustainable development (ESD) and critical media literacy (CML). In this chapter, the development of ESD from environmental education (EE) and the place of early childhood education (ECE) in this development, ecological systems theory and its education for sustainable development adaptation, CML, its levels and teaching strategies, professional development of in-service teachers and its models, related studies on education for sustainable development and critical media literacy and early childhood education and teacher education are presented respectively.

#### **2.1 The Development of Education for Sustainable Development from Environmental Education and the Place of Early Childhood Education in This Development**

In this section, brief summary of improvement of EE and ESD throughout the years and recent innovations related to EE and ESD in ECE, the historical background of EE and ESD in Turkey, and the existing situation of EE and ESD in ECE in Turkish context are explained in turn.

Kalle Lasn, the editor of Adbusters magazine, drew a parallel between tsunami and consumerism since consumerism also swallows human cultures and ecosystems. For



her, this wave can be precluded if we, human beings, intentionally transforming our lifestyle and cultures to the center of sustainability. 2010 State of the World report, many researchers and practitioners emphasized that education is one of the leading institutions in the world that can reorient cultures toward sustainability (Pramling Samuelsson & Kaga, 2010). Ever since the Brundtland Report of the World Commission on Environment and Development (1987), *Our Common Future*, and the 1992 Earth Summit in Rio de Janeiro with *Agenda 21 Chapter 36*, the attention of the world has been taken to the urgency of sustainable development and the international collaboration on development and environmental issues. (See Table 2.1) However, the issues taking place under sustainable development are complex, and they cannot be covered within only the diplomatic language and an agreement reached in an international conference (Fien & Tilbury, 2002). The World Summit on Sustainable Development in Johannesburg, South Africa, in 2002, specialists from developed and developing countries reached to an outcome which is the most prominent issues related to sustainable development is that the concept has not taken place at the public eye. Hence, it is crucial that the problems and rigors of sustainable development should be outlined by individuals as they ascertain (Bird, Lutz & Warwick, 2008).

Even though climate change and global warming are also the current issues related to sustainability within the public and political lens, there is already going on the discussion about these issues whether the Earth is not warming, or just experiencing “natural climate variability” (Sudhakara Reddy & Assenza 2009, p.2997). They take attention to “while the skeptics generally do not want to take action or want to postpone measures on climate change, the supporters claim that action is right now” (p.2998). For Stuchmcke (2012), instead of debating whether climate change and global warming is true or not, we, humankind, should consider that we play a crucial role to change the existing situation toward to sustainable live style via starting from early years. Therefore, in the following part, significant progress in the field of EE and ESD were examined and summarized in Table 2.1.

As seen in Table 2.1, experts, researchers, and policymakers, first of all, determined the aim of EE, its goals, objectives, and principles in 1977. After that, they aimed to take countries’ attention to the creation of international strategy against the

deteriorating circumstances of the environment gradually all over the world in 1987. In the same year with Our Common Future report, experts declared what sustainable development is via the definition “development that meets the needs of the present without compromising the ability of future generations to meet their needs” (WCED 1987, p. 43). After five years from Our Common Future report, the other millstone conference was organized, and Earth Summit report including Agenda 21 was published. In agenda 21 there were two crucial chapters, Chapter 25, on Children and Youth in Sustainable Development, and Chapter 36, on Promoting Education, Public Awareness and Training. In Chapter 25, children’s role for sustainable development in the future was explained with these words:

Children not only will inherit the responsibility of looking after the Earth, but in many developing countries they comprise nearly half the population. Furthermore, children in both developing and industrialized countries are highly vulnerable to the effects of environmental degradation. They are also highly aware supporters of environmental thinking. The specific interests of children need to be taken fully into account in the participatory process on environment and development in order to safeguard the future sustainability of any actions taken to improve the environment (United Nations, 1992, p.200).

Moreover, Chapter 36 elucidated the importance of education for sustainable development as follows:

Education is critical for achieving environmental and ethical awareness, values and attitudes, skills, and behavior consistent with sustainable development and for effective public participation in decision making. Both formal and non-formal educations are indispensable to changing peoples’ attitudes so that they have the capacity to assess and address their sustainable development concerns (United Nations, 1992, p. 264).

Although education for sustainable development (ESD) was described in the Earth Summit report, in 1997, experts reorganized education for sustainable development covering the all educational types (formal, informal and non-formal).

What’s more, the World Summit for Sustainable Development (WSSD) known as Johannesburg Summit was the third major United Nations Conference held in Johannesburg, South Africa in 2002 (a third decade after the Stockholm and ten years after Rio Declaration). This was the landmark conference focused on implementation that means a summit of actions and results since previous conferences addressed various issues such as poverty, energy usage, and air pollution and attempted to change the tenor of

events however there become a few implementations (UNESCO, 2002). The results of this conference underlined the need to integrate sustainable development into education systems at all levels of education since education was vital factor that encouraged the alternation.

Table 2.1 *Important Developments in EE and ESD*

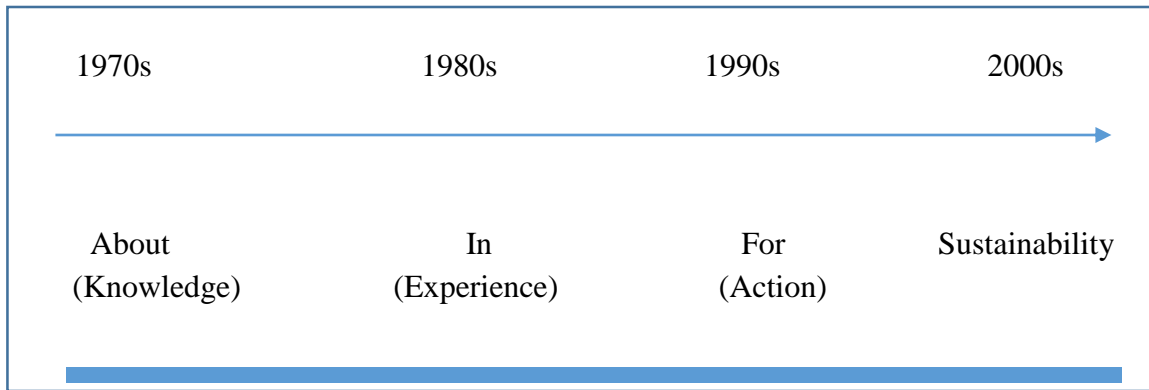
Event	organization	Date & Place	Contributions to the field
The first Inter-governmental Conference on environmental education	UNESCO	in 1977 & Tbilisi	<p>the aim of environmental education</p> <p>1) to foster clear awareness of, and concern about, economic, social, political and ecological, interdependence in urban and rural areas;</p> <p>2) to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment;</p> <p>3) to create new patterns of behavior of individuals, groups, and society as a whole towards the environment (UNESCO, 1978, p.26).</p> <p>goals, objectives (awareness, knowledge, attitudes, skills, participation) and guiding principles of environmental education</p>
Intergovernmental Conference on Environmental Education and Training	UNESCO & UNEP	in 1987 & Moscow	<p>Construction of international strategy</p> <p>Plan of action strategies for the needs and priorities of environmental education and training for the 1990s</p>
The Brundtland Report- <i>Our Common Future</i>	WCED	in 1987	<p>the definition of “sustainable development” term</p> <p>as “development that meets the needs of the present without compromising the ability of future generations to meet their needs” (WCED 1987, p. 43).</p>
The second international conference, The Earth Summit	United Nations	in 1992 & Rio de Janeiro, Brazil	<p>Five significant documents</p> <p><i>Agenda 21</i>(poverty, managing solid waste, and sewage, atmosphere, and climate to youth and education)</p> <p>Chapter 25 (Children and Youth in Sustainable Development), and</p> <p>Chapter 36 (Promoting Education, Public Awareness, and Training)</p>

Table 2.1. Cont'd.

Event	organization	Date & Place	Contributions to the field
The International Conference on Environment and Society: Education and Public Awareness for Sustainability	UNESCO	in 1997 & Thessaloniki, Greece	the reorientation of education (formal, non-formal and informal education) to encourage sustainable development  Sustainable development includes issues such as poverty, population, health, food security, democracy, human rights and peace
World Summit for Sustainable Development, Johannesburg Summit	United Nations	in 2002& Johannesburg, South Africa	Emphasis on the need to integrate sustainable development into education systems at all levels of education
The Decade on Education for Sustainable Development (UNDESD) for the period 2005-2014	UNESCO	2002	Educational principles & strategies interdisciplinary and holistic”, “values-driven”, “critical thinking and problem solving”, “multi-method”, “participatory decision making”, “applicability” and “locally relevant.”  Sustainable School initiative (Australia), the Green School Project (China), enviro-schools (New Zealand), Green Schools (United States) and eco-schools (Europe)

In the light of these advances, experts focus on the scope of education for sustainable development. In 2002, the United Nations proclaimed 2005–2014 the Decade for Education for Sustainable Development (ESD) and accentuated the distinction between environmental education and ESD. Environmental education “is a well-established discipline, which focuses on humankind’s relationship with the natural environment and on ways to conserve and preserve it and properly steward its resources” (UNESCO, 2005, p.18). On the other hand, education for sustainable development covers environmental education, in addition to this, the concept of ESD encapsulates socio-cultural elements and the socio-political problems related to equity, poverty, democracy and life quality (Venkataraman, 2009). As mentioned in Chapter I, ESD is strongly connected to critical theory that takes addressing such issues as vitally important.

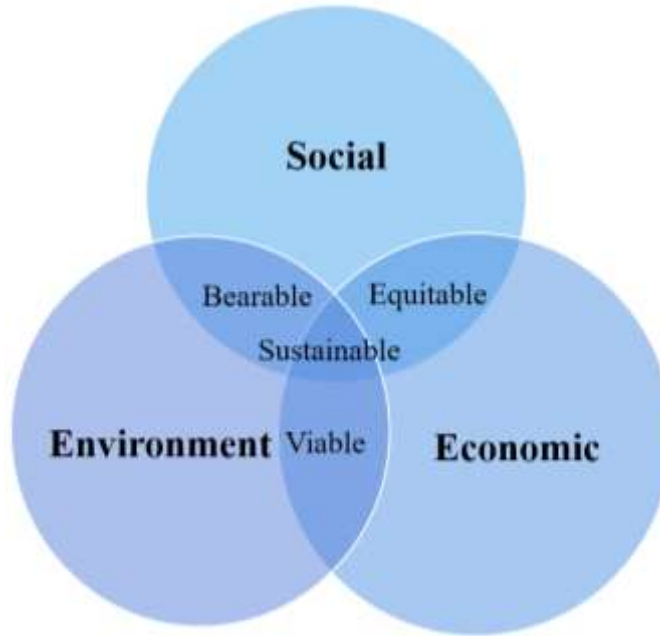
As seen in Figure 2.1, EE approaches have evolved to sustainability. While in the 1970s the focus of EE was comprehension of concepts and knowledge about environmental process and issues (e.g., ecosystems, carbon cycle...), in the 1980s the focus of EE changed to having hands-on experiences, field knowledge, and skills within the natural environment. In the 1990s, EE promoted education for the environment approach covering improvement of values, skills, knowledge, and decision making involvement and taking action on environment and related issues (i.e., waste management, tree planting...). In the 2000s, education for sustainability approach promotes transformative education at which individuals are engaged in decision making effectively and are supported to work collaboratively with their communities to lead to the affirmative environment, social and economic change ( Davis, 2014; Stuhmcke, 2012).



*Figure 2.1* Evolution of environmental education approaches (Tilbury, Coleman & Garlick, 2005, p. 26)

United Nations also proposed some educational strategies and principles how to ESD integrated into the existing programs. Sample programs (e.g., eco-schools) based on ESD conducting throughout world initiated. However, a few of them were getting support from the early childhood education sector's programs (Davis, 2014). The United Nations General Assembly (2005) defines ESD in the following:

ESD targets three pillars of sustainable development, namely; society, environment, and economy including culture as a crucial supplementary and underlying component in an equal way. Via encompassing these elements holistically and integrated, ESD provides to enhance people's knowledge, perspectives, values, and skills which are required for participating in making decision process to raise their life quality not only at local but also at the global level regarding most related things in their everyday lives. (See Figure 2.2)



*Figure 2.2* Interdependent Pillars of Sustainable Development (Adapted from EPSD, 2010, p.29).

At this juncture, the question of how ESD can be transferred into daily life and be effective to construct a sustainable future (Venkataraman, 2009). In 2009, “the U.S. Partnership for Education for Sustainability” declared “National Education for Sustainability K-12 Student-Learning Standards”. These standards were constructed by K–12 educators, and “Teacher Education Sector of the U.S. Partnership for Education for Sustainable Development” (USPESD) based on the Brundtland Commission’s notion of sustainable development via integrating components of ESD as described by the United Nations (NCSS, 2009). These standards are given at below:

EfS Standard 1 – Students comprehend and are skillful in implementing the fundamental notions and norms of sustainability (such as to meet the current needs without intervening future generations’ ability that fulfill their needs).

EfS Standard 2 – Students know the sustainability notion as a vigorous situation described with the interconnectivity among ecological, economic, and social systems and how these interdependent systems impact person and his/her social well-being.



Students also constitute a comprehension of the link between human and his/her interconnection with the natural world.

EfS Standard 3 – In order to acquire the knowledge, skills, and attitudes required to develop the health and well-being of current and future generations continuously, through not only personal but also collective determinations and actions, students enhance a multidisciplinary approach. They are skillful to envisage a sustainable world can continue to exist through the fundamental alterations that would be required to be carried out by people, local communities, and countries to accomplish this.

Early childhood education (ECE) cannot ignore these developments since the characteristics of education for sustainable development naturally align with early childhood pedagogies (Arthur, Beecher, Death, Docket & Farmer, 2008). Therefore, significant improvement is seen in early childhood education. In 2007, the initial international workshop related to education for sustainable development (ESD), “The Role of Early Childhood Education for a Sustainable Society” was carried out in Goteborg, Sweden focusing on young children (Pramling-Samuelsson & Kaga, 2008). This was the subsequent one after the international conference for sustainable development, “Learning to Change Our World”, in 2004, in Goteborg. This workshop aimed to determine the potential promoters and obstacles related to learning for sustainability. In this assembly, specialists arrived a strong concurrence that education for sustainable development should initiate from very early years since “children develop their basic values, attitudes, skills, behaviors, and habits which may be long-lasting” in early childhood years (Pramling-Samuelsson & Kaga, 2008, p.12).

After this workshop, in 2008, another assembly was organized by the researchers from early childhood education and colleagues from other education and policy sectors in order to constitute the document called “The Gothenburg Recommendations on Education for Sustainable Development”. In this document, Recommendation1, “Access for all to a Process of Lifelong Learning”, accentuated that “early childhood is a natural starting point for education for sustainable development in order to promote educational access for all people within a process of lifelong learning” (p.7).

What's more, in 2010, OMEP revised and enhanced the 7Rs that were determined in the international workshop called "The Role of Early Childhood Education for a Sustainable Society". The new 7Rs, which are "Reduce", "Reuse", "Respect", "Reflect", "Rethink", "Recycle" and "Redistribute" for education for sustainable development in early childhood education are included in three pillars of sustainable development, namely environmental protection, socio-cultural and economic development. The 7Rs as shown in Table 1.1 in Chapter I are described and elucidated below (Duncan, 2011; OMEP, 2011, p.6):

*Respect – the rights of the child (related to the socio-cultural pillar)*

This is regarding gaining knowledge of being enthusiastic about nature, as well as to respect nature, but also to respect children and their abilities. Here it is crucial to be able to talk with children about the living conditions of other children without infusing attitudes of pity towards 'those living abroad'.

*Reflect – on cultural differences in the world (related to the socio-cultural pillar)*

This is regarding presenting children an opportunity to reflect on how their peers in other countries dwell. To universalize the issues, it promotes to shape the consumption mentality and to highlight factors like the role of different climatic and weather conditions elsewhere. Utilizing music as a means of communication is effective.

*Rethink – the changes in people's values throughout the time (related to the socio-cultural pillar)*

This is about trying children to be creative, such as via utilizing drama in role-modeling positive and productive attitudes.

*Reuse – by finding new uses for old things (related to the environmental pillar)*

This is regarding proposing creative ways of not wasting resources. This might be as basic as suggesting children draw on both sides of a piece of paper or could comprise constructing an 'exchange corner' with the things that their children do not utilize anymore at home brought by parents and the things other children no longer utilize. Parents could also bring in used 'raw materials' from which children can design new products, like musical instruments or decorations from empty cans or birdhouses from old computer parts.

*Reduce – by doing more with less (related to the environmental pillar)*

This is regarding instructing children to be aware of what they use, such that they consider about whether they really need something before buying/consuming it.

*Recycle – so that waste materials can be remade into something usable (related to the economic pillar)*

This is regarding sorting waste in order to determine materials that can be repurposed—for instance instructing a child how to establish something using scrap wood, or waste-as-art projects—or gathering materials like glass together so they can be melted down and remade into new glass objects. This principle also embraces the concept of composting, and children can take a part in the process of how organic waste can be converted into compost for use in a garden.

*Redistribute – resources so they can be used more equally (related to the economic pillar)*

This is regarding sharing the opportunities with disadvantaged individuals/ groups. For example, donating toys to non-profit organizations or charities throughout the holiday season or attending in action projects related to solidarity through bilateral exchange with children in other parts of the country/undeveloped and/or developing countries.

OMEPA continues and promotes to work on these issues by publishing countries developmental reports on the 7Rs and by organizing conferences. For instance, Post-2015 Global Policy Agenda: Early Childhood Development as a Foundation for Sustainable Development was determined in 2013 with The 6th Session of the Open Working Group on Sustainable Development Goals Side Event.

Moreover, the *Early Childhood Environmental Education Programs: Guidelines for Excellence* was published by the *North American Association for Environmental Education (NAAEE)*. These guidelines contained a set of recommendations defining how to improve and construct qualified environmental education programs for early childhood years from birth to eight. The focus of this program, however, was three-to-six-year olds. This program portrayed a framework that can be used for new programs or causes to developments in the existing curricula (NAAEE, 2010).

Additionally, the International Symposium of the International Network for Reorienting Teacher Education towards Sustainability (6th Biennial Meeting of the International Network of Teacher Education Institutions Associated with the UNESCO Chair on Reorienting Teacher Education to Address Sustainability) was held on in Paris by UNESCO in 2010. In this symposium, there were 100 participants from 50 countries with the involvement of early childhood researchers. The aims of the symposium are mainly (a) sharing experiences pertaining to ESD and teacher education in a platform, (b) promoting professional development about new trends in ESD and (c) to construct national networks to reorganize teacher education to target sustainability. In this organization, there was some specific declaration for early childhood education such as “Students in Early Childhood Education (ECE) are required to take an ESD course” (p.4). Early Childhood education and care was also one of the special group of interest. While talking about ECE, Jenny Ritchie Colleen Lockie and Glynne Mackey emphasized that not only teacher education but also education for sustainability implementations required to be informed via practice-based studies covering educators, children, families, and communities. They made explanations about their research in New Zealand (UNESCO, 2010).

Recent development in ECE is an organization of “Transnational Dialogues in Research in Early Childhood Education for Sustainability (TND)”. First TDN was organized in 2010 with 12 researchers’ participation from different countries (Australia, Sweden, Norway, New Zealand) in Norway. The second one was held on in Australia in 2011 with the involvement of more researchers from two countries (Japan and Korea). The third one was carried out in Norway in 2015. The last one was conducted in 2017 with the involvement of new researchers from (Turkey, Alaska and Canada) in Canada. The focus of TNDs are “Ecological worldviews in ECEfS, Agency & Democracy in ECEfS, EfS in Early Childhood Teacher Education, Exploring ECEfS pedagogies and Researching Forest Kindies”. Based on the focus areas, the participants have made lots of research, publications and projects not only at national but also international level (Davis, 2017).

### **2.1.1 History of Environmental Education and Education for Sustainable Development in Turkey**

In this sub-section, historical developments of EE and ESD in Turkey are investigated. Table.2.2 portrayed the history of EE in Turkey (Alici, 2013, p.41; Kaya, Cobanoglu & Artvinli, 2011).

Table 2.2 *Historical Events Related to Environmental Education and Sustainable Development in Turkey*

Important Dates	Event	Explanation
1961	Turkish Constitution in article 49	The first time the term “environment” was used
1971	Third Five Year Development Plan, for the period between 1973 and 1977	First policy regarding environmental rights and protection
1978	The establishment of the Prime Ministry Undersecretaries for Environment (The Ministry of Environment and Urban Planning)	Coordination of national and international environmental activities
1982	Constitution, Article 56	“Everyone has the right to live in a healthy and balanced environment. Protection of environmental health, prevention of environmental pollutions, and development of the environment are the state’s and every citizen’s duty.”
1983	The enactment of law 2872 in Article 56	Protection of environment and prevention of environmental pollution from the inappropriate usage of natural resources to waste management
1985	Fifth Five Year Development Plan, for the period between 1985 and 1989	Aims to reduce environmental pollution
1990	The approval of environmental education project for primary level by MONE in cooperation with UNESCO	Preparation of a handbook for primary school teachers
1990	Sixth Five Year Development Plan, for the period between 1990 and 1994	The concept of “sustainable development” was found and some steps were taken based on Agenda 21.
1993	The foundation of the Turkish Environmental Education Foundation (TURCEV)	Participation of Turkey in international environmental education programs such as the ‘Eco-School’ and ‘Young Reporters for the Environment’ programs
1994	Seventh Five Year Development Plan Environment Commission’s report	The stress of the significance of the environment and environmental education
1997	National Environmental Action Plan: Education and Participation	To develop early childhood teachers’ environmental sensitiveness via in-service training
1999	The Collaboration Protocol in environmental education by the Ministry of Environment and the Ministry of Education	Preparation of “new environmental education program” for students and teachers at various levels of formal education to develop their environmental sensitivity

One of the main improvements was “National Environmental Action Plan: Education and Participation” was prepared by Under secretariat of State Planning Organization (currently known as Ministry of Development) in 1997. In this plan, in the part of “Environmental Education in Early Childhood Education,” it was proposed that early childhood teachers should attend in in-service training to develop their environmental sensitiveness. Moreover, children should be knowledgeable about the topics related to the environment via learning by doing in the natural learning settings near to the schools. After that, in 1999 Ministry of Environment (currently known as the Ministry of Environment and Urban Planning) and the Ministry of Education constructed *the Collaboration Protocol in Environmental Education*. This protocol aimed to establish a “new environmental education program” for both students and teachers at distinct formal educational levels to increase their environmental sensitiveness. Moreover, this protocol highlighted the active involvement of children in environmental education throughout early childhood education (ECE) and elementary education to improve their awareness of environmental protection (Buhan, 2006). This memorandum was a step to come true environmental education of which topic were “protection of environment”, “prevention of environmental pollution”, “developing consumer habits in a positive way”, “accumulating solid waste separately at its source” and “recycling” implemented at particular schools in ECE and elementary education via active involvement (Ministry of Environment, 1999). Although in early childhood curriculum had special days and weeks covering environment, there was no develop curriculum on environmental education. Kiziroglu (2000) also stated that environmental education was not perceived as significant at K-3. On the other hand, Ayvaz (1998) emphasized that it was required to present material and learning settings to children not only at ECE but also elementary education via targeting their sense to encourage them to protect nature and natural resources. Moreover, in 2000, the Ministry of Environment constructed an “environmental council”. By means of this council, the deficiency of environmental education was declared, and collaboration of Ministry of Education was given importance to promote children to develop an environmentally friendly attitude and behavior (Ministry of Environment, 2001).

From 2007 to 2013 five national declarations on climate change were published by the Ministry of Environment and Urban Planning in 2013 after Turkey acceded to the agreement of United Nations Framework Convention on Climate Change in 2004. The fifth national declaration broadcasted after the Kyoto protocol. In this declaration, there was a part of education and instructing public giving information about the projects, activities (educational camps, pilot implementations, bale), campaigns related to various subjects (such as energy saving, environmental education, climate change, the effect of greenhouse gas, tree planting, erosion...etc.) conducted by both state and private, scientific and non-scientific institutions and companies from 2007 to 2013. The target sample of these initiatives was generally elementary, high school students and teachers, then university students and the public, and then local governments and farmers. What's more, in 2010, Mülga Ministry of Environment and Forestry and Ministry of Education renovated the previous "Environment and Forestry Education Protocol" including various topics (e.g. protection of forests, water saving, pollution of water, air, soil and noise, climate change...etc.) (Ministry of Environment and Urban Planning, 2013).

In 2011, General Directorate of Teacher Training and Development of Ministry of National Education and The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA) conducted Eco-literacy for teacher education with 64 teachers from 30 provinces. The aim of this project was to provide teachers from all educational levels (early childhood to high school) to be eco-literate since they raise their students as eco-literate individuals who will have different occupations and statues in future such as managers, policymakers; and thus, the future generations can decide on issues and make attempts in an environmentally friendly way (TEMA, 2012). The teacher who attends in a two-week education went back to their schools and provinces. After that, they can give training to their colleagues within three half-days with the support of MoNE. By this way, TEMA's eco-literacy education reached to 15 thousand teachers, mostly elementary teachers, up to 2013. In 2018, TEMA has started to give training about eco-literacy to school managers. By 700 school managers, TEMA can reach 460 thousand students.



The recent *Collaboration Protocol in Environmental Education* was established between Ministry of Environment and Urban Planning and Ministry of Education in 2014 in order to carry out projects, training, and workshops on several issues such as environment, water, air, and energy efficiency to protect the natural resources in Turkey. Printed and visual materials about these issues will also be prepared. Additionally, to eliminate environmental problems in Turkey consciousness-raising and elucidating activities, training, seminars, meetings, demo programs and competitions for primary and middle school students, teachers, school managers, parents and support staff will be designed. Competitions on drawing pictures, designing posters, short film, and projects, writing stories and taking photos will be arranged to increase individuals' environmental consciousness. Recycling, waste management, and tree planting campaigns will be organized. The school environment plan will be constructed and applied in a vocational school after that this implementation will be spread to the whole country. In world environment day, the schools will be awarded turquoise flag based on the criteria on environmental planning as well as cleaning and energy saving created by two ministries (Ministry of Environment and Urban Planning, 2014).

The latest development about sustainable development was the *Climate Change Awareness Project* which was carried out by Yildirim Beyazit University as the coordinator of the Ministry of Environment and Urban Planning in 2015-2017. The primary purpose of this project was to increase the awareness of students, teachers and local governments about climate change. By means of this project, in mainly it is aimed (a) to give a training on awareness development about climate change to students and teachers at primary and middle schools, (b) to provide a change in their knowledge, conscious, skills attitudes and behaviors related to climate change, (c) to increase the widespread impact of the educational program applied throughout the project and (d) to improve local governments' capacities to make contribution to diminish the effect of climate change. Throughout this project, the training on climate change was given to the teachers at eighteen provinces in Turkey. At each province, three preschools, three primary schools, three middle schools, three high schools twelve schools were reached and provided training about climate change for the students in these schools as well as preservice teachers in the universities. Twelve climate camps covering five days and

targeting middle school students were arranged. While providing training for preschoolers, the drama was used as a teaching method. During the training, brochures, poster, puzzle, coloring, book computer game, cartoon related to climate change for students; and, handbook, as well as teacher book for teacher and teacher candidates were designed. The competition pertaining to creating a short film, drawing a picture taking a photograph and writing a literary composition about climate change were arranged (Iklimicindegisin, 2017).

#### **2.1.1.1 Early childhood education and education for sustainable development in Turkey**

Throughout this sub-section, the situation of ESD in ECE in Turkey is explained.

2006 Early Childhood National Curriculum was renewed. After the pilot study conducted in 2012, the new curriculum (36-66 month-old children) has been implemented since 2013. This program includes objectives and indicators used while planning daily and monthly plans to assess children's whole development (psychomotor, cognitive, social and emotional, language development and self-care). When these objectives and indicators are examined regarding education for sustainable development based on 7Rs, the outcome presented in Table 2.3 were reached. As seen in Table 2.3, only 7 of the 63 objectives and 18 of 240 indicators were related to 7Rs. While most of the related objectives and indicators were found at social and emotional development domain, just one objective and indicator were at cognitive development domain the other one was at self-care domain. Majority of the objectives and indicators were in respect aspect, and a few of them were found at reflect and recycle aspects. There were no objectives and indicators related any of the 7Rs at psychomotor as well as language development domains.

Table 2.3 *Analysis of Objectives and Indicators in Early Childhood National Curriculum regarding 7Rs ( Alici, 2018)*

Domain	Psychomotor development	Cognitive development	Language development	Social& emotional development	Self-care	Total objectives and indicators
<b>7Rs</b>	-	1&1	-	5&16	-	<b>7 &amp;18</b>
<b>Respect- the rights of the child</b>	-	-	-	4 &13	1&1	<b>5 &amp;14</b>
<b>Reflect- on cultural differences in the world</b>	-	-	-	1 & 3	-	<b>1 &amp;3</b>
<b>Rethink- the changes in people’s values throughout the time</b>	-	-	-	-	-	-
<b>Reuse – by exploring new uses for old things</b>	-	-	-	-	-	-
<b>Reduce – by doing more with less</b>	-	-	-	1&3	-	<b>1&amp;3</b>
<b>Recycle – through this waste materials can be converted into something usable</b>	-	1&1	-	-	-	<b>1&amp;1</b>
<b>Redistribute – by this way resources can be used more equally</b>	-	-	-	-	-	-
<b>Total Objectives and indicators for each domain</b>	<b>5 &amp; 50</b>	<b>21 &amp; 66</b>	<b>12 &amp; 53</b>	<b>17 &amp; 50</b>	<b>8 &amp; 21</b>	<b>63 &amp; 240</b>

Further, most of the objectives and indicators were connected with knowledge, fewer of them with skills, attitude, and behavior. What's more, 9 of the 21 special days and weeks (e.g., energy conservation week, the forest week, traffic and first-aid week, museums week and environment protection week) were directly and indirectly correlated with the aims of education for sustainable development.

Even though early childhood national curriculum was developed and renewed in 2006 and 2013 as two times, in both of them, sufficient attention was not given to environmental education and education for sustainable development (Akçay, 2006; Gulay & Ekici, 2010). The reason for this was poor research on EE and ESD in the early years (Gülçay & Ekici, 2010). However, the studies, declarations, and experts emphasized the importance and effects of early years on children's future awareness, skills, attitude and behavior related to sustainability (Davis, 2007; NAAEE, 2010; UNESCO, 2008; Siraj-Blatchford, 2009; Tilbury, 1994; Wilson, 1994).

When common programs related to ESD implementations were analyzed, it is seen that there are two programs namely Eco-schools (as an example of whole school approach) and TEMA Kids program. TEMA Kids program has been conducted since 2010 via TEMA Kids Teacher Guideline. In this guideline, there are 42 activities related to soil, air, and water. Teachers have to implement at least 21 activities to be TEMA school. However, this program is mostly soil based education and focusing on an environmental aspect of ESD. This program is conducted in 50 provinces and at 973 schools in Turkey.

Two recent studies on what the situation of research on EE and ESD in Turkey is were made by (Gülçay-Ogelman & Güngör, 2015; Toran, 2017). Gülçay-Ogelman and Güngör (2015) made research on the analysis of published studies about environmental education in early childhood education from 2000 to 2014. While making the analysis, the authors focused on only studies targeting children. Thus, the research targeting early childhood teachers and teacher candidates were ignored. The result of document analysis indicated that there were five master theses, one dissertation, three national and seven international articles. Based on the examination of these studies, there were no studies focusing on 3-year-olds and different topics. Although the studies on environmental education in ECE has increased in recent years, this area cannot reach the desired level.

The authors proposed (a) to increase the research on EE in ECE, (b) to utilize different scales, (c) to design programs for EC pre-service and in-service teachers and make research on this issue, (d) to investigate the outcomes of EE, the attitudes of teachers and parents with longitudinal studies, (e) to carry out various studies of which topics can be “environmental protection, endangered animals, using natural resources wisely,(f) to enlarge the sample to the other cities (except Ankara, Istanbul) and regions and (g) to plan and conduct place-based education for these cities and regions to encourage children to be aware of their environment and its beauty and to protect them.

Toran (2017) conducted a research on the examination of the publications about ESD in ECE with the document analysis. The results of the document analysis demonstrated that the studies related to ESD started in 2010 and the number of them ( n=17) has increased in recent years although most of them were conference papers (n=6) and pertaining to examination of the awareness level. There were four articles, one master thesis, four dissertations, one book chapter and one translated book. In the majority of publications (n=7), the target sample was children. The others were related to document (n=1), teacher (n=6), pre-service teacher (n=2), early childhood institutions (n=2) and parents (n=1). Qualitative (n=6), quantitate (n=7) and mix design (n=2) research methods were used in these studies. The purpose of these publications was a) the effectiveness of ESD in ECE (n=5), b) describing the awareness level of ESD in ECE (n=9), c) giving information about ESD in ECE (n=2) and d) assessing ESD in ECE (n=2). The author suggested that (a) experimental studies should be implemented in ESD through early years, (b) more studies should be in postgraduate degrees and (c) the research and project should be conducted in postgraduate degrees to determine the effect of program based on ESD on children, parents and teachers and to develop educational program for Turkey.

Having discussed Turkish research about ESD and EE, in the next section is a discussion about Bronfenbrenner’s Ecological Systems Theory that is used in the present study. This distinguishes this study from other Turkish studies in this field.

## 2.2 Bronfenbrenner's Ecological Systems Theory

This section discusses Bronfenbrenner's ecological systems theory and explains how it guides this study about changing teachers' understandings and practices related to ESD and CML. Included is the information about ecological systems theory, its critics, and some adaptations based on ESD.

Ecological systems theory was developed by Urie Bronfenbrenner in 1977 based on Lewin's theory of psychological fields. This theory perceives that the child develops within a complicated system of relationships impacted by multiple layers of the surrounding environment (Berk, 2006). In addition to these, Bronfenbrenner claimed that child is influenced biologically from the dispositions in his/her environment when s/he is developing; and thus, he renamed his theory as a bioecological model (Bronfenbrenner & Evan, 2000). Bronfenbrenner (1994) explained his theory with this statement: In this model, there is the ecological environment constituted "a set of nested structures, each inside the other like a set of Russian dolls" (p.3). From the innermost level to the outside, there are five layers which are described in the following part.

a) **Microsystem:** This system includes a pattern of activities, social roles and interpersonal relations experienced by the developing child in a given face to face environment with especially physical, social and symbolic characteristics that evoke, allow or restrain participation in sustained gradually more complex interaction (bidirectional) with and activity in the immediate environment. Family, school, and peer group are the examples of the settings of microsystem (Bronfenbrenner, 1994). (See Figure 2.3) In other words, a teacher taking place in the system has a crucial role in children's development.

b) **Mesosystem:** This system consists of the connections and process occurring between two or more settings including the developing child (such as the relation between home and school). To put into another word, a mesosystem is a system of microsystems. The effect of two-way communication and engagement in decision making by parents and teachers on child's development is the example of mesosystem (Bronfenbrenner, 1994). (See Figure 2.3) As mentioned above, the teacher has also played a crucial role as in the microsystem.

c) Exosystem: This system consists of the connection and process occurring between two or more settings at least one of which does not include the developing child, however, where events come true that indirectly impact process within the immediate settings in which the developing child lives (such as the relation between the home and the parent's workplace, mass media). In particular, since the early 1980s, researchers found that exosystems had an effect on the family, school, and peer and they also impacted on the child's development (Bronfenbrenner, 1994). (See Figure 2.3) To put it another way, mass media has an indirect effect on a child's life by impacting his/ her teacher and parents.

d) Macrosystem: This system comprises the inclusive pattern of micro-meso and exosystems features based on defined culture or subculture, by giving specific reference to the belief systems, bodies of knowledge, material resources, customs, lifestyles, facilities, dangers and life course choices that are uncastrated in each of these wider systems. The macrosystem can be viewed as a societal blueprint for a specific culture. Accordingly, specific social and psychological characteristics at the macrosystem can influence the specific conditions and process coming true in the micro system (Bronfenbrenner, 1994). (See Figure 2.3)

e) Chronosystem: This system is accepted as a third dimension of the model. A chronosystem covers alteration or consistency throughout the time not only in the characteristics of the individual but also the environment in which the individual dwells (such as alteration throughout the life route in family structure, socioeconomic status, employment, place of residents...etc.) (Bronfenbrenner, 1994) (See Figure 2.3). In other words, the advances occurring in the world also influence our individual development. For instance, after media have started to be prevalent in our lives because of increase in accessibility and technological improvements, a specialist such as researchers, educators and curriculum planner have begun to discuss on pros and cons of media.

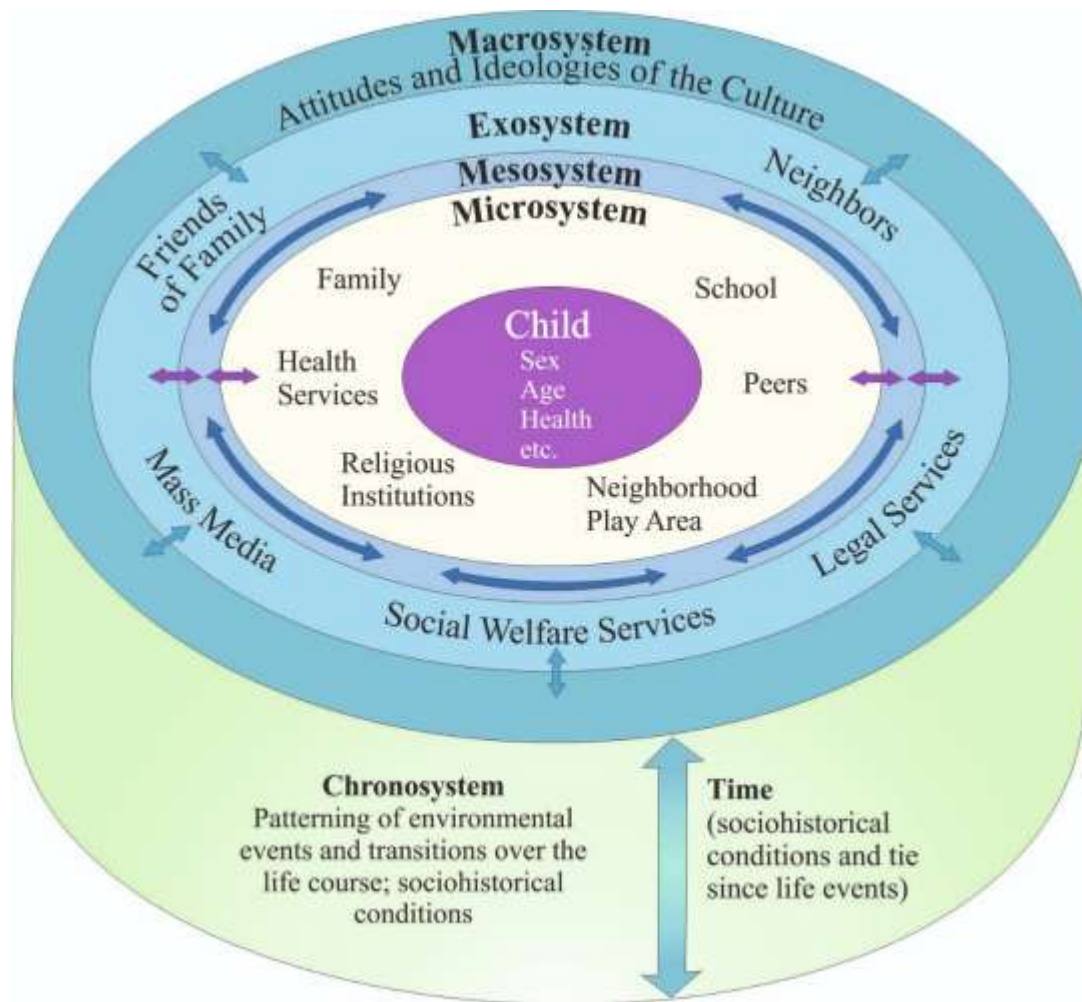


Figure 2.3 Bronfenbrenner's Ecological Systems Theory (adapted from Bronfenbrenner (1979) and Garbarino (1982)).

On the other hand, some views on Bronfenbrenner's Ecological System Theory emphasized that although it is advocated that socio-ecological models (like Ecological System Theory) demonstrate the "true influencers on individuals" by reflecting the complexity of the ecological systems, it is perceived that the ecological influencers in these models mainly focused on "human and social factors" (Stanger, 2011). Hence, he proposed a new model for Bronfenbrenner's theory by changing its focus from socio-ecological to eco-sociological.



For Stanger (2011), based on his biological background, in Bronfenbrenner's theory, there is something neglecting while making an analogy on "ecological". This means that the existing socio-ecological models cannot completely represent the complexity of overall ecological systems of which a human or individual is also a member. Also, I, the researcher, who has a biological background started to this dissertation with Bronfenbrenner's theory, however, when I considered how I could make connection ESD with Bronfenbrenner's theory and/or where is ESD's place in this theory, I realized that I could not state definite arguments even if this theory is explained with different ecological systems and determined to make a research about this theory's EDS adaptation version. To decide the place of ESD, first of all, we should comprehend the meaning of the word "environment" as advised by Stanger (2011). Tansley (1935) described ecosystem as "including not only the organism-complex but also the whole complex physical factors forming what we call the environment" (p.299). In other words, the environment consists of biotic and abiotic factors. Moreover, the concept of environment is independent of the concept of size, but for the environment concept, the vital things are organisms, physical environment, and their interactions among them and specific dimension that connect and describe those (Pickett & Cadensso, 2002).

Nonetheless, when the metaphors related to the environment in socio-ecological models were examined, it was observed that the metaphors had an anthro-dominant focus with a connection to human-system (such as education, media, and politics...) not ecological systems (Stanger, 2011). Similarly, Bronfenbrenner (1976) completely focused on human being, social and cultural aspects of the environment (See Figure 2.3) instead of the whole ecosystem. To put into another words, in Bronfenbrenner's theory human relationships are represented as ecological relationships, but individuals' social, emotional, cognitive and spiritual development that are affected from true ecology from "food systems energy systems, ecological systems, nutrient systems, water systems to atmospheric systems (notably local and global climate change)", are not given a place in this theory (Stanger, 2011, p.169). He reshaped Bronfenbrenner's theory as in Figure 2.4.

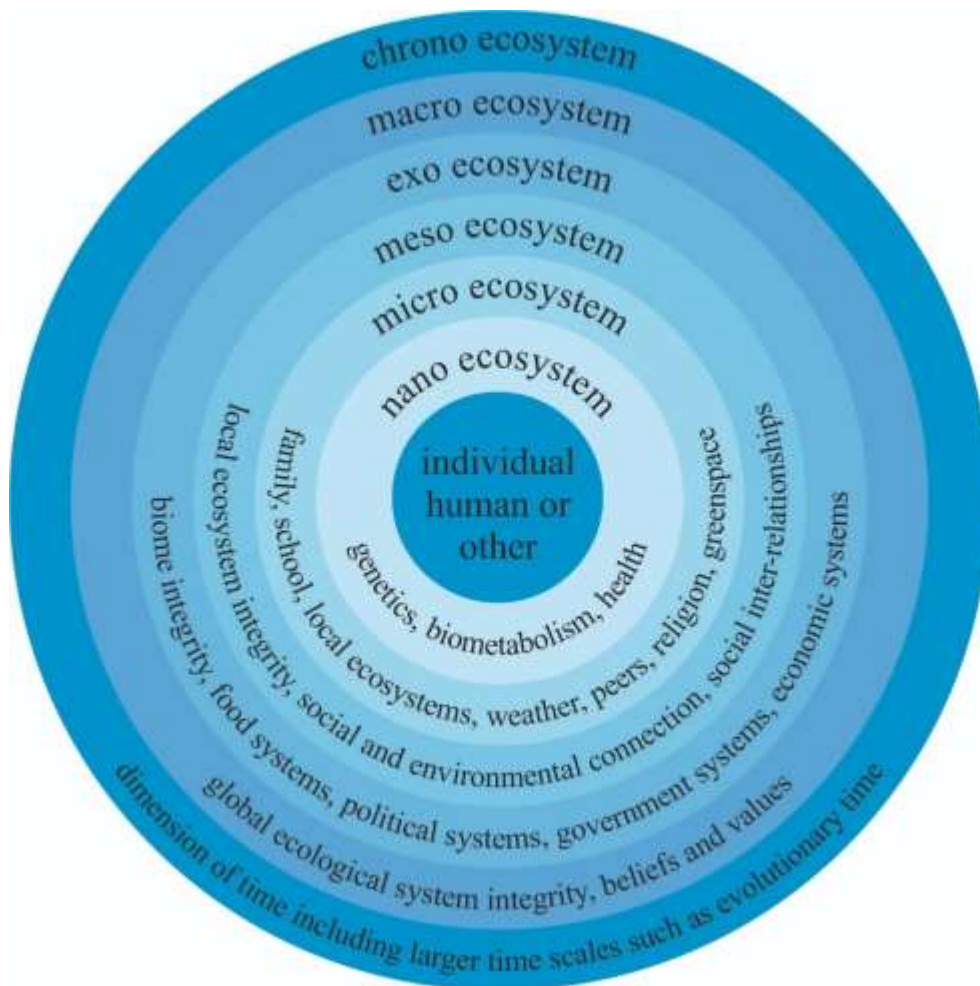


Figure 2.4 A reworked ecologically-based version of the socio-ecological model (adapted from Bronfenbrenner, 1986) (Stanger, 2011, p.170)

For him, if we promote the change in theories perspectives from socio-ecological to eco-sociological and adapt them in education and educational based research, we will realize that the alteration in the learning environments is required to provide the learners be eco literate individuals to keep the existing global biodiversity. Yildirim and Hablemitoglu (2013) also proposed that eco-sociological education model can be used to promote students to be eco-literate individuals (e.g. having skills and values to analyze environmental problems, attitudes toward and being knowledgeable about and awareness of nature and natural events...etc.) that is essential for sustainability by supporting

Stanger's systems (such as nano, micro, meso, exo, macro and chrono ecosystems systems).

On the other hand, Stanger (2011) pointed out his revised model was two dimensional and thus, it is too complicated to really represent the interconnections of time and ecological components via this model. Hence, McCrea and Littledyke (2015) revised Bronfenbrenner's model in the light of Stanger's statement and advice to encourage educators for their ECEfS implementations with children. What's more, Rogoff (2003) declared that utilizing the solid lines for Bronfenbrenner's "nested circles" prevent to indicate real impacts among the layers from one to another or back to forth. Therefore, McCrea and Littledyke (2015) made some changes in Bronfenbrenner's model by adding "organic-looking circles with broken or segmented line help reflect two-directional permeability of influencers and relationships" (p.48). So, children can be effecter and affected. They also put ECEfS at the outer part of the model to cover and infuse the whole model. (See figure 2.5)

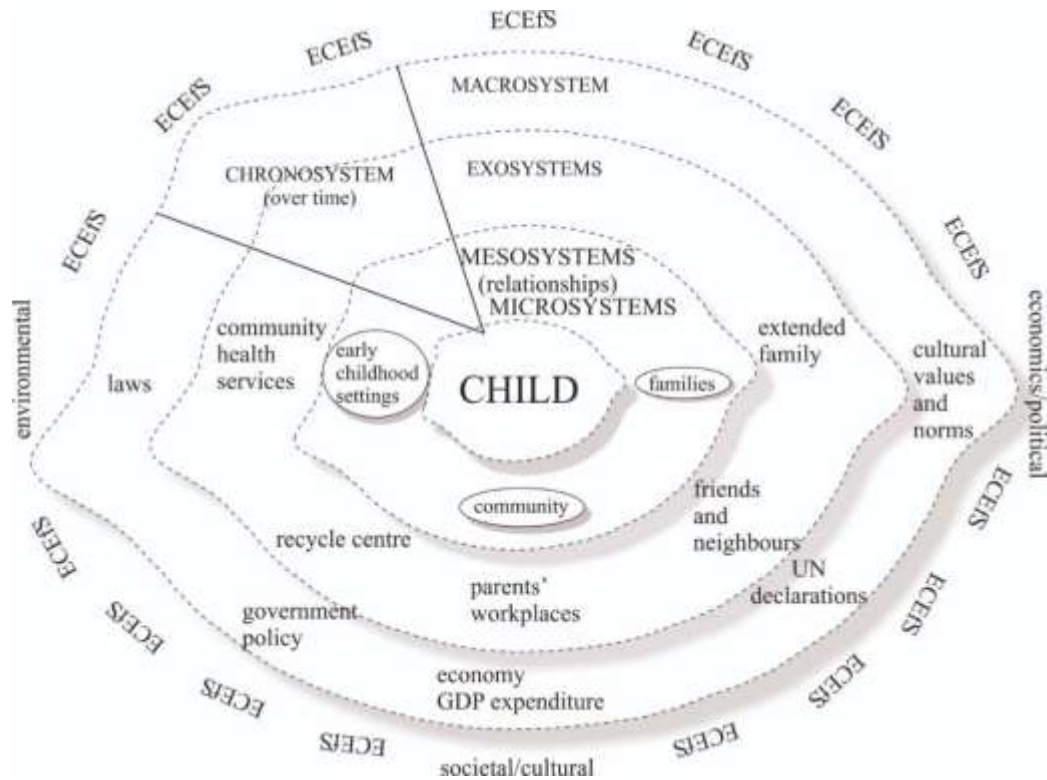


Figure 2.5 An ECEfS adaptation of Bronfenbrenner's ecological approach (McCrea & Littledyke, 2015, p.47)

McCrea and Littledyke (2015) also highlighted the extensive effect of EfS on macrosystem (such as government policy – regulation about non-smoking in public places) and exosystem (e.g., television- advertisements on fast-food). For them, this impact indicates how far existences can directly and non-directly impact children (such as their health and well-being). Therefore, they put “child” at the center of the model while explaining children’s health and well-being. By means of this model, it can be seen that how other components affect children’s everyday life not only at home but also their learning environments.

Moreover, when the ECEfS adaptation version of Bronfenbrenner was examined, it is observed that the effect of chronosystem and ECEfS can reach to the center of the model (child, individual). In other words, if you made a change in one of the layers of the model, even if this layer or layers were far away from the center, its effect can be easily

seen on the individual or child (at the center). Thus, I determined to use this model while I was explaining the impacts of ESD implementations through CML in early childhood learning environments on children's ESD awareness and CML levels.

After examining ecological systems theory and its critiques as well as revised versions, the next section focuses on CML as one of the components of exosystem of this theory. This connection to the theory makes the present study unique since in Turkish literature there is no study analyzing early childhood teachers' CML competencies and levels.

### **2.3 Critical media literacy and its level**

In this section, first of all, information about the development of the notions media education, media literacy (ML) and critical media literacy (CML) and the comparison between ML and CML, their competencies, levels and instructional strategies and finally the situation of ML and CML in Turkey are given.

#### **2.3.1 The development of the Concepts Media Education, Media Literacy and Media and Information Literacy**

When the development of media education and media literacy was examined, it is seen that the historical apprehension about the effect of media caused to three different strategies to guard and strengthen the society. These were "1) regulation, 2) pressure on advertisers and those responsible for the creation of mass media and 3) media education" which were united by common assumption, "the mass media is problematic" (Davis, 1992, p.18). Based on this assumption, it was advocated that the public must be protected from the negative impacts of media, this view was called "protectionist view". On the other hand, "empowerment model" declared that citizens as continuously negotiating to mean as they watch, listen and read". In other words, in term of media education, there was a change from media activism to media exploration (Davis, 1992, p.19).

In the following part, the main views about media education will be given respectively.

##### **A) Media Activism**

Buckingham (1991) described three different type of reasons to encompass common apprehension about the impact of media as 1) "moral panics" (viewing as media

making contribution to corruption of moral values (e.g. sexuality and violence)), 2) “the plug-in drug” (watching TV affects the relationships in the family and keep children away doing the right things in terms of mortality) and “consciousness industries (media was perceived that it made contribution to externalization of several objectionable ideologies)”.

In this approach, there were two arguments. One of them was the duration of children spend with media and the other one connected with the first was the powerful influence of media on children’s lives and their thinking style related to the world (Buckingham, 1991). All in all, this approach advocated that students should be protected from the media’s harmful effects (e.g., consumerism, sexism, ideologies) via activist protection instead of creative exploration.

#### B) The Protectionist Model

The media activism approach failed to ensure a permanent solution to media influence. Therefore, the protectionist model was offered to protect the public against the detrimental impact of media. There were two principles of this model. One of this was “Teaching *True Art*”. For this view, the aim of media education was “to teach students to appreciate and demand *true* art rather than media art”. To put it another way, the popular media were not perceived as legitimate, and thus, media education did not become an agenda. This means that the protectionist approach propounded the harmful effects of popular media. Hence, media education was comprehended as incompatible with efficient “mainstream education” (Davis, 1992, p.21).

The other view was “the discriminating viewer”. The purpose of this view was to emphasize the positive sides of media. Therefore, media educators should have the ability to teach students to discriminate the best ones from the worst ones among media. In other words, to be able to efficiently discriminate the media means that viewers have still a passive role in the making meaning process with media. Hence, the crucial thing in this view was to select and watch just best media since the media was very powerful and had devastating effect when it was compared with viewers’ position (Davis, 1992).

In other countries especially Britain, Canada and Australia protectionist model was seen as “Cultural Studies”. In this view, culture encompassed not only political and economic dimensions but also the whole social environment. For instance, advertising

also included t-shirts, public relation stories, publicity of politicians, television commercials in a shopping mall. Thus, media education required for political awareness, consumerism, and democracy (Davis, 1992).

#### C) Media Arts Education

In this approach, it is taught to the students to give importance to “the aesthetic qualities of media and the arts” when they are utilizing their creativity to express themselves via constructing art and media. While individuals express themselves, they can make critical analysis and consider to produce alternative media. These types of programs can be at the school as a course or outside of the school as a community based or after-school programs. If in this approach, the other issues (e.g., gender, class, and power) are targeted rather than technical production skills and relativist art approach, it has a transformative potential (Kellner & Share, 2007).

#### D) Media Literacy Movement

##### Uses and Gratifications

This theory pointed out an active viewer since it advocated that “television does not ‘do things’ to people but rather, people ‘do things’ with television.” (Davis, 1992, p.23) Anderson (1980) identified three approaches these were: firstly students were impelled to watch TV based on their motives, secondly students were promoted to create their own standards (such as recognition of fundamental views, identifying details, interpretation of literacy component (e.g., setting, mood, plot...etc.)) that can be utilized to evaluate as a gratification for their motives and finally they were encouraged to experiment decision-making process related to media use.

While active viewer approach utilized “uses and gratification theory” in America, “audience theory” (via this theory students can describe stereotypes and production techniques while they are exposed to media) and “inquiry model” (teacher promotes students to explore the media without any predetermined agenda) used in some countries (Britain, Canada, and Australia). After these distinct theories and model, some developments emerged. These are:

- ✓ Audiences are perceived as more active than previous years.
- ✓ Active audience requires democratic and learner-centered environment like experiential learning.

- ✓ Media education is vital since it promotes reflection on personal values; and, critical thinking, problem solving and creativity.
- ✓ Media literacy should be an integral part of the learning process through the curriculum. Teacher instructs not only with media but also about media,
- ✓ Media education empowers democracy (Davis, 1992).

What's more, this change was explained in UNESCO's (1990) report like this

In the 50's-60's we understood the viewer as a "tabula rasa" — a blank slate on which mass media could write its powerful messages. The educational agenda, therefore, was inoculation — "in order to protect both our children and the continuity of our cultural values from the worst excesses of the media." The tools were discrimination (of "good" media from "bad" media) and aesthetic appreciation (of the "good.")

In the 70's/early 80's the field moved from aesthetic questions toward ideological ones: How and in whose interest do the media operate? How are they organized? How do they produce meaning? How do they represent "reality?" And whose "reality?" The development of a critically informed intelligence became the key objective rather than nurturing a finely-honed aesthetic judgment.

In the 90's we now understand that media viewers are also producers of meaning. We are constantly trying to "make sense" of the many media messages we encounter every day. There is a constant interaction between the text of the message, the context of the media event and the viewer's background, past experience, value system, etc. The educational goal is now empowerment of the viewer to process the messages of the mass media and produce meanings that are both personally and societally relevant (p.1).

UNESCO has also given more importance to media literacy education since the 1970s (Altun, 2011). "Media Studies in Education" focusing on media and screen education was published in 1977; and, "A General Curricular Model for Mass Media Education" was written by Minkkienen in 1978 were the first attempts of UNESCO to media education. On the other hand, "The Grünwald Declaration on Media Education" (1982) conducted in Germany was one of the milestones since this declaration explained why media education was so crucial with these words:

We live in a world where media are omnipresent: an increasing number of people spend a great deal of time watching television, reading newspapers and magazines, playing records and listening to the radio. In some countries, for example, children already spend more time watching television than they do attending school (p.1).

Media Literacy starting in 1982 has continued with UNESCO's conferences and seminars such as "International Media Literacy Conference: New Directions in Media"



conducted in Toulouse in 1990, “Education for Media and the Digital Age” organized in Vienna in 1998, “ Youth Media Education carried out in Seville in 2002, “ Paris Agenda or 12 Recommendations for Media Education” hold on in Paris in 2007 and first international conference on media education fulfilled in Riyad in 2007.

Based on these conferences and seminars, the characteristics of media literate individual have described in “ Youth Media Education” seminar in 2002. These are:

- To analyze the media texts, detect their mistakes in a critic way and construct them.
- To determine the source, politic, social and cultural gains; and, the contexts of the media text.
- To interpret the messages and values that are presented by media
- To choose the suitable media type to deliver his/her own message or stories or communicate the things that are planned by an individual with the audiences
- To own or want to access to the media for not only broadcasting but also reaching them (Altun, 2011).

In 2007, in the international context, experts from the world, teachers, researchers, educational policymakers, NGOs representatives and media professionals came together in Paris and declared that the role and place of media had undergirded day by day. Thus, it is required that more than each citizen having critical analysis skills related to media and its components (e.g., image, sound, text). The citizenship can construct the context by themselves and harmonize themselves to the social and professional changes. Although it was accepted that the Grünwald Declaration (1982)’s effectualness continued in Paris meeting, the research and the comments’ of experts from the world indicated that media education still was at the experimentation phase and did not drop the other shoe to widespread use phase. Hence, in this meeting, they shaped a framework including 12 recommendations covering international agenda about “Millennium Development Goals and the World Summit on Information Society” carried out locally, nationally, regionally and internationally based on four Grünwald guidelines.

- I. development of comprehensive media education programs at all education levels;
- II. teacher training and awareness raising of the other stakeholders in the social sphere;
- III. Research and its dissemination networks;

#### IV. international cooperation in actions

These recommendations were:

##### **I. Development of comprehensive media education programs at all education levels**

Recommendation 1: To adopt an inclusive definition of media education

Recommendation 2: To strengthen the links between media education, cultural diversity and respect for human rights

Recommendation 3: To define basic skills and evaluation systems

##### **II. Teacher training and awareness raising of the other stakeholders in the the social sphere**

Recommendation 4: To integrate media education in the initial training of teachers

Recommendation 5: To develop appropriate and evolving pedagogical methods

Recommendation 6: To mobilize all the stakeholders within the education system

Recommendation 7: To mobilize the other stakeholders of the social sphere

Recommendation 8: To place media education within the framework of lifelong learning

##### **III. Research and its dissemination networks**

Recommendation 9: To develop media education and research in higher education

Recommendation 10: To create exchange networks

##### **IV. International cooperation in actions**

Recommendation 11: To organize and to make visible international exchanges

Recommendation 12: To raise awareness and to mobilize political decision-makers (p. 2-4)

In the light of 12 recommendations, it is advocated that media education should cover from early childhood to adulthood. These also pointed out the importance of training of implementators, educators, of media education and proposed how media education can be designed.

What's more, at "The High-Level Colloquium on Information Literacy and Lifelong Learning" report written in Alexandria, Egypt in 2005, the concept of information literacy was described. After 2005, UNESCO combined the concepts of media literacy and information literacy and formed a new concept as media and information literacy (MIL) since it was advocated that MIL encompasses "print, screen-based and electronic media and information sources" and focuses "the roles of libraries, archives, and museums as sources of media and information" ( UNESCO, 2010). (See Figure 2.6)



*Figure 2.6 Ecology of MIL: Notions of MIL (UNESCO,2015, p.19)*

All of above-mentioned historical developments can be summarized in Table 2.4.

Table 2.4

*The phase of Media Education (Jacquinot-Delaunay, Carlsson, Tayie & Tornero, 2008)*

period	pioneers	interest	Perspective/trends	Media education implementations
<b>the 1960s and a large part of the 1970s</b>	Europe	film	aesthetic moreover, cultural trends	Film club activities, education in film image and evaluation of the aesthetic moreover, linguistic opportunities in film
<b>In the 1970s and early 1980s</b>	France and UK	Television	consumer criticism of advertising	became more critical and took advantage of the critical experience critical pedagogy
<b>the 1980s</b>	France, Italy, Spain	alternatives to mass communication video	the development of local or close communication	many types of popular content
<b>The end of the 1980s the beginning of the 1990s</b>	Europe	the impact of the media and its contents	the deregulation of broadcasting and the appearance of private television channels Concerns about violence, the influence on young people, consumerism, the influence of advertising on values,	first systematic links between schools and the media.
<b>In the mid-1990s</b>	Europe	digital media, in particular, Internet and the web	the need for digitalization the need to acquire instrumental skills, to combat the digital divide	digital literacy
<b>At the beginning of the 2000s</b>	Europe tradition to the USA	Digital and traditional media	the barriers between conventional and electronic media and digital media began to disappear	a synthesis of digital literacy and the tradition of audiovisual literacy (media education), which came to be known as <i>media literacy</i> .
<b>Since 2005- up to now</b>	UNESCO's attempts	convergence of audiovisual, IT, and telecommunications	Critical reading, creative production, the establishment of communication policies; and Cooperative production,	media and information literacy-introduce new knowledge and skills to allow critical and creative use of digital and mobile technologies

This sub-section investigates that the development of ML, CML and MIL. The next sub-section specifically focuses on the similarities and differences of ML and CML.

### **2.3.1.1 Media literacy versus critical media literacy**

In this sub-section, the concepts of ML and CML, their competencies and levels are discussed.

Media literacy has been captured the glance of not only a wide range of academicians from distinct areas but also the general public in particular activists, policymakers, teachers and families wanting to protect their children harmful effects of media. All of them have different focus while they are dealing with media and media literacy. For instance, media scholars focus on the impacts of messages taking place on media on individuals and society, whereas educators investigate the ways to provide each new generation cope up with rapidly changing and increasing information at the society (Potter, 2013).

According to the literature review on media literacy, it was found that there were many different media literacy definitions, even though most of them were complementary. In this definition, it can be realized that there is no consensus about the critical issues such as “what are the media?”, “what do we mean by literacy?” and “what should be the purpose of media literacy?” However, seven common themes on which studies and reports reach general agreement related to media literacy can be stated. These are:

- 1) There is a possibility that mass media lead to a wide range of impact on individuals.
- 2) The influence of mass media can be observed not only on individuals but also on larger societies.
- 3) There is a postulation since media have the perpetual and implicit impact that people are more vulnerable to that impact when they are passive.
- 4) Media literacy target not only to foster people guard themselves against the possible negative impact but also to support them to utilize the media as a tool while reaching their own aims.
- 5) Media literacy must be developed.
- 6) Media literacy is multi-dimensional.

7) To increase an individual's media literacy, it should be done more things than being informed about media literacy (Potter, 2013).

Even though media literacy is accepted as a requirement for the new millennium, a discussion about what is media literacy and its level have already continued. One of the debaters is Cecilia Von Feilitzen of the International Clearinghouse on Children Youth and Media" stated that

There exist many definitions of media literacy around the world. More and more often they include the ability 1) to access the media, 2) to understand/critically evaluate different aspects of the media and media contents, and 3) to create media contents/participate in the production process. It is not unusual that the definitions also include aspects of learning to use the media in order to participate in the process for social change, for development, towards increased democracy (European Commission (2007, p. 14).

Nonetheless, the definition of media literacy stated by Aufderheide (1993) as "the ability to access, analyze, evaluate, and produce both print and electronic media" is the more acceptable one from various fields (Livingstone, 2004, p. 5).

Further, Hobbs (2010) identified the essential competencies of digital and media literacy as "access, analyze and understand, create, reflect and act". These competencies contain " effective problem-solving and communication skills," and they are connected spirally and interoperate to promote individuals' active involvement in lifelong learning process not only creating but also creating messages like constructivism. ( See Figure 2.7)

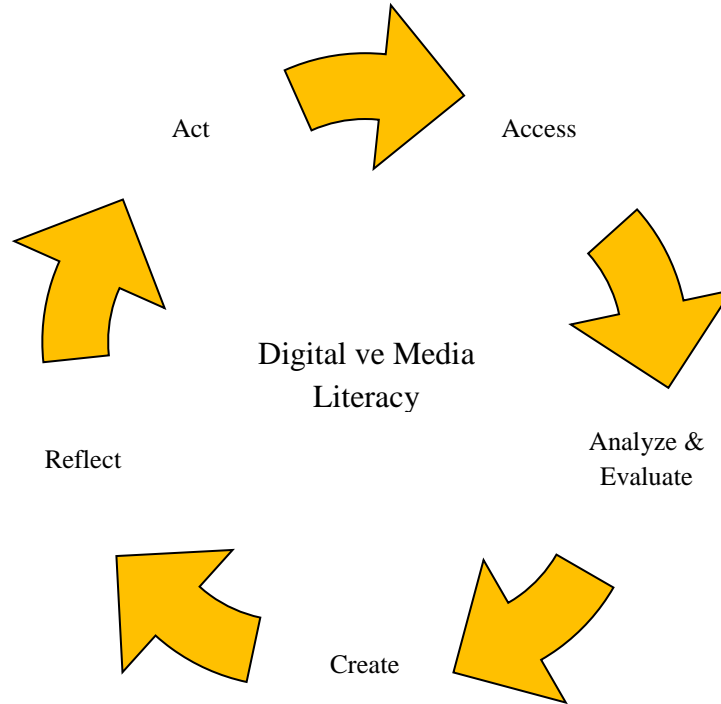


Figure 2.7 Essential Competencies of Digital and Media Literacy ( Hobbs, 2010, p.18)

The concept of digital and media literacy also has been started to give importance via teacher education programs. For instance, The Professional Standards for the Accreditation of Teacher Preparation Institutions declared that “teachers understand the media’s influence on culture and people’s actions and communication; as a result, teachers use a variety of approaches for teaching students how to construct meaning from media and nonprint texts and how to compose and respond to film, video, graphics, photographic, audio, and multimedia texts” (NCATE Standards, 2007, p. 57). The essential competencies of digital and media literacy are summarised in Table 2.5.

Table 2.5

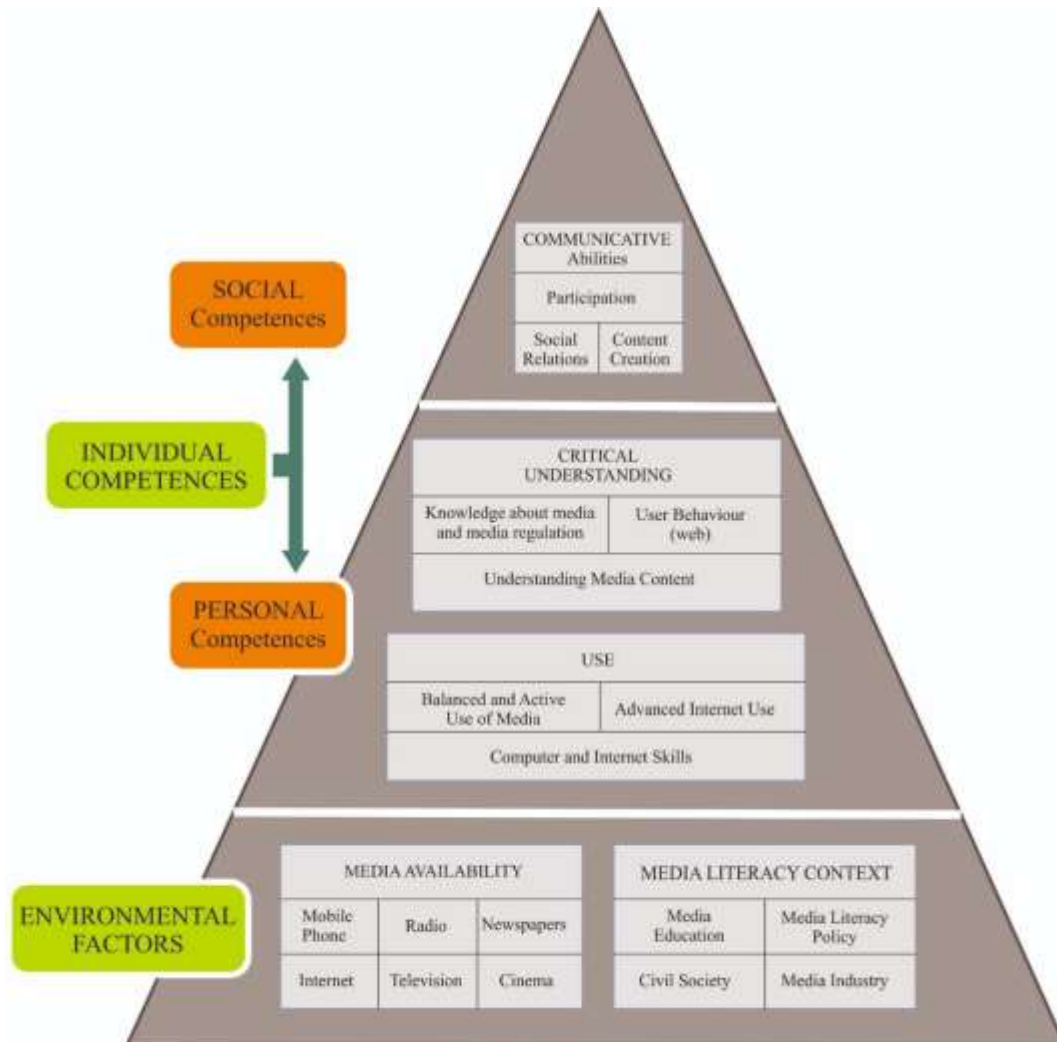
*Essential Competencies of Digital and Media Literacy (Hobbs.2010, p.10)*

<b>Essential Competencies</b>	<b>Explanation</b>
<b>Access</b>	Finding and using media and technology tools skilfully and sharing appropriate and relevant information with others
<b>Analyze &amp; Evaluate</b>	Comprehending messages and using critical thinking to analyze message quality, veracity, credibility, and point of view, while considering potential effects or consequences of messages
<b>Create</b>	Composing or generating content using creativity and confidence in self-expression, with awareness of purpose, audience and composition techniques
<b>Reflect</b>	Applying social responsibility and ethical principles to one's own identity and lived experience, communication behavior, and conduct
<b>Act</b>	Working individually and collaboratively to share knowledge and solve problems in the family, the workplace, and the community and participating as a member of a community at local, regional, national and international levels

In addition to Hobbs' digital and media literacy competencies, a research was conducted in 2009 with the support of "European Commission Directorate General Information Society and Media, Media Literacy Unit" in order to develop assessment tools to identify the individuals' media literacy level. Based on this study, media literacy has two components. These are (a) individual competences and (b) environmental factors. Individual competence is divided into two categories. One of them is personal the other is social competences. These are also categorized as (i) use, (ii) critical understanding and (iii) communicative. On the other hand, environmental factors are comprised of five



dimensions. These are a) media education b) media literacy policy, c) the media industry, d) civil society and e) communication rights. These are summarized Graph-2.1 at below.



Graph-2.1 Structure of Media Assessment Criteria (Celot, 2009, p.8)

After the media literacy levels of individuals are identified, they are categorized as a) basic, b) medium and c) advanced (See Table 2.6).

Table 2.6

*Level of Competences (Celot, 2009, p.55)*

Level	Definition by Dimension	
	Individual	Environmental
<b>Basic</b>	The individual has a set of abilities that allow a basic use of media. The user knows its function, deciphers its basic codes and uses it for specific ends, the user's capacity to critically analyze the information received is limited. His/her communicative capacity through media is also limited.	The environment does not provide stimuli for the development of media literacy.
<b>Medium</b>	The individual has a medium level of media use, knowing in depth its function and is able to carry out complex operations. The user knows how to obtain and evaluate the information required, s/he evaluates the information search strategies. The user is an active producer and participates socially.	The environment provides some stimuli but in a sporadic, irregular way.
<b>Advanced</b>	The individual is an expert in media use, being aware of and interested in the legal conditions that affect its use. The user has an in-depth knowledge of the techniques and languages and can analyze and convert the conditions affecting his/her communicative relations and the production and communication of messages. In the public sphere, the user is capable of activating cooperation groups that allows him/her to solve problems.	The environment provides systematic stimuli. Actions are coordinated to develop a media literate population.

Throughout more than 50 years, new media and literacy types have been blossoming. These literacy types encompass the concepts such as “information literacy, media literacy, media education, health literacy and digital literacy”. Although each literacy type portrays new competencies appropriate for contemporary society’s needs, we can think that all of them are the part of the same family. For instance, information literacy is focusing on research skills; media literacy is dealing with the critical analysis of mass media and their productions (e.g., advertisements); and, digital media is interested in using the ability of a computer, internet and social media (Hobbs, 2010).

While Hobbs (2010) combined media literacy and digital media literacy and described a new literacy type as “digital and media literacy”, in the present study, the concept of “critical media literacy” will be used since Buckingham (2007) pointed out that individuals are promoted to develop their critical media literacy (CML) via reasonable and appropriate and effective media usage in media education.

For Kellner and Share (2007), CML is also one of the leading approaches to media education like four approaches as mentioned before “media activism, protectionist model, media arts education and media literacy movement”. They proposed that the new literacy concepts should build on the existing ones and not abandon traditional print media. Thus, the new literacies contribute to media education area. Moreover, CML is nourished from many disciplines and theoretical frameworks, poststructuralist, feminist theory, critical pedagogies, and cultural studies field. All of these give importance to individual’s voices for redesigning media and design their own media (active audiences).

Although some well-known media literacy approaches hold off themselves from CML and critical pedagogy (Scheibe & Rogow, 2012; Hobbs, 2011; Buckingham, 2003), Garcia, Seglem, and Share (2013) advocate that CML pivot on “guiding students to explore difficult-to-see ideologies and connections between power and information (p.111). Based on Kellner and Share’s (2007) view, CML enlarges the concept of literacy to cover distinct types of mass communication and popular culture; and, strengthen “the potential of education to critically analyze relationships between and audiences, information, and power”. CML also encompasses development of skills on “analyzing media codes and conventions, abilities to criticize stereotypes, dominant values and

ideologies, and competencies to interpret the multiple meanings and messages generated by media text”. Therefore, CML and its related views should be integrated into the curriculum from early childhood education to higher education, which causes “a reconstruction and democratization of education and society” (p.4).

CML has three dimensions:

- “1) The development of critical understandings of how corporate for-profit media work in terms of economic, political, social and cultural power
- 2) Developing abilities and consciousness for searching, creating, developing and supporting alternative, non-profit media independent public-interest media
- 3) The characterization of the role of teachers in helping students and their parents to become critical media literate users and actively engage in alternative media use and development” (Torres & Mercado, 2006, p.260-261).

This sub-section drew attention to the differences and similarities of the concept of ML and CML. In the next section, their pedagogies and instructional strategies are examined.

### **2.3.2 Pedagogy and Instructional Strategies of ML and CML**

For this section, in the light of literature, how ML and CML can be conducted in learning environments is discussed.

Individuals generally do not realize that they are being instructed and located by media culture since its pedagogy usually is not seen and exposed to it unconsciously (Kellner & Share, 2007). Although the interest in the requirement for media literacy, the debate on why and how to teach it is going on (Hobbs, 1998).

Hobbs (2010) proposed some instructional strategies (See Table 2.7) can be utilized in all grade levels and different areas (such as science, literature, health, art, vocational and professional areas) in not only formal but also informal learning environments. These strategies are already found in some areas, and they do not need to use sumptuous equipment and to allocate excessive time to design. For her, to implement these strategies successfully, it is needed to establish “a respectful learning environment” in which students’ hands-on and minds-on activities are given importance, and multiple viewpoints are promoted. Media literacy implementations encourage “independent thinking, authentic dialogue, collaboration, reflection, creativity, and social responsibility

as applied to the practices of responding to, creating and sharing messages” (NAMLE, 2007; Partnership for 21st Century Skills, 2010). Moreover, NAMLE (2007) explained the purpose of MLE is “to develop the *habits of inquiry* and *skills of expression* needed to be critical thinkers, effective communicators and active citizens in today's’ world”.

Table 2.7

*Instructional Practices of Digital and Media Literacy Education (Hobbs, 2010, p.23)*

<b>Instructional Practices</b>	<b>Explanations</b>
<b>Keeping a media-use diary</b>	Record- keeping activities help people keep track of media choices and reflect on decisions about sharing and participation, deepening awareness of personal habits.
<b>Using information search and evaluation strategies</b>	Finding, evaluating and sharing content from a variety of sources helps people explore diverse sources of information. Using search strategies appropriate to one’s needs helps people make discriminating choices about quality and relevance
<b>Reading, viewing, listening and discussing</b>	Active interpretation of text helps people acquire new ideas, perspectives, and knowledge and make sense of it in relation to lived experience. Dialogue and sharing help deepen understanding and appreciation.
<b>Close analysis</b>	Careful examination of the construct nature of particular texts encourages people to use critical questioning to examine the author’s intent and issues of representation.
<b>Cross-media comparison</b>	Comparing and contrasting two texts that address the same topic help people develop critical thinking skills. By examining genre, purpose, form and content, and point of view, people recognize how media shape message content.
<b>Gaming, simulation, and role-playing</b>	Playful activities promote imagination, creativity and decision-making skills, supporting people’s reflective thinking about choices and consequences.
<b>Multimedia composition</b>	Message composition using a combination of language, images, sound, music, special effects, and interactivity provides real-world experience addressing a particular audience in a specific context to accomplish a stated goal. Teamwork, collaboration, and knowledge sharing enhance creativity and deepen respect for the diverse talents of individuals.

In addition to these strategies, Rogow (2015) proposed four pillars MLE practices for early childhood children namely “modeling (promoting children’s healthy and intentional selection about when and where they utilize media), questioning (supporting children’s evidence-based answers and careful observation), decision making (encourage children to create their own media based on their own messages) and integration ( MLE can be the part of the ECE curriculum since it also includes inquiry-based learning, critical thinking, and language development)” based on NAMLE’ s *habits of inquiry* and *skills of expression*.

In the light of these strategies, Schiebe (2004) advised a set of questions appropriate for working on media text with students from elementary to college. These are:

1. Who made- and who sponsored-this message, and what is their purpose?
2. Who is the target audience and how is the message specifically tailored to that audience?
3. What are the different techniques used to inform, persuade, entertain and attract attention?
4. What messages are communicated (and/or implied) about certain people, places, events, behaviors, lifestyles and so forth?
5. How current, accurate and credible is the information in this messages?
6. What is left out of this message that might be important to know? (p.63)

These questions have revised recently by Project Look Sharp and Rogow in 2017 from NAMLE’s Core Principles for Media Literacy Education in 2007. The categories, themes and sample questions for media literate people and early childhood children when they are analyzing the messages are given in Table 2.8. Also, the categories, themes and sample questions for media literate people when they are creating the messages are presented in Table 2.9.

Table 2.8 *Developing Habits of Inquiry: Key Questions to Ask When Analyzing Media Messages*

Categories	Themes	Sample Questions for Media Literate People (Project Look Sharp & Rogow, 2017)	Sample Questions for Media Literate Early Childhood Children (Rogow, 2015)
Authors & Audiences	Authorship	Who made this?	Who created this? /Who made up this story?
	Purposes	Why was this made? Who is their target audience? What do they want me to do? What do they want me to think (or think about)?	Who does this want me to do? Who are they talking to? / Who is this for?
	Economics	Who paid for this? Who might make money from this?	Who paid for this? Who makes money from it?
	Effects	Who might benefit from this message? Who might be harmed by it? Whose voices are represented or privileged? Whose voices are omitted or silenced?	What does the storyteller want me to remember? Is this good for me or people like me? Is it good for people who are not like me?
	Responses	How does this make me feel? What kinds of actions might I take in response to this?	How does this make me feel? What could I do about [insert topic or message]? What else do I want to know and how could I find out?
Messages & Meaning	Content	What are the messages about ___? What ideas, values, and information are overt? Implied? What is left out that might be important to know? How does this compare/contrast to other media messages on this topic?	What does this want me to think (or to think about)? What is this? What does this tell me about [insert topic]?
	Techniques	What techniques are used to communicate the messages? How effective are those techniques? What are their strengths and weaknesses? Why might they have chosen to use those techniques?	What do they want me to notice? How do they get me to notice what they want?
	Interpretations	What is my interpretation of this? How do prior experiences and beliefs shape my interpretation? What do I learn about myself from my interpretation or reaction?	What might someone think about this who is [insert a type of person, e.g., older than me, from a farm, a teacher, a pet owner, etc.)]?
Representations & Reality	Context	When was this created? Where and how was it shared with the public? What aspects of cultural context are relevant to consider?	When was this made? Is it from a long time ago or now?
	Credibility	Is this fact, opinion, or something else? How credible is the information? What are the sources of the ideas or assertions? Is this a trustworthy source about this particular topic?	How do they know [what they are saying is true]? What is the evidence? Can I trust this source to tell me the truth about this topic? Is this fact, opinion, a little of both, or neither?

Table 2.9 *Developing Habits of Reflection: Key Questions to Ask When Creating Media Messages (Project Look Sharp & Rogow, 2017, p.2)*

Categories	Themes	Sample Questions for Media Literate People
Authors & Audiences	Authorship	Who am I representing in making this? Who are my co-creators (if any), and what did we each contribute?
	Purposes	Why am I making this? Who is my target audience? What do I want people to do as a result of my message? What do I want people to think (or think about)?
	Economics	Who is sponsoring or paying for this? Who might make money from this? How might that affect my message?
	Effects	Who might benefit from this message? Who might be harmed by it? Whose voices are represented or privileged? Omitted or silenced? What is my responsibility to my audience?
	Responses	How might people feel after hearing, reading, or viewing this message? What kinds of actions might people take in response to this?
Messages & Meaning	Content	What messages and impressions do I want to convey? What ideas, values, and information do I want to make explicit? Implied? What will I choose to leave out of this message, and why? Is my presentation of information and ideas fair?
	Techniques	What techniques will work best to communicate the messages for this audience, and why? Do I have (or need) permission to use this content?
	Interpretations	How (and why) might different people interpret this differently? What do I learn about myself from my choices in making this?
Representations & Reality	Context	Where and how will I share this message with my audience? How might cultural context influence the way people interpret my message?
	Credibility	Is the information in this message accurate, and how will the audience know that? What sources am I using for information and ideas, and why?



On the other hand, according to the New London Group (1997), there are four components of pedagogy for CML. These are “situated practice, overt instruction, critical framing and transformative practices (a reflection of differences and multiplicity)”. In situated practice, audiences are both permitted and outfaced to take a risk and to create their own multiple comprehension of the world. Overt instruction is about the understandings of implicit knowledge regarding “ings, positioning, subjectivities and pleasure related to texts.” In critical framing, teachers and students discuss on different text to understand them from other perspectives (not focused on previously). By promoting audiences to discuss on distinct textual interpretations and acknowledgment of subjective positions, transformed practices are enacted since “individuals deconstruct and reconstruct the text while realizing and dealing with the tension that may be caused by differing and conflicting readings” (Alvermann & Hagood, 2000 p.203). They also state that most of the CML researchers point out some questions to the active participation of audiences to CML process such as “Who does this text address through its words, images, and sounds? Who is absent in this text, and what might explain that absence? Whose interests are served in this text? How am I positioned by it?” (Alvermann & Hagood, 2000, p.195).

What’s more, Kellner and Share (2007) declared that CML utilize “multiperspectival approach” which is mostly related to “progressive and transformative education” and “democratic approach critical pedagogy” which pursues progressive educators’ views like John Dewey and Paulo Freire. Dewey advocated education for democracy and gave importance to active participation, hands-on and minds-on activities (such as experimentation and problem-solving). The teacher has a role as collaborator and co-learner since Dewey emphasizes collaborative inquiry including children as well as adults (New, 2007). Progressive education respects children’s culture and values. In other words, all children from a different culture are welcomed, and their own values are admitted; and thus, all children’s democratic participation in a class environment is provided (Edwards, 2002). Additionally, Freire (1970) highlights “critical consciousness” containing views related to concrete circumstances and issues and reaction to oppression via utilizing problem-posing pedagogy. Freire accentuates to the activities including

dialogical communication between students and teachers that encourages reciprocal learning and teaching. To put it another word, this method requires practice and critical reflection within the action, which leads to transforming the society. Hence, CML education should encompass “critical analysis and alternative media creation”. CML also focuses on how media (e.g., film and video) can be utilized in a positive way and to instruct various topics from multicultural understanding to education. While CML instructs students to learn from media, to withstand media manipulation and to utilize media materials constructively, it targets to develop skills to foster individuals to be active citizens who are motivated and qualified in the life surrounded by various types of media. Accordingly, individuals can be aware of issues related to inequities and injustices of a society (e.g., gender, race, class). In addition to this, they can have power over their culture and create their own perspectives to form and transform their culture and society’s material and social circumstances (Kellner & Share, 2007). To support students’ CML even at preschool age, some questions can be asked while analyzing the texts. These are: “Whose voice is heard? Who is silenced? Whose reality is presented? Whose reality is ignored? Who is advantaged? Who is disadvantaged (Vasquez, 2003, p.13).

After examining the pedagogy and instructional strategies of ML and CML, the next section focuses what the existing situation related to ML and CML in Turkish context is.

### **2.3.3 The situation of ML/CML in Turkey**

Throughout this sub-section, the developments of ML and CML in Turkey are investigated.

Even though lots of developments about CML and/ or ML has occurred in the international level, in Turkey the concept of ML became agenda in 2003 with communication council. ML acquired currency at the final report of Media and Violence Working Team studying on an action plan with Radio and Television Supreme Council (RTUK)’s suggestion in 22nd September 2004 and made contact with Ministry of National Education formally to open a new the course on ML in the national elementary curriculum.

In 2005, the first International Conference was held by the Faculty of Communication at Marmara University. At this conference, it was emphasized that new

communication skills be required to exist in a world full of all print and visual resources' messages. It was also emphasized that the citizens should be introduced to media literacy as a new concept while using rapidly developed media (such as printed, audio, visual and digital media). At this conference, researchers and experts highlighted that media education should be given place in all education and communication faculties and the educators who would instruct media education should be trained. They also pointed out that media literacy course should be added to the curriculum and the conferences, seminars, workshops should be organized with the support of the institutions.

After this conference, on 31 August 2006 Elementary Elective Media Literacy Course Instruction Schedule was confirmed in MoNE's Board of Education And Discipline. Firstly, this elective course was instructed by social studies teachers in 7<sup>th</sup> grade as a pilot study during the 2006-2007 academic year. Based on the affirmative results of the pilot study on students' attitudes towards the course and media usage, this course has been taught at 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade in elementary education as an hour since a 2007-2008 academic year. For this, 103 social studies teachers and primary teachers who were graduated from the faculty of communication and related college attended in in-service training (Çetinkaya, 2008). At the end of the 2011-2012 academic year, totally 3.235.851 elementary (6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade) students have taken this course in Turkey. However, year after year it was seen that there was a fluctuation in the proportion of students preferring to take this course. The reason for can be lack of expert teacher about media and media literacy (Alagözlü, 2013). RTUK and MoNE published "Media Literacy Course at Elementary Education for Teachers", The Program and Guideline of Media Literacy Course books but there was no book for students to avoid from rote teaching (Hasdemir Asrak, 2009).

In 2011, via law 6112 the mission and responsibility of making collaboration with MoNE and the other governmental institutions were given to RTUK with the aim of extending media literacy to the whole society. RTUK made several attempts such as television content rating system (has been applied since in 2011), iyi uykular çocuklar projesi [good night children project] (has been implemented since 2010), establishment of media literacy website (<https://www.medyakuryazarligi.gov.tr>) and website for children

(<http://www.rtukcocuk.gov.tr>), and organizing media literacy workshop in 2012 with MoNe and Ministry of Family and Social Policy.

On the other hand, after the 2012 Media Literacy elective course has been taught in 7<sup>th</sup> and 8<sup>th</sup> grade in elementary education as two-hour (Altun, 2014). In 2014, Elementary Elective Media Literacy Course Instruction Schedule was renewed based on 21<sup>st</sup> century's needs and expectations. The revised Media Literacy Coursebook for middle schools was published in 2014. The previous head of RTUK, Prof. Dr. Davut DURSUN (2014) stated in the renewed course instruction schedule covered television, the other information and communication technologies and social media. While the previous program was tool based (such as watching television and using the internet), the new one was skill based (e.g., students can clean viruses from the computer, write a news text about the observed event, use media tools to impel the society's sensitiveness). Moreover, via this course schedule, students can be grown up as media literate individuals (to be aware of media messages, to criticize the events and situations in the media, to have an active role in media process, to be aware of ethical procedures related to media and their responsibility.) by targeting four primary skills, namely "access, analyze, evaluate and create" (MoNE, 2013). In 2015, five-day in-service training was conducted with academicians coming from different departments and universities to give information about the renewed media literacy course book, teaching methods and strategies used in media literacy course and how to design and implement media literacy activities.

In 2013, First 'Child and Media Congress' was organized in Turkey to evaluate the relationship between child and media within all dimensions and to propose solutions for problematic issues. This congress aimed to introduce "The Child and Media Movement". This movement targets to protect children against negativeness emerging during their interaction with media, to provide them to benefit from media's positive effects and to promote them to be conscious about this issues. Moreover, this congress emphasized the importance of the development of media literacy movement and extending of this movement. The noteworthy outcome of this congress was the 2014-2018 Strategy Document including First Child and Media Strategy and Its Action Plan. This document was prepared by taking views of children and adults via workshops and focus group interviews (Yavuzer, 2013). The last shape of this document was completed in 2013 and

presented to the government in 2013. Based on this document, it is aimed for 5 years (2014-2018) (a) to prepare reading movement program, (b) to establish Child and Media Monitoring Board (MEDIK), (c) to give priority to media literacy education, (d) to construct Turkish Child and Media Map and (e) to prepare Turkish Child and Media Law (Republic of Turkey Office of the PM, Directorate General of Press and Information, Child Foundation (Çocuk Vafkı) & RTUK, 2013). This document has still been investigated by the government.

The project of “Internet Journalism” has been conducted since a 2014-2015 academic year with 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup>-grade students at the private school. This project aims to promote students to reach knowledge and to write news about this knowledge and to investigate the reliability of this knowledge from different resources as if they are real journalists.

The recent project was carried out by Konya Provincial Directorate of National Education in 2017 with the financial support of Scientific and Technological Research Council of Turkey (TUBITAK) to develop in-service teachers’ understandings and skills about media literacy, to give information them about media literacy teaching methods and strategies and to support them how to implement media literacy activities and lessons effectively. The participant of this project were 96 in-service teachers who are working in Konya district and are instructing /were instructing/ will instruct the media literacy course at the middle schools. The project was completed within five days. Throughout the project, nine activities (such as I am preparing TV program, I am designing digital story, the future journalists, production of media at the social media...etc.) were implemented by academicians via various learner-based teaching methods and strategies (e.g., discussion, drama, improvisation, cooperative and peer learning).

However, there has been no specific attempt to develop CML/ML and CMLE/MLE for early childhood years in particular for 0-6 six years old and their teachers.

In the present study, the concept of CML was used, however, as Kellner and Share (2007) stated, while constructing theoretical background (pedagogies and instructional strategies and critic questions) of CML, it was utilized from the whole literature based on ML, digital and media literacy and media education. Hence, the criteria which were developed by European Commission (2009) and Hobbs (2010) were adapted to Turkish

context to define early childhood teachers' CML levels since they are in the microsystem of the developing children.

Through this section, the development of ML and CML, their comparisons, pedagogies as well as teaching strategies are discussed. In the following section, literature pertaining to in-service teacher education which is the important component of the current study is analyzed.

## **2.4 Teacher's Professional Development**

In this section, respectively, the information is given on what is professional development, teacher change, teacher knowledge and the models of professional development.

Professional development generally refers to individuals' professional role (Villegas-Reimers, 2003). In particular, Glatthorn (1995) described that "teacher development is the professional growth that a teacher achieves as a result of gaining increased experience and examining his or her teaching systemically" (p.41). For Ganser (2000), professional development consists of not only formal experiences (e.g., participating in workshops, mentoring...etc) but also informal experiences ( i.e., following professional publications, watching documentaries on teaching and learning in an academic field...etc.).

According to Villegas-Reimers (2003), professional development has some properties

- 1) It is constructivist based rather than a transmission-oriented model.
- 2) It covers long-term learning process.
- 3) It is conducted "as a process that takes place within a particular context" such as an existing classroom or school context.
- 4) It is closely connected to school reform.
- 5) A teacher is perceived as "a reflective practitioner."
- 6) Professional development is considered as a "collaborative process"
- 7) Professional development may seem and be very distinct in various settings since each setting has its own components (p.13-15).

### **2.4.1 Teacher Change**

When the concept of professional development in the literature is examined, it is seen that the notions of teacher change and teacher growth are the main aims of

professional development. Thus, in the following sub-section teacher change concept is explored.

Clarke and Hollingsworth (2002) stated that the notion of teacher change is essential since the rationale of teacher change designate the perspective of teacher professional development. There are six perspectives about teacher change as mentioned below.

- a) change as training-change is something that is done to teachers; that is, teachers are “changed”.
- b) Change as adaptation-teachers “change” in response to something; they adapt their practices to changed conditions.
- c) Change as personal development-teachers “seek to change” in an attempt to improve their performance or develop additional skills or strategies.
- d) Change as local reform-teachers “change something” for reasons of personal growth.
- e) Change as systemic restructuring-teachers enact the “change policies” of the system.
- f) Change as growth or learning-teachers “change inevitably through professional activity”; teachers are themselves learners who work in a learning community (Clarke & Hollingsworth, 2002, p.948).

For them, the main points of existing professional development attempts are mostly related to “change as growth or learning” perspective. Hartnett (2011) pointed out that teachers’ professional knowledge base growth is the significant element of their change and continuous learning. Borko and Putnam (1995) also explain the importance of knowledge with these words:

Teachers’ thinking is directly influenced by their knowledge. Their thinking, in turn, determines their action in the classroom. Thus, to understand teaching we must study teachers’ knowledge systems... Similarly to help teachers change their practice, we must help them to expand and elaborate their knowledge systems ( p.37).

According to Shulman (1986), there were seven distinct knowledge type: a) knowledge of content, b) general pedagogical knowledge, c) curriculum knowledge, d) pedagogical content knowledge, e) knowledge of educational contexts and f) knowledge of educational end, purposes, and values. Nonetheless, Shulman highlighted three main teacher knowledge types namely content knowledge, curriculum knowledge and pedagogical knowledge. Borko and Putnam (1995) revised these knowledge types as general pedagogical knowledge, subject-matter knowledge, and pedagogical knowledge. The revised ones’ components are explained in Table 2.10.

Table 2.10

*Domains and components of teaching basement knowledge (Borko and Putnam,1995)*

Domains	Components
General Pedagogical Knowledge	Learning environments and instructional strategies Classroom management Knowledge of learners and learning
Subject Matter Knowledge	Knowledge of content and substantive structures Syntactic structures
Pedagogical Content Knowledge	Overarching conception of teaching a subject Knowledge of instructional strategies and representations Knowledge of students' understanding and potential misunderstandings Knowledge of curriculum and curricular materials

What's more, Clarke and Peter (1993) enlarged these knowledge types to cover teachers' whole world as personal domain (teacher beliefs and attitudes), domain of practice (related to Shulman's and Borko and Putnam's knowledge types), domain of consequences (outcomes of teacher's practice such as assessing students' learning) and external domain (information resources e.g. training, books, discussions). (For detailed explanation See Professional Development Models)

### **2.4.2 Models of Teacher Professional Development**

When the literature on models of teacher professional development is investigated, the change and development in professional development models regarding teacher change and teacher professional growth perspectives year by year can be summarized like in Table 2.11.



Table 2.11

*Change and development in teacher professional development models*

Developer(s)	Model Type	Components	How change/ growth occur			
<b>Lewin (1935)</b>	Linear- teacher change	Professional development/ learning opportunity Knowledge and beliefs Classroom Practice Student learning outcomes	<pre> graph LR     A((Professional development/ learning opportunity)) --&gt; B((Change in teacher beliefs and attitudes))     B --&gt; C((Change in teachers' classroom practices))     C --&gt; D((Change in student learning outcomes))             </pre>			
<b>Guskey (1986)</b>	Linear- teacher change	Professional development/ learning opportunity Classroom Practice Student learning outcomes Knowledge and beliefs	<pre> graph LR     A((Professional development/ learning opportunity)) --&gt; B((Change in teachers' classroom practices))     B --&gt; C((Change in student learning outcomes))     C --&gt; D((Change in teacher beliefs and attitudes))             </pre>			

Table 2.11. Cont'd.

Developer(s)	Model Type	Components	How change/ growth occur
Clarke (1988)	Cyclic- professional growth	Staff development activity Classroom practice Student learning Teacher belief	

Table 2.11. Cont'd.

Developer(s)	Model Type	Components	How change/ growth occur
Clarke and Peter (1993)	Cyclic-professional growth	Personal Domain Domain of Practice Domain of Inference External Domain	<p>The diagram illustrates the cyclic model of teacher growth. It features four main components: 'Teacher knowledge and beliefs' (Personal Domain), 'Classroom Experimentation' (Domain of Practice), 'Valued Outcomes' (Domain of Inferences), and 'External source of information and stimulus of support' (External Domain). The flow is as follows:         <ul style="list-style-type: none"> <li>Solid arrow (Enactment) from Personal Domain to External Domain.</li> <li>Solid arrow (Enactment) from External Domain to Classroom Experimentation.</li> <li>Solid arrow (Enactment) from Classroom Experimentation to Valued Outcomes.</li> <li>Solid arrow (Enactment) from Valued Outcomes back to Personal Domain.</li> <li>Dashed arrow (Reflection) from Classroom Experimentation to Personal Domain.</li> <li>Dashed arrow (Reflection) from Valued Outcomes to Classroom Experimentation.</li> <li>Dashed arrow (Reflection) from Personal Domain to Valued Outcomes.</li> </ul> </p>

Table 2.11. Cont'd.

Developer(s)	Model Type	Components	How change/ growth occur
<b>Teacher Professional Growth Consortium (1994)</b>	Cyclic-professional growth	Personal Domain Domain of Practice Domain of Consequences External Domain	<p>The diagram illustrates the cyclical process of teacher growth across four domains: Personal Domain, External Domain, Domain of Practice, and Domain of Consequences. It features three main nodes: 'Knowledge and beliefs' (Personal Domain), 'Classroom Experimentation' (Domain of Practice), and 'Salient Outcomes' (Domain of Consequences). A fourth node, 'External source of information and stimulus of support' (External Domain), is shown in a box. Solid blue arrows represent 'Enactment' (moving from Personal to External, External to Practice, Practice to Consequences, and Consequences to Personal). Dashed blue arrows represent 'Reflection' (moving from External to Personal, Practice to External, Consequences to Practice, and Personal to Consequences). A legend at the bottom left identifies the arrow types: a solid blue arrow for 'Enactment' and a dashed blue arrow for 'Reflection'.</p>

Table 2.11. Cont'd.

Developer(s)	Model Type	Components	How change/ growth occur
<b>Clarke and Hollingsworth (2002) based on Clarke's (1999) recommendations</b>	Cyclic-professional growth	Personal Domain Domain of Practice Domain of Consequence External Domain	<p>The diagram illustrates the cyclic-professional growth model. It features four main components: 'Knowledge, beliefs and attitude' (Personal Domain), 'Professional Experimentation' (Domain of Practice), 'Salient Outcomes' (Domain of Consequences), and 'External source of information and stimulus of support' (External Domain). The 'External Domain' is represented by a blue rectangle at the top. The 'Personal Domain' is indicated by text on the left. The 'Domain of Practice' is on the right, and the 'Domain of Consequences' is at the bottom. Solid blue arrows represent 'Enactment' (moving from left to right, top to bottom, and bottom to right), while dashed blue arrows represent 'Reflection' (moving from right to left, bottom to top, and right to top). A legend at the bottom left shows a solid arrow for 'Enactment' and a dashed arrow for 'Reflection'. The entire diagram is set within a box labeled 'The change environment'.</p>

As shown in Table 2.11, in the early years, teacher professional development can be seen as teacher change, and this change can occur as linear. While Guskey (1986) elucidated his model, he took attention to the intrinsic relationship between model components. Hence, after 1988, researchers especially Clarke advocated that teacher professional development should be seen as professional growth and this growth should be cyclic (ongoing interaction and multiple entrances) instead of linear. In 1994, the model teacher professional growth was called as “Interconnected Model of Teacher Professional Growth” by Teacher Professional Growth Consortium. This model was used by Hollingsworth’s dissertation in 1999 but, she used different terms for change as “change sequences” and “growth networks” while describing teacher professional development. For her, a change sequence occurred when a change in one domain connected via enactment or reflection with other domain. On the other hand, if the changes are continuous over time, growth networks occur. For instance, if there is a change in only teacher’s experimentation (domain practice) just because of attending training via enactment, this change defined as change sequences. On the other hand, if teacher reflected to new teaching method/strategy (domain practice) and observed the outcomes of the effect of this method/ strategy on children’s learning, active participation and she was glad about the outcomes of this method/ strategy (domain consequences) and these outcomes reflected to change in teacher’s beliefs (personal domain) about this method/ strategy and finally this method/ strategy became a teacher’s usual classroom practice (change in domain practice), growth networks could occur. For Hollingsworth (1999), there are three different kinds of professional growth namely “adoption (change occurs in teacher’s practice and or belief in the light of views based on the professional development program), misinterpretation (change occurs in teacher’s practice and or belief via misinterpreting the views based on the professional development program) and rejection” (change occurs in teacher’s practice and or belief via rejecting the views based on the professional development program). The last version of “The Interconnected Model of Professional Growth” developed by Clarke and Hollingsworth in 2002 based on Hollingsworth’s dissertation’s outcomes in 1999.

In the following sub-section, this model is explained in detail by giving the outcomes of Hollingsworth’s research.

### **2.4.2.1 The Interconnected Model of Teachers Professional Growth**

After Hollingsworth (1999) utilized the *Interconnected Model of Teachers Professional Growth* in her study, she recommended four revisions about this model.

One of the proposed revision was to change the scope of domain practice component from “classroom experimentation” to “professional experimentation.” Using this change, the focus of this component enlarges to other professional settings except for classroom environments such as institutions and organizations. By means of this chance, other professions can use this model (e.g., related to administrative and organizational skills...etc.) in order to support individuals’ professional growth.

The second one was to add “attitude” into the personal domain component including just teacher knowledge and beliefs. Hollingsworth (1999) found that most of the teachers in her study demonstrated a change in their (teaching mathematics) attitude via an increase in their enthusiasm and satisfaction related to teaching math. Hence, “ attitude” should be placed in personal domain component.

The third one was to approve the key role of the school context on teacher’s professional growth. For Hollingsworth (1999), reaching to, involvement in and experimentation with and implementation of professional development affected each teacher growth differently.

The last one was to revise the name of the model. Hollingsworth (1999) renamed the model as the “*Interconnected Model of Professional Growth*” (instead of teacher professional growth) to cover all the things that she recommended and to indicate the differences between prior model. While the “*Interconnected Model of Professional Growth*” ‘s modification was proposed and applied firstly by Hollingsworth (1999), the detailed explanation was made by Clarke and Hollingsworth (2002). In the following part, this model will be elucidated.

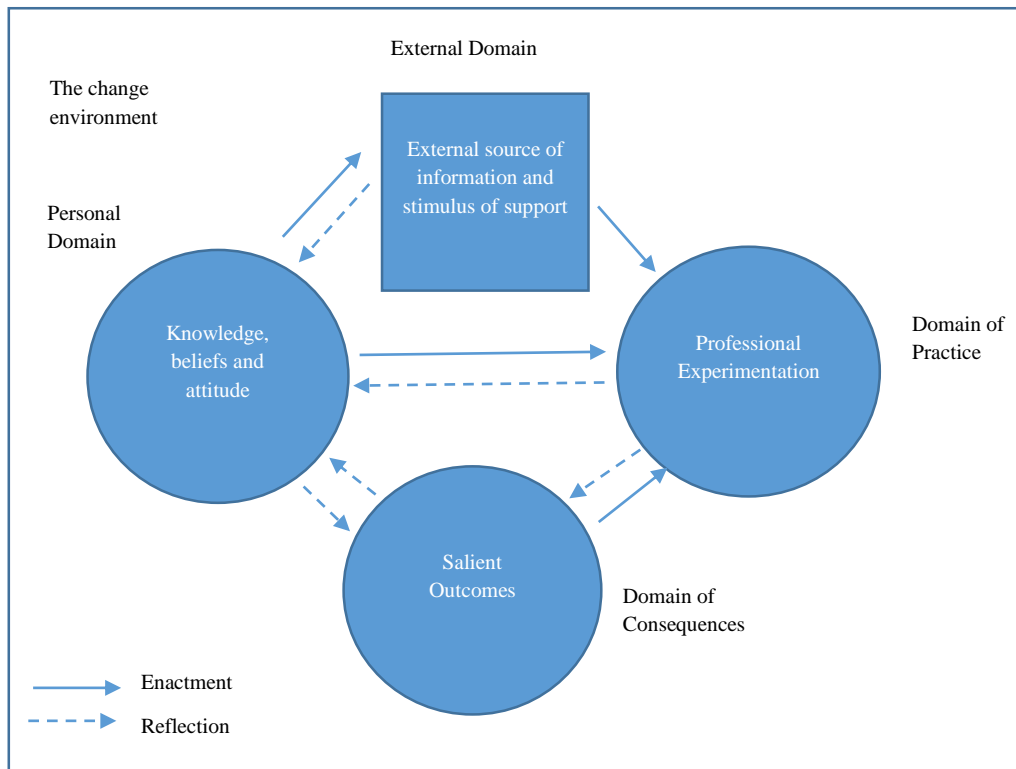


Figure 2.8 The Interconnected Model of Professional Growth (Clarke & Hollingsworth, 2002)

As seen in Figure 2.8, in this model, there are mainly four domains namely “external domain”, “personal domain”, “domain of practice” and “salient outcomes”. The interactions among the domains are provided by enactment and reflection. Moreover, the other important factor is “the change environment”. Each of them will be explained in the subsequent paragraphs.

a) *External source of information or stimulus (the external domain)*

The external domain is discriminated from other domains of this model with its location that is out of the teacher’s individual world (Therefore, its shape is drawn as rectangular in Figure 2.8). For Clarke and Hollingsworth (2002), this domain covers not only professional development training (in-service training) but also professional publications and dialogues with colleagues as new information and stimulus. This domain can be considered as a precursor of the professional development (Witterholt, Goedhart, Suhre & Sterun, 2012). For the present study, as an external domain, 10-hour in-service training focusing on ESD through CML was given.



*b) Professional experimentation (the domain of practice)*

The main component of this domain is teachers' experimenting in their own teaching environments. It is seen that practices (such as using collaborative group work, student self- assessment) are useful for teachers since, by means of these practices, they have a chance to observe whether students can reach the desired outcomes and if students obtained these outcomes, teachers can continue and implement, but if not, at that time, teachers could give up implementing (Guskey, 2002). For the present study, the experimenting part was come true via teachers' own application with their own activities/daily plans/ projects and the experimenting part of each teacher was video-recorded.

*c) Teacher knowledge, beliefs, and attitudes (the personal domain)*

This domain refers to teacher's practical knowledge that covers teachers' knowledge, beliefs, and attitudes (Witterholt et al., 2012). What's more, change in teacher beliefs and attitudes leads to increase in value that the teacher gave to the new teaching strategy and/or method which referred to new pedagogical knowledge for him/her (Clarke & Hollingsworth, 2002).

*d) Salient outcomes (the domain of consequences)*

The outcomes encompass not only student learning outcomes but also teacher's practices (e.g., teacher classroom management, student motivation). Change in this domain is straightly connected to "the teacher's existing value system and to inferences the teacher draws from the practices of the classroom" (Clarke & Hollingsworth, 2002, p.953). For instance, student-student talk means for one teacher as positive outcome that leads to change in his/her pedagogy, on the other hand, for the other teacher it means that losing the classroom management that causes to give up using new teaching strategy; and thus, there will be no change in his/her pedagogy (Clarke & Hollingsworth, 2002).

*Mediating process of the model*

Clarke and Hollingsworth (2002) explained the mediating mechanism that causes to change in one of the domains in the model bringing about change in another with two mediating processes namely "enaction" and "reflection".

*a) Enaction:* Clarke and Hollingsworth (2002) stated that "enaction" process is distinct from only "acting" such as operationalizing of a new idea/ belief/ a newly met practice.

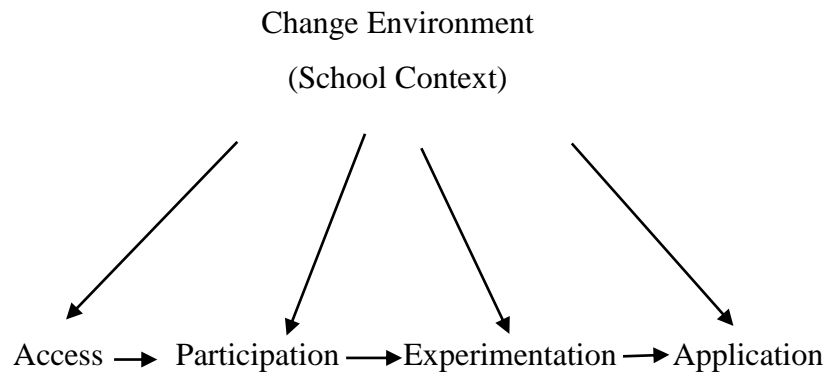
For example, a teacher enacted a new type of teaching strategy experienced in in-service training (the connection between external domain and domain of practice, see figure 2.8 with solid arrows). Moreover, increase in teacher's use of new teaching strategy stand for the enaction of newly improved belief in student ability to raise significant mathematical knowledge while participating in collaborative group work (the connection between the personal domain and the domain of practice, see figure 2.8 with solid arrows). Based on the outcomes/conclusions, teacher perceived that the new strategy supported the student-student interaction by contrast with his/her expectations; and thus, s/he was promoted to continue using new strategy in his/her classroom (the connection between the domain of consequences and domain of practice see figure2.8 with solid arrows).

*b) Reflection:* Clarke and Hollingsworth (2002) elucidated the reflection process in the model by giving examples from their previous studies. As seen in Figure 2.8 with broken arrows, there are five distinct embraced reflective links within the model. The first one is the potential reflective link between the external domain and the personal domain. For instance, a teacher can reflect on the new experiences presented by in-service training. However, this might not cause to change in his/ her belief until s/he implements the proposed teaching methods/strategies in his/her own classroom. Hence, it can be stated that there is a reflective connection between the external domain and the personal domain about a change in knowledge. The second one is the potential reflective link between the domain of practice and the domain of consequences. For example, when the teacher experiments the new teaching methods/ strategies, s/he can reflect on the interpretation of the implementations in the classroom with regards to outcomes which is important for him/her; and, s/he can reach to the conclusion which can be a change in salient outcomes. The third one is the potential reflective link between the domain consequences and the personal domain. To illustrate, when s/he observe some salient outcomes (e.g., student motivation, classroom management), s/he can reflect on his/ her personal domain; and thus, s/he can revise his/her beliefs and attitudes. The fourth one is the potential reflective links between the personal domain and the domain consequences. This one is related to change in teacher's belief causes to a "re-evaluation of changes in the domain of consequences" (p.954). For instance, when a teacher believes that student-student interaction is important for student's active involvement, s/he can tolerate student-student interaction instead of considering

this as uncontrolled behaviors. The last one is the potential reflective link between the domain of practice and the personal domain. For example, when the teacher makes a change in his/her implementations, this can also reflect on the personal domain as new knowledge about being a new practice as permanent in classroom applications.

#### *The change environment*

The literature indicated that the contextual factors impact teacher professional development programs effectiveness. Clarke and Hollingsworth (2002) and Hollingsworth (1999) added “the change environment” as a part of the “*Interconnected Model of Professional Growth*”. While designing the model, the domain of the change environment stands for with a frame surrounding the model to indicate how change in each domain and the impact of each mediating process are promoted or impeded with the facilities and obstacles of the working environment and every teacher (or other professional) (Clarke & Hollingsworth, 2002). (See Figure 2.8) While Hollingsworth (1999) identified the school context (where teachers work) as one of the main factors of the change environment that affects teachers’ reaction to professional development for her study, Clarke and Hollingsworth (2002) added the other factors such as school subscriptions of professional journals, administrative support of teachers for experimenting the new teaching strategies/methods, promoting discussions among colleagues on various topics (i.e. ethics, curriculum, new resources..etc.). Hollingsworth (1999) elucidated the effect of school context on teacher professional growth process step by step. The growth has four stages, namely “access to facilities for professional growth”, “participation in professional development”, experimentation with professional development program ideas” and “application of the new ideas in their classroom”. (See Figure 2.9)



*Figure 2.9* Influence of the change environment on teacher professional growth (Hartnett, 2011, p.54)

The stage of “access” covered the teachers’ participation to professional development programs, reaching information related to professional development facilities, developing and applying their own professional development plans regarding not only their own but also whole school community’s professional growth. The stage of “ participation” encompasses various supportive elements from financial support to peer and mentor assistance such as supplying of facilities to discuss program’s information and views with other staff/ colleagues and personal encouragement. In the stage of experimentation, teachers can be willing to apply the new practice because of the appropriateness of new ideas for their school context and agreement on the new practice with their colleagues. The last stage of “application” can be affected by the contextual obstacles, e.g., educational philosophy, financial support, resources, policies of behavior management, properties of the physical environment (Hollingsworth, 1999).

### **2.4.3 Types of Teacher Professional Development**

In this sub-section, different types and methods of teacher professional development are explained.

According to Argyris and Schön (1974), there were two types of professional development, namely “single-loop learning” and “double-loop learning”. In single-loop learning, the main aim is to construct professional development to meet the immediate needs. If a new need occurred, a proposed action would be put to the

existing program to fulfill the requirements and sustain the existing situation. This type of professional development is a linear and “ action correspondence approach.”. For this approach, a change emerges when new information and curriculum are exposed to the teacher. On the other hand, in the double-loop learning, the main purpose is to change the bigger picture and brings about a momentous change in a whole system of theoretical background and implementation. This type of learning focuses on the more long-term solution rather than short-term like single-loop learning (Hartnett, 2011). In other words, for effective teacher professional development, the programs should be long-term.

The literature analysis on the principles of effective teacher professional development indicated that there are several researchers (Owen, Johson, Clarke, Lovitt and Morony, 1988; Clarke, 1994; Johnson, 1993,1996; Guskey, 2003) identifying these key principles. The recent review of this issue was done by Guskey (2003). He made comparison 13 lists including principles of effective teacher professional development in the literature and reached to 21 distinct characteristics. Guskey (2003) pointed out that some of them were familiar and found at most of the lists although some of them were given place at just a few lists. The most five commons were “ enriching teachers’ content and pedagogical knowledge, supplying adequate time and resources, encouraging collegial and collaborative exchange, constructing evaluation procedures of professional development experience and implementing school-based professional development”. However, he highlighted that these characteristics should be used wisely and effectively regarding learning and learners’ aspects. Otherwise, these characteristics could be utilized without aim. Moreover, Guskey (1995) proposed some procedural guidelines for the professional development process. These were: (a) to be aware of change occurring as individually and collectively, (b) to perceive change emerging with small steps but affecting on big picture,(c) to provide teamwork supporting for sharing the ideas and getting feedback,(d) to ensure follow-up and foster; and,(e) make program integration and indicate how they can be organized to meet the ultimate goal of designing professional knowledge base.

In the light of these principles and guidelines, teacher professional development can be organized by using different methods. These methods are summarized in Tabl

Table 2.12 *Methods of teacher professional development* (Hartnett, 2011)

<b>Teacher Professional Development Methods</b>	<b>Examples</b>	<b>Advantages</b>	<b>Disadvantages</b>
<b>Training</b>	Workshops, seminars	Cost-effective, reaching to large numbers	Lack of individualization and choice
<b>Observation</b>	Peer coaching, clinical supervision	Learning emerges for both observer and observee The discussion is made with follow-up sessions	Time –consuming Restricted participants
<b>Curriculum Development</b>	Review of curriculum, developing strategies to enhance the instruction Solving educational issues	Obtaining new knowledge via research, Collaboration Sharing decision-making skills	Restricted participants Dominant participant effect
<b>Study Group</b>	Practicing curricular or instructional innovations	The whole school is promoted as a learning community	Require well planning Time –consuming Dominant participant effect
<b>Inquiry/ action research</b>	To develop the existing implementation To try innovations	Participant become reflective practitioners, systematic and decision makers Straiten the gap between educational research and educational practice	Time-consuming
<b>Individually guided activities</b>	Writing personal history, journal Reviewing audio or video recordings Participating in cognitive coaching case study role-play	Flexibility Individualization Self-reflective Participating in self-analysis procedure	Quite isolating
<b>Mentoring</b>	Regular discussions Sharing ideas and strategies Reflection Observation	Highly individualized Support long-term productive professional relationships	The mentor should be highly competent and respected Time-consuming
<b>Co-teaching</b>	Shared teaching	Participants learn each other	Time –consuming Restricted participants

As it is seen in Table 2.12, each method has both advantages and disadvantages. In other words, there is no best method. Hence, the professional developers should select the appropriate method based on the needs, context and aim (Guskey, 1995; Hartnett, 2011).

In this section, teacher's professional development is examined. In the following section, the international and national studies in the literature focusing on pre-and in-service teacher education related to ESD are discussed.

### **2.5 Studies on ESD in ECE with Early Childhood Educators**

The analysis of the related literature on education for sustainable development and early childhood education revealed that the studies in this area are still in a limited number at both the international and national levels (Davis, 2009; Davis & Elliott 2014; Erdogan, Marcinkowski & Ok, 2009; Gülay-Ogelman & Güngör, 2015; Somerville & Williams, 2015; Toran, 2017). The subsequent section summarizes the findings of the international and the national studies, respectively.

The analysis of international studies indicated that the trend of teacher education started in EE and had come to ESD and sustainable development (SD). The research on teacher education has increased in the recent years. These studies are presented year by year as follows.

Initially, Van Petegem, Blicke and Pauw (2007) carried out a research on the conducting process of EE in two different teacher education colleges. While one college had a long year experience of cross-curricular education, the other one did not. However, the data analysis indicated that educators required to be knowledgeable about effective implementation which demonstrates how EE could be integrated into the daily activities. This means that EE is not only added to syllabus but also EE is internalized with daily implementation with cooperative school working. Teachers also require to interact with their colleagues regularly to create effective interdisciplinary courses.

Another study related to the in-service teacher was conducted by Ärlemalm-Hagsér and Sandberg (2011) to examine daycare educators' understanding of SD notion and to investigate related pedagogical implementations at their own schools. The participants were 32-daycare attendants working at 30 distinct pre-schools from five representative Swedish municipalities from 5 to 20 years. The participants involved in

part-time in-service education course in the university once a week. The other weekdays worked at their own schools. The purpose of the course Developing Creative Learning in Early Childhood was to improve teachers' theoretical and practical skills to conduct SD in ECE. The content of this course consisted of four parts: "1) learning about theoretical framework of SD, 2) study visits to pre-schools that work with the concept; 3) group discussions; and 4) an exam report". The data were collected via exam reports. These reports were analyzed by content analysis. The results of the analysis showed that teachers had a multi-faced comprehension related to the notion of SD. SD was also perceived as a holistic approach such as environmental issue, democratic issue. Moreover, this study discovered how distinct approaching ways were there, different attitudes and daily activities related to ESD in pre-schools' pedagogical program. The authors proposed that via an approach including various voices of children are given importance, multi-faceted topics (e.g., democracy, diversity, social and economic justice, care, peace...etc.) can create productive learning environments not only in pre-schools but also universities.

The other research was made by Effeney and Davis (2013) to examine the relationship between 266 pre-service teachers' (Primary and Early Years) knowledge and efficacy for teaching sustainability. The data were collected by anonymous questionnaire based on Boon's (2011) scale. The questionnaire consisted of questions related to demographic information, attitudes to and self-efficacy for EfS, perceived and actual knowledge of environmental sustainability. The data analysis demonstrated that pre-service teachers believed they were sure about their abilities to involve in EfS with self –efficacy augmenting with augmented perceived knowledge levels. On the other hand, there was not a relationship between perceived knowledge and actual knowledge. This means that pre-service teachers did not feel uncomfortable because of their knowledge deficiency or were not aware of their existing knowledge level related to sustainability. This situation can cause that pre-service teacher to develop superficial and tokenistic approaches to EfS. In other words, while teachers recognize that EfS is curial, there is a deficiency in their knowledge and PCK can be interpreted that their implementation with students can support students' needs with inappropriate and shallow reactions. For instance, they can focus on obtaining knowledge about



environmental and sustainability issues and have an inadequate understanding of complex, transdisciplinary, collaborative and action-oriented nature of EfS.

Further, a study focusing on the published studies related to ESD in ECE from 1993 to 2013 was run by Hedefalk, Almqvist, and Östman (2014). The findings indicated that there were two main research areas. One of them was about how teacher comprehends ESD, and the other one was related to how ESD can be conducted in early childhood learning environments. It was observed that throughout this period, the studies changed from instructing facts related to environment and sustainability issues to develop children as active citizens playing a vital role for changing the existing situation toward sustainability with using different approaches such as participatory approach and critical pedagogy.

Dyment, Davis, Nailon, Emery, Getenet, McCrea and Hill (2014) also made research to identify the effect of professional development session entitled as “Living and Learning about Sustainability in the Early Years” on early childhood educators’ knowledge, understanding and confidence levels related to ESD. 99 participants who were early childhood educators, center-based educators and pre-service teachers with various experience levels engaged in three PD session (one 5 hours, two 2 hours). By mean of PD sessions, participants were promoted to learn and share views on the general theoretical background and practical implementations of sustainability; and, especially early childhood education for sustainability (ECEfS). Prior to and after PD, teachers completed a Likert-type questionnaire including questions that aimed to determine their content knowledge, level of understanding and confidence related to ECEfS. Moreover, they also wrote five words when they thought of the concept of sustainability. Teacher professional growth model was utilized while explaining the results pertaining to change in teachers’ knowledge, understanding and confidence (personal domain) as consequences of PD on ECEfS (external domain). After PD, there was a significant positive change in educators’ knowledge, understanding and confidence levels. The analysis of written five words indicated that participants’ understanding of ECEfS changed from environmental aspect to social, economic and politic aspects. This study also took attention that PD is a requirement for improving educators’ capabilities to fulfill the needs of sustainability giving place in educational policy and curriculum documents in ECE.

Also, Inoue, O’Gorman, and Davis (2016) conducted research with early childhood educators to investigate the connection between the comprehension of EfS and existing EfS implementations of early childhood educators in the Queensland state of Australia. The participants were 109 early childhood educators from community-based services and state institutions. Most of them had a diploma (28/8%) or bachelor degree (58.8%). Averagely, teachers had an 18.9-year experience. During this study, the survey including qualitative and quantitative questions was translated from Japanese and adapted to the Australian context. The survey questions were about 1) learning environment and facilities, 2) children’s learning activities, 3) teachers’ intentional teaching about sustainability, 4) opportunities for professional development in EfS, 5) conceptual understanding of sustainability and 6) centre management practices related to sustainability. The result of this survey indicated that EC teachers in Australia, like Japanese EC teachers, did not have well-developed views and implementations in EfS. They generally conducted traditional nature-based activities (e.g., gardening, outdoor play, instructing resource conservation via books, posters or fact sheets). Educators’ comprehension of nature education, EE and EfS looked like to impact their educational implementations. Authors emphasized that teachers require in-depth comprehension related to EfS to carry out educational practices different from traditional ones. Although the guidelines and frameworks of national curriculum highlighted the significance of sustainability in early childhood education, these are not adequate for empowering teachers’ views of sustainability and how to implement it effectively. The authors proposed that professional development facilities should be constructed for EC teachers, both pre-service and in-service teachers, to enrich their comprehension of sustainability and its practice in early childhood learning environments.

In 2016, Davis, O’Gorman, Gibson, Osborne and Franz made a project with 18 Early Childhood pre-service teachers and 50 Design students to build a centre that would be an example of EfS, “sustainable design, community engagement, and sustainable business encapsulated by the vision statement ‘care with education and conservation values’”. The purpose of the project was to examine the value of participants’ interdisciplinary learning partnerships for sustainability. The data were collected with qualitative data collection methods such as focus group and interviews. The data analysis showed that EC students reframed their position as a professional.

During this project, the concepts of teamwork and giving value to diversity were internalized by the participants. This study provided to the participants critical thinking as well as reflection and open-mindedness related to beliefs and inquiring the debates.

Inoue, O’Gorman, Davis, and Ji (2017) carried out a survey study to compare the similarities and differences of three countries’, Japan, Australia and Korea, ECEfS policies, educators of conceptual understandings and pedagogical practices pertaining to ECEfS. The data were collected via questionnaire including qualitative and quantitative questions and used in the previous research. The participants of this study were early childhood teachers from Japan (n=304), Australia (n=109) and Korea (n=370). The results indicated that EC educators mostly implemented traditional nature-based activities (i.e., gardening, outdoor playing, teaching about nature knowingly and willfully. While Australian and Korean teachers gave priority to pedagogies about environmental issues and resource conservation, Japanese counterparts were an unwillingness to concentrate on these features of sustainability. The authors pointed out the importance of national guidelines of each country as a motive to promote teachers’ comprehension of sustainability. They also proposed that there is a requirement for targeted strategies for professional development to enhance teacher comprehension and develop implementations for sustainability in early childhood curricula.

The recent study on teacher education was made by Evans, Stevenson, Lasen, Ferreria, and Davis (2017). This study aimed to examine how teacher education schools embed sustainability education in teaching and learning via making a systematic literature review based on articles in peer-reviewed journals. While analyzing the literature, four different approaches were used: “1) embedding sustainability education widely across curriculum areas, courses, and institution; 2) through a dedicated core/compulsory subject; 3) through a component of a core/compulsory subject, and 4) through a dedicated elective subject”. This study also examined the distinct rationales, theoretical framework and pedagogical approaches utilized and specified perceived problems related to each approach. The outcomes of this research indicated that it is a requirement that the studies at an individual subject level enlarge SE implementations to be more systematic and cross-disciplinary. Moreover, the effectiveness of the pedagogies should be evaluated in-depth. The area

of teacher education research is emerging and still is small-scale and weak regarding theoretical background. The authors pointed out that if pre-service teachers were introduced to SE at an earlier time, it would be more useful for them their knowledge, comprehension, skills, and values related to sustainability.

Lasen, Skamp and Simoncini (2017) carried out the other recent study with in-service teachers (preparatory to year 3) to give a snapshot of EfS implementations of early childhood teachers in the existing school settings. The data were collected by pre-service teachers as their professional experience coursework assignment. They made 43 interviews with teachers working in government, Catholic and independent schools. Data analysis aimed to discover why EC teachers thought that EfS had been specified as a cross-curriculum requirement in the national curriculum, how they practice EfS in their class, the obstacles that they faced with during their practice. The results indicated that the educators saw EfS pertain substantially to their students since they would be future individuals engaging in society, workplaces, leadership and lifelong learning. Although most of the teachers stated that they aimed to design and to conduct activities targeting EfS aspects, the main obstacle was the crowded curriculum focusing on mostly on literacy and numeracy. The outcomes pay attention to ongoing professional learning is necessary for educators to improve pedagogies encouraging students' critical and action-oriented involvement with partners of the community not only in local socio-ecological issues but also urban, rural or remote local.

In the following part, national studies related to early childhood education and education for sustainable development with early childhood teachers are elucidated.

A study adopting qualitative methods to intervention research was conducted by Alici (2013) with kindergarten children (60-72 months old) attending eco-school, their parents, and teacher. In this study, recycle, reuse and reduce (3R) education including various teaching methods (such as creative drama, storytelling, field trip) was implemented. The data were collected from children, parents, and teacher via interviews. The findings of this research regarding teacher revealed that she was not knowledgeable about ESD, its pedagogy as well as effective implementations. Moreover, she stated that if she had a chance to observe and involve in ESD implementations like this study, she would conduct productive ESD practice as well.

Güner (2013) also made research on examining pre-service EC teachers' perceptions related to EE in initial teacher education and their belief related to EE integration into ECE. Moreover, the relationships between their beliefs and perceptions were explored. Mixed method research design was used. The sample of this study was 470 pre-service students for the quantitative part and nine participants for the qualitative part. The data collection instruments were two scales and interviews. The data analysis demonstrated that pre-service students' perceptions related to EE in teacher education were not sufficient. The findings of interviews' analysis pointed out some reasons such as restricted time and separated EE course. The data analysis related to their beliefs indicated that they believed that the integration of EE into ECE was important for support children's all developmental areas and awareness of environmental issues. They also explained how to EE integrate into ECE with various activities. There was a positive correlation between their perception and beliefs.

Another study was carried out by Feriver, Teksöz, Olgan, and Reid (2015) to discover possibilities to introduce EfS to in-service ECE teachers and to evaluate an in-service training program about EfS. This program's focus was a perceptive transformation in ECE and EfS. The professional development program including 21 sessions (90 min), totally 28 h was designed for in-service teachers in the light of Mezirow and Associates' 10-stage transformative learning theory. The mixed-method research design was used. The data were collected from 24 EC teachers via various instruments, learning diaries, a learning activities survey and follow-up interviews. The findings indicated that throughout and after the professional development program, there could be a range of transformation in the educators' perspectives. The factors that support the perspective transformation were content, structure and the flow of the training and peer support. The authors concluded that this study by using transformative learning techniques presented a practical framework for participating and implementing teacher with EfS. For them, to shape an effective transformation perspective needs plenteous facilities such as discussions, group projects, critical thinking, self-evaluation and providing meaningful experiential learning.

The recent study was run by Kahrman (2016) to compare early childhood teachers' thoughts and implementations in eco versus ordinary schools in EC. To examine the precursors of ESD implementations, EC teachers' knowledge related to

SD and attitude toward to SD were analyzed, as well. The sample of this study were 838 educators from different districts (Ankara, Istanbul, Antalya, and Eskisehir) of Turkey. Quantitate research method was designed, and the data were collected with five different scales including demographic information, knowledge about SD, attitude towards SD, ESD practices and the needs for and implementation of ESD. The data were analyzed with two-level Hierarchical Linear Modeling. The results showed that majority of EC teachers in not only ordinary but also eco-schools considered that ESD should be a vital component of ECE. The fundamental aim of ESD was to increase awareness of SD/ESD. Moreover, the findings pointed out that lack of educators' formal training about ESD and deficiency of teaching and learning ESD materials as the most critical difficulties while practicing ESD activities/ program. The teachers also thought that teacher education should cover ESD and ESD should be given in the curriculum. Further, the results indicated that both teachers at Eco-schools and ordinary schools had a positive attitude toward SD and inclined to implement ESD. If the teachers in ordinary schools had an experience related to ESD practices, they were most inclined to conduct ESD related activities in their class. Moreover, if early childhood educators were a member of NGOs related to EE and/or ESD, they inclined to apply ESD activities in their classroom.

The outcomes of international and national studies indicated that in-service teachers need professional development program/ training related to ESD to implement effective activities, plans and programs about ESD in ECE for increasing children's knowledge, awareness, skill, attitude, and behavior toward sustainability and contributing to developing environmentally friendly citizenship. However, there is not sufficient research focusing on EC teachers' this need. Accordingly, the current study aims to investigate early childhood teachers' critical media literacy (CML) level and how they implement the activities on ESD through CML in their classrooms before and after the professional development training on ESD and CML since the study carried by Alici (2013) indicated that various media tools such as printing and audio-visual materials were more effective while conducting activities with preschoolers regarding ESD.

## **2.6 Studies on CML/ ML in ECE with Early Childhood Educators**

In the following section, the international and the national studies about early childhood education and critical media literacy/ media literacy with early childhood teachers are summarized respectively.

The analysis of the studies on media literacy in early years, it is perceived that most of the studies regarding media literacy has focused on school-aged child and young people not only at the international but also national level (Souza & Cabello 2010, Altun 2014). Accordingly, little information related to the current situation of young children's media environment has been acquired. Souza and Cabello (2010) elucidated the reasons for the inadequacy with these words: a) there is insufficient media material targeting the young children, b) some counties ignore this age group, which also contains 0-2 year-olds who are not fostered to make contact with various media tools, while conducting audience measurement systems and c) it is perceived that preschoolers' media consumption has been undervalued.

At this juncture, early childhood educators play an important role as a leader that provides equal access to technological tools and experience with other media tools for children and parents (NAEYC, 2012). Because of this reason, educators should be knowledgeable and ready for making conscious decisions about how and when to appropriately choose, utilize and integrate and assess technology and media (all of these are the characteristics of media literate person) in order to encounter young children's cognitive, social, emotional and language needs. Additionally, teachers require having enough knowledge to reply parents' questions and canalize children to have experience with technology and media, which promote their development in a positive way (Barron, Cayton-Hodges, Bofferding, Copple, Darling-Hammond & Levine, 2011; Guernsey 2011; Takeuchi 2011). In the light of these findings, it is seen that it is important to identify early childhood teachers' CML level to determine how they use media tool in their classrooms. Therefore, the present study aims to investigate early childhood teachers' CML level and how they conduct ESD practices via CML in early childhood learning environments.

The analyses of the studies on critical media literacy (CML)/ media literacy (ML) in EC teachers portrayed that there is insufficient research in this area. The studies on this issues are presented in the following respectively.

Flores-Koulish, Deal, Losinger, McCarthy and Rosebrugh (2011) made a qualitative, narrative, research to explore three early childhood teachers (teacher-researchers) and two teacher educators' using CML in their own classrooms after their first experience in a CML graduate course. This course was taken place in the master program and aimed to enlarges students' concepts of "reading beyond traditional print texts" to admit distinct multiliteracies requirement for the 21<sup>st</sup> century. The participants in this study were a pre-K teacher, a first-grade teacher, and a second-grade teacher. The data were collected from thick narratives, containing autobiographies pertaining to media and popular culture, and their memoirs about media literacy integration into their existing curriculum units constructed for the graduate course. Each teacher had unique backgrounds and classroom environment. The findings depicted that teachers required to instruct children about media messages, "where they come from, what their purposes are, and who is creating them". Educators also required teaching children to have the skill to construct their own messages, as well. Children can also impact the media by utilizing it consciously as the media do. The first-grade teachers' students change their positions from media fan to critical and appreciative. However, each teacher demonstrated different development regarding integrating CML into existing program because of the school context. The findings of the study also indicated that CML could be implemented effectively in the early childhood learning environment within traditional study topics. The authors emphasized that without giving more attention to CML at the pre-service and in-service education, most of the early childhood teachers will not state the need, have the abilities or venture attempt related to instructing their students " how students to access, analyze, evaluate, and communicate with media and popular culture".

Funk (2013) conducted qualitative research to investigate the effectiveness of the course on Critical Media Literacy in Teacher Education Program on graduates and students and to determine their comprehensions of CML as well as their pedagogical challenges within teacher education program context. The data collected from various resources, CML course syllabus, interviews (with course instructors) online



questionnaire (graduates, second- year students of the credentialing program and Master's education) and last interviews (participants finished the Teacher Education Program CML course and instructed high school-level). The data analysis indicated that CML course instructors comprehended CML as a pedagogy rather than as a content area. They explained that this pedagogy as promoting open learning settings radically, revealing questions instead of delivering material and utilizing media and technology improves students' critical thinking abilities. The pedagogical challenges were touching on the whiteness construct, making an assessment which shows and encourages students' learning and instructing students with the distinct background and hectic schedules. On the other hand, graduates and students stated that integration of CML into their high school "Humanities Course" improved the students' engagement level with their peers and communities. They identified the obstacles as lack access to technology and course materials and compelling student for rearing to standardized tests. Although in-service teachers integrated CML into their courses, pre-service teachers were reluctant to integrate it because they did not feel comfortable and thought that CML would trigger too contradictive for high school learning environment. This research indicates that CML is an engaging and relevant pedagogy and how teachers comprehend and integrate CML into their program.

Also, Garcia, Seglem, and Share (2013) made a detailed explanation in their article about the "Teacher Education Program" at the university for a master degree and undergraduate course which aimed to support all pre and in-service teachers (teaching K-12 level)' CML levels. In this course, their purpose was to provide opportunities for all students to discover their connections with media, technology, and popular culture via asking critical questions about various representation types in the media and constructing their own alternative media messages. Throughout this course students prepared several assignments such as "wanted poster, through other's eyes, to transform the white bottle back into a sellable advertisement for different target audiences activity and final project (includes using distinct media and criticizing them in terms of different topics such as songs, video clips related to sexist representations of women)". The outcomes of the assignments demonstrated that while doing their assignments, some students designed their poster like a math formula and some of them constructed only funny nursery rhymes and some of them appealed to the same stereotypes to take their target audiences' attention (this situation was also

criticized by them previously). However, the authors believed that the teacher candidates constructed an awareness of “hegemonic ideology” that indicates their pedagogical framework related to inquiry and production and they hoped this change could affect their future instruction. For them, the pedagogy that derived from theory and student’s real-life experiences is a vital element for considering about how to integrate CML into any context and grade.

Haiping (2016) made phenomenography research which is a qualitative research design to determine pre-service teachers’ social media practices and how these practices can be interpreted via CML lens. This study emphasized the possible ethical challenges that were met while utilizing social media in educational learning environments. The data collected from first and second-year pre-service students via focus group. The findings indicated that students ‘critical thinking and CML levels varied while some of them were aware of critical issues when they were utilizing social media the others not. Students began to use social media on their own and learned it informally by themselves or from their friends. Thus, they could not think about ethical and moral issues while utilizing social media. At this juncture, teacher education requires to determine possible potholes and realize them before they present a danger for both pre-service teachers and learners in the future.

On the other hand, when the studies on media literacy and early childhood education are examined at the national level, the vast majority of the studies focus on elementary and high school students because the experts have studied on media literacy since 2004 (Altun, 2014). According to Altun’s literature review on media literacy, there are three publications (article, conference paper, and book chapter) related to early childhood education. Only one article presents detailed information. Therefore, only this study focusing on parents’ media literacy is examined in this part. This study is conducted by Gunduz Kalkan (2010) to identify early childhood children’s parents’ media literacy level and their related behaviors. The findings of this study reveal that parents are not knowledgeable about media literacy, but they direct their children while selecting the TV programs. They are not conscious that they should prevent their children to be a passive audience. In conclusion, the researcher proposes that parents should be educated about media literacy.

Another study was conducted by Altun (2013) to ascertain how Early Childhood, Primary, Turkish Language, Social Studies, Science, Mathematics...etc.

teachers make the connection between media literacy and their area. The qualitative research design used in this study. The data collected from 55 teachers via open-ended questions. The data analysis indicated that teachers generally perceived media literacy education as “teaching with media”. Moreover, 70% of the teachers explained the pedagogical contribution of the media as (a) enriching the courses, (b) providing permanent learning, (c) taking students attention, (d) increasing general knowledge, (e) instructing tool that makes easy to reach to information. Further, teachers cannot make a connection between their area and media regarding content, skill and value aspects. On the other hand, they saw media as an instructing tool/ material. In other words, there was no emphasis on media literacy in teachers’ statements.

Another research was made by Yılmaz and Özkan (2013) to compare media literacy levels of early childhood pre-service teachers with that of computer education and instructional technology pre-service teachers. The data were collected from 167 pre-service teachers via using the “Media Literacy Levels Determination Scale” developed by Karaman and Karataş (2008). The results of this study revealed that computer education and instructional technology pre-service teachers’ media literacy levels were higher than that of early childhood because computer education and instructional technology pre-service teachers had more experience throughout their compulsory courses. Moreover, it was found that pre-service teachers’ TV watching time had an impact on their media literacy level. The authors proposed that seminars, in-service training could be designed for early childhood teachers and an elective course on media literacy could be opened in the universities.

The recent research was made by Alıcı and Şahin (2016). In this study, researchers investigated the effect of “child and media”, elective undergraduate, a course on 20 4th and 3rd-year early childhood pre-service teachers’ media literacy levels. The data were collected by semi-structured interviews and documents (participants’ reflections and activity plans). At the end of the 14-week course, participants’ ML levels changed from medium to advanced. Moreover, participants had a chance to construct and conduct their activity plans about ML targeting early childhood children and conduct it in real early childhood learning environment; This experience also provided that participants’ were aware of what the existing situation about ML in early childhood settings is and how to implement ML in these settings.

The other recent study was carried out by Alici and Gökbulut (2017) to examine the impact of 21-hour process drama sessions targeting ML on 16 early childhood pre-service teachers' ML level and competencies. The data collected from their written and oral reflections, and documents created throughout drama sessions (posters, letters, and analysis papers). The data analysis demonstrated after process drama sessions, there were positive changes in participants' ML competencies (analyze& evaluate, create, reflect and act) and levels.

Based on studies met in the literature, it is understood that there are few studies on critical media literacy/ media literacy and early childhood education focusing in-service teacher. Moreover, the researchers proposed to develop in-service education related to CML. In other words, there is a need for a study conducting in this area.

## **2.7 Studies on ESD and CML/ML**

In this section, the international and the national studies about ESD and CML/ML are presented.

Although the examination of the related literature on ESD and CML indicates that there are few studies, no research is found focusing on early childhood in-service teachers. Therefore, all the studies on ESD and CML/ML met in the literature are given respectively.

One of them is a project conducted by Monroe, Mata, Templeton, and Douglass (2002) in El Salvador to construct a national environmental education system from the ground up. Throughout this study, they also utilized mass media to reach the public and take public attention to environmental issues. At the end of the project, they perceived that media was used effectively for this aim. They advised that this project was an example of how mass media can efficiently consolidate the work of environmental education in schools. They published this project in the book, "Education and Sustainability: Responding to the Global Challenge". After that, in 2008, "Media as partners in education for sustainable development: A Training and Resource Kit" is prepared by Bird, Lutz, and Warwick for media professionals to give basic information about some priority issues for sustainable development. By this way, they can write more efficiently, comprehensibly and objectively.

Another study conducted by Pearson, Dorrian and Litchfield (2011) to investigate the changes in university students' knowledge, attitudes and behavioral intentions after two style of educational presentations (related to orangutans) shown, to explore the self –reported immediate (one week) and continuing (10-12 week) behavior change after two style of educational presentations shown, to compare the effect of two conflictive educational presentations (the more emotional style of “Green” to factual presentation of it) and to determine the obstacles of behavior change identified by students. 120 students were the participants of this study. The participants were assigned to the groups randomly via providing counterbalanced. The data were analyzed with repeated measures between groups ANCOVA. The results demonstrated significant increases in knowledge about orangutans over time with a significant main impact of group situation. It was also observed that there was an interaction between time and cognition. When it comes to participants' attitudes toward to orangutans, the significant main impact of time was found. Independent from presentation order, higher increases emerged with the cumulative impact of both two presentations. The data related to behavior proposes the changes in knowledge and attitude transformed to actual, short-term behavior (after the following week of the study). In other words, this study ensures proof for the utilizing of visual media to raise knowledge, attitudes and conservation behaviors related to a highly endangered orangutan.

Further, Timmerman and Ostertag (2011) carried out a study on explicit and implicit media (such as books, toys, songs, clothing, electronic media...etc.) messages related to animals and human-animal relationships that target under 4-year-old. While analyzing the media messages, they also used their recollections with their own children. Based on ecofeminism, ecocriticism, and early childhood environmental education, they discovered messages pertaining to animals in kids' media as mis- and dis-place, anthropomorphic and subjective. Therefore, the authors advised that parents, environmental educators should rethink the messages that children take from the media in their surroundings and make research for possible alternatives to abolish the social and ecological inequalities.

Foley, Archambault, and Hale (2015) carried out a study with teacher candidates to educate them in sustainability literacy. A new hybrid course,

Sustainability Science for Teachers, was started in one of the universities in the USA. The course targeted teacher education for K-8 with sustainability lessons via integrating technology and digital storytelling through in-class activities. This course aimed to improve pre-service teachers' sustainability literacy via promoting their content knowledge and them to use and implement activities related to these concepts in their future classes. The participants of this study were 10–25 preservice students in eight different sections. The data were collected as pre and post with qualitative data collection instruments (writing their own sustainability definitions) and quantitative data collection instruments (drawing concept maps). The data analysis indicated that significant learning occurred. For instance, they comprehended that sustainability is a complex and interconnected system. There was an increase in their conceptual understandings of sustainability. Moreover, their definitions changed from quite shallow to more powerful and complicated during the course. At the end of the course, pre-service teachers started to perceive their responsibility for actualizing more sustainable life and the critical role of education to achieve this aim.

Share (2017) presented a paper at the International Critical Media Literacy Conference. In this paper, they use CML pedagogy to discover the history of delineation of environmentalism related to existing media messages regarding climate change and environmental justice. They utilize an inquiry-based approach to criticize the portrayals of environmental issues. Via examining different media text and modern struggling with dominant ideologies, the audience can implement CML pedagogy to reveal familiar allusions and the influential media role in shaping public statement on climate change and environmental justice. When individuals are good at learning to criticize media messages and ascendant ideologies, they will be ready to create their own media messages that struggle with ascendant myths and encourage socially to create alternatives for healthier and more sustainable Earth.

As a summary of this chapter, the literature review has shown, there have been many praiseworthy developments in ESD and CML, but there have been none targeting early childhood teachers. Hence, researchers should also focus on educators' especially early childhood educators' CML about issues on sustainable development because they are 0-8-year-olds' teachers. In other words, in these age group, in particular, 0-6 year-olds cannot write and read; and thus, they cannot select appropriate

media tools for themselves, but teachers can do and guide them how they select appropriate program if they are media, literate individuals. Moreover, media is an effective way to convey the messages related to ESD and early years are crucial to promoting children to be active citizens for a sustainable future. Therefore, researchers can focus on these issues. At this point, the present study aims to investigate not only early childhood teachers' ESD awareness and CML level but also their practices regarding ESD through CML in the early childhood learning environments and their outcomes obtaining from their practices before and after the professional development training. Additionally, it is believed that the findings of the present study makes contribution to not only national but also international literature in terms of describing the reflections of the professional development training related to ESD and CML on preschool learning environments since in the light of these findings new educational programs might be organized both for teachers and children.

## CHAPTER 3

### METHOD

*“Science and technology are the most reliable  
guides for everything in the world for  
civilization, for life and for success”.*  
Mustafa Kemal ATATURK

The method of the current study is explained in this chapter. The chapter starts with the description of the overall design of the study and an explanation of the use of case study, followed by information about the research participants, an account of the professional development training on which this study is based, the data collection tools used, and how data collection occurred. The chapter finishes with a discussion of the data analysis procedures.

#### 3.1 Overall Design of the Study

The aims of the present study were to identify changes in and/or growth concerning (a) early childhood teachers’ awareness of education for sustainable development (ESD), (b) their level of critical media literacy (CML); (c) their practices targeting ESD through CML, and (d) their outcomes (e.g. children’s awareness of ESD, and their CML levels) that are drawn from their implementations after the professional development training (PDT). In this study, I began by providing PDT for seven early childhood teachers in two preschools. Due to the large amount of the data collected during the study, discussions for four selected teachers was included in this thesis.

To achieve these purposes, first, the existing situation related to ESD and CML in early childhood learning environments was determined by a needs assessment of teachers and children by using a case-based approach. In the light of the needs, PDT was developed by the researcher and then conducted to support participants’ awareness of ESD and their critical media literacy levels, and their pedagogical skills in integrating media into ESD while conducting learning activities with children in their



classrooms. After PDT, each participant planned and applied her own activity plans and/or ESD projects. To examine this process, a case-based approach was used as proposed by Clarke and Hollingsworth (2000). To describe the teachers' professional development as a result of this intervention, Clarke and Hollingsworth's 'The Interconnected Model of Professional Growth Model' was used. All in all, this study documented the impact of the PDT on early childhood educators' professional change and/or growth. PDT covered the issues related to ESD and CML, how these issues could be integrated (content) and which teaching strategies (pedagogy) could be used while educators were implementing their activities/project in their classroom. After PDT, which ran for a semester (five sessions for each teacher), individual and ongoing support was then provided for each teacher via face to face communication, e-mail, and by phone. Such a lengthy process meant that the researcher could be aware of both teachers' and their students' learning needs and the most appropriate support. In addition, the researcher also had multiple opportunities to observe professional change and/or growth of each teacher. The overall design of the study is outlined in Table 3.1. This shows that there were five distinct phases.

Each phase is further detailed. In phase-1, the needs assessment was conducted to describe the existing situation of implemented activities/plans related to ESD and CML in early childhood settings. For this, various data collection instruments stimulated recall interview, interview were designed, and teachers' daily and monthly plans and field notes were used in the light of the related literature on EE, ESD, CML and The Interconnected Model of Professional Growth Model. The data collected within the case study context. In the second one, the collected data was analyzed and based on the outcomes of the needs assessment, PDT was established in the light of the studies focusing on ESD, CML and The Interconnected Model of Professional Growth Model. To give the last shape of PDT, experts' views were taken. In phase-3, PDT was implemented at the in-service seminars period<sup>2</sup>. During this training, teachers made discussion and written as well as oral reflections; and, engaged in informal dialogues. Moreover, they made media analysis via worksheets during PDT, and they created their own posters at the end of the PDT. While determining these assessment

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<sup>2</sup> In Turkey, there are two seminar periods which are at the end of June (after academic year finishes) and at the beginning of September (before academic year begins). These periods cover maximum ten days. PDT was conducted in September 2016.

tools, the related literature on ESD, CML and The Interconnected model of Professional Growth Model were utilized. In the fourth stage, teachers planned and implemented their own activities/plans based on the experiences that they gained from the PDT. Same data collection tools (in Phase-1) was used to determine how teacher conducted ESD practices through CML in their own classroom. In the last phase, the data collected in Phase-1 and Phase-4 were analyzed in the light of the literature review on ESD, CML and The Interconnected model of Professional Growth Model. While describing each teacher's professional change and/or growth a case-based approach was utilized. Each phase is explained in more detail later in this chapter.

Table 3.1 *Phases of the Study*

Phases of Study	Description	Research techniques used to generate research knowledge	Review of literature related to the study content	Research process & areas of literature related to the conduct of this study
<b>Phase-1</b>	Needs assessment	Stimulated Recall Interview (video cases) Interviews Teachers' Daily & Monthly Plans Researcher notes (Field notes)	Environmental education in schools Education for Sustainable Development Critical Media Literacy The Interconnected Model of Professional Growth Model	Research paradigms and methodologies Case study Ethical issues in the conduct of research Education for Sustainable Development Critical Media Literacy Conducting Stimulated Recall Interview and Interviews Collecting Daily & Monthly Plans Writing Field Notes
<b>Phase-2</b>	Planning and Giving the last shape of Professional Development Study	Analyzing the programs/ activities/ projects related to Education for Sustainable Development and Critical Media Literacy Taking expert views	The Interconnected Model of Professional Growth Model Education for Sustainable Development Critical Media Literacy	Data Analysis & Interpretation techniques The Interconnected Model of Professional Growth Model Education for Sustainable Development Critical Media Literacy
<b>Phase-3</b>	Implementing Professional Development Study	Written and oral reflection Conservation Discussion Preparing poster Worksheets	The Interconnected Model of Professional Growth Model Education for Sustainable Development Critical Media Literacy	Data Analysis & Interpretation techniques The interconnected model of Professional Growth Model Education for Sustainable Development Critical Media Literacy
<b>Phase-4</b>	Experimentation of Participants	Stimulated Recall Interview (video cases) Interviews Daily & Monthly Plans Researcher notes (Field notes)	Education for Sustainable Development Critical Media Literacy The Interconnected Model of Professional Growth Model	Research paradigms and methodologies Case study Ethical issues in the conduct of research Education for Sustainable Development Critical Media Literacy Conducting Stimulated Recall Interview and Interviews Collecting Daily & Monthly Plans Writing Field Notes
<b>Phase-5</b>	Finalizing the study	Stimulated Recall Interview (video cases) Interviews Daily & Monthly Plans Researcher notes (Field notes)	Education for Sustainable Development Critical Media Literacy The Interconnected Model of Professional Growth Model	Data Analysis and Interpretation techniques a) Daily and Monthly Plans b) Stimulated Recall Interview and researcher notes (field notes) c) Interviews d) Combination of ones mentioned above e) Describing Findings Case-based approach- tell a story about each participant

### **3.1.1 The Choice of Case Design Study**

For the current study, the aim was to investigate the learning and teaching related to ESD and CML in early childhood learning environments before and after PDT. Therefore, case study methodology was utilised because “departing greatly from designs of experiments and tests of hypotheses, qualitative case researchers focus on relationships connecting ordinary practice in natural habitats to a few factors and concerns of the academic disciplines” (Stake 2014, p.10). Moreover, using case study, a thick description of the situation can be given.

Stake (1994, 2005) identified three types of case study according to its intent. These are “single instrumental case study”, “collective or multiple case study” and “intrinsic case study”. While in an instrumental case study, the researcher concentrates on an issue or concern to illuminate and understand this issue, in multiple case studies, the researcher can select several programs from several research sites or multi-program within a single site. On the other hand, in the intrinsic case study, the researcher focused on the case itself since s/he needs to ascertain the specific case (e.g., evaluating the program).

When the types of case study and the intent of the current study were considered the research method of the study was determined as an instrumental case study (Stake, 2005). In other words, this study aimed to comprehend ‘early childhood teachers’ practices related to ESD through CML before and after PDT’ in depth via investigating four cases as Stake (2005, p.445) explained instrumental case study is conducted “mainly to provide insight into an issue or to redraw a generalization. The case is of secondary interest, it plays a supportive role, and it facilitates our understanding of something else”. For example, Hollingsworth (1999) used to case study to explore the influence of professional development program on mathematics teachers’ professional growth. Moreover, Witterholt, Goedhart, Suhre, and Streun (2012) utilized case study to observe and examine mathematics teacher’s redesigned lessons and to determine changes in teacher’s professional growth after network meetings with her colleagues. Similarly, in the present study, the researcher also aimed to evaluate the effect and reflection of PDT on teachers’ professional change and/or growth regarding ESD and CML.

In the current study, four cases examining four different teachers from two different schools were selected via using the methodological advice of Creswell (2007) and Stake (2005). While selecting these cases, the following three questions proposed by Stake (2014, p.23) were addressed:

Is the case relevant to quintain (an object or phenomenon or condition to be studied)?

Do the cases provide diversity across context?

Do the cases provide good opportunities to learn the complexity and context?

When these questions were considered, the quintain was 'change in the implementations of ESD via CML in early childhood learning environments' and was related to all of the cases. If the teachers did not attend the PDT, they could not be a case of this study. For the second question, the selection of the case teachers indicated diversity according to their background, age group, school and the existence of programs related to Environmental Education in their schools. For the third question, all teachers joined in this research as volunteers thus an appropriate sample size was selected as advised by Creswell (2007) to understand the complexity and context.

Moreover, Creswell (2008), and Merriam and Tisdell (2014) explained that a case study is in-depth describing and exploring the bounded system. The concept of the bounded system was described by Smith (1978) as a unit or entity examined via separating from another study with determining time, place or physical boundaries. Hence, the case could be “a single person who is a case example of some phenomenon, a program, a group, an institution, a community or a specific policy” (Merriam & Tisdell, 2014, p.28). In the present study, four teachers in two different schools before and after PDT were the cases of this study. The context of this study covered the activities related to ESD and CML in early childhood learning environment.

To explore and gain a more in-depth understanding of each teacher’s existing situation before and after PDT, each teacher was examined as an individual case, and then, each teacher’s growth was summarized and explained with ICMPG (Clarke & Hollingsworth, 2002; Hollingsworth, 1999).

According to Creswell (2002), to conduct a case study, the following steps could be followed: “a) identify intent and the type of design, and relate the intent to

your research problem, b) discuss approval and access considerations, c) use appropriate data collection procedures, d) analyze and interpret the data and e) write the report consistent with your design”(p.469-497). The intent and research problem of the present study was explained in Chapter I. The design of the study is elucidated in this chapter. The approval and access considerations are also explained in this chapter in section 3.5. The data collection procedures were described in section 3.5, and the data analysis process was explained section in 3.6 in this chapter. The findings related to teacher professional change and/or growth are presented in Chapter IV. The last chapter (Chapter V) explains the conclusions that came from the data based on the literature review. All in all, this study shapes the complete report of the research.

### **3.2 The Change Environment**

The change environment is one of the elements of the Interconnected Model of Professional Growth (Clarke & Hollingsworth, 2002) and was explained by Hollingsworth (1999, p.329) as “the setting for individual professional growth” with its obstacles and opportunities. This component was added by Hollingsworth to her study, and the revised and current version of the Interconnected Model of Professional Growth was shaped by the outcomes of Hollingsworth (1999)’s study. For her, this component encompasses the context that teachers’ work in, since school context has an active role on a teacher’s access and participation in professional development programs, and gives the opportunity for teachers’ to experiment and apply the knowledge and skills that s/he learns. Moreover, school staff, the facilitators of any professional development program, and the availability of resources and equipment, in a school are all parts of the change environment. For detailed explanations of this aspect, see 2.2.4. In the current study, the change environment component had an effect on teachers’ professional change and/or growth. For the present study, specific factors in the change environment under examination were the school context, participants, and the researcher role that are explained respectively in the following sections.

#### **3.2.1 School Context**

This study was conducted during the spring semester of the 2015-2016 and the fall semester of the 2016-2017 academic years at two independent public preschools located in the Yenimahalle District in Ankara, Turkey. In the Turkish context,

preschools are separate institutions for children 36 to 66 months old and not connected to the local primary school. Both schools were located in the middle socio-economic suburb of the Yenimahalle District. First, detailed information is given about Preschool A and then Preschool B.

In Preschool A, there was a double shifting schooling with four classrooms that were targeted for the study with children ranging from 48 months old to 66 months old. However, 2016-2017 academic year, for that year, the preschool catered for children from 36 months to 66 months old. The enrollment of the preschool was approximately 100 children. Projects, namely “Bir Kitap Bin Mutluluk Projesi [One book equals a thousand happiness ]”, “Beslenme Dostu Okul Projesi [Healthy Nutrition Friendly School Project]”, “Değerler Eğitimi [Values Education]”, “Hayatın Ritmi Müzik Projesi [The Rhythm of the Life is Music Project]” and “Oyuncaksız Sınıf projesi [Classroom Without Toys Project-Toys made out of recycled materials]” were conducted at the whole school level. Moreover, in this school, an environmental program called TEMA<sup>3</sup> kids program had been in operation since 2011. To be a TEMA School and to reach the goals of the program, teachers should carry out at least 21 activities of the prepared educational program (TEMA Kids Program for Teacher Guide, 2013).

In this preschool, a total of eight teachers (four were working in the morning session, the rest were working in the afternoon), a school manager and an assistant manager were on the staff. While most of the teachers have worked together for at least five years, the school manager has been in this preschool for one and a half year. Moreover, the assistant manager has been there for only a half year. Overall, based on the researcher’s informal observation, it seems there was effective communication among teachers, and they shared resources, information, and missions with each other. The school manager’s and assistant manager’s attitude towards the projects and to research studies conducted in the school were positive. They also promoted teachers’ active involvement in professional development training. They also organized several informal exhibitions, parent involvement activities, and seminars to encourage parents’ active participation in the school activities. They explained the aim of their

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<sup>3</sup> The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats which was established in 1992, is Turkey’s largest and leading environmental NGO now ([www.tema.org.tr](http://www.tema.org.tr)).

school to develop individuals who become aware of the national and moral values of the Turkish nation and have a modern view in the light of science and art integrated activities and become conscious about the environment.

In Preschool A, each classroom was equipped with television, computer, and projection. There were plenty of materials (different types of toys, music instruments) and many books. There were two bulletin boards on the walls. There were 25 chairs and five tables and carpet at the center of the school. There were a mirror and a blackboard. There was a dramatic play center surrounded by a plastic fence. There were two high wooden wardrobes and ten wooden shelves with and without drawers. See Photograph 1.



*Photograph-1* View of the typical classroom environment

This preschool was surrounded with large yards. While there were some trees, flowers, and vegetables in spring time on the right side of the school, the ground was covered with tarmac on the left side. Some games were drawn on the tarmac to support children's gross motor development. At the back of the preschool, the largest part of the school yard was located and was divided into two parts. In one part, there was playground equipment made up of plastic and was covered with sand and soil. In the other part, there were picnic tables, and benches and some parts of the ground were covered with rubber. See Photograph 2.





*Photograph-2* View from backyard of the school

In Preschool B, there was also double shifting half-time schooling, but for some groups (3, 4 and five-year-olds) there was also full-time program. In the full-time program, these groups went to school in the mornings and then joined after-school activities such as creative drama, physical education, chess, and orienteering in the afternoon. While six classes were in full-time schooling, nineteen class were in double shifting. The preschool served children from 36 months to 66 months old. The enrollment of this school was 502 children. Many projects namely “Hayatın Teknoloji Olmasın Hayatında Teknoloji Olsun [Your Life Will not Become Technology, Technology Will be at Your Life Project], Doğadan Sınıfa Geri Dönüşüm [Recycling from Nature to Class Project], Beslenme Dostu Okul Projesi [Healthy Nutrition Friendly School Project], Somut Olmayan Kültürel Miraslar [Intangible Cultural Heritage Project], Yankılansın Her Yerde Müzik Sesleri [Let Resonate Music at Everywhere Project], Aklından Bir Sayı Tut [Pick a Number Project ] and Bir Çocuk Bir Fidan [One Child One Tree Project]” were being implemented at the preschool. While three of these were directly related to EE and/or ESD, only one of them pertained to media. However, there was no special program targeting EE and /or ESD like TEMA and/ or Eco-schools.

In this preschool, a total of 25 teachers (six working in full day and the rest were working half days (morning or afternoon), a guidance teacher, a school manager and two assistant managers. While most of the teachers have worked together for at least five years, some of them had started to work at this school only one and half a

year earlier. The school manager has been working in this preschool for five years. The assistant managers have been there for a half year. In this preschool, each age group (e.g., 3, 4, 5-year-olds) had their own teacher working group, and each group made some meetings (before starting new terms and at the end of the terms) and determined the daily and monthly plans that would be conducted through an academic year. In this way, they provided consistency among the same age groups.

In the light of the researcher's informal observation, there was an effective communication among teachers, and they shared references, knowledge, and responsibilities with each other. While the assistant managers' perspective towards to the projects and/or research studies were positive, the school manager's attitude was neutral. Although the school manager did not have positive thoughts about teachers' involvement in professional development training, the teachers themselves were eager to participate in professional development training. On the other hand, the preschool arranged several informal exhibitions and seminars to promote parents' participation in the school activities.

In this preschool, there were fifteen classes. In each class, there was a television and a computer. There were materials (different types of toys, dramatic play, math materials, and puzzles) and books. There were two bulletin boards on the walls. There were 22 chairs and pillows, four tables and carpet at the center of the school. There was a mirror. There were six small wooden wardrobes and numerous wooden shelves and boxes full of various materials. See Photograph 3.



*Photograph-3* View of the typical classroom environment

This preschool was surrounded with gardens. In front of the school, while most of the area was covered with cement, there were trees and flowers and two playgrounds (one of them was a wooden structure, and the other one was plastic) whose ground was covered with soil as was the rest of the area. There were some trees, flowers, and vegetables in spring time in the garden on the left side of the school. The garden on the right side of the school and at the back of the school had trees and flowers and was covered with soil. There was another plastic playground structure in the backyard of the school. See Photograph 4.



*Photograph-4* The view from the front yard of the school

### **3.2.2 Participants**

In this study, 13 teachers were approached to be research participants. Seven teachers consented to be observed by the researcher. The data from four teachers was included in the final analysis. The participants, all early childhood teachers in kindergartens in Turkey, were selected by convenience sampling, which is one of the types of purposeful sampling (Merriam, 2009). Convenience sampling method was chosen according to location, availability of sites and respondents. Moreover, the researcher reached participants in preschool B via asking one of the participants to refer someone else at the same school, which she thought could also be a participant in this study.

The participants of the study were four early childhood teachers from two independent public preschools in Yenimahalle District of Ankara. All participants were female, and their age ranged from 27 to 42 years. All had graduated from 4 year-university program from the early childhood education department. Their teaching experience varied from 5 to 20 years. Specific information about each teacher is given in the following paragraphs.

Duru and Saniye Teachers worked in the afternoons in Preschool A. Duru was 35 years old. She graduated from the early childhood department from university and had thirteen years working experience with different age groups (e.g., 3, 4, 5-year-olds). She was implementing the TEMA kids program from 2011 in this preschool. She attended various seminars and training about using children's book, using a smartboard, and using social platforms in the digital learning environment. She was one of the most experienced teachers in school A. She was eager to work in this study even though her health was not good at the beginning of the study. While the present study was conducted, she was working with 5 and 4-year-old children. (For detailed information see Chapter IV).

Saniye was 27 years old. She also graduated from an early childhood education department from the university and had five years working experience with different age groups (e.g., 4 and 5-year-olds). She was also conducting the TEMA kids program when she started to work in Preschool A. She was the youngest teacher in Preschool A. Whilst the current study was carried out, she was working with 4 and 5-year-old children. She was willing to be part of this research (For detailed information See Chapter IV).

Umay and Lale Teachers who were the participants the current study worked in the mornings in Preschool B. Umay was 32 years old. She graduated from early childhood education department with a bachelor degree and had eight years working experience with different age groups (e.g., 3, 4, 5-year-olds). She was a master student in the educational administration department. She attended seminars related to writing projects about European Union. Before participating in this study, she made a project on Hayatın Teknoloji Olmasın Hayatında Teknoloji Olsun [Your Life Will not Become Technology, Technology Will be at Your Life Project]". Hence, she was eager to be a part of this research and propose to her colleagues that she thought that she

could attend this research. When the current study was implemented, she was working with 3 and 4-year-old children. (For detailed information see Chapter IV).

Lale was 42 years old. She graduated from child development and early childhood education department bachelor degree and had twenty years working experience with different age groups (e.g., 3, 4, 5-year-olds). She was the candidate of creative drama leader, and she also involved in training related to playback theatre. She has been working in this school for one and a half years. She also worked as a creative drama teacher in this school for club hours. Researcher reached Lale through Umay. She was also eager to work in this research. When the current study was applied, she was working with 3 and 5-year-old children. (For detailed information see Chapter IV)

### **3.2.3 The Role of the Researcher**

Throughout the present study, as the researcher, I worked with a committee including my supervisor and two other academics. They were also experts on CML, early childhood education, ESD/EE, teacher education and professional development programs. Concerning their feedbacks and views, I shaped this study's rationale, method, data collection instruments, data collection and analysis procedure; and, professional development training. I have also been studying at ESD/EE in early childhood education since 2010 and on CML in early childhood education since 2014. Moreover, as the researcher, I also had an experience in teacher education because of my role in a university as a research assistant. During my position, I assisted several undergraduate courses such as "school experience", "practicum" drama in early childhood education and "child and media".

For the present study, I preferred to work with teachers on ESD through CML owing to my master thesis experiences. Throughout my master thesis, I gave training to children, and the teacher of the children just observed my practices. When I interviewed her about the training, she stated to me she also warned her children about the issues placed in this training. For instance, she said to her children to keep clean the class as well as throw garbage to bin, to use the classroom's and/or their own materials (crayons, papers) more wisely; and, to use water and electricity more wisely. However, she could not reach an effective outcome as my study. She wanted to be

knowledgeable about ESD and have experience about how to conduct ESD activities. Hence, I decided to work with in-service teachers in the current research.

For Stake (1995), the researcher plays several roles throughout the case study process. I, the researcher, had some roles in this case study. One of my roles was to observe the existing situation in the early childhood learning environment to determine the needs of teachers and children. During the development of Professional Development Training (PDT), I played an evaluator role to find the needs of teacher and children and to construct PDT based on these findings. In addition to evaluator role, my role shifted from evaluator to teacher educator while implementing PDT. After conducting PDT, I promoted and guided teachers as they created their own plans or projects as a facilitator role. Simultaneously, I also evaluated their plans or projects through after PDT data collection. I also played evaluator role again, but during my evaluator role, while I observed their plans or projects regarding ESD and CML, I also had a chance to work together with teachers and to explore the efficient ways/ strategies/ methods while conducting ESD activities through CML.

Furthermore, I also played an interpreter role through this research. Interpretation of data took a long time to create all codes and findings. For Stake (1995), to establish the knowledge based on data covered the great place when it was compared other researcher roles.

### **3.3. External Domain: Professional Development Training**

In this section I discuss the Professional Development Training, which links to the external domain, one of the components of the Interconnected Model of Professional Growth (Clarke & Hollingsworth, 2002; Hollingsworth, 1999). For Clarke and Hollingsworth (2002), the model highlighted that possible change in teacher's other domains (such as personal domain, domain practice, and salient outcomes) could occur via teacher involvement in in-service programs or through other means (e.g., professional resources, dialogues and/or discussion with colleagues and/or experts).

For this study, professional development training (PDT) as “external domain” was constructed in the light of the ADDIE (Analyze, Design, Develop, Implement and Evaluate) approach (Branch, 2009). In this approach, there are five phases namely

“Analyze, Design, Develop, Implement and Evaluate”. The summary of each phase’s aim and which procedures are followed in every step are presented in Table 3.2.

Table 3.2

*Summary of the phases of ADDIE approach (Branch, 2009, p.21)*

	<b>Analyze</b>	<b>Design</b>	<b>Develop</b>	<b>Implement</b>	<b>Evaluate</b>
<b>Concept</b>	Identify the probable causes for a performance gap	Verify the desired performances and appropriate testing methods	Generate and validate the learning resources	Prepare the learning environment and engage the students	Assess the quality of the instructional products and processes, both before and after implementation
<b>Common Procedures</b>	1. Validate the performance gap 2. Determine instructional goals 3. Confirm the intended audience 4. Identify required resources 5. Determine potential delivery systems 6. Compose a project management plan	7. Conduct a task inventory 8. compose performance objectives 9. Generate testing strategies 10. Calculate return on investment	11. Generate content 12. Select or develop supporting media 13. Develop guidance for the student 14. Develop guidance for the teacher 15. Conduct formative revisions 16. Conduct a pilot test	17. Prepare the teacher 18. Prepare the student	19. Determine evaluation criteria 20. Select evaluation tools 21. Conduct evaluation
	Analysis Summary	Design Brief	Learning Resources	Implementation Strategy	Evaluation Plan

In consideration of Table 3.2 and literature review about ADDIE, PDT was constructed by following the steps outlined in Table 3.3.

Table 3.3

*Steps of PDT following the ADDIE approach to Professional Development Training*

<b>Steps</b>	<b>Tasks</b>	<b>Outcomes</b>
<b>Analyze</b>	Needs Assessment	Needs of teachers Determine instructional goals Developing instructional analysis Developing learning objectives
<b>Design</b>	Determine learning objectives Create instruction Specify resources	Measurable objectives Instructional strategy Prototype of specification
<b>Development</b>	Examining related training Examining related literature Working with supervisor and other researchers	Creating a draft of the training
<b>Implementation</b>	Professional development training	Teachers' product
<b>Evaluation</b>	Taking experts' views about the draft of PDT Data (after PDT)	Finalizing PDT Reporting the findings



For the Analyze step, a needs assessment was made by collecting data from different sources (such as interview, stimulated recall interview, documents and field notes) for one semester (2016-2017 academic year-spring semester). After data analysis in this step, I found out what teachers knew about ESD and what their level of CML was, and how they implemented ESD through CML in their classroom; in other words, their teaching and learning needs were determined. (For detailed information see chapter IV) Thus, based on the literature review about teacher professional development and the findings from the analysis step of the present study, it was determined to develop PDT to promote teacher's professional change and/or growth. Taking all these aspects into account, instructional aims for specific training were developed; and, learning objectives reaching at the end of the training and instructional analysis about the organization of activities related to ESD and CML were also developed. (See Table 3.4)

In the second step, Design, the outcomes that were established in the analyze step were actualized as tasks such as determining the learning objectives, creating an instructional strategy (teaching method and strategies used in training) and identifying resources (internet, printed media, digital media, worksheets...etc.). At the end of this step, measurable objectives, instructional strategy, and prototype of specification (determining the sequences of the theoretical and practical side of activities) were developed.

In the third step, Development, the researcher examined related literature and training and worked with her supervisor and other experts to construct the training program draft.

In the fourth step, Implementation, PDT was carried out in the classroom. The specific outcomes of this step were teachers' products (notes, posters, stories...etc.).

In the last step, Evaluation, this can be made as formative (while creating the training and, between the steps such as taking experts views) and /or summative (the data were collected after the implementation was conducted, e.g. data after PDT). At the end of this step, PDT was finalized, and the overall data gathered during the whole of the ADDIE process were analyzed and reported. (For detailed information see Chapter IV)

In summary, PDT covered five days throughout an in-service training period in September 2016. Each session consisted of two parts. While the first part included theoretical information about CML and ESD, the other part covered the practical sides of this theoretical information. In other words, daily training was comprised of two interwoven parts. These sessions were constructed to support adult learning principles (Lieb, 1991), Hobbs' (2010) essential competencies of digital and media literacy, European Commission Level of Competences (Celot, 2009) and UNESCO's (2012) and OMEP's (2011) frameworks. There were five sessions in total, and each was comprised of approximately two-hour training. These training sessions generally encompassed the notions of ESD, EE, media, types of media, content of media, message of the media and CML, how to promote children to be media literate individuals, the relationship between media and ESD in terms of 7Rs, how to CML integrate into ESD while constructing and conducting activities.

Throughout PDT process, as recommended by Hobbs (2001) and UNESCO (2012), a variety of teaching techniques (such as group work, creative drama (role-play and dramatization), examining case studies) and ESD pedagogy (problem/issue based learning) promoting critical thinking, social critique, issue analysis, discussions, drawing a poster and writing a story to stimulate creativity were utilized. Also, alternative assessment techniques, e.g., assignments, written and/ or oral reflections were used to evaluate training. Furthermore, tasks related to next training such as watching advertisement(s) targeting children and examining the message(s) in this advertisement and sharing these message with your colleagues were used. While designing these sessions, the researcher was inspired by Project Look Through the organization's lesson plans on global warming (GW). After the last version of the sessions in this project was created, they were sent to experts to get their views about their appropriateness. (For expert opinion form See Appendix D) There were five experts, two of them were academic staff, and three of them were experienced early childhood teachers. While one of the academicians was an expert on CML and early childhood teacher education, the other one was expert on teacher education and curriculum and instruction. On the other hand, one of the early childhood teachers has been working at the state preschool for nine years, while the others have been working at the private preschool for eight years. What's more, the teacher working at a state preschool attended by TUBITAK's nature school camp in 2010. Moreover, one of the

teachers working at the private preschool was creative drama leader. The other one working at a private preschool had a master degree in early childhood education.

In the light of the experts' view, the last version of PDT was constructed and then was carried out with early childhood teachers in the two different case study preschools. In other words, during seminar periods, "one-shot or single-loop" (Argyris & Schön, 1974) PDT was implemented, however, after the PDT, teachers took ongoing support from the researcher for the whole semester. More information about this support is given in the following section. A detailed summary of the content of the five PDT sessions can be found in Table 3.3 below. More detailed explanation is given at 3.3.1. It is important to provide this detail so that the readers understand how PDT on global warming (GW), the issue related to ESD, can be implemented through CML via using different media tools because this PDT was developed based on the findings of needs assessment. The findings indicated that early childhood teachers were not aware of three pillars of ESD (environment, economic and social and cultural); and, CML, its instructional strategies and critic questions (which is necessary for media analysis procedure). What's more, there is no study focusing on ESD and CML at the same time in early childhood in-service educators. Hence, by means of an elaborative statement, not only readers but also researchers could see which teaching techniques can be used to support early childhood teacher's ESD awareness and CML level. They also perceived that the connection between activities and teachers' promoted ESD awareness and CML levels and adult learning principles based on the defined objectives and how each session can be implemented step by step by seeing what kinds of media messages and techniques were used to create different media types. This kind of explanation can also ensure the re-implementing chance of PDT with other researchers and teacher educators in this field since this kind of content (ESD combining CML) would be pretty unusual for Turkish ECE teachers.

Table 3.4 *Summary of the Content of the PDT Sessions for teachers*

Session	Selected Objectives	Teaching Techniques	Competencies of Digital and Media Literacy	Adult Learning Principles	Conducted Activities	Assignment
I	to state what media is to state what ESD is	Lecturing, group work, critical thinking, social critique, issue analysis, discussions	Access Analyze & evaluate	Autonomous and self-directed, Goal-oriented, Practical, Respect, Life experiences and knowledge	Presentation, watching and analyzing videos	No assignment
II	To state why CML is necessary. To state his/her opinion about the required characteristics that media literate individual has	Lecturing, group work, critical thinking, issue analysis, discussions, writing a story, examining case studies	Analyze & evaluate Create	Autonomous and self-directed, Goal-oriented, Practical, Respect, Life experiences and knowledge	Presentation, Writing story watching and analyzing videos reading and analyzing articles	To bring media that is related to global warming (GW)
III	to describe that media have own language to state the components of media content	Lecturing, group work, critical thinking, issue analysis, discussions,	Analyze & evaluate Create Reflect Act	Autonomous and self-directed, Goal-oriented, Practical, Respect, Life experiences and knowledge, Relevancy-oriented	Presentation, grouping, composing their own media content, watching and analyzing videos	To watch TV and find any program (advertisement, public service announcement) about GW analyze it and share the message of it with their colleagues
IV	to distinguish GW messages coming from the distinct type of media to create his/her own product to give his/her own message(s)	Lecturing, group work, critical thinking, issue analysis, social critique, discussions, examining case studies, role-playing, dramatization	Analyze & evaluate Create Reflect Act	Autonomous and self-directed, Goal-oriented, Practical, Respect, Life experiences and knowledge, Relevancy-oriented	Presentation, Sharing yesterday's assignment watching and analyzing advertisement Creating their own advertisement	To research how the issues( excluding GW) related to ESD components are broadcasted via media( cartoon, poster, public service announcement) and to bring two of them
V	To tell that media are tools to give messages related to ESD to select and use appropriate media type(s) to give his/her own message(s) about ESD to his/her target group	Lecturing, group work, critical thinking, issue analysis, social critique, discussions, drawing a poster	Analyze & evaluate Create Reflect Act	Autonomous and self-directed, Goal-oriented, Practical, Respect, Life experiences and knowledge, Relevancy-oriented	Presentation, Sharing yesterday's assignment watching and analyzing cartoon reading and analyzing articles creating their own posters	No assignment

### 3.3.1 PDT Implementation Procedure

#### 3.3.1.1 Session-1

In this session, two activities were conducted using two different worksheets as well as videos and power points. While implementing the activities, a variety of teaching methods and strategies (such as discussion, group work, and issue analysis) were utilized. The outline of this session is presented in Table 3.5. Detailed information will be given in the following part.

Table 3.5 *Outline of Session-1*

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To explain what ESD is</b>	knowledge		<b>1</b> -completing worksheets & presenting power point related to ESD	Worksheets, powerpoint	Lecturing, discussion	UNESCO's (2012) and OMEP's (2011) frameworks, UNESCO (1978)
<b>To explain the pillars of ESD and give examples of them.</b>	knowledge		<b>1</b> - completing worksheets & presenting power point related to ESD	Worksheets, powerpoint	Lecturing, discussion	UNESCO's (2012) and OMEP's (2011) frameworks, UNESCO (1978)
<b>To identify global warming (GW) which is an issue related to all components of ESD (environment, economic and social &amp; cultural).</b>	awareness		<b>2</b> -watching and due to human activities, the other analyzing videos about GW(one of them advocate there is no global warming one advocate there is global warming due to activities) making discussions about videos	Worksheets, two videos	group work, critical thinking, social critique, issue analysis, discussions	UNESCO's (2012) and OMEP's (2011) frameworks, UNESCO (1978)
<b>To tell what is media.</b>		access	<b>1</b> - completing worksheets & presenting power point related to media and media types	Worksheets, powerpoint	Lecturing, discussion	Kara (2011)
<b>To tell media types.</b>		access	<b>1</b> - completing worksheets & presenting power point related to media and media types	Worksheets, powerpoint	Lecturing, discussion	Kara (2011)
<b>To use relevant information about the media tools.</b>		access	<b>2</b> -watching and analyzing videos about GW, making discussions about videos	Worksheets, two videos	group work, critical thinking, social critique, issue analysis, discussions	Hobbs(2011)

Table 3.5. Cont'd.

<b>Objectives</b>	<b>ESD</b>	<b>CML</b>	<b>Activities</b>	<b>Resources</b>	<b>Teaching Methods &amp; Techniques</b>	<b>References</b>
<b>To discuss with other people about what s/he knows about media.</b>		access	<b>2-</b> watching and analyzing videos about GW, making discussions about videos	Worksheets, two videos	group work, critical thinking, social critique, issue analysis, discussions	Hobbs(2011)
<b>To describe GW messages which are conducted by media tools.</b>	Knowledge & Skills	Analyze & Evaluate	<b>2-</b> watching and analyzing videos about GW, making discussions about videos	Worksheets, two videos	group work, critical thinking, social critique, issue analysis, discussions	Hobbs(2011), UNESCO (1978)
<b>To distinguish GW messages regarding its quality, veracity, and credibility.</b>	Knowledge & Skills	Analyze & Evaluate	<b>2-</b> watching and analyzing videos about GW, making discussions about videos	Worksheets, two videos	group work, critical thinking, social critique, issue analysis, discussions	Hobbs(2011), UNESCO (1978)
<b>To restate potential effects or outcomes of GW messages</b>	Knowledge & Skills	Analyze & Evaluate	<b>2-</b> watching and analyzing videos about GW, making discussions about videos	Worksheets, two videos	group work, critical thinking, social critique, issue analysis, discussions	Hobbs(2011), UNESCO (1978)
<b>Principles of Adult Learning Employed</b>						
<b>Autonomous and self-directed</b>			1 & 2			Lieb (1991)
<b>Goal-oriented</b>			1 & 2			Lieb (1991)
<b>Practical</b>			1 & 2			Lieb (1991)
<b>Respect</b>			1 & 2			Lieb (1991)
<b>Life experiences and knowledge</b>			1 & 2			Lieb (1991)

Session-1 included the theoretical part (activity-1) and a practical part (activity-2).

In activity-1, the primary purpose was to determine early childhood teachers' knowledge about media as well as media types; and, ESD and inform them about these issues. To reach this aim, the objectives shown in Table-3.5 were supported with several sub-activities such as completing the worksheet and presenting power points related to ESD, media and media types. Lecturing and discussion were used as teaching methods and techniques. Autonomous and self-directed, goal-oriented, practical, respect, as well as life experiences and knowledge, were used as adult learning principles to support teachers' learning.

A Worksheet and power points were the resources used in this activity. In the worksheet, at both sides of the paper, there were some questions pertaining to media and EE such as: What is media?, what issues are covered by media?, what is EE?...etc. During the powerpoint presentations, the information about media and ESD was given to the teachers.

In activity-2, the main aim was to analyze and evaluate the messages related to global warming in the media tools presented. To reach this purpose, the sub-activities, e.g. watching and analyzing videos about global warming (GW) with using worksheets and making discussions about videos were implemented in the light of the objectives shown in Table 3.5. Group work, critical thinking, social critique, issue analysis and discussion were utilized as teaching methods and techniques. Autonomous and self-directed, goal-oriented, practical, respect, as well as life experiences and knowledge, were used as adult learning principles to promote teachers' learning.

Worksheets and two videos were utilized as resources for this activity.

Video-1- Küresel Isınma Uydurması [Global Warming Fault] translated from the “Global Warming Caused by Human Activity is a Pseudo-Scientific Fraud and Should Be Rejected” that was produced by The Intergraph Times in 2014.

Some of the messages given from this video were:

“a) The issues related to global warming is about carbon taxes (economic). If you insist on this claim; this would destroy human society, genocide massacre.

b) We enter a new period, but we can stay at medieval warm period limits. This is largely related to the solar activity (environment).

c) This is pseudoscientific nonsense and should be rejected.”

Video-2- Küresel Isınma ve İklim Değişikliği [Global Warming and Climate Change] was constructed by Cankiri Karatekin University.

Some of the messages came from this video were:|

- “ a) When coal, petrol, natural gas are consumed, the waste of these leads to a decrease in the air, water, and soil (environment).
- b) Due to global warming, while in some regions of world, hurricanes, floods, overflows are occurring, in the other regions, the droughts for a long time and desertification are emerging (environment, economic and social).
- c) Global warming which is created by using fossil fuels, industrialization, overpopulation and consumption is felt already everywhere in the world (environment, economic and social & cultural)
- d) If the world got warmer than 2 degrees, we would not prevent the global warming, and water and energy would be scarce. Migrations would start, and 200 million people would be homeless. The world of the economy would be affected negatively. One million living species would be disappeared in the world. We could not find water to wash our body and to drink. The forest fires would increase because of unexpected thunderbolts are caused by unexpected weather conditions (environment, economic and social & cultural).”

In this video, some techniques were used such as using music with changing sounds, different photographs showing adverse impacts of global warming (drought, overflows), distinct types of sounds, different color and font size of statements, graphs, and figures.

In the worksheets used in activity 2, there were some questions related to the message in the videos such as who produce the message(s) given in this video? What is the target audience, what is the purpose?...etc.

#### Implementation Procedures for Session-1:

In session-1, first of all, activity-1 was conducted with worksheets. After worksheets were filled with teachers, the discussion was made on teachers' reply. Afterward, short power points including five slides were presented with teachers' involvement.



Secondly, activity-2 was implemented. In this part, initially, the worksheets consisting of questions related to GW (Is there any event related to GW? Explain the reason. Is there any evidence about your reasons?...etc.) were delivered to the teachers. After completing these, teachers shared their replies. Teachers and the researcher talked about the answers. Then, the video analysis worksheets were delivered to teachers and time was given to skim through the questions. After that two videos were viewed. The time was given to complete the worksheets. Teachers shared their replies and discussed them.

Lastly, this session was finished with the assessment. In this assessment part, the questions such as which video that you watched is more reliable? Why? According to you, which video is more biased?...etc were asked.

### 3.3.1.2 Session-2

In this session, two activities were carried out by using four different worksheets, two videos and articles and power point. While conducting the activities various teaching methods and strategies (such as critical thinking, examining case studies and issue analysis) were utilized. The outline of this session was presented in Table 3.6. The detailed information will be given in the following part.

Table 3.6 *Outline of Session-2*

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To identify GW which is an issue related to all components of ESD (environment, economic and social &amp; cultural).</b>	awareness		<b>4</b> -watching and analyzing videos about GW making discussions about videos, analyzing the articles	Worksheets, two videos, and two articles	critical thinking, issue analysis, discussions, examining case studies	UNESCO's (2012), OMEP's (2011) frameworks, UNESCO (1978)
<b>To discover environmental, social &amp; cultural, economic and politic consequences of GW.</b>	awareness		<b>4</b> -watching and analyzing videos about GW making discussions about videos, analyzing the articles	Worksheets, two videos, and two articles	critical thinking, issue analysis, discussions, examining case studies	UNESCO's (2012) and OMEP's (2011) frameworks, UNESCO (1978)
<b>To discover what can be done to prevent GW and its consequences.</b>	Knowledge & awareness		<b>4</b> -watching and analyzing videos about GW making discussions about videos, analyzing the articles	Worksheets, two videos, and two articles	critical thinking, issue analysis, discussions, examining case studies	UNESCO's (2012) and OMEP's (2011) frameworks, UNESCO (1978)
<b>To tell why critical media literacy is a need.</b>		Analyze & Evaluate	<b>3</b> -ranging media pictures chronologically, writing a story about different media types and sharing in a creative way, presenting power point related to the development of media and why CML is needed	pictures, papers, power point	Lecturing, group work, critical thinking, telling a story	Kara (2011),MEB & RTUK (2006)

Table 3.6. Cont'd.

<b>Objectives</b>	<b>ESD</b>	<b>CML</b>	<b>Activities</b>	<b>Resources</b>	<b>Teaching Methods &amp; Techniques</b>	<b>References</b>
<b>To tell his/her opinion about the required characteristics of media literate individual.</b>		Analyze & Evaluate	<b>3</b> -ranging media pictures chronologically, writing a story about different media types and sharing in a creative way, presenting power point related to the development of media and why CML is needed	pictures, papers, power point	Lecturing, group work, critical thinking, telling a story	Kara (2011),MEB & RTUK (2006)
<b>To describe GW messages which are conducted by media tools.</b>	Knowledge & Skills	Analyze & Evaluate	<b>4</b> -watching and analyzing videos about GW(both of them advocate there is global warming due to human activities in a scientific and non-scientific ways) making discussions about videos, analyzing the articles(one of them advocate there is no global warming due to human activities, the other one advocate there is global warming due to activities)	Worksheets, two videos, and two articles	critical thinking, issue analysis, discussions, examining case studies	Hobbs(2011), UNESCO (1978)
<b>To distinguish GW messages regarding its quality, veracity, and credibility.</b>	Knowledge & Skills	Analyze & Evaluate	<b>4</b> -watching and analyzing videos about GW making discussions about videos, analyzing the articles	Worksheets, two videos, and two articles	critical thinking, issue analysis, discussions, examining case studies	Hobbs(2011), UNESCO (1978)
<b>To restate potential effects or outcomes of GW messages.</b>	Knowledge & Skills	Analyze & Evaluate	<b>4</b> -watching and analyzing videos about GW making discussions about videos, analyzing the articles	Worksheets, two videos, and two articles	critical thinking, issue analysis, discussions, examining case studies	Hobbs(2011), UNESCO (1978)
<b>To design content via using his/her creativity and own tool(s).</b>		Create	<b>3</b> -ranging media pictures chronologically, writing a story about different media types and sharing in a creative way, presenting power point related to the development of media and why CML is needed	pictures, papers, power point	Lecturing, group work, critical thinking, telling a story	Hobbs(2011)
<b>To determine the content(s) and aim(s) of the message, and the audience while creating his/her message.</b>		Create	<b>3</b> -ranging media pictures chronologically, writing a story about different media types and sharing in a creative way, presenting power point related to the development of media and why CML is needed	pictures, papers, power point	Lecturing, group work, critical thinking, telling a story	Hobbs(2011)

Table 3.6. Cont'd.

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To use some techniques to conduct his/her own message(s).</b>		Create	<b>3</b> -ranging media pictures chronologically, writing a story about different media types and sharing in a creative way, presenting power point related to the development of media and why CML is needed	pictures, papers, power point	Lecturing, group work, critical thinking, telling a story	Hobbs(2011)
<b>To explain media types and their development, and discuss them with his/her colleagues.</b>		reflect	<b>3</b> -ranging media pictures chronologically, writing a story about different media types and sharing in a creative way, presenting power point related to the development of media and why CML is needed	pictures, papers, power point	Lecturing, group work, critical thinking, telling a story	Kara (2011),MEB & RTUK (2006)
<b>Principles of Adult Learning Employed</b>						
<b>Autonomous and self-directed</b>			3 & 4			Lieb (1991)
<b>Goal-oriented</b>			3 & 4			Lieb (1991)
<b>Practical</b>			3 & 4			Lieb (1991)
<b>Respect</b>			3 & 4			Lieb (1991)
<b>Life experiences and knowledge</b>			3 & 4			Lieb (1991)

Session-2 included theoretical part (activity-3) and practical part (activity-4).

In activity-3, the primary purpose was to provide early childhood teachers to be knowledgeable about the development of media and the reason of CML need. To reach this aim, the objectives shown in Table-3.6 were supported with several sub-activities such as ranging media pictures chronologically, writing story about different media types and sharing in a creative way and presenting power points. Lecturing, group work, critical thinking and telling a story were used as teaching methods and techniques. Autonomous and self-directed, goal-oriented, practical, respect, as well as life experiences and knowledge, were used as adult learning principles to support teachers' learning.

Pictures, A4 papers, and power points were used as resources in this activity. There were pictures showing newspaper, telegraph, radio, television, the internet, Google, Facebook, Twitter, and Instagram. A4 papers were used to write a story about different media types. At powerpoint presentations, the information related to the development of media and why CML is needed was given to the teachers.

In activity-4, the main aim was to analyze and evaluate the message related to global warming in different media types. To actualize this purpose, the sub-activities, e.g., watching and analyzing videos about global warming (GW) by using worksheets and making discussions about videos, reading and analyzing the articles by utilizing the worksheets and making the discussion about these articles were applied in the light of the objectives indicated in Table 3.6. Critical thinking, issue analysis, discussions and examining case studies were utilized as teaching methods and techniques. Autonomous and self-directed, goal-oriented, practical, respect, as well as life experiences and knowledge, were used as adult learning principles to promote teachers' learning.

Worksheets, two videos, and articles were utilized as resources in this activity.

In the worksheets, there were some questions to promote teachers to analyze the message in videos and articles (such as “which ways are used to describe the outcomes of global warming and their predicted results? What is the main result of global warming? Which scientific evidence(s) is used to support this result(s)?”)

Video-1- Küresel ısınma bir gerçek mi? [Is global warming true?] prepared by HTZK, Hüseyin, a blogger.

Some of the messages given from video one were:

“ a) Indeed, there is global warming based on scientific evidence but some people deny this, and they also have legitimate justifications (contradictions). For them, global warming is a plot.

b) They believe that global warming is plot and it becomes an agenda to make regulations about high taxes and to make people calm down about high taxes (economic).

c) What’s more, this photograph which is taken from Svalbard Island in Norway is sufficient to explain the situation. While polar bears were eating fish previously, now they are eating algae and bird eggs and struggling with starvation (environment).

In this video, some techniques were utilized such as using music with changing sounds, different photographs showing adverse impacts of global warming (polar bears, dead fish), distinct types of sounds and font size of statements, using question, zooming to the photos.

Video-2-Global Warming was prepared by a TV channel (which is one of the prestigious channel, CNN TURK) program whose name is Eğrisi Doğrusu.

Some of the messages came from video two were:

“a) there has been an abnormal increase in greenhouse gases since the mid-1900s, and we have not seen such increase throughout the Earth’s geologic history (environment).

b) The things that will occur are changing Earth’s climate completely, melting glaciers, increase in sea level and increase in abnormal raindrop in some places while emerging desertification in some places (environment, social & cultural and economic).

c) While some places are getting warmer, some places (like Europe) are getting cooler because of change in Gulf Stream and Labrador (environment, social & cultural and economic).

d) The climate that we develop our civilization will be removed, and the new climate will appear, and in addition to this, the sea level will increase (environment, social & cultural and economic). This leads to issue related to immigration because most of the

country's soil will be covered with sea. For instance, the half of Bangladesh's soil will be under the sea (environment, social & cultural and economic).

e) Until 2100, scenarios claim that the sea level will increase by 20 cm in all likelihood but, in the worst-case-scenario, the sea level will increase up to 1 meter. At this juncture, the half of Florida will be under the sea. Moreover, some of the places in the Marmara and Aegean Regions in Turkey will be covered with sea water. This means that today's beautiful coastline of the Marmara and Aegean Regions will be under sea water. This is not rough estimate because we know the glaciers' melting rate and how much water is held by glaciers (environment, social & cultural and economic).

f) 40.000 species disappear in each year. This is the most significant extinction event throughout our geologic history (environment).”

In this video, some techniques were utilized such as using questioning, analogy, graphs, and figures constructed by different scientists (Al Gore, Berger & Loutre), the cover of TIME journal.

Article-1 - İnsan Kaynaklı Küresel Isınma Yalanı [Prevarication on Anthropogenic Global Warming] was written by Nurullah Atay.

Some of the messages given in this article were:

“a) The increase in CO<sub>2</sub> concentration in the atmosphere is most probably derived from the fossil fuel usage (there are also some scientists that do not support this view).

b) We consider that CO<sub>2</sub> plays a crucial role in global warming although CO<sub>2</sub> covers trivial place regarding amount and characteristics of sunlight reflection in greenhouse gasses (there are also some scientists that do not support this view).

c) The total CO<sub>2</sub> emission can be reduced with carbon taxes (as is not related to science, this is a politic view).

c) It is unnecessary to make a regulation about new taxes related to the other greenhouse gases except for CO<sub>2</sub> (it is not related to science; this is a politic view).

d) To carry out carbon taxes and related sanctions, we need an international executive, legislative and judicial powers. In other words, we should give up our national sovereignty (it is not related to science, this is a politic view).

In this article, some techniques were utilized such as using graphs and figures.

Article-2- Suriye olaylarında küresel ısınmanın rolü [The role of global warming on the events in Syria] was written by Prof. Dr. Nazimi Açıköz.

The messages given in this article were:

“a) This article is about the report results on the relationship between the events in Syria and climate change. Based on this report, respectively in 1988-1993, 1998-2000, 2005-2010 periods, the migration from rural to urban places that are derived from drought in Syria, not only leads to decrease in the numbers of producers but also increase in unemployment rate in the urban places. (environment, social & cultural, economic).

b) According to the reporters, global warming is completely anthropocentric. It means that global warming is derived from human beings. The drought that is caused by an increase in greenhouse gas affected not only the agriculture sector in Syria but also in other sectors and was one of the key roles in the current Syrian crisis. In this country, in 2014 the agricultural production was 30 % less than that of the last two years (environment and economic).”

In this article, some techniques were utilized such as using graphs and figures.

#### Implementation Procedures for Session-2:

In session-2, first of all, activity-3 was implemented. In this activity, teachers made two-people groups. After that, the groups ranged from pictures including different media types chronologically and shared their range with another group. Then, the same groups created their own stories about media types (printed and social media for one group, audio, and visual media for another group) and creatively told their stories. Afterwards, powerpoint was presented with teachers' involvement.

Secondly, activity-4 was conducted. In this part, initially, the video analysis worksheets were delivered to teachers and time was given to skim through the questions. After that, two videos were viewed. The time was given to complete the worksheets. Teachers shared their replies and discussed them. Afterwards, the article analysis worksheets were given with two articles. After completing the analyses, teachers shared their responses and discussed them with the researcher's support.



Lastly, this session was finished with the assessment. In the assessment part, the questions such as according to you, is global warming truth or myth? Explain the reason. Is the information presented from different media types contemporary and correct? Are these media reliable?...etc were asked. After this, the line was drawn on the floor of the room, and the statements were written at the end of the line. One of the statement was “global warming is the truth” the other is global warming is a myth. It is wanted from teachers to define their place in this line and explain the reason for their place. After sharing, the sessions were completed.

### 3.3.1.3 Session-3

In this session, two activities were conducted by using different worksheets, two videos and articles, printed documents and power point. While implementing the activities various teaching methods and strategies (such as critical thinking, group work, and issue analysis) were used. The outline of this session was presented in Table 3.7. The detailed information will be given in the following part.

Table 3.7 *Outline of Session-3*

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To identify GW which is an issue related to all components of ESD (environment, economic and social &amp; cultural).</b>	awareness		<b>5 &amp; 6</b> watching and analyzing videos about GW, making discussions about videos, analyzing the articles	Worksheets, two videos, and two articles	critical thinking, issue analysis, discussions, examining case studies	UNESCO's (2012) and OMEP's (2011) frameworks, UNESCO (1978)
<b>To discover media messages on GW are constructed at the end of a creation process.</b>	awareness	Analyze & Evaluate	<b>5-</b> analyzing, grouping the posters, caricature, the cover of magazines (such as Atlas and National Geographic), news related to effects GW (on climate, water resources, Turkey, animals, economy etc.), constructing their own media message with their own media, presentation powerpoint on components of media critical media literacy and communication	posters, caricature, the cover of magazines (such as Atlas and National Geographic), news, papers, PowerPoint	Lecturing, group work, critical thinking, issue analysis, discussion	Aufderheide (1993), UNESCO (1978)
<b>To discover media messages on GW are produced within the economic, social, political, historical and aesthetic contexts.</b>	awareness	Analyze & Evaluate	<b>5-</b> analyzing, grouping the posters, caricature, the cover of magazines (such as Atlas and National Geographic), news related to effects GW (on climate, water resources, Turkey, animals, economy etc.), constructing their own media message with their own media, presentation powerpoint on components of media critical media literacy and communication	posters, caricature, the cover of magazines (such as Atlas and National Geographic), news, papers, PowerPoint	Lecturing, group work, critical thinking, issue analysis, discussion	Aufderheide (1993), UNESCO (1978)

Table 3.7. Cont'd.

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To tell media have their own language.</b>		Analyze & Evaluate	<b>5-</b> analyzing, grouping the posters, caricature, the cover of magazines (such as Atlas and National Geographic), news related to effects GW (on climate, water resources, Turkey, animals, economy etc.), constructing their own media message with their own media, presentation powerpoint on components of media critical media literacy and communication	posters, caricature, the cover of magazines (such as Atlas and National Geographic), news, papers, PowerPoint	Lecturing, group work, critical thinking, issue analysis, discussion	Aufderheide (1993)
<b>To state main components of media contents.</b>		Analyze & Evaluate	<b>5-</b> analyzing, grouping the posters, caricature, the cover of magazines (such as Atlas and National Geographic), news related to effects GW (on climate, water resources, Turkey, animals, economy etc.), constructing their own media message with their own media, presentation powerpoint on components of media critical media literacy and communication	posters, caricature, the cover of magazines (such as Atlas and National Geographic), news, papers, PowerPoint	Lecturing, group work, critical thinking, issue analysis, discussion	Kara (2011),MEB & RTUK (2006)
<b>To describe GW messages which are conducted by media tools.</b>	Knowledge & Skills	Analyze & Evaluate	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW(one of them advocate there is no global warming due to human activities, the other one advocate there is global warming due to activities), making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining cases	Hobbs(2011), UNESCO (1978)
<b>To distinguish GW messages regarding its quality, veracity, and credibility.</b>	Knowledge & Skills	Analyze & Evaluate	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW, making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining cases	Hobbs(2011), UNESCO (1978)

Table 3.7. Cont'd.

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To restate potential effects or outcomes of GW messages.</b>	Knowledge & Skills	Analyze & Evaluate	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW, making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining cases	Hobbs(2011), UNESCO (1978)
<b>To design content on GW via using his/her creativity and own tool(s).</b>	Attitude & skills	Create	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW, making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining cases	Hobbs(2011), UNESCO (1978)
<b>To determine the content(s) and aim(s) of the message, and audience while creating his/her message on GW.</b>	Attitude & Skills	Create	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW, making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining case studies	Hobbs(2011), UNESCO (1978)
<b>To use some techniques to conduct his/her own message(s) on GW.</b>	Skills	Create	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW, making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining cases	Hobbs(2011), UNESCO (1978)
<b>To operate ethical principles and his/her responsibility while creating their own media about GW.</b>	attitude	Reflect	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW, making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining case studies	Hobbs(2011), UNESCO (1978)
<b>To perform ethical principles and responsibilities in practice.</b>	skills	Reflect	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW, making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining case studies	Hobbs(2011), UNESCO (1978)
<b>To apply ethical principles and responsibilities to his/her own identity and communication behavior.</b>	skills	Reflect	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW, making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining case studies	Hobbs(2011), UNESCO (1978)

Table 3.7. Cont'd

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To perform individually and collaboratively to share his/her knowledge with families, colleagues, and community.</b>	skills	Act	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW, making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining case studies	Hobbs(2011), UNESCO (1978)
<b>To perform individually and collaboratively to solve the problems with families, colleagues, and community.</b>	skills	Act	<b>6-</b> analyzing the news, and, watching and analyzing fragments of documentaries about GW, making discussions about news and fragments	Worksheets, two news and two fragments of documentaries	critical thinking, issue analysis, discussions, examining case studies	Hobbs(2011), UNESCO (1978)
<b>Principles of Adult Learning Employed</b>						
<b>Autonomous and self-directed</b>				5 & 6		Lieb (1991)
<b>Goal-oriented</b>				5 & 6		Lieb (1991)
<b>Practical</b>				5 & 6		Lieb (1991)
<b>Respect</b>				5 & 6		Lieb (1991)
<b>Life experiences and knowledge</b>				5 & 6		Lieb (1991)
<b>Relevancy-oriented</b>				5 & 6		Lieb (1991)

Session-3 included theoretical part (activity-5) and a practical part (activity-6).

In activity-5, the primary purpose was to help early childhood teachers to gain knowledge about media components, CML, and communication, message content (economic, social, political, historical and aesthetic), target audience, the language of media and effective area of the message. To reach this aim, the objectives shown in Table-3.7 were supported with several sub-activities such as analyzing and grouping the posters, caricature, the cover of magazines (such as Atlas and National Geographic), news related to effects of GW on climate, water resources, Turkey, animals, economy etc., constructing their own media message with their own media, presentation powerpoint on components of media, CML and communication. Lecturing, group work, critical thinking, issue analysis and discussion were used as teaching methods and techniques. Autonomous and self-directed, goal-oriented, practical, respect, life experiences and knowledge, as well as relevancy-oriented were used as adult learning principles to support teachers' learning.

The documents (such as posters, caricatures, news) papers and power point were used resources for this activity. Papers were used to construct their own media message.

Posters, caricatures, the cover of magazines (such as Atlas and National Geographic), news related to GW were also utilized.

At powerpoint presentations, the information related to media components and CML and communication was given to the teachers.

In activity-6, the primary target was to analyze and evaluate the message related to GW in different media types. To come true this purpose, the sub-activities, e.g., reading and analyzing the news by utilizing the worksheets and making the discussion about them, watching and analyzing fragments of the documentaries about GW by using worksheets and making discussions about them were applied based on the objectives presented in Table 3.7. Critical thinking, issue analysis, discussions, examining case studies were utilized as teaching methods and techniques. Autonomous and self-directed, goal-oriented, practical, respect, life experiences and knowledge, as well as relevancy-oriented were used as adult learning principles to support teachers' learning.

Worksheets, two news, and fragments were utilized as resources in this activity.

In the worksheets, there were some questions to support teachers to analyze the message in the news and fragments such as “what is the main point(s) of the news?, Which news is more reliable? Explain the reason for it. Which news cite an opinion? What is your evidence(s)? When you see the title of the documentaries, do you make any guess about the aim of the documentaries? Explain the reason of it...etc.

News-1- BM raporu: Küresel ısınmanın etkileri ciddi [UN Report: The effects of global warming are serious] was written by one of the authors of BBC in 2014.

Some of the messages given in this news were:

“ a) In the climate change report broadcasting by United Nations, it is stated that GW is **most probably** ‘serious, common and irreversible’. (indefinite)

b) The members of United Nations panel on climate change emphasized that the report present **powerful evidence** about the dimensions of effects of GW. (indefinite)

c) In the report, it is uttered that ‘the rising temperature menaces our health, home, food, and security’. (social &cultural,economic,environment)

d) In this report, it is highlighted that the scientific evidence related to the effects of GW had reached approximately two-fold when the first report was published in 2007.(verifying)

e) It is supposed that the production of corn, rice, and wheat will be influenced negatively until 2050 and until that date, the food demand will increase because the world population will be 9 billion. (social and cultural, economic, environment)

f) It is pointed out that the number of deaths will increase due to flood disasters and hot temperature. It is stated that in the short term, the developing countries will be impacted more negatively, but the rich countries will also be affected negatively. (social and cultural, economic, environment)”

In this news, some techniques were utilized such as using photographs using scientific data and report, different font and size of titles.

News-2 - Küresel ısınma politik aldatmaca! [Global warming is politic deception!] was written by one of the authors of Sabah (one of the newspapers in Turkey)’s international service in 2013.

Some of the messages given in this news were:

“ a) For some experts, the actual threat is not global warming but cooling... The world is at the mini ice age. The reports pointing out the risk of GW and CO2 is the trick of the interest groups. (Human-based GW is not true)

b) The support to the assertion, “actually there is not global warming, but cooling”, that causes to fundamental politic changes in world politics has gradually increased. (politic & environment)

c) THE EVENTS OCCURRED IN THE HISTORY.

At the leaked documents, it is seen that the governments, which promoted and supported IPCC financially desired 500 changes in the report of the section namely ‘the summary for policymakers’. (Political) It is also perceived that the halt in GW cannot be explained correctly in the current draft. (Indefinite)

d) FERTILIZER OF THE ATMOSPHERE

It is put forward that...unless increase in CO2 emission were prevented, glaciers would melt, and some places would be under the water, and someplace would become desert (environment, social & cultural and economic) However, the other experts who advocate that CO2 emission not be hazardous as it is considered, point out CO2 is actually crucial for plants’ growing. (contradiction-environment & economic,social)

e) POLAR BEARS ARE ALSO PROPAGANDA

...the broadcasting dead polar bears photographs belongs to the animals that died due to the hurricane.

f) THEY ARE VERY GOOD SWIMMER

... it is claimed that some environmentalist groups especially Greenpeace have the reports related to GW written by private companies/organizations. (contradiction-doubtful resources)”

In this news, some techniques were utilized such as using different font and size of titles; and, punctuation marks.

Fragment-1 -Global Warming Swindle. This documentary was directed by Martin Durkin in 2007.

Some of the messages given in this fragment were:



“a) Prof. Paul Reiter (IPCC & Pasteur Institute, Paris): ... The global warming alarm is dressed up a science. However, it is not a science. It is propaganda. (Human-based GW is not correct)

b) Prof. Nir Shaviv (Institute of Physics, University of Jerusalem): There is no direct evidence which links 20<sup>th</sup> century’s global warming with anthropogenic greenhouse gases. (Human-based GW is not correct)

c) Prof. Tim Ball (Dep. of Climatology- University of Winnipeg): They said if the CO<sub>2</sub> increases in the atmosphere, like a greenhouse, then the temperature will go up. However, the ice core record shows precisely the opposite. So fundamental assumption, the EMOs fundamental assumption of the whole theory of climate change due to human beings, is shown to be wrong. (Human-based GW is not correct)

d) Any criticism of how scientifically is ridiculous and illegitimate even worse dangerous. However, in this film, it would be shown the earth climate is always changing. However, there is nothing unusual about the current temperature. On the other hand, the scientific evidence does not support the notion climate driven by CO<sub>2</sub> human-made or otherwise. Everywhere you are told human-made climate change is proved beyond the damp which is being thought lie. (Human-based GW is not correct)

In this fragment, some techniques were utilized such as using music with changing sounds, different images, distinct types of sounds, different color and font size of statements; and, explanations of expert people.

Fragment-2-Inconvenient Truth was directed by Davis Guggenheim in 2006.

Some of the messages given in this fragment were:

“a) When we look at the hottest ten years that have been measured up to now, you can see that all of them has been a masseuse within last four years. The hottest year was 2005. (environment)

b) Scientific consensus says that we are causing to the global warming. (Human-based GW is true)

c) This is Patagonia 75 years ago and same place today. This is Kilimanjaro 30 years ago. Within a decade there is no more snow on Kilimanjaro. (environment)

d) This is not really a political issue this is a moral issue. (not political but social)

e) The Arctic is experiencing faster melting if this could go, sea level would increase by 6 meters. This is what happens to Florida around Shanghai 40 million people. The area around Calcutta, India 69 million. Here is Manhattan. The world is threatened by being underwater. Think of the impact couple of hundred thousand refugees. Then imagine a hundred million. (environment, social & cultural, economic)”

In this fragment, some techniques were utilized such as using news, music with changing sounds, different photographs showing adverse impacts of global warming (drought, overflows), distinct types of sounds, different color and font size of statements; and, figures.

### Implementation Procedures for Session-3:

In session-3, first of all, activity-5 was implemented. In this activity, the documents (such as posters, caricatures, news) was placed on the ground of the room. The small papers were given to the teachers. After that, teachers went around the documents and took some notes on their paper according to the researcher’s instruction with the help of the music. When music was opened, teachers went around the documents, and when the music was stopped, teachers took some notes (such as the most and least attractive document, the most and least colorful...etc.). It is asked them to group the similar documents. After completing the grouping process, teachers shared how they made a group. Afterwards, teachers made two-people groups. Moreover, they grouped the documents regarding message content (economic, social, political, historical and aesthetic), target audience, the language of media and effective area of the message. Then, they shared their groupings and experiences about the grouping process (is grouping process easy and/ or difficult?) with another group. Same groups created and presented their own media contents based on researcher’s instruction. Afterwards, powerpoint was presented with teachers’ involvement.

Secondly, activity-6 was conducted. In this part, initially, the news analysis worksheets were delivered with two news. After completing the analyses, teachers shared their responses and discussed them with the researcher’s support. Afterwards, the fragment analysis worksheets were delivered to teachers and time was given to skim through the questions. After that, two fragments of the documentaries were viewed. The time was given to complete the worksheets. Teachers shared their replies and discussed them.

Lastly, this session was finished with the assessment. In the assessment part, the questions such as “what did the activity made with documentaries that presented scientific truths show to you? “Is the concept of global warming a truth or manipulated information based on the viewed fragments?” were asked. After talking about these questions, researcher summarized the session, and she asked the media types that they examined today indicated that the media targeted specific audience and aim; and, had a potential effect of on audience lives. “Under this circumstance, which ways/ strategies should be used by us, educators, and other people, our students, children, citizenships, to be more knowledgeable about the truths and especially when evaluating scientific claims/ views on the media?” After discussing this question, the session was completed.

### 3.3.1.4 Session-4

In this session, two activities were carried out by using worksheets, advertisement and power point. While conducting the activities various teaching methods and strategies (such as role-playing, critical thinking, and issue analysis) were used. The outline of this session was presented in Table 3.8. The detailed information will be given in the following part.

Table 3.8 *Outline of Session-4*

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To identify GW which is an issue related to all components of ESD (environment, economic and social &amp; cultural).</b>	awareness		<b>7 &amp; 8</b> Sharing yesterday's assignment related to analyzing the content of media on global warming, presenting the message(s) according to the target audience, analyzing advertisement on consumption Creating their own advertisement	Worksheets, video and internet A4 papers	group work, role-playing, critical thinking, issue analysis, discussion examining case studies	UNESCO's (2012) and OMEP's (2011) frameworks, UNESCO (1978)
<b>To state that at which educational level and age, CML education is required to start.</b>		Analyze & Evaluate	<b>7</b> -Sharing yesterday's assignment related to analyzing the content of media on global warming, presenting the message(s) according to target audience, effective area, power point presentation on how the messages can be read effectively	internet, A4 papers, power point	Lecturing, group work, role-playing, critical thinking, issue analysis, discussion	UNESCO, 2007
<b>To state the required duration of CML education.</b>		Analyze & Evaluate	<b>7</b> -Sharing yesterday's assignment related to analyzing the content of media on global warming, presenting the message(s) according to target audience, effective area, power point presentation on how the messages can be read effectively	internet, A4 papers, power point	Lecturing, group work, role-playing, critical thinking, issue analysis, discussion	UNESCO, 2007
<b>To describe GW messages which are conducted by media tools.</b>	Knowledge & Skills	Analyze & Evaluate	<b>7</b> -Sharing yesterday's assignment related to analyzing the content of media on global warming, presenting the message(s) according to target audience, effective area, power point presentation on how the messages can be read effectively	internet, A4 papers, power point	Lecturing, group work, role-playing, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)

Table 3.8. Cont'd.

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To distinguish GW messages regarding its quality, veracity, and credibility.</b>	Knowledge & Skills	Analyze & Evaluate	7-Sharing yesterday's assignment related to analyzing the content of media on global warming, presenting the message(s) according to target audience, effective area, power point presentation on how the messages can be read effectively	internet, A4 papers, power point	Lecturing, group work, role-playing, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To restate potential effects or outcomes of GW messages.</b>	Knowledge & Skills	Analyze & Evaluate	7-Sharing yesterday's assignment related to analyzing the content of media on global warming, presenting the message(s) according to target audience, effective area, power point presentation on how the messages can be read effectively	internet, A4 papers, power point	Lecturing, group work, role-playing, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To design content on GW via using his/her creativity and own tool(s).</b>	Attitude & skills	Create	7-Sharing yesterday's assignment related to analyzing the content of media on global warming, presenting the message(s) according to target audience, effective area, power point presentation on how the messages can be read effectively	internet, A4 papers, power point	Lecturing, group work, role-playing, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To determine the content(s) and aim(s) of the message, and audience while creating his/her message on GW.</b>	Attitude & Skills	Create	7-Sharing yesterday's assignment related to analyzing the content of media on global warming, presenting the message(s) according to target audience, effective area, power point presentation on how the messages can be read effectively	internet, A4 papers, power point	Lecturing, group work, role-playing, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To use some techniques to conduct his/her own message(s) on GW.</b>	Skills	Create	7-Sharing yesterday's assignment related to analyzing the content of media on global warming, presenting the message(s) according to target audience, effective area, power point presentation on how the messages can be read effectively	internet, A4 papers, power point	Lecturing, group work, role-playing, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)

Table 3.8. Cont'd.

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To operate ethical principles and his/her responsibility while creating their own media about GW.</b>	attitude	Reflect	<b>8-</b> analyzing advertisement on consumption Creating their own advertisement	Worksheets, video, A4 papers,	critical thinking, issue analysis, discussions, examining case studies, group work	Hobbs(2011), UNESCO (1978)
<b>To perform ethical principles and responsibilities in practice.</b>	skills	Reflect	<b>8-</b> analyzing advertisement on consumption Creating their own advertisement	Worksheets, video, A4 papers,	critical thinking, issue analysis, discussions, examining case studies, group work	Hobbs(2011), UNESCO (1978)
<b>To apply ethical principles and responsibilities to his/her own identity and communication behavior.</b>	skills	Reflect	<b>8-</b> analyzing advertisement on consumption Creating their own advertisement	Worksheets, video, A4 papers,	critical thinking, issue analysis, discussions, examining case studies, group work	Hobbs(2011), UNESCO (1978)
<b>To perform individually and collaboratively to share his/her knowledge with families, colleagues, and community.</b>	skills	Act	<b>8-</b> analyzing advertisement on consumption Creating their own advertisement	Worksheets, video, A4 papers,	critical thinking, issue analysis, discussions, examining case studies, group work	Hobbs(2011), UNESCO (1978)
<b>To perform individually and collaboratively to solve the problems with families, colleagues, and community.</b>	skills	Act	<b>8-</b> analyzing advertisement on consumption Creating their own advertisement	Worksheets, video, A4 papers,	critical thinking, issue analysis, discussions, examining case studies, group work	Hobbs(2011), UNESCO (1978)

Table 3.8. Cont'd.

**Principles of Adult Learning Employed**

<b>Autonomous and self-directed</b>			7 & 8			Lieb (1991)
<b>Goal-oriented</b>			7 & 8			Lieb (1991)
<b>Practical</b>			7 & 8			Lieb (1991)
<b>Respect</b>			7 & 8			Lieb (1991)
<b>Life experiences and knowledge</b>			7 & 8			Lieb (1991)
<b>Relevancy-oriented</b>			7 & 8			Lieb (1991)

Session-4 included theoretical part (activity-7) and a practical part (activity-8).

In activity-7, the primary purpose was to supply early childhood teachers to be knowledgeable about and aware of the message (positive and negative), target audience, effective area/ domain, topic (common/ familiar) in the media. To reach this aim, the objectives shown in Table-3.8 were supported with several sub-activities such as sharing yesterday's assignment related to analyzing the content of media on global warming, presenting the message(s) according to target audience and effective area by using visual and printed media types with a creative way; and, powerpoint presentation on how the messages in the media can be read effectively. Lecturing, group work, role-playing, critical thinking, issue analysis and discussion were used as teaching methods and techniques. Autonomous and self-directed, goal-oriented, practical, respect, life experiences and knowledge, as well as relevancy-oriented were used as adult learning principles to support teachers' learning.

Internet, A4 papers and power point were utilized as resources for this activity.

Internet was used to watch the videos (such as public service announcement, program, and advertisement...etc.)

A4 papers were utilized to write a message (positive and negative), target audience, effective area/ domain, topic (common/ familiar) in the media that they analyzed and evaluated as an assignment.

At a power point presentation, the information related to what can be done to analyze and evaluate the messages in the media was given to the teachers.

In activity-8, the primary target was to analyze and evaluate the message related to consumption (electric, water, fossil fuels) in the media. To come true this purpose, the sub-activities, e.g., analyzing advertisement on consumption, creating their own advertisements were applied based on the objectives presented in Table 3.8. Critical thinking, issue analysis, discussions, examining case studies and group work were utilized as teaching methods and techniques. Autonomous and self-directed, goal-oriented, practical, respect, life experiences and knowledge, as well as relevancy-oriented were used as adult learning principles to support teachers' learning.

Worksheets, A4 papers, and advertisement were utilized as resources in this activity.



In the worksheets, there were some questions to support teachers to analyze and evaluate the message in the advertisement such as “who produces/ creates and supports the message(s) that is given at the advertisement? Which techniques are used to convey the message(s)? What is the critical thing that you catch among the messages? Etc.

The A4 paper was used to create their own advertisements.

Advertisement-Volkswagen Passat was prepared in 2012.

Some of the messages were given in this video:

- a) If you want to live comfortably, you should be rich or have a high socioeconomic status.
- b) You should have your own house and car.
- c) In the house, you should have lots of machines that make easy your life.
- d) You can buy film costumes for your child to support him/her playing with it.

In the video related to Volkswagen car advertisement, there was no talking part. Some techniques were utilized such as using music with changing sounds, different images (washing machine, drying machine, fitness tool, car), distinct types of sounds, different color and font size of the statement, using an actor, actresses, and child...etc.

Implementation Procedures for Session-4:

In session-4, first of all, activity-7 was implemented. In this activity, teachers shared their analyses about yesterday’s assignment related to analyzing the content of media on global warming in the media (such as programs, public service announcements, advertisement broadcasting in TV channels...etc.) as if they were in the open session. After that, it is wanted that they made a group with another person that found the same thing(s). The A4 papers were delivered to each group, and it is desired them to write the positive and negative messages that they reached while analyzing the messages in their assignments. After that, each group gave their A4 paper to the next group, and the new groups wrote to the target audience that they determined while making their assignments. Each group changed their papers with the next group. New groups wrote the effective area of the messages that they analyzed in their assignment. Then, each group changed their paper, and they wrote the most common/popular content in the media that they analyzed. All papers were changed lastly, and each group opened their

own papers and read the papers. It is wanted that each group selected one of the content, positive and negative messages, target audience and effective area that were found in their own papers and presented them with visual and printed media in a creative way. The other group tried to guess what the content, messages, target audience and effective message area are. Teachers and the researcher talked about these predictions and rationale of them. Lastly, powerpoint was presented with teachers' involvement.

Secondly, activity-8 was conducted. In this part, initially, the advertisement analysis worksheets were delivered to teachers and time was given to skim through the questions. After that, the advertisement was viewed. The time was given to complete the worksheets. Teachers shared their replies and discussed them.

Lastly, this session was finished with the assessment. In the assessment part, it is wanted from teachers to construct their own advertisement related to global warming (by giving importance what they desire to convey (message), how they can convey this message, target audience...etc.) as a group based on their experiences throughout this session. After that, they presented their advertisement with their own groups in a creative way. Researcher and teachers discussed in the advertisement regarding the message, target audience, techniques...etc. After this discussion, the session was completed.

### 3.3.1.5 Session-5

In this session, two activities were conducted by using two different worksheets, a cartoon, two articles and power point. While implementing the activities various teaching methods and strategies (such as discussion, critical thinking, and issue analysis) were used. The outline of this session was presented in Table 3.9. The detailed information will be given in the following part.

Table 3.9 *Outline of Session-5*

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To state that media are used as a tool to convey the messages related to ESD.</b>	awareness	Analyze & Evaluate	<b>9</b> -Sharing yesterday's assignment related to analyzing the message(s) about ESD targeting kids, watching and analyzing cartoon on GW	internet, A4 papers, cartoon, Worksheets	group work, critical thinking, issue analysis, discussion	UNESCO's (2012) and OMEP's (2011) frameworks, UNESCO (1978), Hobbs(2011)
<b>To state how media can be used as an educational tool.</b>		Analyze & Evaluate	<b>9</b> -Sharing yesterday's assignment related to analyzing the message(s) about ESD targeting kids, watching and analyzing cartoon on GW	internet, A4 papers, cartoon Worksheets	group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To state that individuals use media as a tool to express themselves.</b>		Analyze & Evaluate	<b>10</b> -analyzing the articles on child and media, presentation powerpoint on whether 0-6 year-olds kid can understand the media messages or not, preparing posters with slogans based on this PDT	Articles, A3 and A4 papers, powerpoint, Worksheets,	Lecturing, group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To describe GW messages which are conducted by media tools.</b>	Knowledge & Skills	Analyze & Evaluate	<b>9</b> -Sharing yesterday's assignment related to analyzing the message(s) about ESD targeting kids, watching and analyzing cartoon on GW	internet, A4 papers, cartoon	group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To distinguish GW messages regarding its quality, veracity, and credibility.</b>	Knowledge & Skills	Analyze & Evaluate	<b>9</b> -Sharing yesterday's assignment related to analyzing the message(s) about ESD targeting kids, watching and analyzing cartoon on GW	internet, A4 papers, cartoon	group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)

Table 3.9. Cont'd.

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To restate potential effects or outcomes of GW messages.</b>	Knowledge & Skills	Analyze & Evaluate	<b>9</b> -Sharing yesterday's assignment related to analyzing the message(s) about ESD targeting kids, watching and analyzing cartoon on GW	internet, A4 papers, cartoon	group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To select the appropriate media type to convey the messages or tell the stories or to transmit planned things related to ESD to the audience/ target group.</b>	Skills	Create	<b>10</b> -analyzing the articles on child and media, presentation powerpoint on whether 0-6 year-olds kid can understand the media messages or not, preparing posters with slogans based on this PDT	Articles, A3 and A4 papers, power point	Lecturing, group work, critical thinking, issue analysis, discussion	UNESCO's (2012) and OMEP's (2011) frameworks, UNESCO (1978), Hobbs(2011)
<b>To design content on ESD via using his/her creativity and own tool(s).</b>	Attitude & skills	Create	<b>10</b> -analyzing the articles on child and media, presentation powerpoint on whether 0-6 year-olds kid can understand the media messages or not, preparing posters with slogans based on this PDT	Articles, A3 and A4 papers, power point	Lecturing, group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To determine the content(s) and aim(s) of the message, and audience while creating his/her message on ESD.</b>	Attitude & Skills	Create	<b>10</b> -analyzing the articles on child and media, presentation powerpoint on whether 0-6 year-olds kid can understand the media messages or not, preparing posters with slogans based on this PDT	Articles, A3 and A4 papers, power point	Lecturing, group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To use some techniques to conduct his/her own message(s) on ESD.</b>	Skills	Create	<b>10</b> -analyzing the articles on child and media, presentation powerpoint on whether 0-6 year-olds kid can understand the media messages or not, preparing posters with slogans based on this PDT	Articles, A3 and A4 papers, power point	Lecturing, group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To operate ethical principles and his/her responsibility while creating their own media on ESD.</b>	attitude	Reflect	<b>10</b> -analyzing the articles on child and media, presentation powerpoint on whether 0-6 year-olds kid can understand the media messages or not, preparing posters with slogans based on this PDT	Articles, A3 and A4 papers, power point	Lecturing, group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)

Table 3.9. Cont'd.

Objectives	ESD	CML	Activities	Resources	Teaching Methods & Techniques	References
<b>To perform ethical principles and responsibilities in practice.</b>	skills	Reflect	<b>10</b> -analyzing the articles on child and media, presentation powerpoint on whether 0-6 year-olds kid can understand the media messages or not, preparing posters with slogans based on this PDT	Articles, A3 and A4 papers, power point	Lecturing, group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To apply ethical principles and responsibilities to his/her own identity and communication behavior.</b>	skills	Reflect	<b>10</b> -analyzing the articles on child and media, presentation powerpoint on whether 0-6 year-olds kid can understand the media messages or not, preparing posters with slogans based on this PDT	Articles, A3 and A4 papers, power point	Lecturing, group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To perform individually and collaboratively to share his/her knowledge with families, colleagues, and community.</b>	skills	Act	<b>10</b> -analyzing the articles on child and media, presentation powerpoint on whether 0-6 year-olds kid can understand the media messages or not, preparing posters with slogans based on this PDT	Articles, A3 and A4 papers, power point	Lecturing, group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>To perform individually and collaboratively to solve the problems with families, colleagues, and community.</b>	skills	Act	<b>10</b> -analyzing the articles on child and media, presentation powerpoint on whether 0-6 year-olds kid can understand the media messages or not, preparing posters with slogans based on this PDT	Articles, A3 and A4 papers, power point	Lecturing, group work, critical thinking, issue analysis, discussion	Hobbs(2011), UNESCO (1978)
<b>Principles of Adult Learning Employed</b>						
<b>Autonomous and self-directed</b>			9 & 10			Lieb (1991)
<b>Goal-oriented</b>			9 & 10			Lieb (1991)
<b>Practical</b>			9 & 10			Lieb (1991)
<b>Respect</b>			9 & 10			Lieb (1991)
<b>Life experiences and knowledge</b>			9 & 10			Lieb (1991)
<b>Relevancy-oriented</b>			9 & 10			Lieb (1991)

Session-5 included theoretical part (activity-10) and practical part (activity-9).

In Activity-9, the primary purpose was to be aware of whether the media messages related to ESD especially GW can be understood, analyzed and evaluated by children whose age ranged from 3 to 6 years old. To reach this aim, the objectives shown in Table-3.9 were supported with several sub-activities such as sharing yesterday's assignment related to analyzing the message(s) about ESD targeting kids, watching and analyzing cartoon on GW. Group work, critical thinking, issue analysis and discussion were used as teaching methods and techniques. Autonomous and self-directed, goal-oriented, practical, respect, life experiences and knowledge as well as relevancy-oriented, were used as adult learning principles to support teachers' learning.

Internet, worksheet, and cartoon were utilized as a resource for this activity.

Internet was used to watch the videos (such as public service announcement, program, and advertisement...etc.) and analyze the posters and caricatures.

In the worksheet, there were some questions to support teachers to analyze and evaluate the message in the cartoon such as "who produces/ creates and supports the message(s) that is given in the cartoon? Which message(s) related to GW is given? What is the important thing that should be known and you catch among the messages? Etc.

Cartoon-Nane ile Limon-Küresel Isınma [Nane and Limon-Global Warming] were prepared by Ozgur ZUMRUT with TRTCocuk sponsorship.

Some of the messages were given in this video:

a) There are dialogues between two children (sister and brother).

B: Not only me but also all world is in trouble. This is a big problem like Earth. This problem is global warming.

S: What do you mean?

B: I mean we, all of us will die.

S: What do you say? Can you explain this issue?

B: Okay. Today we mentioned global warming at our course. The world faces with horrific disaster. Also, we mostly cause this problem.

S: Are we? Why?

B: We use the energy resources in the world excessively and incorrectly. This book also makes an explanation of this. (Fossil fuels and some gases such as petrol and coal. You know, when we use these gases excessively, there became a gas layer around the world. Moreover, this layer holds heat, and thus, this starts to destroy the balance of heat and temperature. If this balance were destroyed, Earth would begin to get hotter slowly. Therefore, the glacier at the poles starts already to melt. Think about it! The white polar bears can become extinct. environment)

b) B: Of course not. On the contrary, as said my teacher, we, all of us, have responsibility. Hereafter, we change our consumption habits. We will save energy. The people that will save the world are we. (economic)

We should produce solutions such as alternative energy resources. (environment and economic) (Creating their own windmill as an alternative energy resource and experimenting with it)

c) At the last part of the cartoon, they give information about global warming (human-based CO<sub>2</sub> causes to global warming). The outcomes of global warming change in climates and destroy the balance of nature (melting glaciers). We, human beings, have responsibilities. Firstly, we should protect the forests and plant trees. By this way, there will be a decrease in CO<sub>2</sub> level. We should be careful about our consumption habits. We should be sensitive to the environment. For instance, we should use paper wisely because the paper is made up of trees. We should save the energy. We can do this by shutting down the lamp when we are leaving our room. We should save the water and use it wisely. (environment and economic)

In this video, some techniques were utilized such as using questioning, analogy, graphs and figures, images (water, tree, and windmill), using music with changing sounds, distinct types of sounds, different color and font size of the statement.

In activity-10, the primary target was to analyze and evaluate the message related to CML in early childhood education and media and child development in the articles and be aware of whether the media messages in the media can be understood, analyzed

and evaluated by children whose age ranged from 3 to 6 years old. To come true this purpose, the sub-activities, e.g. analyzing the articles on child and media, presentation powerpoint on whether 0-6-year-old kids can understand the media messages or not and preparing posters with slogans based on this PDT were applied based on the objectives presented in Table 3.9. Lecturing, group work, critical thinking, issue analysis and discussion were utilized as teaching methods and techniques. Autonomous and self-directed, goal-oriented, practical, respect, life experiences and knowledge, as well as relevancy-oriented were used as adult learning principles to support teachers' learning.

Articles, worksheets, A3 and A4 papers and power point were used as resources for this activity.

The two articles that were written by the academicians whose research area were media literacy were used. They gave perspective on how teachers can be used media in their activities efficiently.

Article-1-Media literacy for children: to analyze the characters in the media text is written by Prof.Dr. Alexander FEDOROV in 2013.

Abstract of this article was:

Can we help our children more perceptively analyze media characters and media texts as a whole? This question is my paper focus. The analysis of media characters in the classroom is based on a variety of creative assignments outlined here: literary imitation, dramatic role-playing, and graphic representation. For each of these categories, a “bank” of creative assignments is provided from which a teacher can choose activities best fitting the form, genre, and content of a given media text, as well as the age, level, and needs of their students. The three categories of assignments correspond to stages in the process of creating a media text. The literary imitation assignments are related to the script-writing stage (devising a plot, development of characters, writing screenplays for scenes in well-known literary works).

Article-2- Media and early childhood development “Communication with children: Growing–up, inspiring, encouraging teaching and developing principles” is written by Prof.Dr. Dafna LEMISH and Barbara KOLUCKI.

Abstract of this article was:



In this article, mainly we make an explanation about the role of media in developing children's lives globally. We mention digital media such as kid's TV and print media, e.g., children's books. We have three aims. One of them is to make summary related to media about obtaining children's right. The second one is to examine the contribution of media to especially the texts integrated with the early childhood development strategies in low and middle socioeconomic countries- in particular in the unprotected countries whose life has the most deficiencies-, strengthening specific development targets, supporting them and playing a complementary role. The third one is we play an indicator role in taking action. We summarize the main principles of knowledge sharing and significant items which promote children's cognitive, social and emotional development, raise with them and are done made for them. In addition to this, we make discussion on breaking new ground in the communication area and the most effective strategies having a most significant effect on especially in this area having an exchange of ideas with local press and the other sectors for broadcasting the publications that are appropriate for children's development and cultural background.

In the worksheet, there were some questions to support teachers to analyze and evaluate the message in the article such as "who write this article? What is the purpose of writing this article?, what is the target audience(s) of this article? Etc.

A3 and A4 papers

A3 papers were used to provide that teachers created their own posters with their own slogans.

A4 papers were utilized to provide teachers designed their own products (story, journal, book, video, etc.) related to ESD.

At power point presentation, the information related to child and media and whether from birth to six years old children can understand the messages in the media or how they can understand these messages was given to the teachers.

#### Implementation Procedures for Session-5:

In session-5, first of all, activity-9 was implemented. In this activity, teachers shared their analyses and findings of yesterday's assignment related to whether children can understand the messages on ESD especially on global warming in the media (such as programs, public service announcements, advertisement broadcasting in TV

channels...etc.) or not. After this sharing, a discussion was conducted on whether there are same and different things which were found while analyzing. Afterwards, the cartoon analysis worksheets were delivered to teachers and time was given to skim through the questions. Then, the cartoon was viewed. The time was given to complete the worksheets. Teachers shared their replies and discussed them.

Secondly, activity-10 was conducted. In this part, initially, the article analysis worksheets were delivered with two articles. After completing the analyses, teachers shared their responses and discussed on them with the researcher's support. Then, powerpoint was presented with teachers' involvement. Lastly, it is wanted that teachers made a group including two people and created their own media (such as a poster, journal, book, video...etc) related to ESD based on their findings of yesterday's assignment and today's presentation. After each group presented their own media, researcher, and the other group talked about what the message is and whether the media is prepared appropriately for the target audience and effective area; and, they proposed how it can be produced more differently/ efficiently.

Lastly, this session was finished with the assessment. In the assessment part, it is asked that teachers constructed their own posters with slogans in the same groups. The posters and slogans reflected their experiences that they had throughout the five sessions. After each group finished their sharing, I also asked for overall PDT reflections from the teacher participants. After this discussion, the session was completed.

### **3.3.2 Ongoing Support for the teachers from the Researcher**

Above, I have provided a detailed account of the PDT that was developed specifically for the teachers involved in this study that focused on ESD and CML. As a critically reflective researcher I have described this PDT as one shot PDT, in that the researcher did not return to the preschool for further PDT sessions, however the researcher and teachers kept in touch for a whole semester, which is advised by Clarke and Hollingsworth (2002). Later in Chapter IV, I also provide some further critique of the PDT. Immediately After the PDT, on 19<sup>th</sup> September at the start of the 2016-2017 academic year, the preschools were busy developing their educational programs for the newest children enrolling in the classes. For example, they prepared an orientation program to make children knowledgeable about their class, preschool manager,

assistant manager(s) teacher, helpers, toilets, their wardrobes, and the school as well as class rules. Therefore, until the middle of the October, the teachers were busy ensuring that their children got used to school and class organizations as they set about forming their own classroom rules with the new children and to help them to adapt to classroom activities. Once this was established, after 19<sup>th</sup> October, the teachers started to organize the learning activities related to ESD that integrated to CML. At this time, we began to communicate regularly either face to face and/or by e-mail and/or telephone call. We talked about ESD and CML, which topics could be related to ESD, which teaching strategies were more appropriate for ESD and CML and which question types were more appropriate for media analysis.

While the teachers (Duru and Saniye) who were working in Preschool A preferred to design and implement five distinct activities including ESD and CML, the teachers (Umay and Lale) who are working in Preschool B decided to create and conduct an ESD project at least one week. In Preschool B, one of the teachers planned and applied a month-project. After the teachers made their own daily plans /projects, we also discussed the plans and, as the researcher, gave feedback.

Additionally, after the teachers implemented their activities, the researcher and teachers came together and talked about their activities formally via watching the videos of the implemented activities. In this way, the teachers had a chance to see their activities in action and to self-evaluate regarding their strong and weak aspects. They tried to add new things to their activities every time. Sometimes, too, there was informal dialogue amongst the teachers and the researcher. These were also very effective and productive for both teachers and the researcher. For instance, teachers asked questions about the scope of their activities (whether this issue is related to ESD and its components) before preparing them or whether the question(s) prepared by them for CML is appropriate or not. In the light of questions, I also gave information to the other teachers to promote them to make clear their knowledge about ESD and CML.

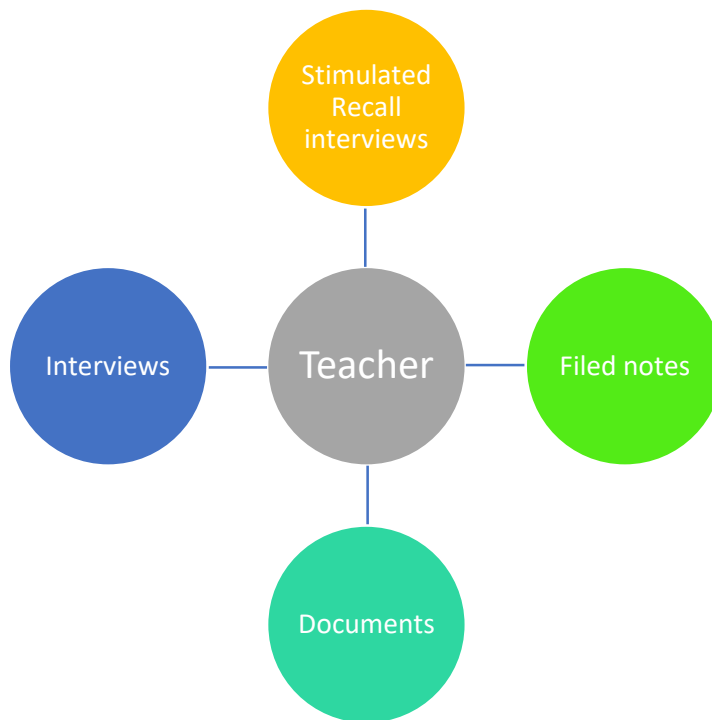
### **3.4 Data Collection Instruments**

As has been illustrated at various points in the above detailed account of the PDT that is the basis of this study, primary data were collected via a range of qualitative research methods, including: stimulated recall interviews using video data;

face to face interviews with the teachers; supporting data gathered from teacher documentation and researcher's field notes; and written and oral reflections and participants' educational products developed during the PDT. In summary, to enhance the internal validity (credibility) which is one of the triangulation strategies as proposed by Denzin (1978), of the findings of the current study, multiple data sources were used. (See Figure 3.2) The data collection instruments used in each phase of the study - prior to PDT, during the PDT, and after the PDT - are summarized in Table 3.3 below, along with explanations of their purposes. Following this table, I then outline each of the data collection instruments used in more detail.

Table 3.10 *Summary of the Data Collection Instruments*

<b>Data Collection and Implementation Procedure</b>	<b>Data Collection Instruments</b>	<b>Aims</b>
<b>Phase-I-Prior to PDT</b>	Teacher Documentation (daily and monthly plans)	To support describing the existing situation related to ESD and CML in early childhood learning environments, and teacher's CML levels and their knowledge about and awareness of ESD and how to combine ESD and CML while implementing before the training
	Stimulated Recall Interview	To determine the current situation related to ESD and CML in early childhood learning environments and teacher's CML levels and their knowledge about and awareness of ESD and how to combine ESD and CML while implementing before the training
	Field Notes	To support describing the existing situation related to ESD and CML in early childhood learning environments, and teacher's CML levels and their knowledge about and awareness of ESD and how to combine ESD and CML while implementing before the training
	Interview	To determine the current situation related to ESD and CML in early childhood learning environments and teacher's CML levels and their knowledge about and awareness of ESD and how to combine ESD and CML while implementing before the training
<b>Phase-II-PDT</b>	Written and/or oral reflections	To identify the impact of training on participants' professional development
	Documents created by participants during the workshops	
<b>Phase-III- After the PDT</b>	Teacher Documentation (daily and monthly plans)	To support describing the existing situation related to ESD and CML in early childhood learning environments, and teacher's CML levels and their knowledge about and awareness of ESD and how to combine ESD and CML while implementing after the training
	Stimulated Recall Interview	To determine the current situation related to ESD and CML in early childhood learning environments and teacher's CML levels and their knowledge about and awareness of ESD and how to combine ESD and CML while implementing after the training
	Field Notes	To support describing the existing situation related to ESD and CML in early childhood learning environments, and teacher's CML levels and their knowledge about and awareness of ESD and how to combine ESD and CML while implementing after the training
	Interview	To determine the current situation related to ESD and CML in early childhood learning environments and teacher's CML levels and their knowledge about and awareness of ESD and how to combine ESD and CML while implementing after the training



*Figure 3.1* The Summary of the Data Collection Methods

### **3.4.1 Stimulated Recall Interview**

The primary data source was Stimulated Recall Interview (SRI) used to examine how teachers utilize media while they were applying activities regarding ESD regarding 7Rs before and after PDT. Researchers have increasingly used this data collection method to investigate how people experience about interactions related to specific situation in education context (Dempsey, 2010; O’ Brien, 1993; Theobald, 2008). Via this data collection method, teachers could consider their teaching behavior in depth (O’Brien, 1993; Lyle, 2003). Moreover, utilizing video cases “which lends itself to re/view, can facilitate the sort of fine-grained “data-driven” discussion likely to reveal the nature and significance of the practices” which is not easily seen by an outside observer and play a key role for discussion, “we can facilitate the articulation of teachers’ theories of practice and construct their professional development experiences on that basis” (Clarke & Hollingsworth, 2000, p.11-12).

SRI were carried out as immediately as possible after making a recording to actualize the validity as suggested by Lyle (2003). All the SRI were finished no more than one day after the video recordings as proposed by O’Brien (1993). In the SRI procedure, the researcher (interviewer) and the teacher (interviewee) watched

the video recordings together. Therefore, the interviewer could prompt the participants if it is necessary. Moreover, interview protocol prepared by the researcher via examining the related literature (e.g. Martinelle, 2017; Nguyen, McFadden, Tangen, Beutel, 2013; O' Brien, 1993,) was used throughout SRIs since Dempsey (2010) emphasized that it is necessary to develop SRI protocol to provide validity of SRI procedure. The sample interview questions were presented at Appendix-A. The time allocated to each SRI ranged from 30 minutes to 40 minutes which is dependent on the total significant episodes from each activity recording. As recommended by O'Brien (1993), short sessions were determined, so teachers did not get tired and bored while they were watching the recordings. Furthermore, O'Brien (1993) has suggested that the number of lessons video recorded is mostly dependent to the availability of resources and time but based on the experiences, the average video-taping about four lessons over a two to three weeks period is appropriate. In the present study, each of early childhood teachers participated in a dry-run teaching session in their class. After that, they were involved in four observations and four follow-up SRIs maximum within one day after each recording through a whole semester. In Total, 16 SRIs were carried out with four teachers before PDT. After PDT, entirely 16 SRIs excluding dry-run sessions were also conducted. The procedure of SRI before and after PDT utilized for each participant is portrayed in figure 3.3 below.

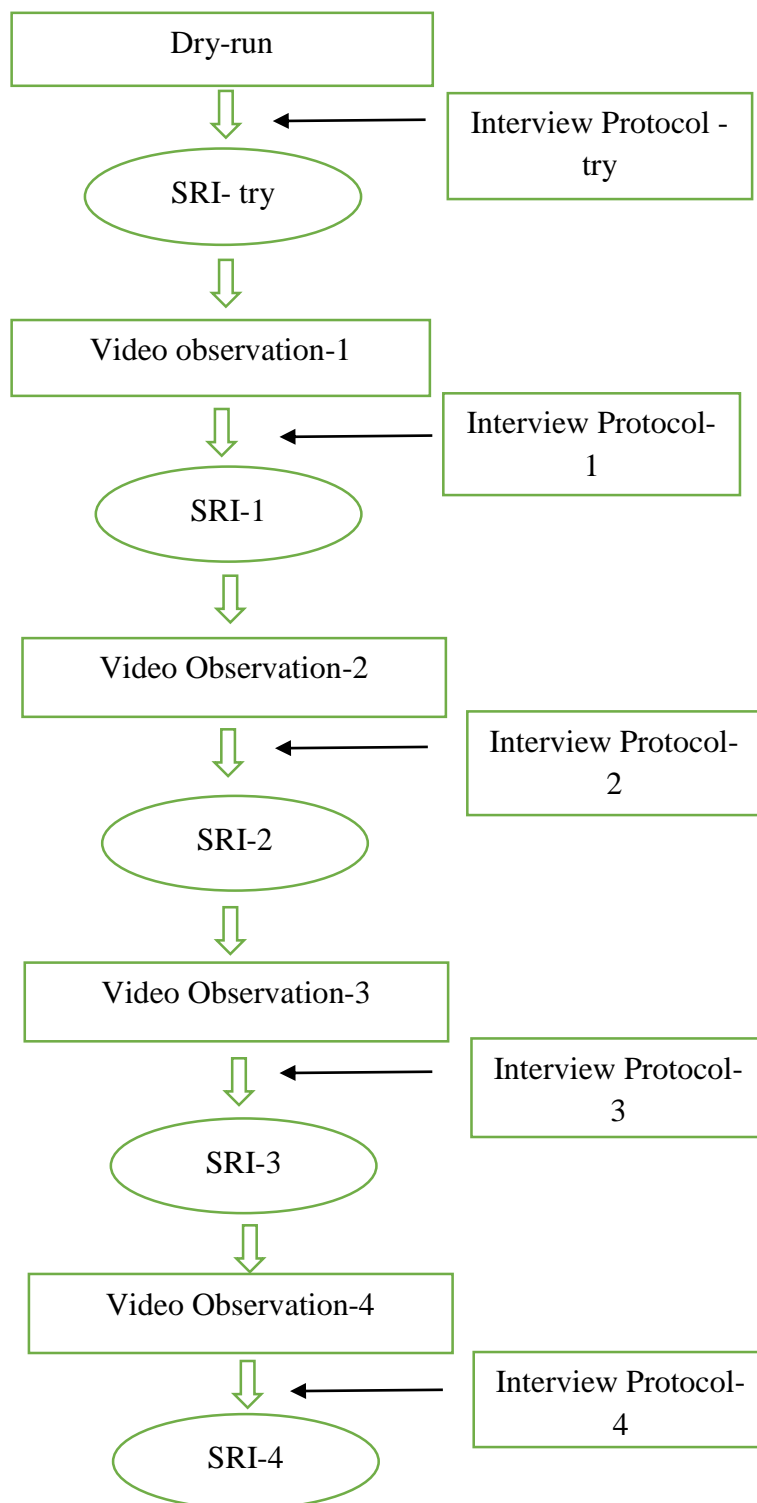


Figure-3.2 Procedure of Stimulated Recall interview



### **3.4.1.1 Video recording procedures**

During the video recording part of the SRIs, two cameras were used as recommended by O'Brien (1993). While one camera was fixed with the help of tripod, the other one was used by the researcher as a hand-held camera since in early childhood classrooms activities including many movements (such as sitting on carpet, playing active games with group, doing activities at the garden...etc.) were not conducted as it was in elementary classrooms. The camera with a tripod set up at the corner of the classroom not to distract children's play and activities and to observe teachers' implementation with a broader view in the classroom. Hand-held camera was moved around again mainly focused on teachers' work.

Before starting to real video recordings and SRIs, as O'Brien (1993) proposed "dry-run" (p.217) sessions were carried out for each teacher in order to introduce them to filming as well as SRI process and SRI protocol such as how the data was collected, how interviews were conducted what type of questions were at the interview protocol. By this way, teachers and children got used to being observed by cameras. Further, these sessions ensured that the researcher, camera operator, was familiar with how to operate cameras and which angles were more appropriate, where she should put the camera.

Each filming process took approximately 45 minutes. During the filming process, researcher mainly focused on teachers, but sometimes children caught up because of the activities that they are involved.

All in all, the main aims of using the filming process were to discover what the existing situation related to ESD and CML before PDT was and to observe the new situation about ESD and CML after PDT in early childhood learning environments. Through SRI, the researcher could also understand what the reason(s) of the videoed situations before and after PDT was. For these aims, some validity issues as explained above were carried out.

### **3.4.2 Teacher Interviews**

The second qualitative instrument was developed by the researcher in the form of a semi-structured interview. The interview protocol was composed of a semi-structured interview including questions pertaining to media, CML, ESD, and views related to daily plans on integration CML into ESD. Each interview session was conducted twice as before and after PDT lasted at least 40 minutes and was audio-taped. The data collection procedure was carried out in a room with a quiet and relaxed atmosphere which was designated by the preschool administration. In the room, there was nobody else other than the teacher and the researcher. Before the data collection procedure started, each teacher was acquainted with the interview questions and was told that when s/he became bored s/he could take a break or do not have to go on with the interview. The data was collected from each teacher individually via a face-to-face interview in the same order. During the interview process, enough time was given to the teachers to think about the questions in the interview protocol; moreover, they were encouraged to give detailed answers to the questions. Some questions were asked again when any of the teachers did not understand the questions and ask for repetition.

The interview protocol was developed by the researcher according to the research questions of the study and the related literature on CML (European Commission's Structure of Media Assessment Criteria and Level of Competences (2009) and Hobbs (2010)) and ESD. After the last draft was formed, four experts in different fields examine the questions and cases regarding comprehensibility. While one of them were expert on CML and early childhood education, the other one was expert on ESD. Moreover, the other one was expert on ESD, and early childhood education and the last one was an expert on qualitative studies. After the experts' examinations, the required modifications were made, and then, a pilot study was conducted to identify the comprehensibility of the interview questions. After the analysis of the pilot study, the questions were rearranged, and the final interview protocol was formed. The final form was presented at Appendix-B.

### **3.4.3 Researcher Field Notes**

For the present study, the researcher took field notes during and immediately after the video recordings, PDT, and informal dialogues between the researcher and teachers to support the gathered data. In other words, two types of field notes, namely “descriptive field notes and reflective field notes” were utilized (Creswell, 2005, p.214.). For descriptive field notes, the researcher took notes to describe the events, activities, and participants in SRIs’ procedures. The notes drew a light if there is a difference between the researcher thought about what happened and the video recording showed. For reflective notes, the researcher took notes immediately after the recorded activities sessions to state her own thoughts related to observations and interviews. Moreover, the researcher took reflective notes about PDT after conducting each plan and informal dialogues after conversations with teachers.

### **3.4.4 Teacher Documentation**

The other data collection instruments supporting the findings were teacher documentation (daily and monthly plans) used both before and after PDT, written and/or oral reflection and participants’ products during the training. These personal documents were utilized because these were a reliable source of data about a person’s attitudes, beliefs, and perceptions and gave the inner meaning of human everyday activities and experiences (Merriam, 2009). Moreover, prior to PDT, before making SRIs (videotaping), firstly teacher documentations were analyzed and the activities related to ESD were determined; and then, the researcher made contact with the teacher to observe (record with camera) the specified activities in their daily plans. After PDT, for Preschool A, the researcher observed five distinct activities which were designed by teachers according to researcher feedback. In Preschool B, for one teacher, five connected activities covering six days were observed. For another teacher, five selected activities from the one-month project including ESD and CML were observed.

## **3.5 Data Collection Procedure**

The data collection procedure was conducted from March 2016 to January 2017. Before the data collection procedure was initiated, the required official permissions were

taken from both the Research Center for Applied Ethics, Middle East Technical University and the Turkish Ministry of National Education. (See Appendix F) After getting the necessary permissions, the researcher visited the selected preschools to inform them about the nature of the study. Firstly, the preschool managers and assistant managers were informed about the aim and scope of the study and permission was taken from them to carry out the study in their school. After their approval, their support was requested to encourage the teachers to participate in this research. Secondly, the kindergarten teachers were informed about the aim and scope of the study, and their participation in the research was requested. After they agreed to participate in this study, each of them signed a volunteer participation form. Finally, parents were informed about the aim and scope of the research with letters and their children's involvement in this study was requested. After they accepted that their children were a part of this study, each of them signed a parental consent form. Then, the data collection before PDT regarding CML and ESD was initiated. The data were collected from each teacher via simulated recall interview and interviews. Throughout stimulated recall interview, the activities pertaining to CML and ESD which were applied by teachers were video recorded. This main data was supported by the data collecting from field notes and documents. Afterwards, based on data analysis, it was found that there was a need for PDT related to ESD and CML to support teacher's professional development. Therefore, 10-hour PDT was constructed and conducted. After PDT, same data collection procedure before PDT was carried out for the data collection procedure after the training.

### **3.6 Data Analysis Process**

For the present study, several data analysis procedures were used according to the different data types used. For the analysis of teacher documentation (daily and monthly plans) before and after PDT, content analysis was used to describe concepts and relations that explicate the data. For this, the data were carefully read several times and highlighted all parts that reflect the components of CML and ESD regarding 7Rs. Throughout the content analysis, firstly, the coding phase was carried out. In this phase, the meaningful parts of the data were named by using the predetermined codes. These codes were determined with the analysis of relevant literature (for CML Hobbs' (2010) essential

competencies of digital and media literacy was used; and, for ESD UNESCO's (2012) and OMEP's (2011) ESD and 7Rs frameworks were utilized.). During the naming process, the data were examined, compared and conceptualized to make connections between them and to determine whether there were different codes from predetermined codes. Then, all codes were determined and listed; and related codes were combined. Afterwards, they were organized logically. Lastly, themes explaining the data were determined by the analysis of the related literature.

Based on these analyses, activity observations which were the part of the SRIs were made. The data were obtained from both SRIs and interviews were analyzed by open coding as proposed by Glaser and Strauss (1967). In the process of open coding, each part of the data is examined to describe what the data exactly means and to form specific categories that explained the data sufficiently (Boeije, 2002; Creswell, 2007).

All the audio-taped interviews for each teacher were transcribed verbatim and were read entirely. After the reading, the data were analyzed separately concerning the timeline of data collection (before and after PDT).

Initially, before PDT, the data that belonged to each teacher were collected via SRIs and interview, were analyzed and divided into categories. While some of the codes emerged in connection with related literature, some of them emerged during the analysis. All the codes were grouped into various categories. These codes, categories, and their descriptions were composed in the light of the conceptual framework of the European Commission's Structure of Media Assessment Criteria and Level of Competences (2009), Hobbs' (2010) essential competencies of digital and media literacy and UNESCO's (2012) and OMEP's (2011) and previous research such as (Elliott, 2017, McCrea & Littlelyke, 2015). After the analysis of the data related to before PDT was completed, the data analysis pertaining to after PDT began. The same procedure was followed for this data. After all the analyses of the data were completed, the emerging codes and categories were compared. While some of them did not emerge in the data before PDT, some of them appeared in both data sets: before and after PDT.

Moreover, researcher constructed patterns for SRIs as advised by Stake (1995) to search for a correspondence between two or more categories. For this, researcher

composed 3X3 tables to demonstrate the relationship among the three categories. They were categorized from basic to advance regarding ESD and CML (For detailed information see Appendix-E).

After these steps were conducted for data prior to and after PDT separately with the help of supporter data (such as field notes and documents), the emerging categories were connected to the Interconnected Model of Professional Growth (Clarke & Hollingsworth, 2002; Hollingsworth, 1999). This means that the data obtained from before and after PDT were compared via the perspective of Clarke & Hollingsworth's (2002) model which explains how the change in external domain (PDT) promote teacher's professional development change and/or growth by impacting his/her "personal domain", "domain practice" and "salient outcomes". (For detailed information see 2.4).

### **3.7. Research Ethics**

The current research was conducted in two public preschools. For this study's ethical clearances, required permissions were received from Middle East Technical University's Research Center for Applied Ethics and the Turkish Ministry of National Education as explained at 3.5 Section.

Based on the university guidelines, written permissions were obtained from all participating early childhood teachers. They gave their own permission to involve in this research. Besides, parental permission was ensured and taken on behalf of all the children in four classrooms. (Detailed information See 3.5 Section) The researcher provided to establish ethical and respectful relationships between participants and her. For this, the researcher focused on two issues namely informed consent and not to giving harm to the participants. For instance, to ensure participants' confidentially and full anonymity, the preschools were not described, and while reporting the findings, pseudonymous were used for early childhood teachers and children.

The videos in the data were used for this research and will not be utilized in any platforms. Moreover, during data collection, the researcher did not force participants to work with her, she always respected to their trust and personal rights.

### **3.8 Trustworthiness of the Study**

In order to make a study trust-worthy, there are specific procedures that are proposed by experts. According to Merriam (2009), to ensure the trustworthiness of qualitative studies, the researcher should check validity and reliability issues using some strategies.

#### **3.8.1 Validation of the Study**

Various strategies to assess the accuracy of the findings are suggested by researchers (Creswell, 2009). According to Creswell (2007), at least two of these strategies should be carried out by qualitative researchers. In this study, as proposed by Denzin (1978), of the method of gathering multiple sources of data, which is one type of a triangulation strategy, was used. In the present study, the strategy “use multiple data sources” was fulfilled by using various data collection instruments (SRI, interview, document, field notes).

The other strategy that was carried out was “spend prolonged time in the field” as proposed by Creswell (2009). The study was carried out for approximately nine months. Hence, the researcher had a chance to observe the participants and to make contact with them more closely in their real setting.

#### **3.8.2 Reliability of the Study**

There are several ways to reveal that the approach of the research is consistent across various researchers and projects (Gibbs, 2007).

In the present study, the strategy “check transcripts to make sure that they do not contain obvious mistakes made during transcription” as suggested by Gibbs (2007) was used. Further, the external auditor advised by Creswell (2009) was used. The outside reviewer read the transcripts, codes, and interpretations examined the connection between research questions and data gave feedback about these. The external auditor was a professor in Early Childhood Education. She was an expert on Efs/ESD and teacher education.

As a summary, in this chapter, the research methodology of the study has been outlined. It included the research context being two preschools in Turkey, four teachers as participants, the study design that contained five steps. Data collection methods that consisted of SRIs using videos, interviews, teacher documentation (daily and monthly plans) and field notes as well as the data analyses process encompassing content analysis and open coding were described. Detailed explanation about how PDT was developed and conducted was given. The chapter concluded with the section on ethical issues raised during the study and an account of methods of trustworthiness and validity and reliability issues.



## CHAPTER 4

### FINDINGS

*“Quality of life isn’t measured only  
by what we gain, but also by  
what we trade for it.”  
Richard LOUV*

This chapter presents the findings in line with one primary and four sub-research questions. These are 1) To what extent have early childhood teachers’ critical media literacy (CML) levels changed as a result of professional development training aimed at improving the effectiveness of their Education for Sustainable Development (ESD) practices in terms of their personal domain, domain of practice, and domain of consequences? a) How have early childhood teachers’ awareness of ESD changed before and after the professional development training? b) What is the level of early childhood teachers’ CML before and after the professional development training? (personal domain) c) What changes in early childhood teachers’ implementation of ESD through CML in early childhood learning environments have occurred after professional development training? (domain of practice) and d) What changes in early childhood teachers’ outcomes derived from their implementation of ESD through CML in early childhood learning environments occurred after professional development training? (domain of consequences)

In this chapter, based on case research and The Interconnected Model of Professional Growth (ICMPG) each EC teacher’s professional change and /or professional growth were explained one by one. ICMPG consists of four distinct domains, namely personal domain, domain practice, domain of consequences and external domain. While personal domain focuses on teacher knowledge, beliefs, and attitudes, domain practice covers teachers’ professional experimentation (trying new approaches/strategies/methods throughout conducting daily plans) in their classroom. Domain of consequences includes

salient outcomes of teacher's experimentation/ implementation. External domain contains sources of information, stimulus or support such as in-service training, formal/informal meetings.

Each teacher was examined regarding explaining her school context and teaching background. Then, teachers' personal domain (awareness of ESD and CML level) before PDT were given separately. After that, their implementation related ESD through CML in their classroom before PDT was presented in detail in terms of ESD components (weak to strong) and CML (basic to advanced). Afterwards, their domain consequences before the PDT (selection of topic, teaching and assessment strategies; and, resource use) was portrayed. After the explanations related to prior to PDT were completed the same steps were followed while presenting the findings pertaining to after the PDT. (See Figure 4.1)

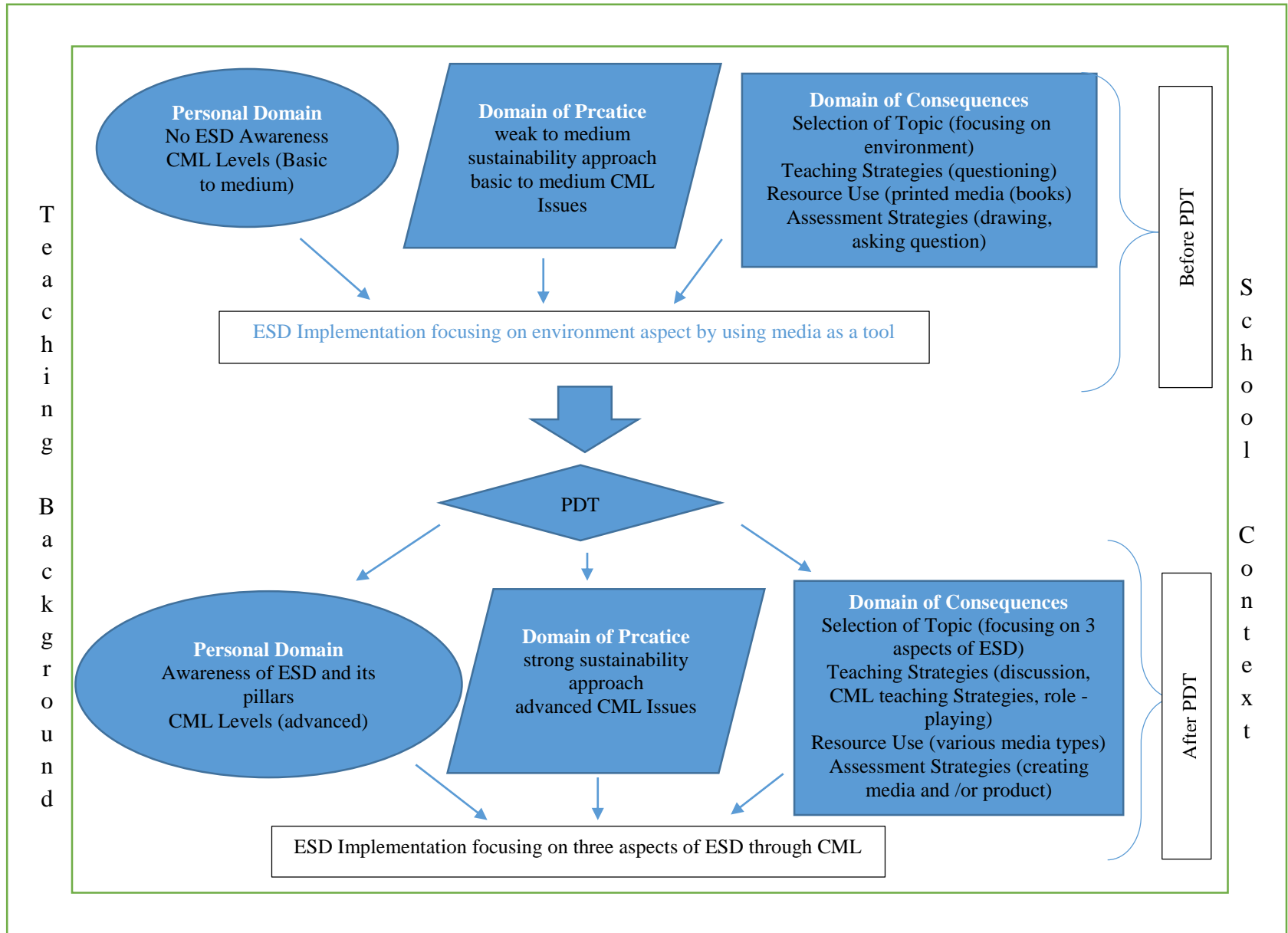


Figure 4.1 Summary of the Findings

The figure provides a visual account of how the findings of the current study are presented. The top shapes before PDT represent the existing situations of ESD and CML in four classrooms. For instance, the top left-hand ellipse shows early childhood teachers' ESD awareness, and CML levels and the next parallelogram indicates analyses of teachers' daily and monthly plan and four observed activities regarding ESD and CML before PDT. The next square demonstrates the examinations of teachers' four observed activities regarding selection of topic, teaching strategies, resource use and assessment strategies before PDT. All of them reveal that before PDT great majority of teachers' ESD implementations focused on environment aspect by using media as a tool. On the other hand, after PDT, there were some changes. To illustrate, the bottom left-hand ellipse shows changes in teachers' ESD awareness and CML levels and the next parallelogram demonstrates changes in teacher's daily and monthly plans and four observed activities targeting ESD through CML. The next square indicates the changes in teacher's four observed activities concerning selection of topic, teaching strategies, resource use and assessment strategies. All of them reveal that after PDT teachers' ESD implementations focused on three aspects of ESD through CML. While all these changes were explaining, each teacher's teaching background and school context were also elucidated. These components are shown at the edges of the figure.

After each teacher's story was illuminated in detail, their overall professional growth of ESD awareness, CML issues, practices targeting ESD via CML and outcomes from their practices were summarized and explained with ICMPG. All teachers' and children's names were changed with their pseudo names in order to provide their confidentiality. Missing parts of the teachers' and children's statement were shown inside bracket “[ ]”.

#### **4.1 Examining Teacher Professional Growth: The Story of Duru**

##### **4.1.1 Duru in Context**

In this section, Teacher Duru's professional history, professional environment, and professional background are examined.

#### **4.1.1.1 Teaching background**

Teacher Duru holds a four-year college degree in the early childhood education field. She had 13-years teaching experience and had been working at the preschool where the implementation was conducted for ten years. She implemented activities about environmental education composed by TEMA<sup>4</sup>. This program, “Minik TEMA [TEMA Kids]” has been implemented since 2010 with the support of the Ministry of National Education. It targets young children with soil-based environmental education. This program is applied in 50 provinces and at 973 preschools in Turkey. In this program, the teacher should carry out at least 21 activities of the prepared educational program to reach the goals of the program (Minik Tema Eđitim Programı Öğretmen Rehberi [TEMA Kids Program for Teacher Guide], 2013). She attended in some training related to how to read children’s books effectively.

#### **4.1.1.2 School context**

Duru worked in public kindergarten an independent preschool in Ankara, the capital city of Turkey. In this preschool, there is double shifting<sup>5</sup> schooling. Duru was working during the afternoon period. In this preschool, four classrooms are targeting from 48 months old to 66 months old. TEMA kids program has been applied since 2011. The school consists of a school director, an assistant director, eight teachers and 150 children.

All teachers including Duru, have not been attended to any professional development training (PDT) related to ESD through CML.

In this preschool, several projects were also conducted during 2015- 2016 spring semester and 2016-2017 fall semesters while this study was occurring. These were: long-term projects namely “Bir Kitap Bin Mutluluk Projesi [One book equals a thousand happiness ]”-in this project every Friday a different book was sent to the home to promote that parents read this book to their kids-, “Beslenme Dostu Okul

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<sup>4</sup> The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats which was established in 1992, is Turkey’s largest and leading environmental NGO now ([www.tema.org.tr](http://www.tema.org.tr)).

<sup>5</sup> In Turkish education system, some public schools serve double shifts. Morning shifting starts at 8:00 am finished at 12:00 pm. Afternoon shifting begins at 1:00 pm and ends at 5:00 pm.

Projesi [Healthy Nutrition Friendly School Project]” applying for seven months and covering different issues for each month (such as adequate and balanced nutrition, physical activity), values education conducting for seven months and targeting different values for each month (e.g. love, respect) and short-term projects namely “Hayatın Ritmi Müzik Projesi [The Rhythm of the Life is Music Project]” applying one week in May, 2016 and targeting to introduce children with different types of music (e.g. folk music, pop music), and “Oyuncaksız Sınıf projesi [Classroom Without Toys Project-Toys made out of recycled materials]” implemented throughout two weeks in December, 2016 and intending that children can make their own toys and play with these.

The attitude of teaching staff, school manager, and the assistant manager seemed to enthusiastic and positive towards exploring new things and adapting these into their activities. Informal exhibitions, parent involvement activities and seminars were conducted.

In the 2015-2016 spring semester, the students in Duru’s classroom consisted of 16 children (9 Girls and 7 Boys) including one inclusion student. On the other hand, in the 2016-2017 fall semester, 18 children (7 Girls and 11 Boys) were in her classroom. Initial observations indicated some classroom management problems due to several students wanted to be dominant figures amongst their classmates.

#### **4.1.2 Teacher Duru’s Professional Practices before PDT**

In the following part, Duru’s professional practices before PDT are explained based on the Interconnected Model of Professional Growth. Duru’s Personal Domain (awareness of ESD and CML competencies and level), Domain Practice (implemented activities) and Domain of Consequences (resource use and assessment) are summarized respectively.

##### **4.1.2.1 Personal domain: Teacher Duru**

According to the ICMPG model personal domain refers to teacher’s knowledge, awareness, skill, belief, attitude...etc. that s/he benefits during the planning and conducting the activities. In this section, the information about Duru’s awareness of ESD and CML competencies and level will be presented.

#### **4.1.2.1.1 Duru's awareness of ESD**

The analysis of Duru's awareness of ESD before PDT based on pre-interview demonstrated that she was not knowledgeable and aware of the concept of "ESD". After she read the definition of ESD made by UNESCO, she advocated that she also make activities similar to UNESCO's definition without being aware of it with these words:

I have heard "Sustainable Development" but, I have not become aware of ESD. At present, while I am reading [ESD definition], even if I was not knowledgeable about this [ESD definition], I think that we make appropriate and supportive things for this [ESD]...

She made explanations about the activities which she considered that she gave a place to ESD.

There are already related objectives and indicators such as "to be able to use the resources that are required to live" at our program [national curriculum]. What could we make based on these [objectives and indicators]? For instance, the significance of soil, water, and air, why these are vital, what is the function of them and how they can occur are instructed to the children via play and experiments. Moreover, we examine and read books related to these [soil, water, and air] with kids, use videos, visual, images. I observed that the children graduated from this year are conscious about even after not only human beings live in the world but also what the components of the world are, natural resources, and the components of the environment. Therefore, I am happy now on behalf of me to make something that fosters the definition that I read here...

Duru also made a statement about which teaching methods and techniques were used thought the activities to promote ESD in the following:

When the topic is to raise consciousness about nature, obviously, I think, experiments mostly come to the forefront. Mostly making an experiment or by play. When I considered the whole semester, I frequently used experiments. Of course, there are also discussions, language development activities but ultimately we always made a connection to the experiment...

#### **4.1.2.1.2 Duru's CML competencies and level**

Duru's CML competencies and level were examined in terms of access, analyze and evaluate, create, reflect and act respectively.

##### **4.1.2.1.2.1 Access**

Duru could access and utilize different kinds of media in her every day and work life such as printed media (book), audio-visual media (television) social media (Facebook,

WhatsApp) and digital media (internet, Google) and E- Governmental Portal for different purposes. She allocated much more time for media in her daily life than on her work life. Media covers at least 5-6 hours in her life.

When I hear the concept of media, TV and then social media come to my mind...I am mostly dealing with children's books. Children's books are my interest area. Therefore, I make a reach on these...I watch TV and follow some soap operas. I use the TV for entertainment. For social media, I utilize Facebook, but on Facebook, I mostly like to follow the groups related to my occupation [early childhood education] ... I can learn the breaking news in my occupation through Facebook... I use digital media for making research pertaining to my job. For instance, every evening, I search the issue/content [that I want to teach] that will be applied with children tomorrow (e.g., what can be done/ implemented this issue differently, is there an image that I use for the activity to teach children) through Google... I use WhatsApp for making a connection with parents through our WhatsApp group to reflect the activities that are made in the class. For this, I share video and photographs which I could take during the activities.

When I range the media types that I used from most to least digital media (internet), printed, social (Facebook) and audio-visual media (TV)...

#### **4.1.2.1.2.2 Analyze & Evaluate**

Duru has some own criteria while using distinct media types especially printed (e.g., the components of printed media, its popularity) and digital (originality, quality, and creativity). Also, she used some strategies to verify the truthfulness of the content of different types of media and compare view and knowledge. She was not knowledgeable about the components of media's content.

When media are stated, they cover lots of things. For instance, when I think in terms of books, I look the publisher of the book, its author, and illustrator...If I buy a book for me, I follow the best sellers, or I examine the comments about that book from the bookselling websites and compare different websites before I buy a book.

...There are some websites related to our occupation [early childhood education] where people share their activities. When you are a member of that website and follow for a while, you can understand the quality of members and shared activities...For instance, at some website, there are a lot of green peduncles [all children do the same thing in the same way. This means the member of websites considers art activity like this... On the other hand, some websites such as Pinterest, people make/create something by using their own creativity and children design original products, and these products are shared on that website.

Generally, if there is a reference related to that content, it seems more reliable, and I trust that content. Alternatively, I read, and if it took my attention, I search for it on Google to verify. I try to find something related to that content such as article data. If it is true, you can find something about that content quickly. If not, you cannot reach anything. At that time, you can understand it is fabricated news.

Some documents that you read, you can feel it is personal/subjective, or you can comprehend that someone advocates something when you read. Moreover, if it is



scientific information I can check it. I can distinguish “information” from “opinion” based on my feelings. However, I am not sure whether this strategy is reliable or not...

The content of media that I utilize consists of the professional development area, good examples [activities] and sharing information.

I give importance to just usefulness of media or media tool used [by me] or the appropriateness of those to the usage aim. To be honest, except these, I do not pay attention to the more specific things.

Duru did not consider that the security of media and media tools were ensured. Therefore, she did not want that her own personal information shared with other/unknown people when she was a member of any website.

When Duru’s level related to analyze & evaluate competency was perceived, it was seen that she used some basic strategies unconsciously. She has not determined any criteria until the interview, especially for her everyday media usage. She just used some criteria for book selection. Therefore, Duru’s level can be stated “medium”.

#### **4.1.2.1.2.3 Create**

Duru used social media accounts such as Facebook and Instagram to share good examples in her working life. She generally preferred to use Instagram while sharing something. She would rather impart vital things with e-mail and WhatsApp she explained the reason for it in the following:

..If it were more significant, I would send it to the person directly. It is a more reliable way because we worked with kids, and thus, if you share something, which is video or photograph, it would be video or photograph of children. We should pay attention to this [security] Therefore, I send via e-mail and/or WhatsApp because these ways are more reliable and private...

She also utilized website when she was appointed to the preschool (that she has been working up to now) for the first time. She elucidated her thoughts in the following

...when I came to this school, the school had no website. At that time, we made a website by getting internet address. I had used this website actively for three years by obtaining permission from parents. I shared just photographs and videos. When the school website can be used effectively, and opportunities such as WhatsApp have increased, I have not used that website actively, and it has been closed.

Duru also followed some blogs related to different topics from health to education. However, she did not design any blog and share anything on the blogs that

she followed. Although she prepared a brochure with her colleagues to give information to the parents, she did not prepare any journal, newspaper, and book.

When Duru's level related to create competency was perceived, it was seen that she had experience with the usage of different kinds of media types such as Instagram, websites, and brochures. On the other hand, she did not prefer to create her own blog. She has not had any experience to create her book and/or journal. It can be stated that her level remained between advance and medium because she had experience with different types of media.

#### **4.1.2.1.2.4 Reflect**

Duru thought that an individual's own self could determine social responsibility and ethical issues. In other words, these issues cannot be controlled by others such as government or governmental agencies and/or institutions.

For instance, Mother Child Education Foundation (ACEV) has its own website. Of course, this website should be inspected by ACEV because this website represents an institution and something that is shared on this website should be suitable for this institution's internal regulations. On the other hand, the things that are shared by an individual on their own private accounts should not be inspected by other people. Individuals can write what s/he wants to write. I am not disturbed by this situation. If I do not want to follow these people, only I do not follow them. I think any governmental institutions and/or agencies' inspection is not appropriate to for any private/ personal account...

She also stated her thoughts related to sharing something in the media with these words:

While sharing something in digital and social media, I do not prefer to share any personal/ private information on these platforms. In other words, I can walk on eggshells. For example, as a teacher, we shared the children's photos on the social media without thinking. However, when the issues related to child abuse occurs the warning comes from governmental agencies not to share photographs and videos. After that, we can just share activities' photos on the school website only if the parents permit us. I also cannot put children's photos on my social media accounts. I try to take precaution by myself.

While talking about inspection of any institution, she made the explanation as follows:

I do not know because I am not sure how to inspect/check and according to which criteria and who. After that, this detection can lead to other problems. For instance, while detecting, it can cause to intervene in individuals' rights and their private lives. Therefore, I cannot say certain things about this issue. In my opinion, everybody should inspect themselves.

When Duru uses any social media account such as Facebook and Instagram and shares something on these accounts, she would rather share something that she cannot feel uncomfortable if the things are shared on the different platforms without her permission or awareness. To put it another way, she prefers to share something that is not private for her generally pay attention to not to give private/ personal information. She continued *...I do not think that anything which we shared on these platforms [social media] will not remain secret...*

When Duru's level regarding reflect competency was examined, it was seen that she could look through different perceptive to the social responsibility and ethical issue. However, she could not state what the other people can do to ensure the ethical issues, especially on social media. Hence, it can be stated that her level remains between advance and medium.

#### **4.1.2.1.2.5 Act**

The Act and Create competencies intertwined for some parts especially creating/ designing specific media (such as videos, photographs, brochures, book, journal, blogs, and social media). Therefore, some of Duru's replies are also found at Create competency and in this part, the different components of Act competency will be given based on teacher's answers.

Duru utilized a social media application called WhatsApp to make a connection with her colleagues. In addition to this, she used e-mail to provide cooperation with governmental and non- governmental institutions.

*...WhatsApp is really very effective for communication with my colleagues. Even after, you can share the document through WhatsApp therefore; it is very beneficial for us. Generally, I share the things that should be declared at the school or if it was needed I share activities as well... For instance, I implement this [activity] in this way. I got good feedback from kids, and you can also apply this [activity].To illustrate, we are preparing a book list with my colleagues; there is a WhatsApp group among us at which they share the book list including beneficial books for kids. Everybody write the name of the book(s) that she likes to form a book list...*

She replied to questions related to usage of media and/ or media tools to support ESD in her classroom as follows:

*...such as visuals. As I mentioned before, when I always look at the computer related to this [visual] at home, if there was something that I like, I can make children watch it to take attention and occur a question mark on their mind... I gave ESD in my daily plans without being aware of to target UNESCO's these aims. At*

least, we used TEMA kids program actively...We utilize mostly books such as TUBITAK's books. Their prices are cheaper and thus are easily reachable. We often used the books having good printed quality and beautiful pictures. I use the videos that I could find via reflecting by the projector. However, when I think media dimension, I can say that I use mostly books.

However, she did not mention any strategies that can be used to support children's CML levels throughout the ESD activities via CML in the class.

When Duru's level in terms of Act competency was considered, it can be stated that she could use distinct types of media and/ or media tools in her activities related to ESD, especially children's books. However, she could not create her own books, journals, and videos to share with kids. In addition to this, she did not benefit from strategies to support children's CML level. Hence, her level might be medium.

All in all, prior to PDT, Duru was not aware of ESD as well as which ESD covered contents, and which strategies can be used to encourage children's CML levels while applying ESD activities through CML. Additionally, her CML level was generally medium.

#### **4.1.2.2 Domain of practice: Teacher Duru**

ICMPG model defines Domain of Practice as teacher's implementations (such as daily and monthly plans) in early childhood learning environments. The analysis of Duru's domain of practice is based on the document analysis of her monthly and daily plans, stimulated recall interviews (SRIs) and the field notes of implemented activities about ESD and CML before her involvement in PDT.

In the light of document analysis showing at Table 4.1, throughout the initial part of the study (2015-2016 spring semester), she could not demonstrate a general knowledge regarding ESD components except the environmental pillar. Similarly, her classroom practices did not include any CML issues focusing on ESD through CML.

Table 4.1

*Number of ESD and CML in Daily and Monthly Plans Prior to PDT*

<b>Months</b>	<b>Total obj.</b>	<b>Obj. 7Rs</b>	<b>Obj. CML</b>	<b>Total Act.</b>	<b>ESD in Act.</b>	<b>Media in Act.</b>	<b>CML in Act.</b>	<b>ESD &amp; Media in Act</b>	<b>ESD &amp; CML in Act.</b>
<b>March</b>	28	2-respect 1-reflect	3	10	1-reflect 2 -respect	-	-	1	-
<b>April</b>	53	2-respect 1-reflect	3	20	2 -respect (indirect)	-	2 (painters)	-	-
<b>May</b>	54	2-respect 1-reflect	3	44	7-respect 2-reflect(knowledge)	1 (book)	1 (newspaper)	1-respect	-
<b>June</b>	47	3-respect	3	26	5 -respect (indirect- knowledge)	1	-	1-reflect 1-respect- (indirect)	-

The analysis of daily and monthly plans regarding ESD and CML indicated that Duru generally focused on respect which is the environmental aspect of ESD. The objectives related to ESD placing in daily and monthly plans have also supported this situation. What's more, when the activities were examined in terms of CML and media, it was seen that Duru gave a place media mostly by using books but seldom utilized CML and ESD with media and never used ESD and CML in her activities in the classroom.

In the following section, the detailed information about implemented and observed activities in the classroom will be given. For this, SRIs were analyzed concerning ESD (from strong to weak approach sustainability practice) and CML (basic to advanced). First of all, in the light of activity plans, SRIs, and field notes, applied activities applied activities were given based on from strong to weak approach sustainability practice, basic to advance CML at Table 4.2. Then, two conducted activities (A<sub>1</sub> and A<sub>4</sub>) will be explained in detail in the light of SRIs and field notes since these two activities are most representative, and reflect a general view of Duru's classroom practices in terms of demonstrating ESD and CML issues most clearly.

Table 4.2

*Analyses of the Places of ESD and CML in Activities Prior to PDT*

CML	ESD		
	weak	Medium	Strong
Basic	-	*A <sub>1</sub> , A <sub>2</sub> , A <sub>3</sub>	-
Medium	-	*A <sub>4</sub>	-
Advanced	-	-	-

\*A<sub>1</sub>: Sea Pollution, A<sub>2</sub>: Erosion, A<sub>3</sub>: Underground Water Resources A<sub>4</sub>: Keep Clean Our Environment

In the A<sub>1</sub> activity, Duru applied Activity 36-Clean Sea from TEMA Kids activity book by adding art activity as an assessment. This was science and preparation for primary school integrated activity. It focused on sea pollution via ships carrying hazardous waste and materials (e.g., nuclear waste and petrol). To reach this focus, first of all, different kinds of sea vehicles pictures (boat, sailboat, ship, transport ship,

and submarine) were shown to the kids and asked some questions related to the pictures such as what they see at these pictures, how they can be used, what they carry...etc. Then, the teacher and kids designed their own ship by using origami technique with paper. Then, children put their own ships on the water at the basin. After that, teacher and kids made an experiment with these ships by pouring colored oil (represent petrol) inside of them. Then, children observed the change of the watercolor. Finally, the teacher wanted them to draw a picture of how they felt if they were living beings at this sea [polluted by petrol]. After drawings were finished, each child explained what s/he drew at his/her picture and activity was finished.

In this activity, Duru utilized distinct types of sea vehicles, colorful papers, ships made up of paper, basin, water, oil and black finger paint as a material and resource. Furthermore, she made an assessment via children's drawings related to their feelings as mentioned above.

For A<sub>1</sub> activity, in the light of the filed notes (researcher notes), Duru focused on ESD-respect- awareness, and sensitiveness via implementing the activity. Children stated they learned some knowledge (submarine and how a boat can be used to move) about activity from cartoons that they watched before. It can be interpreted that children were ready for the education about CML. However, the teacher did not pay attention to support children's CML literacy. Although the focus of activity was not ESD-social political and environment (endangered species), based on children's drawings, these two issues came to the forefront as important points of the activity. The teacher added new things to the original activity based on children's needs (hidden and emergent curriculum). Hands-on and minds-on learning were used to promote children's active involvement. The teacher wanted kids to draw the picture. This provided that they felt themselves like this animal and developed empathy. Further, the teacher asked three different types of question. These were "instigating discovery (ID)" (What is the name of this [showing the picture]?), "eliciting predictions (EP)" (What did happened and sea became dirty?) and "probing for understanding (PF)" (According to you, are the materials that were thrown and poured into sea dangerous for living beings in in the sea?).

All in all, in this activity Duru used medium approach to sustainability practice and basic CML level.

On the other hand, in A<sub>4</sub> activity, Duru combined and implemented two prepared activities by changing their applying order. The second one was used as a transition activity for the first one. For the second activity, instead of story completion, the song that was learned before repeated and related feelings were talked. After that, nursery rhyme was repeated at the original activity. After that, first activity was implemented, but at the art activity part, Duru preferred to make group working instead of individual work. This was Turkish language and art integrated activity. Its primary focus was environmental pollution caused by garbage, hazardous waste and gases from factories; and, deforestation caused by cutting trees. To provide this focus, first of all, different kinds of environmental pollution and deforestation pictures were demonstrated to the children and asked some questions related to the pictures such as what they see these pictures, what can be written at the thinking bubble [at the picture], how do you feel if you were at that place, and why do you feel like this...etc. After talking and discussion on the pictures, children were divided into 4 group including three or four kids. Colorful cardboards were delivered to each group. After that, the pictures that were talked at the begging of the activity was given to each group and wanted them to draw the opposite of what they see in the pictures. After all, groups completed their drawing, they explained their drawings to the teacher and activity was finished.

In this activity, Duru utilized distinct kinds of environmental pollution and deforestation pictures, colorful cardboards and paintings. Furthermore, she made assessment via children's group drawings.

Apart from, in A<sub>4</sub> activity, based on field notes (researcher notes) teacher concentrated on ESD-respect- awareness via implementing the activity. The pictures related to environmental pollution such as water, soil and air pollution were shown to the kids by the teacher. While kids were looking at and examining the pictures, the teacher asked some questions about them such as "what do you see at this picture?, how do you feel?, does this place look good or bad?, why?" It could be stated that this activity was quite close to CML education especially understanding what there are at the pictures. Even though the teacher did not mention anything related to global warming, while talking about the picture showing pollution smoke coming out from a factory chimney, two of the children and teacher discussed that



C<sub>1</sub>: If there are smokes like this, all polar bears will die.

T: Why?

C<sub>1</sub>: Glaciers could melt.

C<sub>2</sub>: I also know. The smoke coming from factories goes to the poles. No hot weather is there. Therefore, the glaciers were melting. Moreover, polar bears cannot

build their own house.

T: Yes, it is absolutely true. It can be called “global warming”, cannot be?

C<sub>1</sub> and T: Ultimately, global warming gives harm to the living things at the polar.

By this way, the teacher added new things to the original activity and took children’s attention to new issues related to ESD based on children’s needs (hidden and emergent curriculum). After completing taking about the pictures, the teacher gave time to kids to examine the picture more closely. At that time, one of the kids tried to create a story by using these pictures with the help of his peers. It can be interpreted that children were ready for the education about CML. However, the teacher did not pay attention to support children’s CML literacy via using teaching strategies pertaining to CML. The teacher wanted kids to draw their picture with their own group. This provided that kids reexamine the pictures in detail and considered the opposite of the picture that was delivered to them. Further, the teacher asked three different types of question. These were “instigating discovery (ID)” (Is there anything not to be on the sea? Where should they be thrown?), “eliciting predictions (EP)” (If trees were decreasing in the world, in which problems can occur?), “probing for understanding (PU)” (Why will polar bears die?) and “promoting reasoning (PR)” What is the right behavior? [Children stated that people throw their garbage in the park although there is a bin] and “reflection on feelings (RF)” (How do you feel if you were there?).

Teacher selected pictures which were easily understandable and were talked about deeply. However, the pictures were not colored, and children had not had a chance to look at the pictures closely during activity. Therefore, this could lead that children cannot pay attention to the pictures for a long time.

For this activity, group working was better than the other activities regarding communication and collaboration. Children could share their work with peers in their own groups. Mostly, all group members decided together what they can draw on their cardboard. They could discuss what the opposite of their picture can be. They could

explore the other group's drawings. During group work, the teacher went to each group and discussed on what they draw and what they plan to draw.

Throughout the activity, the teacher always made a connection to the previous activities. This leads that children could establish a connection with their previous experiences and everyday life. However, the teacher had still anthropocentric view at some points instead of ecocentric.

At one of the drawings, a policeman was inspecting the people not to throw the garbage in the bin. It was interesting that children thought that right behavior could be achieved with the help of strict control.

All in all, in this activity Duru used medium approach to sustainability practice, and her CML level remained between basic and medium.

#### **4.1.2.3 Domain of consequences: Duru's salient outcome**

Based on ICMPG model, Domain Consequences refers to outcomes of teacher's classroom practices that affect his/ her values and experiences such as how s/he determine activity topic, teaching and assessment strategy, and resource. A more detailed explanation based on "Selection of Topic", "Teaching Strategies", "Resource Use" and "Assessment Strategies", A<sub>1</sub> and A<sub>4</sub> activities and related SRIs will be given in the following part.

##### **4.1.2.3.1 Selection of topic**

The analysis of implemented activities and related SRIs demonstrated that the activities A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub> directly came from TEMA kids program even though A<sub>4</sub> was given a place at teacher's prepared plans. When the topics of activities were examined in terms of 7Rs, the components of ESD, it was seen that all activities targeted to respect, the environment aspect of ESD. What's more, the activities mostly consisted of science activity, although all of them were integrated activities. The teacher could make a connection to the ESD environment pillar. Therefore, all activities can be placed on the medium approach in terms of sustainability practice.

#### 4.1.2.3.2 Teaching strategies

It could be stated that Duru utilized mostly hands-on and minds-on activities especially making the experiment, reading visual materials and group working particularly in A<sub>3</sub> and A<sub>4</sub>. She asked about some questions pertaining to the visual material while conducting A<sub>4</sub>. However, she was not aware of CML and its teaching strategies.

During SRIs, Duru stated that she used various teaching methods and strategies such as taking attention, discussion, questioning, problem-solving, brainstorming, making the experiment, observation, a group working, book reading and interpreting visual materials.

For instance, for an A<sub>1</sub> activity, she made an explanation with these expressions:

...again we used questioning. Hmm, what else did we make? We utilized discussion and made brainstorming even if I intervened in the process a little bit. We made the experiment. I made kids solve the problem...

She explained the reason for using these methods and/ or strategies as follows:

The main aim is to provide all children to participate in the activity. However, unfortunately, some children can cause the class to lose concentration. At that time, it is difficult for me to take the kid's attention [to the activity]...

She elucidated the alternative teaching methods for this activity in the following

... Hmm. Actually, I could implement a music activity. I made a plan [to apply music activity]. However, I could not manage the time. Thus I could not apply it. Children were bored, and they lose their attention. I think, by making rhythm activity and combining it with a song related to sailors "Sen Gemiciler," we could make a story of this song and then we could dramatize it, however, I could not manage the time. We could not implement the activity that I planned...

The analysis of her statements indicated that she preferred to use creative drama, music to promote children's awareness and sensitiveness (feelings) about ESD-respect. The additional activities and alternative teaching methods were different from the original TEMA-Kids activity.

On the other hand, for an A<sub>4</sub> activity, she stated that *again there was questioning [teaching method]. There was a group working.* She continued to make an explanation about why she selected these teaching methods/ strategies as follows:

I consciously chose the questioning teaching method by showing the pictures consciously. Up to now, with several experiments, we mentioned environmental cleaning, what the environment is, what soil, air and water are, and all of them [soil, air, and water] are interconnected. At this time, Especially, I want to talk about visuals [pictures] to determine how children can understand [the activities that implemented before] and how they can interpret [pictures]. For group work, I select this method because I observed and considered that they had deficiencies in group working. We have not had any problem with individual activities. However, I want to see how they work with a group. In other words, they should not only interpret the picture but also consider the opposite of the picture and then draw this by taking their groups' member's views...

Duru gave some examples teaching methods and strategies that can be used as an alternative with these words:

...before you had come, we made brainstorming. There was a song that we learned before. In that song, there were water and animals such as bird, elephant, and horse in the forest. Moreover, all of them were unhappy because of various reasons. For instance, a bird was unhappy and crying at one of the tree's branch. The song was signed, and after this statement, we stopped and made brainstorming by asking "why was the bird unhappy?" and "why was it crying at the branch?"...role-playing could be made. Two of the children already made role-playing by demonstrating s/he did like this. Maybe, children can improvise the pictures. Instead of making art activity, Turkish language and creative drama could be implemented.... Music activity could be added. Actually, we applied...

When Duru's statements were examined, it was perceived that she made an observation about children's needs and supported their working group abilities. Additionally, she applied two prepared activities and used one of the activity as a transition activity for the activity that was observed by the researcher. Expect the teaching method used at the transition activity; she would rather use creative drama especially to promote kids to improvise the pictures. It can be interpreted that she generally desired to utilize teaching methods that children can easily internalize the learning process.

#### **4.1.2.3.3 Resource use**

For A<sub>1</sub>, Duru used different kinds of sea vehicles pictures (boat, sailboat, ship, a transport ship, and submarine), colorful A4 papers, and water at the basin, oil, and black finger paint. She declared the reason for using these materials in the following:

...the cause of starting to the activity by introducing the sea vehicles through using their pictures is to make a connection to the experiment and take children's attention. I used others [colorful A4 papers, and water in the basin, oil and black finger paint] to make an experiment about sea pollution. In this experiment, oil represents petrol. Particularly, I prefer to use black finger paint because children can observe the pollution [sea pollution] easily. However, it cannot solve the oil...

Based on Duru's statement, she utilized media to take children's attention to the activity. During the activity, she asked questions to promote kids to describe the pictures. In other words, she was not aware of CML, its strategies and how they can be used in educational environments.

What's more, in A<sub>4</sub>, she used different kinds of environmental pollution and deforestation pictures, colorful cardboards and paintings. She made an explanation why she selects these materials especially pictures as follows:

...to visualize [what I state]. When I say, hazardous smoke comes out from factories chimneys, how children can imagine it. Therefore, it is always good that concrete materials are there. Visual, I mean, target not only eyes but also ears.

Moreover, she stated how she decided to use these pictures with these words:

Obviously; I considered the experiments that we made up to no. These were related to water pollution; we talked about air. What else...there are related to trees, we made an erosion experiment? I mean, I select the pictures to overlap with these issues. In other words, I choose [them] to make the connection between them.

Researcher and Duru talked about on caricature that she used at the activity.

R: During your activity, you used a caricature, what is the reason for using this?

T: Especially, I hide this at the end of the discussion part to see what they Can interpret this. Actually, some of them understand immediately, but it is funny for some of them. It is already funny.

In the light of teacher's words, she believed the effect of media especially visual and audio and visual media on visualizing topics about environmental issues. She also used the visuals to make a connection with the previous activities. Although she stated that she utilized media to target children's audio and visual sense, she utilized only visual things. It is a misconception on her mind. This activity is quite close to CML education, but still, some specific strategies should be added.

#### **4.1.2.3.4 Assessment strategies**

For A<sub>1</sub>, Duru preferred to use drawings as an assessment and explained this situation as follows:

...The aim of that I made children draw a picture is to make an assessment. What did they understand [from the activity]? Do you feel happier in the clean sea or pollute the sea?... Some children drew the polluted sea, but they reported this was the last fish, the last sea serpent. Some of them drew themselves as happy, the sea was clean; and thus, they were also happy fish. In my opinion, it means that they can comprehend that when the sea is clean; nature will be not only healthier for the living beings but also have nicer view. It [activity] reached the aim.

In the light of the teachers' statement, she could reach the objectives and indicators that she intended. However, in these objectives and indicators, there was no objectives and indicators related to ESD-respect. It can be interpreted that there could be a hidden curriculum on teacher's mind.

Apart from, in A<sub>4</sub> activity, Duru would rather use group working while children were drawing opposite of the pictures that were given by the teacher. She explained the reason for it with these words:

... yes, we could make this activity individually, but as I mentioned before, they had too much trouble in the previous activity. I wonder what they will do, and in fact, I warn them in the morning. One of the children cried for a long time and reported that I do not make group working I make individually... She seemed happy. At least her prejudices were eliminated. Otherwise, it can stay like this. Group working is terrible thing; teamwork is not good... While I gave the pictures, I chose the pictures which I thought that they could easily draw the opposite of it. For instance, there is a family who is making a picnic, and there is child who is coughing...I mean I can see what I want. It is nice that they drew their pictures by thinking the opposite of the picture that was given to them and they could do this as a group...

Based on teacher's declaration, she would rather use group working to eliminate prejudices and promote group working and collaboration. She could evaluate via art activity. Additionally, throughout the art activity, she could encourage children's interpretation of visual and creativity. However, she had not mentioned CML and its strategies.

#### **4.1.3 Participation in PDT**

Duru participated in PDT with her three colleagues from the same preschool for five days during seminar periods in September 2016. At first, she was not willing

to involve in this training because of her workload. For instance, she should prepare for a new academic year and make arrangements for children's needs and items that can be used throughout one year. However, during PDT and after PDT, she was happy to be a part of this training. Especially, after training, she stated that she has not been aware of the effects of the message on media on people's view. She added her mind was confused after attending in this training about global warming. She knew and believed there was global warming but, she was not sure what the main reason is for it due to the messages in the media. She wanted to make reach about this. She also advised that maybe this training could include the meaning of symbols that are used on TVs by The Radio and Television Supreme Council (RTUK).

#### **4.1.4 Teacher Duru's professional practices after PDT**

In the following part, detailed explanation pertaining to Duru's professional practices after PDT based on the Interconnected Model of Professional Growth is made. Duru's Personal Domain (awareness of ESD and CML competencies and level), Domain Practice (applied activities) and Domain of Consequences (selection of topic, teaching and assessment strategies and resource use) are presented in turn.

##### **4.1.4.1 Personal domain: Teacher Duru**

In this section, the elucidation related to Duru's awareness of ESD and CML competencies and level will be portrayed.

###### **4.1.4.1.1 Duru's awareness of ESD**

The examination of Duru's awareness of ESD after PDT based on post-interviews indicated that she was knowledgeable about and aware of the concept of "ESD". She made an explanation like this.

Yes, now I am aware of ESD... I mean, all in all, there are some values that we have. These values are related to everything, are not just about electric, water, soil. We talked about you inner values, society's cultural values, all of them are covered [by ESD]. If it was required that something is sustained, it means if it was handed down from generation to generation, it was continued, sure it should be started from education, and children. This [starting from education and children] is more required, and this [ESD] is an issue that takes children's attention. For instance, last year, I understood that the content was just about environmental education. Merely, to be able to use environmental resources wisely. However, when I look it [ESD] covers everything such as cultural, social and economic. Broader than the environment, the issue that you want to sustain can be the topic of your activity, eventually. I realized this.

She used various teaching methods and strategies while using media and media tools in her implementations to promote ESD through CML.

I mean we use brainstorming, questioning. Generally, science activities would be more supportive ones if the issues were about the environment. Sometimes, the creative drama could be effective. Actually, we can use everything [strategies and teaching methods], I mean we can utilize lots of things based on children's needs, interest, and background. The process develops spontaneously.

What's more, Duru stated that she frequently implemented activities targeting ESD through media in her daily plans.

Actually, I can say very often. Now, I can look every content in terms of this perspective [How I can integrate media into different aspects of ESD] I say how I can do this and what I can do. For instance, videos. I started to utilize short videos immensely. I definitely use visuals or pictures which are related to that day's content. It would be very effective.

Apart from, the dialogue between researcher and teacher was terrific. She emphasized that there is a need to review the existing early childhood national curriculum regarding ESD and CML with these words:

R: Do you want to add anything more?

D: Thank you. I desire that our curriculum will be updated and add new objectives and indicators will be added to the curriculum in terms of CML and ESD. It is so crucial because in this century, there are lots of media types and children use them in an uncontrolled way. Therefore, I consider that it would be appropriate that this issue should be given in the curriculum. Much more people should be aware of this [CML].

#### **4.1.4.1.2 Duru's CML competencies and level**

In this part, Duru's CML competencies and level are investigated concerning access, analyze and evaluate, create, reflect and act seriatim.

##### **4.1.4.1.2.1 Access**

Duru could access and use different types of media in her every day and work life such as internet (websites related to news such as Mynet), digital media (Google), social media (Facebook, WhatsApp, twitter) printed media (newspaper, book), audio-visual media (television) and E- Governmental Portal for different purposes. She spent much more time on media at her daily life than on her work life. Media covers approximately 5 hours of her life.

...When I hear the concept of media, mostly it brings newspaper and television to my mind...Probably; social media is not the first one. I mean, there are websites



related to news on the internet such as Mynet. These types of things become the first. Secondly, I used search engines. Generally, I utilize Google for making research related to my job. Usually, I look at websites that I can get information about the news during the daytime. After that WhatsApp comes. Mostly I use it to make connection pertaining to my job, especially with the parents... To follow the agenda frequently, I use twitter and I look at some accounts that I follow...

When I think my working life digital media is the first one that I use. In general, we use television to watch the videos. However, if digital media [internet connection] permitted to open some videos, we could make children watch via the internet. Therefore, we have to use the TV... When I consider my house life, I use digital media mostly because make research on the internet and bring here and make children watch TV... Books are always taken place. We always read and/ or examine books sometimes more than one every day. Therefore, books are in the second one.

For my every day, I use these media types [digital, social and printed media] equally.

I use E- Governmental portal since almost everything that I need is there. Last night, I used it to pay a tax on our car... It provides convenience. Now, the application of e-nabiz is there. I like e-nabiz. For instance, you can write there all of your health histories. If there were anything and called 112... It [your health history] is seen, when people enter to your account. I like this situation because you feel safer.

When Duru's level related to access competency was examined, it was seen that she utilized different types of media effectively and she was knowledgeable about different types of application and how to use them. Therefore, Duru's level in terms of reflect competency is "advanced".

#### **4.1.4.1.2.2 Analyze & Evaluate**

Duru has some criteria while using various media types especially digital media such as websites related to news, Google (reliability, fast and habits) and social media, e.g. WhatsApp (convenience and practical). Also, she uses some different strategies than that of prior to PDT to verify the truthfulness of the content of different types of media and to compare view and knowledge. She was knowledgeable about the components of media's content and made a detailed explanation about it.

...For my daily life, there are things [media] that I have been used for a long time. I mean, it is important to be reliable. Also, my habits are significant. For instance, I have been looking at Mynet.com over the years. It [Mynet] is both on my phone and my computer. I looked at it because I think it is more reliable and fast... I use WhatsApp since it is easy to make instant communication. It is more convenient because you can send pictures and even after folder.

For my working life, I give importance to provide materials which are appropriate for my children's age and original.

She explained the content of the media that she used as follows:

Generally; it appears as breaking news...its front size could be 10. It covers lots of things from politics to magazine... Moreover, then, there are some subtitles related to everything such as life, women, man, child, education, shopping... I mean, from one interface I can reach to the thing that I want ...Mostly; there is a more striking visual. Under this visual, there is a statement or word as a headline. Sometimes, even without reading, I click on to see what it is in the underground due to that visual. Occasionally, at the opposite of this situation, there is only black screen and striking written statement under it... In other words, content is composed of visuals, writings with font size. In fact, both front size and expression style effect.

Duru stated her views about the truthfulness of the media content with these words:

Of course, indeed, being reliable means that being correct and being unbiased. Moreover, it is so significant that I mean I said that there is a website I have been following over the years. That is to say; the trust has been established for many years...Moreover, you can verify from other sources... However, is it reliable?

All in all, it is news. Under it, the Anatolian news agency is written. I mean, it indicates a resource. Probably, compulsorily we believe. You know, we consider that the reflected style of it could be true... For instance, if there was an article about psychology, there could be a citation to the psychologist who writes the article. If I liked it so much, I would search and look at who that person it by writing on Google... I mean I use all different media sources to certify it.

She made an explanation about how she distinguished whether the media content cites knowledge or view with this statement:

In general, if it is an idea, you can understand from its writing style, whether it includes a comment or the channel where it is broadcasted I mean its perspective. When you analyze, you can comprehend it. I think that it is most probably knowledge and unbiased if it did not include comment and certain sentences were used and stated transparently that this occurs...that occurs, In other words, it depends on its expression style...it should be looked multi-directional. Do not look at just one place. When you follow the opposite views [from different media sources], a person makes an analysis and draws something [conclusion] to him/her own self.

Duru did not think that the security of media and media tools were provided. She did not share something that she thought it was private especially in social media because it was not reliable. Also, for her, while using the internet, the user information should not be opened to the other people, and it should be hidden due to reliability. She advocated that people could make this arrangement according to their preferences. Further, this responsibility should be given to the individuals.

Before using media/media tools or deciding to use media/media tools, Duru gave importance to being current, target audience and originality in terms of sample activities and their implementation. She expressed her views as follows:

As I mean, I pay attention to whether the media that I utilize convey the breaking news. Further, when I think the media that I used in my working life such as sample activities, I give importance to its implementation style... I mean being current and target audience is important to me before using media. I also look and analyze websites to present original examples than the activities that I conduct...

When Duru's level related to analyze & evaluate competency is examined, it was perceived that she used essential strategies. She made detail explanations about these criteria. She was aware of analyzing several sources to get/reach correct knowledge. Therefore, Duru's level can be stated "advanced".

#### **4.1.4.1.2.3 Create**

Duru mostly used social media accounts such as Facebook, Instagram, and Twitter in leisure time when she was bored. Except this, she utilized them to make communication.

She explained how she shared photos and videos through media with these words:

I had been sharing photos and videos by using the website. I had an account and made sharing with this account. Nowadays, via WhatsApp, I directly send small things (just a few photos) to the person that I desire to share with. I have not shared something on a public [social] platform, but if there is a need, I can do it, indeed. I follow lots of people who have shared.

I also have accounts on websites and blogs related to early childhood education, however, generally, I follow them and do not share anything.

Duru did not utilize social media to share her experience with her daily and working life. She stated the reason for it like this:

In previous years, I share the photos related to activities [that we made in the classroom] with parents. However, I do not for this year because some parents do not want and allow that any photos of children on any social platform. They do not let to permit to upload photos even at the school website. Therefore, this also means that it [sharing photos with families through a group in WhatsApp] is not reliable. Although you can send the photos by establishing a group in WhatsApp, you cannot control whether where and how many of them [photos] are shared by the people who are in that group. Hence, I do not share any photos. I just compose my archive.

Duru prepared brochure and/or article with her colleagues by citing form resources to give information to parents about the projects conducted at the preschool.

When Duru's level related to create competency is investigated, it was observed that she had experience about the usage of different kinds of media types such as Instagram, Twitter (different from the first interview) websites and brochures.

On the other hand, she did not prefer to create her own blog. She has not had any experience to create her book and/or journal. She does not prefer to share something related to the activities due to safety problems. It can be stated that her level is close to “advanced” because she had experience with different types of media and she has some priorities in her mind while sharing something with children. She made her archive to evaluate herself.

#### **4.1.4.1.2.4 Reflect**

Duru was not sure about supervision of media content via institutions and/or person and/or people. She stated her views about this issue as follows:

You know, I will say these [media] should be inspected, but who inspect them? I mean, I do not know because I am not sure whether the institution and/or people are neutral or not. As I stated before, in my opinion, individuals should supervise on him/her own. I think they should not believe everything that they see and/or hear; they should try to perceive its origin. I mean they should criticize these. They should not focus on just one view/perceptive. They should look from various perspectives. Otherwise, if these are supervised, who will supervise, will the institution be reliable...

I mean, this reaches to the outcome: The individuals should be educated about this issue [CML], they can criticize them [information coming from media]. It is required that they should not have blind confidence in anything that is written there and/or they see, so they should make more research. We also try to give this [CML] to the kids; they can criticize the events and be interrogator person. We can achieve/change this by starting with kids.

She made explanations about what she can do to provide the safeness of the social media tools with this statement:

Ultimately, you shared something, especially with the social media. All of them can spread everywhere. Therefore, I do not share anything that is private for me, in those places (social media platform) due to it [sharing something on the social media platform] is not reliable. Such as mobile phone and credit card number. I think we cannot do anything except this. As I understand, everything that you upload, stored at one of the databases. We agree and enroll [in that social media accounts] without reading their security policy [statement]. Thus, I do not want to share... They can change Safety Check [Facebook] perpetually.

While talking about inspection of any institution, she stated that

as we mentioned, there is RTUK but, I am not sure and do not have any knowledge about how and/ or what they [RTUK] supervise. Hmm... it can pay attention to not sharing the information about the people’s private life, but, it cannot be limited, ultimately. Television, newspaper... how far these can be limited? People think, create, write, draw, take video and publish it. All of them are very common, the inspection of these would be difficult. How can they inspect them? According to which criteria, they can inspect?... Everybody has different values and judgments.

Who give the decision about the right criteria for whole society?... At that time, if some regulations about this issues, this situation leads to polarization at the society. Therefore, everybody should inspect on his or her own.

The dialogue between researcher and Duru about the meaning of warning signs that appear before films at the cinema and on TV was impressive.

The analysis of Duru's level related to reflect competency shows that she can look through different perceptive to the social responsibility and ethical issue. She also pointed out the importance and impacted CML education on individuals' attitude about media and how they can interpret the message on the media and how to protect themselves negative impacts of media on their lives. She explained why she conducted activities related to CML. She emphasized the impact of education in the early years especially CML. All of these indicate that her level is "advanced".

#### **4.1.4.1.2.5 Act**

The Act and Create competencies overlapped for some parts mainly creating/ designing specific media (such as videos, photographs, brochures, book, journal, blogs, and social media). Hence, some of Duru's answers are also given at Create competency and in this episode, the distinct parts of Act competency will be presented in light of teacher's replies.

Duru utilized e-mail frequently to make connection and collaboration with governmental and non- governmental institutions. Additionally, she used WhatsApp to communicate and cooperate with her colleagues.

... I prefer to use WhatsApp since it has the opportunity to send the visual images. Sometimes, I store some documents and folders on my computer. At those times, I would rather utilize the e-mail... Actually, I use e-mail often, but when you ask, I realize that I used it [e-mail] frequently...

She elucidated which media and/ or media tools she utilize while applying activities pertaining to ESD in her class as follows:

I did not use public service announcements before. Even after, I use them [public service announcement]. Moreover, I utilize the small parts from cartoons. Maybe, there is a book that supports the contents, are used by me. Perhaps, I utilize poster. To tell the truth, I used every source that I can find/reach.

She made an explanation about (which criteria are essential for her) how she chooses the media that she used in her activities with these words:

It is vital to promote the objectives and indicators that I select, to be appropriate for children's developmental level or interest. We know how or which style we can take children's more attention [to the activity] because we get used to working with them.

Duru also stated that she started to ask questions about different media types to the kids while they are watching/ looking at media in order to analyze and evaluate the messages and the aim(s) of these messages given by the media.

The examination of Duru's Act competency demonstrated that she could use distinct types of media and/ or media tools (such as public service announcement, cartoons, book, and poster) in her implementations pertaining to ESD. She created brochures and documents for parents to give information about various content and project conducted at the preschool. In addition to this, while she was selecting media, she gave importance to children's needs, developmental level, and interest. While using media, she preferred to use mainly brainstorming and questions and also other methods or strategies according to children's desire and curiosity. Hence, her level is advanced.

Overall, after PDT, Duru was aware of ESD and its components (environmental protection, social and cultural and economic) as well as which contents are covered by these components. Moreover, Duru's CML level was changed from medium to advance. Additionally, Duru used different types of media (e.g., video, cartoon, public service announcement, book, and poster) and different teaching strategies and/or methods (i.e. brainstorming, questioning, and creative drama) to promote children's knowledge about and awareness of ESD and CML (access, analyze & understand and create competencies).

#### **4.1.4.2 Domain of practice: Teacher Duru**

Duru's domain practice is investigated in the light of the document analysis of her monthly and daily plans, stimulated recall interviews (SRIs) and the field notes of implemented activities on ESD through CML.

On the basis of document analysis presenting at Table 4.3, through the second part of the research (2016-2017 fall semester), her activities focusing on ESD and CML after her involvement in PDT could be broadly stated that she changed her mind about ESD. Additionally, she gave the place the other components of ESD such as

social and economic aspects, and she could combine ESD activities with CML and its strategies.

Table 4.3 Number of ESD and CML in Daily and Monthly Plans After to PDT

Months	Total obj.	Obj. 7Rs	Obj. CML	Total Act.	ESD in Act.	Media in Act.	CML in Act.	ESD & Media in Act	ESD& CML in Act.
<b>October</b>	35	2-respect 1-reflect	3	42	1-respect		1	5-respect	2- CML- access, create 2-reflect 1-respect
<b>November</b>	40	2-respect	3	44	1-redistribute	3	-	2-redistribu 5-respect 1 reflect	4-CML access-analyze & evaluate and create – 4-respect
<b>December</b>	41	3-respect	3	40(snow holiday)	2 reflect	1	1	-	7 CML access-analyze & evaluate and create 2-reduce 5-respect-economic
<b>January</b>	34	1-respect	3	27	1-reduce 2 –respect (indirect)	9 (book)	1	1-reduce	3 CML access-analyze & evaluate and create 2-respect 1-reduce



The analysis of daily and monthly plans in terms of ESD and CML indicated that Duru focused on many topics related to 7Rs (reflect, reduce and redistribute) and three pillars of ESD (environment, social & cultural and economic) combining with CML. She could not select specific objectives related to her activities because there is no objective especially targeting ESD's social & cultural and economic aspects and CML. The additional notes that were added to daily plans by the teacher have also supported this situation. What's more, when the activities were examined in terms of CML and media, it was seen that after PDT Duru generally gave much more places than that of prior to PDT. She used books, pictures, photographs, cartoon, animation, and videos as media. She aggregated ESD and CML in her activities and implemented these activities regularly to support children's knowledge about, awareness of and attitude toward ESD and their CML (access, analyze & evaluate and create competencies).

In the following section, the detailed information about implemented and observed activities in the classroom will be given. For this, in the light of activity plans, SRIs, and field notes, implemented activities were examined concerning ESD and CML based on from weak to strong approach to sustainability practice, basic to advanced CML. Initially, conducted activities based SRIs were classified regarding sustainability practice (from weak to strong approach) and CML (basic to advanced) at Table 4.4. Afterwards, detail explanation about two applied activities (A2 and A4) will be made in the light of SRIs and field notes because these two activities represented the general situation about Duru's classroom practices concerning ESD and CML and revealed ESD and CML issues most clearly.

Table 4.4

*Analyses of the Places of ESD and CML in Activities after PDT*

CML	ESD		
	weak	Medium	strong
Basic	-	-	-
Medium	-	*A <sub>1</sub>	-
Advanced	-	-	*A <sub>2</sub> , A <sub>3</sub> , A <sub>4</sub>

\*A<sub>1</sub>: Spider, A<sub>2</sub>: Noise of Materials, A<sub>3</sub>: Blow out the Fire, A<sub>4</sub>: Milk Means to be Healthy

In the A<sub>2</sub> activity, Duru planned and implemented new activity by making an addition to and benefiting from the prepared one. In other words, the original activity focusing on just sounds was not applied. New activity targeting to noise and noise pollution was designed and conducted instead of the original one. This was a music activity (the original one) integrated with the Turkish language, drama, and movement. To reach the new focus, initially, teacher and kids made a discussion about what noise is and how we can make a noise. After that, they attempted to make a noise by doing different movements such as shouting, jumping, running in the room, beating hands to the floor, clapping the hands...etc. Firstly, they did what they stated before and then talked about whether people were distributed when they did like this. The last trial of them was making noise by driving their own cars and honking the horns. Afterwards, two public service announcements about noise pollution prepared by Republic of Turkey Ministry of Environment and Urbanization were watched and interpreted. While watching videos, time to time teacher stopped the video and asked some questions about the image. For instance, “who is this woman?, whose mother?, what is this child doing?, what did this girl say?”...etc. The dialogue between teacher and children in the following:

T: Who prepare this video for us?

C<sub>1</sub>: Republic of Turkey Ministry of Environment and Urbanization.

C<sub>2</sub>: People who work for the local government. People who work in the big cities.

T: Why these videos are prepared by Republic of Turkey Ministry of Environment and Urbanization?

C<sub>2</sub>: To warn people or raise their awareness.

C<sub>4</sub>: To say that the noise is detrimental.

C<sub>5</sub>: To abolish the noise.

After interpreting process, the teacher wanted children to dance with making noise and then to dance without making noise. Afterwards, they talked about what they felt while dancing. After talking, Duru desired them to make their own poster about noise pollution with their own groups including four kids. Before preparing their own poster, she demonstrated some posters related to noise pollution such as the baby closing his/her ears with his/her hands, a world surrounded with lots of things (helicopter, tape recorder, and car). While kids were drawing their own poster, the teacher wrote their names on their cardboard. After kids prepared their own posters, they explained their posters to the teacher and the activity was completed.

In this activity, Duru utilized different media types (public service announcements and posters) and colorful cardboards, as a material and resource. Furthermore, she assessed children's posters related to noise pollution as mentioned above.

For A<sub>2</sub> activity, in the light of the field notes (researcher notes) teacher concentrated on ESD- environment, social, cultural [respect]-awareness and sensitiveness via implementing the activity. Designing own posters like a group was very successful although some of the children wanted to be the leader. The activity was also child-centered; they internalized the process via role-playing and created their own posters. The teacher wrote all the group members' name on their posters and stated that "I wrote because this poster was designed by you". This behavior was very effective in children's CML because some kids explored his/her name's letter. Some of the children seemed like they were not engaging in activity but, they were engaging especially when it was looked at their posters. They could reflect what they saw in the videos and posters. In some posters, there were some hints related to previous ESD- recycle activity such as a recycling sign. They were affected by the activity of recycling. Their posters showed that they could understand and analyze the videos

effectively. This also indicates that CML can be used in EC learning environments if we could ask the right questions and use sources.

The communication between researcher and teacher was very beneficial because the teacher changed her mind about the topics of ESD and CML. She also was a willingness to try new things and adapt these things to her activities and classroom. She stated her thoughts like this:

Actually, I think, it is not directly related to ESD. Moreover, I asked you when we say EE/ESD, whether this is absolutely pertaining to soil, water, and air. I had an activity plan about sounds; I thought that how I can integrate and combined this plan with ESD and CML. Moreover, I decided to apply to today's plan...

While watching one of the public service announcement, one of the kids drew an analogy because, in that video, a group of young people was at the exam. Therefore, he stated that these people's class name was "big clouds" since his class name was "small clouds".

Before teacher wanted kids to create their own posters, she stated that the "Republic of Turkey Ministry of Environment and Urbanization ask us to prepare posters. These posters would hang at a shopping mall, hospitals, and school corridors. Moreover, when the people see these posters, they could understand that they do not make a noise". This type of introduction to preparing posters was effective motivator words for kids. Hands-on and minds-on learning were used to promote children's active involvement.

Further, the teacher asked four different types of question. These were "instigating discovery (ID)" (What could make this sound?), "promoting reasoning (PR)" (According to you, why does Republic of Turkey Ministry of Environment and Urbanization create this video?) and "probing for understanding (PU)" (How should the vehicle go not to disturb the baby or interrupt baby's sleep?), and "reflection on feeling (RF)" (How does baby feel him/herself?).

Teacher selected two videos and four posters which were easily understandable and were talked about deeply. She used a computer to show all of them to the kids. In other words, before this activity, she made research and saved the videos and colored posters to share with kids.

For this activity, the teacher preferred to use group working to promote communication and collaboration among kids. Children could share the same cardboard, and some of them could decide and work together in their own groups. During group work, the teacher went to each group and discussed on what they draw and wrote the kids' name on their own cardboard. Some explanation about their poster with these words:

These are shouting and not shouting men. This one warned the other [by showing their drawings]. This man was shouting. I do this Xs to make the man not shout. I drew a big man to close his ears with hands because of noise. He was disturbed while making noise...

All in all, for this activity, she utilized a robust approach to sustainability practice (environment, social, cultural [respect & rethink] and advanced CML level (access, analyze & understand and create competencies).

On the other hand, for A<sub>4</sub> activity, Duru applied it by excluding music and adding movement. In other words, a new activity was designed by teacher except using some of the questions in the assessment and learning process as originally since the original activity focusing on just milk and benefits of milk. Therefore, new activity targeting to cow, milk, farmers, animal breeding and the role of framers was created and carried out instead of the original one. This activity was the Turkish language, art and music integrated activity. To reach the new focus, firstly, Duru started to the activity with the cow model. Before bringing the model, she increased kids' curiosity by saying "Today a guest will come to our class. Let's try to guess who can be?" After kids saw the model, they initiated to ask lots of questions to the teacher and discussed the model.

C<sub>1</sub>: Did you make this?  
T: No, I did not.  
...  
T: Is this real?  
C<sub>ALL</sub>: No.  
T: Is this alive?  
C<sub>ALL</sub>: No.  
C<sub>4</sub>: But, its tail is missing.  
T: Its tail is missing is not?  
C<sub>5</sub>: Yes, of course.  
C<sub>6</sub>: They [their peers] give harm to it.  
...

After this conversation and exploration, the teacher asked questions about the model (such as if it were not real, which materials would be used to make it? what does it eat?). She stated that the model came to ask a riddle to you. She enquired “how do I make a sound?” as if the model stated her what it wanted to ask the kids. After they replied to the question as “MÖ” by imitating the sound. At that time, one of the kids realized that this model did not have any udder. After this exploration, the teacher asked, “why do cows have an udder?” One of the children replied her to produce milk. After this conversation, the discussion went to how the milk that we drink is produced. Moreover, kids talked about cheese and goat and how the cheese can be produced. Teacher asks a question to kids “why do cows produce white milk, while they eat green grass?” Children made brainstorming about this question. During this brainstorming part, one of the kids stated that “if the cows did not eat grass, the milk could not be produced... Then farmers come and take their [cows’] milk.” Based on these statements, the teacher made them connect to the farmers and the importance of the farmers by asking questions (e.g., why do farmers feed the cows? What would happen, if there were not farmers and cows?). After this brainstorming and discussion, teacher and kids watched cartoon related to milk and farmer’s life in the village. After the cartoon, the teacher asked questions to provide kids to interpret the cartoon. The dialogue between teacher and kids was in the following:

- T: What is the video about?  
 C<sub>1,2,3</sub>: Milk.  
 T: Why do you think this video related to milk?  
 C<sub>4</sub>: There was a cow.  
 C<sub>5</sub>: If we drink milk we will grow. [This is one of the messages of the video]  
 C<sub>5&6</sub>: It showed milk. [As an image]  
 T: To whom the video is prepared?  
 C<sub>7</sub>: To us.  
 T: Who are you?  
 C<sub>8</sub>: Children  
 C<sub>9</sub>: Children do not like drinking milk  
 T: Who does prepare this video?  
 C<sub>10</sub>: Farmers  
 C<sub>4</sub>: Minika Cocuk [one of children’s cartoon channel]  
 T: What is TRT Cocuk?  
 C<sub>4</sub>: It is one of the cartoon channels  
 C<sub>11</sub>: TRT Cocuk [one of children’s cartoon channel]  
 T: What is TRT Cocuk?  
 C<sub>11</sub>: It is one of the cartoon channels.  
 ...

After this conversation, the teacher also asked questions to kids about the visuals in the cartoon such as “do you like this cartoon?” For instance, “how are the colors [that are used in the cartoon] and the drawings?” After the interpretation of the cartoon, the teacher talked about how milk come to your house. After brainstorming, kids stated that milk comes with milk boxes. After that, kids reached to bottle made up of glass. Afterwards, the teacher asked kids “ in this class, is there anybody that who do not like dirking milk?” All children replied “no”. Duru stated that however, at a school, there were kids who do not like drinking milk and their parents wondered that if the milk bottles were designed by kids and kids gave a decision how milk bottle can be, could their children like drinking milk, maybe? After this explanation, kids designed their own milk bottle. After completing their bottle, they also gave a name to their bottle and the activity was finished.

In this activity, Duru utilized cartoon as a media and foam rubber (for milk bottles) as a material. Furthermore, she made an assessment of children’s milk bottles as mentioned above.

What’s more, in A<sub>4</sub> activity, based on the filed notes (researcher notes), in this activity, teacher focused on the combination of social & cultural, environmental and economic aspects of ESD (respect, reflect and rethink) and CML. Before watching the cartoon, the replies of children to the teacher’s questions (such as why do farmers feed the cows? What would happen, if there were not farmers and cows?) indicated that they could make the connection about farmers, animal breeding, and milk since they gave a response like these:

- C<sub>1</sub>: We cannot drink milk, will be ill.
- C<sub>2</sub>: If we were ill, we could not make honey milk.
- C<sub>3</sub>: Cheese cannot be produced.
- T: Why is the milk important?
- C<sub>4</sub>: To grow up.
- C<sub>5</sub>: We also cannot get better.
- ....

The responses of children to the questions related to the cartoon was astonishing, they could state the target audience of video as “children,” and some of them stated that kids who do not like drinking milk. They also answered the question “who made this carton” as Minika Cocuk or TRT Cocuk, which are the names of children channels. These answers showed children’s CML-analyze and understood.

They also reported that they did not like the style of the drawing style and color of the cartoon characteristic (See page 226). This was quite close to creating a step of CML.

In the last part of this activity, kids designed their own milk bottles and gave a name to them. It was a very effective way to support children's CMLs especially create and their awareness about marketing process because they created their own bottles to take kids' (who do not like consuming milk) attention kids and make them like drinking milk. The dialogue between a teacher and a child was amazing.

C: The prices were not written on them [milk bottles] {by showing the milk bottles hanged on the wall by teacher}.

T: The prices will be written by them [salesmen at the market] when we send them [milk bottles] to the market. If you want you can write on it [milk bottle].

C: If we do not write, how can we understand the price of it?

T: You are right. Its price is important.

(In this part child gave his bottle and stated the price of milk to the teacher.)

C: 2TL

T: You tell the price of it. Hmm, its price is low.

Further, the teacher asked different types of questions. These were “instigating discovery (ID)” (Is there anybody that feed the cows? What does cow eat?), “probing for understanding (PU)” (Why do cows have udder?), “promoting reasoning (PR)” (Why do farmer feed the animals?, Why is the milk important for us?), “encouraging creative thinking(CT)” (Why does cows' milk become white even if they eat green grass?) and “serving as a catalyst (SC)” (What could happen if there were no farmer and cows?).

The teacher used some criteria while choosing media and explained these criteria in detail (See Resource Use). This also demonstrated that the teacher was an advanced level of CML.

The communication between the researcher and teacher was powerful. Thus, the teacher changed her mind about the topics about ESD and how to CML into ESD activities. She was also eager to adopt new things and utilize these things in her activities and classroom. She elucidated her thoughts with this statement:

...I make an emphasis on ESD and CML together. I provide them to internalize the learning process. Animal breeding, there are the people [farmers] who feed the animals...I took that advice from you at the previous meetings. To provide them become aware of being people that prepare these [videos, cartoon]...



Throughout the activity, the teacher made a connection with the previous activities especially recycling and using the healthier material for us and the environment (e.g., glass bottle). This might lead that kids could rethink their previous experiences and daily life and establish connections between them.

All in all, for this activity, Duru used robust approach to sustainability practice (environment, social & cultural and economic- respect, reflect, rethink) and advanced CML level (in terms of access, analyze & evaluate and create competencies).

#### **4.1.4.3 Domain of consequences: Duru's salient outcomes**

A more detailed explanation based on “Selection of Topic”, “Teaching Strategies”, “Resource Use” and “Assessment Strategies”, A<sub>2</sub> and A<sub>4</sub> activities and related SRIs will be made in the following part.

##### **4.1.4.3.1 Selection of topic**

The examination of conducted activities and related SRIs indicated that the activities A<sub>1</sub> and A<sub>3</sub> directly came from TEMA kids program although A<sub>2</sub> and A<sub>4</sub> were redesigned by adding new parts and excluding some parts of teacher's prepared (preexisting) plans. When the topics of activities were investigated regarding 7Rs, the components of ESD, it was perceived that only A<sub>1</sub> was related to ESD-environment aspect and respect of 7Rs. On the other hand, A<sub>2</sub> focused on the environment and social aspects of ESD and respect and rethought of 7Rs. While A<sub>3</sub> was TEMA Kids activity, the teacher added two videos (one of the animations the other one is public service announcement prepared by the Ministry of Forestry and Water Management). Therefore the focus of the activity changed from environment aspect of ESD to environment, social and economic aspects of ESD and respect. What's more, A<sub>4</sub> was re-planned by Duru, and the focus of this activity was social & cultural and economic aspects of ESD and respect and reflect on 7Rs.

Overall, it can be stated that three of four activities used strong sustainable approach by combining at least two aspects of ESD.

##### **4.1.4.3.2 Teaching strategies**

It could be stated that Duru utilized mostly brainstorming, questioning, and interpretation of media to encourage children's active involvement in the learning

process. She re-planned the activities based on kids' needs and desire. In other words, she used an emergent curriculum and child-centered activities. Except for these teaching methods and strategies, a group working, creative drama, peer learning, inquiry-based learning and using models were given place in A<sub>2</sub> and A<sub>4</sub>. She asked different kinds of questions to the children about the media (videos, cartoons, posters) to promote them to understand and analyze the messages that were given by distinct media types. To put in another way, she was aware of CML and used its teaching strategies in her activities effectively.

During SRIs, Duru stated that she used distinct teaching methods and strategies such as brainstorming, questioning, a group working, watching, analyzing and interpreting visual materials, creative drama, asking a question to encourage creative thinking.

To illustrate, for an A<sub>2</sub> activity she made the explanation as follows:

...again we used brainstorming, watched the video and interpreted it. We utilized questioning. Actually, there were music and movement in the activity, creative drama, as well. I got their opinion about how we can make a noise, and we improvised their opinion... They made group working. Everybody tried to complete some parts of the poster. If you realized, there were some of the children try to draw together. Therefore, there was a peer learning...

Additionally, Duru explicated why she prefers to use these teaching methods/strategies with these words:

...I had an activity plan about sounds; I thought that how I can integrate and combined this plan with ESD and CML. When I thought about it, this emerged. I mean, I considered that we could make activity about noise pollution. I thought that we had not interpreted any public service announcement yet... you know, probably this content can be placed in activity in this way, which is the best way, by using and interpreting visuals. As I mentioned, actually, the activity was related to sounds, but I added noise pollution and media to this activity. To disturb the people, environment...we can touch lots of thing at the same time...

Further, Duru reported her thoughts about the alternative teaching methods for this activity in the following:

Maybe, I can want them to prepare a video like a public service announcement, but I am not sure about how can be done because of their age group and attention span. We can try... Indeed, I thought that we could listen to the sound of the environment, perhaps, there could be the sound of that come from outside such as truck's and motorcycle's sounds because sometimes, a motorcycle went with making too much noise at that time, all of them [kids] frightened and worried about what happened at outside. Maybe, I can do something like this to take their attention, but I am not

sure whether we can catch the right time or not. On the other hand, we can listen to the sounds coming outside by opening the windows while we were silent. We can talk about whether the sounds are disturbing or not. The sounds of bird and exhaust could be at there...

The examination of her statements demonstrated that she would rather use the outdoors more efficiently to make a connection to children's everyday lives. She also pointed out that children can take their own video. This thought was also surprising because she always kept in her mind to support kids' CMLs by encouraging them to design/create their own media and messages. What's more, she described how she combined to integrated ESD and CML; and, she changed your mind about ESD contents. She underlined the effect of media on children's learning.

On the other hand, for A<sub>4</sub> activity Duru made the explanation as follows:

We made the brainstorming. Actually, I asked a question to encourage their creative thinking. For instance, "why does cows' milk become white even if they eat green grass?" We watched the video [cartoon], analyze and interpret it again. We made art activity [designing their own milk bottle].

She continued to elucidate about the reason for choosing these teaching methods/strategies with these words:

I emphasize to ESD and CML. To internalize this [animal breeding and framers]. Actually, they [kids] were aware of this. I mean they reported various things such as we will die, will not grow up, get tall, and grow our bones...[If There was no farmers and animal breeding]... I mean I always try to design and apply the contents that can take their attraction because they are too active. Moreover, merely if you took their attraction, they would engage in the activity. It [activity] should include parts that give time for them to be active.

Duru also exemplified teaching methods and strategies that can be utilized as an alternative in the following:

Maybe we can dramatize the village life. For instance, they reported that it [cow model] did not have an udder. Perhaps...I am also thinking of it. However, when I gather together lots of things [activities], we cannot make all of them because we cannot concentrate on all of them. I can put milk inside of the medical glove and hold under the cow model and make kids milk the cow. It is important not only their small muscles but also as I mentioned they could internalize the process.

When Duru's explanations were analyzed, it was understood that she made an observation about children's needs and she reviewed her activities that children could be more active and decreased the duration of the activities. She preferred to use creative drama and hands-on activities to promote kids to internalize the learning process. It can be interpreted that she always thinks how she can combine and integrate

ESD and CML and which way is the most effective way to support kids' active involvement in the activities.

#### **4.1.4.3.3 Resource use**

For A<sub>2</sub> activity, Duru used two public service announcements (internet & computer), four posters (computer), colored cardboard and crayons. She clarified the reason for using these materials with these expressions:

I gave importance to select the visuals that take children's attention because there were lots of option, but I thought about which ones can take their attention. For instance, there were pictures of babies at the posters. Mainly, I chose this. There was a baby at the other one [video], mother made baby sleep, and there was a young girl who was the same age as their [kids'] age...I have not interpreted public service announcement yet. I made research what we can do and what can I find. When I was searching, I reached good public service announcements. In fact, I found a video that was prepared by Uludag University students as a part of The Scientific and Technological Research Council of Turkey (TUBITAK) project. However, we watched it before leaving school. They liked it so much. In that video, starting from what is sound? The name of the video was already the noise pollution at the school. They [kids] interpreted everything including the name of the video such as when did like this or that, noise pollution emerged...

The analysis of Duru's statement indicated that she utilized different types of media. She gave a place to the interpretation of public service announcement because children did not have experience with this media. It was terrific since Duru provided that kids have experience about how to interpret messages coming from different kinds of videos. While interpreting the visuals, she asked various questions to promote kids to analyze and understand the message at these visuals. Moreover, while choosing the visual for kids, she was so selective. Both of them also showed that her CML change and she was aware of and knowledgeable about how to support kids' CML.

When it comes to A<sub>4</sub> activity, she used a cow model, cartoon and foam rubber. She made an explanation why she selected these materials as follows:

...for this time; I chose especially cartoon since we have not interpreted the cartoon until now. I was curious about how they can interpret the cartoon if I select a cartoon which is related to milk because it is more colorful. Therefore, particularly I asked them whether they like the drawings, colors [that are used in the cartoon]. In fact, I wanted to ask them whether they like the music at the end of the cartoon because they danced with this music. However, I forget to ask it... It was more appropriate for children's age. They are four years old. I desired that there be pretty cartoon characteristic such as grandfather, grandmother, mother in this cartoon...Village. Apparently, I wanted to make emphasis on the village, animal breeding, and farm. I mean, there are some people to feed the cows why they are important. While selecting this cartoon from other videos, it is also crucial

for me in this cartoon; there were characters who were living at the farm and in the village...

For the cow model, one of my colleagues made this model, and she asked me “do you have a plan related to milk?” I stated yes. She reported that I made a cow model, if you wanted to use, you could use...if there were not a cow model I would make an introduction with a puppet. However, this model could be more attractive and provide that children were curious about the content and can easily engage in the activity...

In the art activity, we used foam rubber...Indeed, I thought first to use papers or cardboard, but then we would make a bottle, so the material should be more satisfactory. Moreover, we have not made any drawing on this type of material... I desired that they can work on the different surface, try to cut this material and provided that they have a distinct experience...They could also design decorate their milk bottle [made up from foam rubber] whatever they wanted...Also, it looks so lovely; its visuality is better than that of paper. Hence, I selected this material.

Based on Duru’s words, she used a distinct media type and gave a chance/opportunity for children to interpret the message of this media type. While selecting the cartoon, she had some criteria such as cartoon characters, including music and children’s developmental level and connection to ESD. She also used cow model to make an introduction to the activity. It was also a very effective way to take the children’s attention. She also preferred to utilize foam rubber to support kids to design and decorate their own bottles. She presented to kids with hands-on and minds-on activities to encourage their creativity and aesthetic view. All in all, she promotes children’s CML competencies (access, analyze & understand and create) and awareness of ESD and its components (environment, social & cultural and economic).

#### **4.1.4.3.4 Assessment strategies**

For A<sub>2</sub> activity, Duru would rather use posters prepared through group working as an assessment, and she made explanation like this

...I want them to draw their own posters with their own groups because I am curious about how they can reflect the things [that we talked about noise through the activity]. I also said to them the Republic of Turkey Ministry of Environment and Urbanization asked us to prepare posters to make people aware of the noise. These posters would hang at a shopping mall, hospitals, and school corridors...When we hang these posters in our school corridor and children see these, they would remember not to make a noise. When I thought of all the posters, I reached my objectives. For instance, Güven and Anıl drew together. While one of them was drawing a man making noise, the other was drawing the man warning the other one. In the other group, one of the children drew X on the child making a noise...In fact, I wrote especially [the names of children] who drew the poster and also emphasized who prepared this. You prepared this. If a teacher used this, s/he could know who prepared this. Moreover, Eylül reported that yes, our names were seen there, we prepared this...

In the light of Duru's statement, she could reach the objectives and indicators related to ESD and CML (even if there is no objective and indicator in Turkish National Curriculum) that she determined. She gave importance to group working and peer learning. She also supported children's CML, in particular, create competency. She stated that she wrote the names of the children who drew the poster consciously and took their attention to this to make them aware of it. Children also reflect their thought generally negative ones to their posters with their own groups. They could become conscious that the noise gives harm to our health.

What's more in A<sub>4</sub> activity, Duru wanted children to use foam rubber to design their own milk bottles as an assessment. She made an explanation why she preferred to use the art activity in the following:

To give them the opportunity to have experience with using different materials. They cut, pasted and made a drawing of this material. They attempted to draw and/or paint with various paintings... When I made an explanation about designing their own bottles. It was also related to their creativity. In that explanation, there were the kids who do not like drinking milk... Therefore, they would design and decorate their bottles. When they see their designed bottles, they want to drink milk. Moreover, I desire to observe how they can reflect on what we talked about their designed bottles. For instance, Erdem makes a drawing like a rainbow. He reported that I also gave a response like these. "I can draw multicolored". [When the teacher asked the children about the cartoon characters "do you like the colors of drawings of the characters, Erdem replied above- mentioned.]... Moreover, children were knowledgeable about the brands. This [designed bottle] was the production of you. To give a name to this. I want to mention to brand...

Based on teacher's words, she preferred to use this type of material consciously to encourage children's creativity and active involvement by supporting their hands and minds on explorations. She made an explanation about the rationale of designing bottle creatively. Throughout the activity, Duru always made a connection to the other activities and/or formers parts of the existing activity. Therefore, children also connected with the previous part of the activity (color of cartoon characters and designed bottle). The teacher attempted to give kids an understanding that if something was created by someone, the name could be given to represent the creator name. It is also amazing. In this way, children can become conscious about CML especially in terms of create competency.

#### **4.1.5 Duru's Overall Professional Growth**

In this section, Duru's overall growth will be examined regarding CML competencies as well as level and ESD awareness respectively. Duru's growth networks will be demonstrated in Figure 4.2.

##### **4.1.5.1 Professional growth concerning CML issues**

When Duru's CML levels before and after PDT were compared, it can be observed that the growth in her CML level regarding the competencies (access, analyze & evaluate, create, reflect and act) because before PDT she did not use as distinct media as after PDT. Moreover, she did not have any criteria while selecting any media types, however, after PDT she could explain why she preferred to use different kinds of media types, which criteria were important for her while selecting these, which media types could be used in early childhood learning environments, how children's CML level could be supported, how ESD and CML could be integrated, and which criteria were important while conducting ESD through CML activities. Moreover, she paid attention to children's experiences related to various media types and made a detailed explanation of its rationale. To illustrate, to support children's critical thinking skills, she used different teaching strategies.

##### **4.1.5.2 Professional growth concerning ESD**

Before PDT, Duru generally preferred to use TEMA kids program, but after PDT she also created and implemented her own activities especially noise pollution and animal breeding. She also made an explanation about how she changes her mind about ESD especially in SRIs and the last interview. Moreover, when her last interviews in spring and fall semesters, she could easily explain the issues related to ESD coming from our daily life and everything could be the content that she thought it should be sustained especially social and cultural issues such as Turkish coffee.

#### 4.1.5.2.1 Growth concerning selection of topics

Table 4.5

*Analysis of Observed Activities in terms of Selection of Topics before and after PDT*

<b>Selection of Topic-ESD</b>	<b>Prior to PDT</b>	<b>After PDT</b>
Environment	4	4
Social & cultural	-	3
Economic	-	2

When four applied and observed activities on ESD through CML before and after PDT were compared regarding Selection of Topic, it was perceived that after PDT there was a growth in Duru's criteria related choosing the contents about ESD.

#### 4.1.5.2.2 Growth concerning teaching strategies

Table 4.6

*Analysis of Observed Activities in terms of Teaching Strategies before and after PDT*

<b>Teaching Strategies</b>	<b>Prior to PDT</b>	<b>After PDT</b>
brainstorming, questioning, discussion	4	4
analyzing and evaluating, interpreting various media types	-	4
using puppet/ model	-	2
drama/ creative drama	-	2

The analysis of four conducted and observed activities before and after PDT was compared in terms of Teaching Strategies indicated that after PDT there was a growth in using different kinds of teaching strategies especially related to CML while implementing ESD activities via CML.



#### 4.1.5.2.3 Growth concerning resource use

Table 4.7

*Analysis of Observed Activities in terms of Resource Use before and after PDT*

<b>Resource Use</b>	<b>Prior to PDT</b>	<b>After PDT</b>
pictures	2	2
book	1	-
animation	-	1
video	1	2
cartoon	-	1
public service announcement	-	2
poster	-	1

All of the implemented and observed ESD activities through CML before and after PDT were examined in terms of Resource Use, it could be seen that there was a growth in using different kinds of media types from poster to public service announcement. This growth also demonstrated that Duru was eager to provide her children have different types of experience about media by utilizing various media.

#### 4.1.5.2.4 Growth concerning assessment strategies

Table 4.8

*Analysis of Observed Activities in terms of Assessment Strategies before and after PDT*

Assessment strategies	Prior to PDT	After PDT
drawing	2	1
painting and completing the picture	1	-
creating poster	1	1
design own product	-	2
asking different types of question	-	4

When all of the conducted and observed activities conducting ESD through CML before and after PDT were examined, it could be perceived that there was a growth in utilizing different assessment strategies since Duru used assessment strategies to promote children's create level such as creating a poster and design their own products. What's more, in one of SRIs after PDT Duru stated that maybe children could create their own video, but she was not sure because of children's developmental level.

Overall, Duru's growth networks could be summarized like in Figure 4.2. As it can be seen, the reflection of External Domain (PDT) on Duru's Domain Practice (implemented activities) because she changed her mind about conducting activities on ESD via CML in early childhood learning environments. Moreover, PDT had a direct effect on Duru's Personal Domain (awareness of ESD and CML level) based on the post-interview at the fall semester (2016-2017). The change in her Personal Domain also had a direct impact on her Domain Practice because she stated that she thought how to conduct issues on ESD except for environment in her class, and then she redesigned her activities. The reflection of Domain Practice on Personal Domain also can be perceived since she made a schema in her mind which ESD contents can be integrated which media types based on CML or how to implemented ESD activities through CML, what the children's reactions could be, how to support children's active

involvement in this type of activities. What's more, Domain of Consequences (assessment and seeing the outcomes of selection different topics, resource use and teaching strategies) were affected directly from Personal Domain because according to Duru's awareness of ESD and CML level, Domain of Consequences could be changed. When the questions "what were the reasons for these assessment strategies, resource use and teaching strategies" were asked her, she explained the reason to support children's ESD awareness and/ or CML levels. Further, the reflection of Domain of Consequences to Personal Domain could be seen because, during the post-interview, she stated the change in not only her but also children's ESD awareness and CML occurred after this research. Moreover, the direct effect of Domain Practice on Domain Consequences could be observed since she planned to use different media types and assessment strategies based on the consequences of her previous activities. The reflection of Domain Practice on Domain Consequences could be seen because when Duru asked questions children about different media types based on CML or to make a connection to different aspects of ESD, she could play effective inquirer role

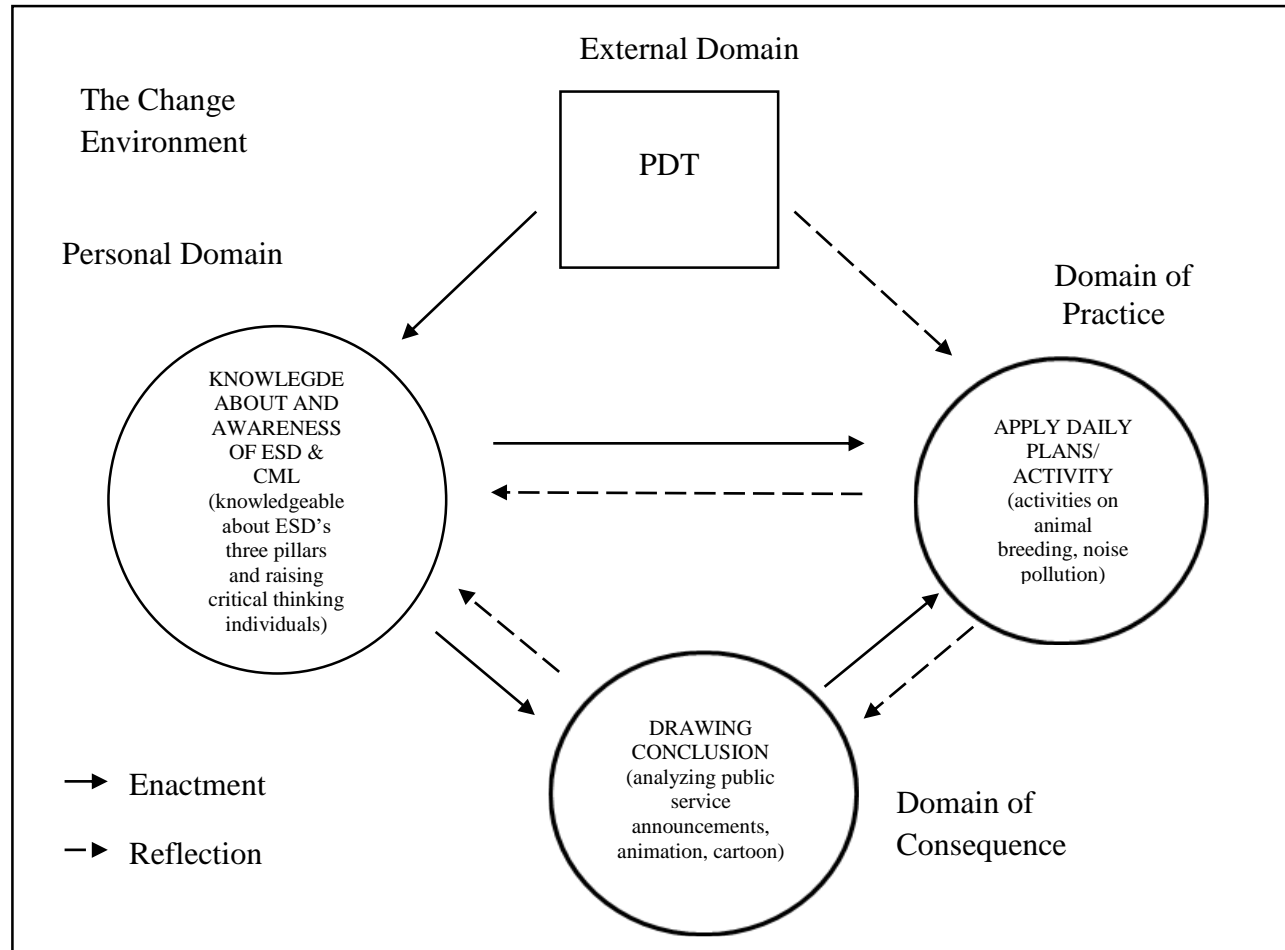


Figure 4.2 Duru's Growth Networks

The growth of Teacher Duru regarding personal domain, domain of practice and domain of consequences after PDT were summarized in Table 4.9.

Table 4.9

*The Summary of Teacher Duru's Growth*

<b>Teacher Duru</b>	<b>Before PDT</b>	<b>After PDT</b>
<b>Personal Domain</b>	No ESD awareness Medium CML	ESD and its pillar awareness Advanced CML
<b>Domain of Practice</b>	Medium approach to sustainability Basic to medium CML	Strong approach to sustainability Advanced CML
<b>Domain of Consequences</b>	Environment aspect of ESD No CML teaching strategies Picture, book, video No assessment strategies to support children's create competency	All aspects of ESD CML Teaching Strategies New resource use (public service announcement, poster, animation, cartoon) New assessment strategies to support children's create competency (design own product)

## **4.2 Examining Teacher Professional Growth: The Story of Saniye**

### **4.2.1 Saniye in Context**

In this section, Teacher Saniye's professional history, professional environment, and professional background are explored.

#### **4.2.1.1 Teaching background**

Teacher Saniye graduated from early childhood education department with a bachelor degree. She had five-year teaching experience and had been working at the preschool where the study was carried out for three years. She conducted activities targeting environmental education constructed by TEMA. She participated in training related to how to use smart boards in education effectively. However, there was no smart board in her current classroom.

#### **4.2.1.2 School context**

Saniye was the colleague of Duru in the same independent preschool. Therefore, only specific information for Saniye will be given in the section. She has worked at afternoon period for two years and has not participated in any PDT related to ESD through CML.

In this school, the same projects as Duru's were also implemented during 2015- 2016 spring semester and 2016-2017 fall semesters when this study was carrying out. The only different project was Sanat Tarihi Projesi [Art History Project] conducting 2016-2017 fall semester.

Further, she was working with supporting and open-minded school director and an assistant director regarding applying new approaches and adapting them to activities in her classroom. There was a collaboration between her and her colleagues. They shared digital and printed resources. Additionally, several informal exhibitions, parent involvement activities, seminars and field trips were organized.

She was together mostly with the same children from September 2015 to June 2017. In her class, while there were 18 children (10 Girls and 8 Boys) in the 2015-2016 spring semester, 19 children (12 Girls and 7 Boys) in the 2016-2017 fall semester were there. There was no inclusion student at both semesters.

## **4.2.2 Teacher Saniye's Professional Practices before PDT**

In the following part, Saniye's professional practices before PDT on the basis of the Interconnected Model of Professional Growth are elucidated. Saniye's Personal Domain (awareness of ESD and CML competencies and level), Domain Practice (conducted activities) and Domain of Consequences (resource use and assessment) are presented one by one.

### **4.2.2.1 Personal domain: Teacher Saniye**

In this section, Saniye's awareness of ESD and CML competencies and level will be given.

#### **4.2.2.1.1 Saniye's awareness of ESD**

The examination of Saniye's awareness of ESD before PDT in the light of pre-interview indicated that she had no knowledge and was not aware of the notion of "ESD". After she read the description of ESD constructed by UNESCO, she made an explanation of the following:

I have not heard about this [ESD], but it is a well-established plan. Of course, nothing remains just knowledge. I mean, it is important to use and implement this knowledge in everyday life...

She elucidated the implemented activities related to ESD in her class throughout the semester with these words:

Mini field trip at the school garden or field trips to the other places are organized. In the field trip, children have a chance to see the real objects related to everyday life, or when we are at the environment they have a chance to observe things at nature, I apply the plans like this...

Saniye also reported which teaching methods and techniques were utilized to support ESD throughout the activities as follows:

...I use presentation, lecturing, a group working, and project-based applications. I mean, I generally utilize all of them [different teaching techniques] since each child has a different learning style. While one child can understand with lecturing, the other can comprehend with visuals [pictures, photos]. Therefore, it is important to use all of them because there are several stimuli and so, it promotes continual learning...when children go outside, they can learn by doing this is the most permanent one. If children just listen to any topic, they might forget the knowledge about that topic. However, when they have the first-hand experience, the learning occurs permanently because they cannot have a chance to forget it...

#### **4.2.2.1.2 Saniye's CML competencies and level**

In this part, Saniye's CML competencies and level were investigated regarding access, analyze and evaluate, create, reflect and act respectively.

##### **4.2.2.1.2.1 Access**

Although Saniye could access and use different kinds of media in her daily and work life such as printed media, audio-visual media, social media and digital media, she preferred mostly utilizing social media (Facebook and Instagram) and digital media (Internet and Google) both at her every and work life. While making an explanation about what comes to your mind when media is stated, she mentioned that firstly came audio and visual things such as TV, internet, and computer. She spent much more time on media in her daily life than on her work life. Media covers at least 5 hours of her life.

I use social media to investigate the topic that I wonder about or to make a research about the material or something else related to my job, especially throughout the academic year. I ask me what I can do for children. On Instagram or Facebook, I can see which kinds of materials and toys that I can create and use them in learning centers... because when I like some pages related to my interest area, I can perceive them on my homepage automatically, this also reminds me of examining those pages at the meantime. I can state that Hmm this can be done this can be implemented... For instance, children's books. I can hear about new books and see their content... I utilized the Internet generally throughout the academic year. I write on Google for the ration card or other things that I am interested in and want to search. I can read and learn the views about any issue by this way. I can print the things that I find. I follow the current issues (what happened?) by reading newspapers... if I did not have a view and/or knowledge about any issue or how I can tell this issue to the children, I can make research from Google and prepare pre-knowledge for myself. Or a literacy page, the page including visuals related to an activity which will be implemented. I mean you can investigate the issues that you think by writing to Google... I also use visual media to watch the new and some soap operas in my daily life...

##### **4.2.2.1.2.2 Analyze & Evaluate**

Saniye has some own criteria while utilizing the media especially social media (Facebook and Instagram). These are reaching knowledge easily (the first one for her) as well as in a short time and its quality. She elucidated these in the following:

I mean being easily reachable comes first for me. Social media always are at my elbow. Moreover, I can follow the contents (such as news) on TV via social media. I can also reach the journals' digital forms. Moreover, social media is just one click away since nowadays everybody has a smartphone connected to the Internet. Therefore, I prefer to use social media as in the first order since it can easily reach.



What's more, she made an explanation how she decided to use media related to her working life with this statement:

While using social media, I like some pages. If there was a content that I dislike, I could remove this page(s) from my like pages. Alternatively, one of my friends' advise me to follow some pages. If I like the contents of the pages and these can be implemented in the class or can be done in everyday life, I continue to follow the pages. I mean if the pages make a contribution to me regarding knowledge, sample activities...etc. I prefer to follow them.

Further, she decided the truthfulness of the content in the media just by analyzing the content or her reliable friends' advice. She expressed her thoughts as follows:

I think nobody would rather use an unreliable website. Everybody give priority to the truthfulness and reliability of the website that they utilize. I can decide its truthfulness and reliability by analyzing its content and experiencing. If one of my friends proposes to me as a good reference, I start to follow without thinking because I believe that when my friend suggests that it should be beneficial for my daily and working life. However, the characteristics of the friend are also important (if she is good at her job and follows the reliable websites).

She can distinguish opinion from knowledge via looking whether there is a reference or not and if there is a reference, the truthfulness of the statement is verified by making a search about this reference. However, she was not knowledgeable about components of media's content. She reported with these words:

If the reference is written at the end of the document, this is knowledge because the author verifies it. I can also confirm this via investigating its source. This means that this is true and reachable knowledge. However, if the author writes the document based on his/her views, I do not know its resource, and I do not consider it is scientific knowledge, it is opinion, I think.

She advocated that self-control mechanism be adequate to provide the security of media and media tools. She expressed her views in the following:

I think individuals provide their security on their own. At Facebook or other media types, the safety is ensured. However, the younger people become friends with that they do not know. After that, they can meet with them in real life or the bad events can occur. Even if Facebook, Instagram, or the institutions inspect, the person ensures his/her safety on his/her own and think wisely. Media are controlled, but their control over them is restricted. They can distinguish according to people's sharing or words, but they cannot know their intent. Therefore, the person should ensure his/her safety by him/herself...

Before using media and media tools, she paid attention to its common usage, target audience and utilizing common language with these words:

The extensiveness of the media type affects our usage. Everyone has a Facebook or Instagram account; let I start to use it. The usage of them starts with curiosity. Everybody has a social media account why I do not have. Alternatively, I want to see other people's sharing and what they do. Generally, the number of the people that use this media type also influence your usage. It can be like a commercial. I mean, everybody utilizes them, let I use, as well. I also see the things that occur in that platform.

For Saniye, the reachability to the personal information or the information of personal account by other people when a person was a member of a website depends on peoples' preferences. She explained this as follows:

It should depend on an individual's desire because people can arrange its privacy settings. While some people write their personal information until phone number, some of them do not share any personal information or close to public reachability...while making shopping, I can give my phone number to the stores to get their discounting card and be knowledgeable about their sale days. However, I can receive lots of messages from other stores or places that I do not give my phone number. On the other hand, I can hear about the new things, sale days, promotions...etc and they are close just one click. It has not only positive but also negative sides...

When Saniye's analyze & evaluate level is examined, it was perceived that she used some effective strategies such as analyzing the pages and arrangement of privacy settings while she gave importance to friend's advice without thinking. She did not state specific predetermined criteria (except for common things such as easily reachable) for her daily and working life media usage. Therefore, her CML level was between basic and medium regarding analyze and evaluate competency.

#### **4.2.2.1.2.3 Create**

Saniye sometimes shared the photos related to daily and working life and taken by her at the social media accounts such as Facebook and Instagram. The photos were related to her special (daily life) and happy moments (working life). However, she did not share any document including her views, experience and implemented activities in social and digital media (such as blogs and websites). She made an explanation of the following:

I do not write anything related to my daily and working experiences on my social media accounts. I read other people's sharing, but I do not share these on my page. For instance, there can be a text related to my working life such as how a child gets used to the school at the beginning of the academic year or what are the child's fears...etc. I do not make any comment about these texts, however, I also read the comments related to the texts since I am curious about how other people criticize and what their comments are, but I do not write anything about them. My opinion remains secret in my mind... I share my happy and special moments related to my

daily and working life. I do not upload too many photos of my every moment. For instance, I went there, I ate this and put photo related to these moments. I upload two or three photos maximum in a year. When I am tagged at the social media, it is seen on my page if I accept these. Otherwise, it cannot be seen. I do not accept all of the tagged ones.

She did not create any website and blog related to her daily and working life.

She explained the reasons for it with this statement:

Now, I am young, and I have been working for four years. I cannot feel myself comfortable to share my experiences related to my experiences. Maybe I can feel more comfortable when I will be 15-20 year-working teacher so, be more experienced. What I can write since I have not had enough experience...

She followed and was a member of websites and blogs related to early childhood education. Nonetheless, she has not shared any activities or comments at these platforms. She elucidated as follows:

I can benefit from these websites and blogs by changing their activities or supporting my activities. I can adapt some games to my activities I can design different learning centers by inspiring from them. I mean, I try to adapt the things that I see at these platforms...however, I do not share anything and comment on anything...

Although she did not write and publish a book, journal, and newspaper, she prepared a brochure pertaining to children's school orientation with her colleagues.

All in all, Saniye's level related to create competency remained between basic and medium since even though she used and was a member of different kinds of media types such as Facebook, Instagram, websites, and blogs, she was just follower and did not share and make a comment about anything. Further, she just prepared brochures with her colleagues.

#### **4.2.2.1.2.4 Reflect**

Saniye considered that the content transmitted by media and /or media tools should be inspected by agencies/institutions/ person/people. She stated her views with these words:

Unless the contents are inspected, wish-wash things can be written. Everybody can state and share their views freely, but sometimes they cannot respect the other people's right. Alternatively, they can share inappropriate things. When there is an inspection, at least these things can be filtered.

For her, the agencies/institutions/person/people should make research to verify the inspection results. She reported this:

It should be confirmed, but I do not know how they are verified. There should be a person/ people to inspect the texts, what individuals do, who used the media positively and negatively. There is a need to make research. The people who use the media negatively, these should be removed from those platforms [social network] automatically. Alternatively, if there is a website on the Google and its content was inappropriate, this website will be closed at the end of the Google's examination.

Saniye made an explanation how to provide her own security while using media with this statement:

I do not visit the websites that I have not known. Even if I am so curious about if I have not had any knowledge about those websites, I do not visit them because when you visit those websites, the founder of those can steal your personal information and passwords easily. I visit mostly known websites. Alternatively, I cannot share my password and other personal information with unknown people. I mean, I can provide my own safety by myself and my computer... firstly individuals should find a solution since the time is passing until agency and institution reach you or implement the procedures. Hence, individuals should know how to protect their rights. If there is something that's/he cannot overcome, s/he can apply agency/institution ... there should be some agencies/institutions/ person/people. When I have a problem, there should be people to solve my problem. Individuals cannot solve these types of problems on their own. If I have a problem, first of all, I should consider what I can do and who/ which agency / institution is authorized and has the responsibility about solving the problem. I state my complaint to that place or person. They write my complaint down and fulfill what is required procedure but, I cannot do this by myself.

Saniye stated her views about the responsibilities of the agencies/institutions/ person/people for providing the safety of the media with these words:

They have some responsibilities that should be described with regulations. They cannot do anything based on their own desire. For this, many agencies/institutions/people should come together, determine and prepare about these issues and act together while applying these regulations. For instance, they cannot impose any sanction about people who do not look from the same perspectives. Therefore, there should be regulation and the sanctions should be applied in the light of these regulations.

She used social media accounts (Facebook, Instagram, and Swarm) as followers she generally did not prefer sharing something related to her personal information and photos on her private life. For her, when she shared lots of things about every moment of her private life, she thought that all her life would be at social media and become public. Therefore, she would rather share photos related to happiness moments rarely to keep her private life away from social media.

Saniye's level regarding reflect competency is medium since she believed that while providing the security in the social media, first of all, people have some responsibilities. If they cannot find any solution, the other agency/institution/ people can intervene in the process. However, she did not mention ethical rules and social responsibility and how to put these into practice.

#### **4.2.2.1.2.5 Act**

The Act and Create competencies interlocked for some parts especially creating/ designing media (such as videos, photographs, brochures, book, journal, blogs, and social media). Hence, Saniye's some replies are also given at Create competency and in this section, the different parts of Act competency will be presented based on her answers.

Saniye used WhatsApp to contact her colleagues while declaring the announcements. She has not made a connection with agencies and institutions to collaborate with them since up to now she has not needed to get financial support from NGOs to rearrange her classroom due to lack of opportunities such as insufficient materials (toy, book, musical instruments) and class environment.

She gave information about media and/ or media tools that were used to support activities related to ESD in her classroom with these words

...At the indoors, time to time we watch a related video that I found. I cannot use a projector due to no projector in the class. Actually, using these tools at the class is very good regarding visuality. I have used overhead projector up to now. I generally use TV and computer. By this way, children at least both see and hear from when I tell something, I cannot know how children imagine and understand these things that I tell in their mind. All of them can comprehend that I instruct because their development is at the operational stage. Although I explain carefully, sometimes they cannot consider. Therefore, I want to show the things that I tell regarding visual. The things can be an animal which children have not seen before... By this way, the knowledge can be more understandable for children and it is easier for them to put it into practice. Otherwise, how children can understand and use too complicated knowledge in their daily life. Hence, I utilize TV and computer. I find videos, cartoons appropriate for children's age as possible as or I use pictures/photos from computer or as a printed way. If I do not have a chance to demonstrate them via computer, I show them as a printed form...

On the other hand, she did not make any explanations related to strategies that can be utilized to encourage children's CML levels via conducting ESD activities through CML in her class.

Saniye's level regarding Act competency might remain between basic and medium. Although she used distinct types of media (printed forms, pictures, photos, videos, cartoon, internet) and/ or media tools (TV, computer, projector) in the activities pertaining to ESD, she could not use the media (such as book, video, photos, pictures...etc) which are designed and created by her. Further, she generally used media as a tool and did not support children's CML level by using different instructional strategies.

Overall, prior to PDT, Saniye was not aware of ESD as well as which contents were targetted by ESD, and which strategies can be utilized to promote children's CML while implementing ESD activities through CML. Additionally, her CML level was found between basic and medium.

#### **4.2.2.2 Domain of practice: Teacher Saniye**

Saniye's domain of practice is investigated in the light of document analysis of her monthly and daily plans, stimulated recall interviews (SRIs) and the field notes of implemented activities related to ESD and CML before her participation in PDT.

Based on document analysis presented at Table 4.10, Saniye could address only environmental component of ESD and limited CML issues in her activities targeting ESD through CML throughout the first part of the study (2015-2016 spring semester).

Table 4.10

*Number of ESD and CML in Daily and Monthly Plans Prior to PDT*

<b>Months</b>	<b>Total obj.</b>	<b>Obj. 7Rs</b>	<b>Obj. CML</b>	<b>Total Act.</b>	<b>ESD in Act.</b>	<b>Media in Act.</b>	<b>CML in Act.</b>	<b>ESD &amp;Media in Act</b>	<b>ESD &amp; CML in Act.</b>
<b>March</b>	38	1- respect	3	45	1-reflect (knowledge) 2 –respect (indirect- knowledge)	7(video, pictures)	1(book)	1-respect	CML-create- respect
<b>April</b>	45	2- reflect	3	37	2 -respect (indirect)	5	2(book)	1-respect 3-reflect	-
<b>May</b>	48	2- respect 1- reflect	3	37	1-respect 2-reflect (knowledge)	6 (picture, Photograph)	-	-	-
<b>June</b>	39	3- respect	3	21	2 -respect	-	1-access, analyze & evaluate	1 respect	1 ESD-respect & CML-access- analyze & evaluate

The examination of daily and monthly plans regarding ESD and CML demonstrated that Saniye generally gave place respect which is related to the environmental aspect of ESD in her plans. This outcome was also supported by the analysis of the objectives related to ESD founding in daily and monthly plans. Additionally, when the activities were investigated in terms of CML, it was perceived that Saniye used media (video, photographs, and pictures) from time to time but utilized CML almost never. She sometimes implemented ESD activities with media and rarely applied ESD activities via CML in the classroom.

In the following section, applied and observed activities in her classroom would be presented in detail. For this, SRIs were investigated regarding ESD (from strong to weak approach sustainability practice) and CML (basic to advanced). Initially, in the light of activity plans, SRIs, and field notes, applied activities were summarized in Table 4.11 based on from strong to weak approach sustainability practice, basic to advance CML. Then, two implemented activities (A<sub>3</sub> and A<sub>4</sub>) will be elucidated with the help of SRIs and field notes because these two activities mainly represented the general perspective of Saniye’s classroom implementations regarding indicating ESD and CML issues most unambiguously.

Table 4.11

*Analyses of the Places of ESD and CML in Activities Prior to PDT*

CML	ESD		
	weak	Medium	strong
Basic	* A <sub>1</sub> , A <sub>3</sub> ,	* A <sub>2</sub> ,	-
Medium	-	* A <sub>4</sub>	-
Advanced	-	-	-

\*A<sub>1</sub>: Spring Comes, Welcome to Spring, A<sub>2</sub>: Flying Soil through Wind, A<sub>3</sub>: Let’s Observe the Birds, A<sub>4</sub>: Which things are hidden with soil?

In the A<sub>3</sub> activity, Saniye applied Activity 21- Let’s Observe the Birds from TEMA Kids activity book via making some changes. For instance, she did not demonstrate the photographs of different kinds of birds through the website. Instead



of this, she made children listen to the birds' sounds and guess which sound belongs to which bird. At the end of the activity, she wanted children to draw a picture related to their observation instead of constructing bird nest. On the other hand, some parts of the original activity were implemented. To illustrate, the observation of birds in their own environment (at the preschool garden) and listening to a different kind of birds' sound at the garden was conducted with a similar at the original activity.

Briefly, this was science and art integrated activity and teacher focused bird observation. The activity started with a discussion between teacher and kids about birds, the name of different types of birds and nests of the birds. After that, they went to the garden to observe the birds. They generally saw two types of birds, namely crow, and pigeon. After the observation, they went back to the class, talked about what they observed in the garden and drew their own observation as a picture. The activity was completed with the assessment part. The assessment of the activity was made with children's sharing of their drawings at the circle.

In this activity, Saniye utilized the computer as a media tool to provide that children listen to the distinct birds' sounds.

For A<sub>3</sub> activity, in the light of the field notes (researcher notes), Saniye did not make a direct connection to ESD-respect just she said it was not good to disturb the birds by making noise. During observation at the garden, children saw bird nest. They reflected this to their drawings. One child drew a bird at the nest. This shows that they observe the environment carefully. Moreover, at the end of the observation, children saw a pigeon near the preschool gate. The bird was trying to find something to eat. Some kids wanted to give bread or something else. This also shows that kids are care about animals around themselves. It would be a good start for ESD connection.

On the other hand, there is no link to CML although teacher used a computer to listen to different types of bird sounds since she utilized media to support the activity. However, it was understood that children used different media types in their daily life. For instance, when the teacher asked the children birds' names that they see, they can just state three different bird names at first. However, while the teacher stated that they could think other sources such as journals, magazines, they can tell distinct bird's names such as the eagle, hawk, and owl. During the discussion about the bird

nest, one child explained how the bird builds the nest in detail as if he saw while the bird is making its nest.

Further, the teacher asked “instigating discovery (ID)” questions. These were where the birds construct their nest?, What might the pigeon eat? Which color are the pigeons’ legs?.

All in all, in this activity Saniye used weak approach to sustainability practice and basic CML level.

On the other hand, in A<sub>4</sub> activity, Saniye implemented Activity 23-Which things are hidden in the soil? from TEMA Kids activity book via changing the range of the activities and their implementation style. For example, discussion between teacher and kids about archaeologist was made at the class and the video related to how archeologist make digging to explore and find the ancient items was watched before making children’s their own digging at the preschool garden.

Shortly, this was a science and language integrated activity, and Saniye concentrated on archaeologist and how archaeologists make digging and find the ancient items; and, how these items are completed and exhibited at the museums. Initially, teacher and kids discussed on the concept of archaeologist and watched a documentary related to digging process (finding old items, completing the finding components of the items as a whole and exhibiting completed ones at the museum). After the documentary, children made their own digging at the preschool garden. Afterwards, they went back to the class to make an assessment and explore the items that they found while digging. The assessment of the activity was also made by asking some of the questions at the assessment part of the original activity. For example, “how do you feel when you dig the soil and find an item?”

In this activity, Saniye used computer and TV as media tools to watch a documentary on “one day of archeologist” with children. By this way, children were knowledgeable about an archeologist and digging process.

What’s more, in A<sub>4</sub> activity, based on field notes (researcher notes), the teacher did not make a direct connection to ESD-respect (just she told children not to touch the historical artifacts and not to give harm. Otherwise, people who go to the museum cannot see them because of being damaged).

While watching the documentary produced by TRT, kids realized that the video was taken at previous times since the bus that was used was old. This means that children can read visuals effectively. Moreover, the process in the video was explained by a teacher with simple words since the documentary was prepared for adults. She also sometimes showed the visuals with her hand on the screen. It was very beneficial for kids to understand and follow the process effectively.

Further, during the documentary, one of the kids asked the teacher how this video was taken. It was exciting; she was aware of the video was created by someone. Although this was the right moment to make connection CML, Saniye did not. She just made a connection to the researchers' video-taking process to explain how the video was taken.

The video was watched with an interactive way since children asked questions related to video to the teacher. For example, why did they put these [ancient] items into the sand pool? Watching the process of combing the components of the items to form a whole pot/material was very interesting for kids. All of them followed the scene very carefully. On the other hand, the teacher also asked questions to take children's attention to the screen such as "do you see how combine the parts of the ancient item, do you see the ancient stones, what did they found? What are there? What happened?" Although she asked about some questions pertaining to the visual material while conducting A<sub>4</sub>, she was not aware of CML and its teaching strategies.

During the activity, the teacher also made a connection with the museum and the importance of the museum and how to behave with children at the museum. By this way, she would make a connection to ESD- reflect.

While making their own diggings, kids were very excited and curious about what can be found in the soil. Throughout exploring the materials in the classroom, kids smelled, touched, felt and examined carefully. They used more than one sense. During the process, kids were always in interaction with other peers. They shared their experiences with their peers. In other words, throughout exploring phase children always actively involved in the learning process. Apart from, in the discussion part, teacher highlighted the occupation of archeologist was difficult and while watching the documentary, she pointed out that there was a women archeologist. She emphasized archaeologist can be man and women. It is imperative regarding gender equity-ESD-social and cultural aspect.

While exploring the items at the class, one of the kids realized that there was a number in one of the stone. The teacher made the connection from the writing at the stone to the writing at the ancient times effectively. She stated that at those times, people could write on the stone by starching. This connection could be very beneficial for kids. Moreover, one of the kids said that cowrie could come from the sea. The teacher made addition maybe there was a sea at the ancient times.

In addition, using different kinds of materials such as magnifying glasses, brushes, shovels...etc. also motivated children to make digging.

Further, the teacher asked three different types of question. These were “instigating discovery (ID)” (Who is archeologist? What appears after the digging process? Is digging process easy?), “eliciting predictions (EP)” (What can be this item and used for?, Which type of bone can be?), “and “reflection on feelings (RF)” (How do you feel when you are digging the soil and finding an item?).

Overall, Saniye used more than weak and less than the medium approach to sustainability practice and medium CML level since she did not utilize any CML strategies even though the documentary was watched interactively.

#### **4.2.2.3 Domain of consequences: Saniye’s salient outcome**

In this section, elaborative explanations on the domain of consequences will be made under the following headings with the help of A<sub>3</sub> and A<sub>4</sub> activities and related SRIs: “Selection of Topic”, “Teaching Strategies”, “Resource Use” and “Assessment Strategies”.

##### **4.2.2.3.1 Selection of topic**

The examination of implemented activities and related SRIs indicated that while A<sub>1</sub> was found at teacher’s prepared daily plans, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub>, activities directly came from TEMA kids program. When the topics of activities were investigated in terms of 7Rs, the components of ESD, it was perceived that A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub> activities targeted to respect, environment aspect of ESD while A<sub>4</sub> activity focused on both respect and reflect aspect, environment and social & cultural aspects of ESD. Additionally, the majority of the activities included science activity, even though three of them (A<sub>1</sub>, A<sub>3</sub>, A<sub>4</sub>) were integrated activities. The teacher could make a connection to the ESD environment (A<sub>2</sub> activity) explicitly and social and cultural pillar (A<sub>4</sub> activity) implicitly just by giving information and talking about in discussion parts of the

activities. Therefore, while two activities (A<sub>2</sub> and A<sub>4</sub>) were at between medium and weak and the other two (A<sub>1</sub>, A<sub>3</sub>) were found at the weak approach in terms of sustainability practice.

#### **4.2.2.3.2 Teaching strategies**

Saniye utilized different teaching methods/ strategies while applying the observed activities such as lecturing, questioning, observing, using an analogy, making experiment and learning by doing.

To explore the teaching methods/strategies more detailed, the researcher asked questions to Saniye about which teaching strategies were used while applying her activities and the reason for selecting those during SRIs. For more elaborative explanation, her statement related to A<sub>3</sub> and A<sub>4</sub> activities will be given in the following parts.

In general, during SRIs, Saniye stated that she used various teaching methods and strategies such as lecturing, questioning, observation, brainstorming, learning by doing, and analogy.

For instance, for an A<sub>3</sub> activity, she explained the teaching methods/ strategies like this:

At first, we used questioning. Hmm, I utilized lecturing as well. We made an observation by going to the garden. They learned by doing. We made brainstorming...

She elucidated the reason for utilizing these methods and/ or strategies with these words:

...Indeed, we can bring the bird to the class; we can watch videos related to birds, however, [observing] at the natural environment [is more effective way] ... Of course, it also includes risks. Maybe we cannot observe any birds. In fact, at this season, we can see; but, there can be no bird when we are at the outside. I mean, they can observe the birds at their own environment (habitat). It is more effective and exciting that children see the real one. We go outside and made observation...

She stated the alternative teaching methods for this activity as follows:

...I may prepare PowerPoint; it can be talked with visuals [photos] instead of going outside... After that, the story about birds, the birth of bird, how the bird's hatch can be told. I mean, instead of going outside, we can tell them through visuals... if I cannot bring the living things from their natural environment, I would rather use visuals... For this activity I prefer making an observation in the garden since it is important that children go outside, observe its [bird's] natural environment, flying, singing, landing on a branch...

The examination of her statements demonstrated that she would rather use media (visuals) and media tools (computer, PowerPoint) unless she provided that children not have a chance to have direct experience with the environment. She gave importance to children's first-hand experience with living things and their environment. She proposed additional activities and alternative teaching methods which were distinct from the original TEMA-Kids activity.

On the other hand, for an A<sub>4</sub> activity, Saniye reported the teaching methods/ strategies with this statement:

Again there was questioning [teaching method]. I used lecturing, children learned by doing. What's more, there was an analogy like an improvisation since we watched the documentary and were an archaeologist. We went to the garden and children find the items that I hid...

She continued to explain why she choose these teaching methods/ strategies in the following:

It is needed to use lecturing to instruct the things. It is required to use questioning to identify what children know that topic. We watch document to provide children visualize it [what archaeologist does]...

Apart from, Saniye verbalized that she could not consider alternative teaching methods/ strategies for this activity. After that, she added these words:

... At this time, I did not want children to draw a picture. The picture could be related to the items that they found during the digging process at the garden. Alternatively, we can make literacy activity on which items can be found during digging process or art activity. This activity endures long time and children was bored because of the duration of the activity. Therefore, I do not need to add new activities.

When Saniye's expressions were investigated, it was seen that she preferred to use media to promote children to visualize the process. She also pays attention to children's active involvement in the learning process with hands-on and minds-on activities. Additionally, she encouraged children to state their thought about the

activity since she said she could also want children to draw a picture of the items that they found.

#### **4.2.2.3.3 Resource use**

For A<sub>3</sub>, Saniye used different kinds of birds' sounds like a resource via computer. Moreover, children utilized A4 papers and crayons to draw the picture. She explained the reason for utilizing various birds' sounds in the following:

I want to see whether they can guess the birds' name when they listen to their sounds... Because we have not made an activity related to birds. Hence, I have not known what their readiness about birds is. Actually, I make them listen to birds' sounds that they can meet in their daily life so they can guess most of them...

Based on Saniye's statement, she utilized media just to support the activity. In other words, she did not become aware of CML, its strategies and how they can be utilized in the learning environments.

What's more, in A<sub>4</sub>, she used the computer and TV to make children watch a documentary. The items buried in the soil, magnifying glasses, brushes, shovels, and rakes were also utilized. She elucidated why she choose these media, media tools and materials with these words:

If I tell the digging process, each child can imagine the process in their mind differently [from the existing situation], or children cannot understand exactly [the whole process]. Hence, it is more beneficial for them to see it [digging process] visually... I mean they reached and found the ancient items, washed, cleaned and combine them. Children see which process was conducted and how the digging was made... I prefer using this video. Actually, I thought that which option is more effective, watching the video before or after the digging process at the garden. Moreover, I decided that it was more beneficial for children watching the video before the digging, so children had pre-knowledge about the process, they can make digging more consciously, or they were aware of what they did. I mean, I want children to be knowledgeable about the main steps of the archeologic digging. ...I prefer to use materials [magnifying glasses, brushes, shovels, and rakes] to take the kids' attention and motivate them...

The analysis of Saniye's words indicated that she believed using media is an effective way to promote children to visualize the topics that children have not had any experience. This activity is close to CML education, but still, the teacher asked a question to children just to take their attention to the video. In other words, some specific strategies related to CML should be added.

#### 4.2.2.3.4 Assessment strategies

For A<sub>3</sub>, Saniye would rather utilize drawings as an assessment and made the explanation as follows

...we made an assessment via discussion, and then we drew pictures...since we talked within a group, but some kids do not want to speak or state their own views, they can remain in the background. Therefore, I consider that I can understand what they see individually while drawing their own picture. They also reflect [what they see during observation at the garden] to their individual drawings. Hence, I want them to draw a picture and tell their drawings to me after completing them... Children generally reflect what they see to their drawings. I mean, they draw what we observe at the garden. Some of them also draw the things that we did not observe. It is their imagination...

Based on Saniye's explanation, she could reach the objectives and indicators that she aimed. On the other hand, there was no objectives and indicators related to ESD-respect and CML among these objectives and indicators.

When it comes to A<sub>4</sub> activity, Saniye made a general assessment with questions such as what did we do today as archeologists?, how do you feel while making digging? After that, she provided an opportunity for kids to examine the items that they found while digging as a group. After this examination, the teacher asked questions about the materials (such as what it can be used? what do you think about this material?). She elucidated why she used these assessment types with these words

... Actually, the aim of the general assessment is whether this activity reaches its aims or not. Throughout this assessment, we understood what the archeologist do; they find items by digging the soil, illuminate our history. The replies of kids already indicate that we reach our aims. Children said that I felt good, was glad and was excited...One of the kids stated that I felt myself as if I were an archeologist. This means that she knows the meaning of the word [archeologist] and starts to use it in a sentence...In the end, they collected the items and cleaned them carefully. Therefore, I want children to investigate them... They also put together the stones and roof tile... One child said that the stone looked like our ex-house's walls. They saw the number on it. I have not planned like this. Just I buried bones, sea shells and miniature wooden spoon. Thus, I did not have any idea how they interpret these items, what they think about ... Hence, I promote them to investigate the items as groups to provide that they do not lose their attention and are not bored during the investigation. I asked them some specific questions related to the items since when I ask them what your opinion is, they cannot state anything. However, when I ask them what you think about bones, stones, they can tell their thought with the help of my questions...

In the light of Saniye's declaration, she preferred to use small group investigation to dignify children's work throughout the digging process. During the assessment process, she mostly focused on the job archeologist (e.g., what they do,



how they find the ancient items...). While talking about the whole activity, she mentioned that we should protect the historical artifacts since they belong to and reflect our history. Children also warned their peers to give importance to the items that they found while group examination process. Although she touches on ESD- reflect, she did not refer to ESD-respect and CML.

#### **4.2.3 Participation in PDT**

Saniye attended in five-day-PDT with her three counterparts from the same preschool during seminar period in September 2016. Firstly, she did not want to join in this training since she should prepare her class for the academic year. This seminar period just covered seven days. One day was allocated to meetings and five days were given to PDT. There was only one day for her to make organizations about children's needs and materials that can be utilized for one year. On the other hand, throughout PDT and after PDT, she was pleased to be a part of this training. In particular, while examining the different media types that have different perspectives about global warming (one of them premeditate global warming occurring without human impact, the other one advocate opposite of this view), she stated that I understood that I did not believe everything on the media without thinking on and analyzing them. She declared that at the beginning of the PDT, she believed that there was global warming without considering other possibilities. Now, she continued to believe that there was global warming. However, she was also aware that there could be other possibilities (e.g., what the main reason is, what the human role is...etc.). Further, she thought that this topic should need to be examined deeply owing to the messages on the different types of media.

#### **4.2.4 Saniye's Professional Practices after PDT**

In this section, Saniye's professional practices after PDT are elucidated in the light of the Interconnected Model of Professional Growth. Saniye's Personal Domain (awareness of ESD and CML competencies and level), Domain Practice (implemented activities) and Domain of Consequences (selection of topic, teaching and assessment strategies and resource use) are presented respectively.

#### **4.2.4.1 Personal domain: Teacher Saniye**

In this part, Saniye's awareness of ESD and CML competencies and level will be given.

##### **4.2.4.1.1 Saniye's awareness of ESD**

The analysis of Saniye's awareness of ESD after PDT in the light of post-interview demonstrated that she had knowledge related to ESD and was aware of the notion of "ESD". She elucidated with these words:

I have not heard about this [ESD] until I participated in this training and applied activities about this issue. After the training, my awareness increased... I think education about these issues should be given to the children. In the light of my applied activities with kids and my research, actually ESD encompasses lots of topics. It is related to your choice or in which topics you want to raise children's consciousness. It [ESD] covers the environment. I mean water, sun, electricity... You know, it contains everything. For instance, I have not known that it also includes equity, gender discrimination. I learned it also covers noise pollution based on my research. At first, the exhaustible things come to my mind. To be sustainable, it is required not to consume water too much. After my research, I see that ESD also includes, human rights, urbanization... I learned all these things thanks to your training...

She utilized distinct teaching methods and strategies while using media and media tools in her activities to foster ESD through CML. She reported that with these words:

I generally use questioning to promote kids to be active in the learning process. We make discussions. I mean I do not use direct instructing. Initially, I learn what children think about the topic and their readiness for the topic. Then, we shaped our views. Afterwards, we summarized what we learn. We make brainstorming. We read visuals (such as photographs and videos)...I use [teaching methods/strategies] to make children participate actively in daily plans... By this way, their knowledge is permanent. When I am telling something, maybe kids listen to me. However, the things cannot be in their minds after a while. However, when they share their experiences, they cannot forget these...

Additionally, Saniye expressed that she frequently applied ESD activities through media in her daily plans as follows:

I used very often... It [ESD activities through media] makes a contribution not only to me but also to the kids. It provides us to look at the events from different perspectives...The activities on gender equity, noise pollution have not been implemented in the class until now. I get positive feedback from the kids. These activities also provide them different experiences, support variation, so they are beneficial for kids...I raise children's consciousness. Indeed, they are already aware of this because they are also occurring in everyday life. It is very nice that these things reflect the education. Children start to look/ examine the things very

careful in their daily life. These concepts/issues/topics become a part of their life...

All in all, Saniye was more aware of ESD and the contents related to ESD. She shared her experiences pertaining to the implementation of ESD through CML. She also stated that by means of activities, she and children change their mind and perceptive and they become more aware of ESD is a part of their life. She declared that we, educator, can reflect ESD to our activities via lots of ways since it is already in our life.

#### **4.2.4.1.2 Saniye's CML competencies and level**

In this part, Saniye's CML competencies and level are investigated regarding access, analyze and evaluate, create, reflect and act step by step.

##### **4.2.4.1.2.1 Access**

Saniye could access and utilize various types of media in her daily and work life, e.g., social media (Facebook, Instagram, and WhatsApp), digital media (internet, Google), printed media (journal (Merakli Minik [Courious Kid])), audio-visual media (television) for different aims. She allocated same time on media in her daily life than at her work life. Media covers a maximum of 6 hours of her life. She made an explanation with this statement:

...when I hear the notion of the media; the visual media tools come to my mind. Although there are also printed texts, firstly visual tools, computer, radio, the internet comes to my mind... When I range the media types that I used in my daily life, the range starts with social media continues with digital media, audio visual media and lastly printed media. In social media, I use Facebook and Instagram to follow the breaking news and daily events, issues. I also use WhatsApp to make communication with my family. On the other hand, I utilize Google to make research on the issues that I am curious about...

...In my working life, social media takes the first place, then respectively digital media, printed media, and audio-visual media come. For social media [Facebook and Instagram, mostly, I follow the pages related to early childhood education. These pages belong to [early childhood education] teachers. They write a text about early childhood education, upload videos. I examine them whether I can also implement these in my classroom. When they make a change [uploading photo, video, and text] in their pages, I can see my own page. By this way, I follow what they do easily. I also utilize digital media to find document pertaining to my research topic, sample activities. If it is required to search on a topic, I use digital media. I utilize printed media such as books, journals for preparing activities for kids. I can read them, or I can benefit from their visuals. From journals such as Merakli Minik. I can give a worksheet or homework. Further, I use audio-visual

media such as TV to make kids watch the videos that I find... I utilize WhatsApp to contact my colleagues. We give information to each other via WhatsApp...

Even though she did not use E-Governmental portal, she was knowledgeable about what she can use this portal.

When Saniye's level related to access competency was examined, it was perceived that she used various types of media effectively, she was knowledgeable about them, benefited from them and made adaptation to her activities. Hence, Saniye's level regarding access competency is "advanced".

#### **4.2.4.1.2.2 Analyze & Evaluate**

There are some criteria in Saniye's mind while using various media such as digital (Google) and social media (Facebook and Instagram). These are interest area, the topic of the text, type size of topics, pictures, photos and text, appropriateness of the context for children's age level, developmental level in working life. What's more, after PDT, she became aware of she should analyze and interrogate the media to authenticate the truthfulness of the content of different types of media and to make a comparison between view and knowledge. She knew the components of media's content. She expressed ones mentioned above with her own words in the following:

For my daily life, while using Google, Facebook, and Instagram, I clicked on the things that are related to my interest and research area. For instance, I select the pages that I follow on Facebook and Instagram according to the headings of the text, type size of the headings, visuals [photos and pictures] on that page and short texts related to issue that I am interested in.

For working life, I look at the content of media, whether its content is appropriate to children's age and developmental level. I mean, whether the topic on the media leads to occur any confusion in children's minds or it is complicated for children. I pay attention to whether media content conveys the topic that I focus on briefly and shortly with striking sentences to the kids. I also give importance to whether the media that I use match up with my topic and my activities [which I apply]... I am careful about the words that are used in the media. If there were words that cause to misconception or cannot be understood by children, I would not use the videos, slide, and visuals.

She stated the content of the media that she followed and used consist of visuals (such as photos, pictures, and videos) and writing (such as texts, headings, different font size).

Saniye elucidated the truthfulness of the media content with these words:

The truthfulness of it [media content] is of course important. If I have a suspicion about its correctness, I myself make a search on the internet through Google whether this information is true or not. Moreover, there are reliable websites and people. I downloaded the videos from these websites. Alternatively, when I am searching for videos related to some topics, I always reach to TRT's [Turkey's governmental channel] videos. Alternatively, there are some videos with educational and training aims. I mean, the websites that I reach to videos and visuals are also important in terms of the contents truthfulness. For instance, I always look at Pinterest where nice activities are shared. Moreover, also most of the people and my colleagues follow it...

Additionally, she stated how she distinguished whether the media content cites knowledge or view as follows:

I understand from visuals; expressions highlighted things. I mean there are primary and sub-aims. I comprehend when I read the document or watch the video. For example, some things shape and infuse your mind implicitly or explicitly. If I realize them, I can take precautions for kids.... Unless I watch them more carefully, I cannot aware of the subliminal message at those videos. Hence, actually it is necessary to watch more carefully, make analysis and interrogate them...

For Saniye, the safety of media and media tools mostly cannot be provided so that the individuals can ensure their own safety. She made an explanation about this issue in the following:

...we should analyze the content [of the media], and then we start to like and follow the pages...I mean everything depends on individuals' attempts. Agencies/institutions' inspection of the media is limited since there are also lots of websites. They cannot inspect all of them effectively. Therefore, we should analyze the content of the website] and based on our analysis we should eliminate some of them [web-sites]...

She also considered that the users' personal information should not be opened to the access of other people while utilizing the internet. She expressed her view with these words:

It should depend on people's preferences. There can be options whether you prefer to share your user and/or personal information or not. I do not prefer to share my personal information with other people because of the reliability. If I heard and saw positive comments from my friends and the other websites or I did not have any bad experiences with the website(s), I could would rather share my personal information...

Prior to utilizing media/media tools or determining to utilize media/media tools, Saniye put emphasis on the purpose of the messages, the target audience, the content of the messages and its domain. She reported that

... For instance, in my working life, while making research about children, the target audience that means what the age of children and to whom this message is conveyed; and, the content of the messages that refers to whether the content is

clear or complicated. We look at all of them while selecting or reading. Based on these, I can eliminate some of them [media]...

Saniye's level related to analyze & evaluate competency is "advanced" since she was aware of individuals also should act to protect their own security while using media. She made detailed explanations about her own steps and strategies on how to reach reliable media and the reliable media sources such as TRT.

#### **4.2.4.1.2.3 Create**

Saniye mostly utilized social media accounts such as Facebook, Instagram, and Swarm to hear about her friends, to make a research and follow the breaking news. She made a detailed explanation with these words:

In my daily life, I follow my friends that I cannot frequently meet and have a phone conversation with them... for my working life, to make a research and to follow the breaking news because you can see updating events, situations simultaneously or in a short time on the social media. I cannot watch TV for twenty-four hours to follow the news. There are some specific hours that I can watch. On the other hand, social media can be with you everywhere in your car, while sitting somewhere...

On the other hand, she did not share any content and write any text about any issue with her social media accounts except Swarm. She just followed the other accounts. She declared the reason of it with this statement:

...because I have to allocate time for writing the content such as I did this and this and I do not have enough time for it. Therefore, I just follow the other people... Hmm, I share photos of our activities or other things related to school environment with only my kids' parents through a closed group on Facebook. Merely, I and my kids' parent were the members of this group. I also share our documents via WhatsApp. However, I do not share anything with other people by opening a website or opening a group on the social media.

...From time to time, I share a photo and declare my location via Swarm. I do not always use it actively. I mean I do not utilize it to declare of my every step. However, I do not share any writing and make any comment.

I also follow Pinterest since I have a chance to see, examine and save nice activities. I can compose my own board easily by this way the things that I save do not cover any place on my phone and on my computer. Moreover, I follow the meal website...I always follow some people's pages such as "oyuncu anne" at social media instead of following websites.

Saniye prepared a video with her children for a new year, mother's day and father's a day and shared these videos only with her children's parents. In these videos, children expressed their own views, feeling and wishes. She elucidated why she prefers to prepare video than book, newspaper, journal, and brochure with these words:

... Since it is easier to prepare a video than that of others [book, newspaper, journal, and brochure]. You have to allocate much more time for printed media, think about your statements and look at the issue critically. I should be careful about selecting my words. However, while preparing a video, I do not play a main role and use some tools to make easy my job...

Saniye's level related to create competency is close advanced because she prepared her own videos, but she has not designed a printed media since she thought that to construct a printed media needs hardworking. She was aware of some popular social network application like Pinterest and how to use it effectively. She also opened a closed group on Facebook, and this means that she became conscious about how to manage the Facebook group and how to control the shared things. Although she did not open any website or blog to share her views/ activities, she was generally active follower and rarely share something on the social media. Moreover, she was careful about sharing something related to kids because of safety issues.

#### **4.2.4.1.2.4 Reflect**

Saniye thought that the content which conveys from media/ media tools should be supervised due to information pollution. She explained why she considers this in the following.

...because in social media and internet environment, everybody writes about everything. I think it should be inspected since the individuals who know about the topic and also the individuals who are not knowledgeable write and share their writing on those platforms. The other people can believe and trust them [what they write or share] so, they can make attempts that leads to negative consequences. Not to guide and inform people; and, not to raise their conscious wrongly, it should be supervised.

She expressed her views about how media contents can be supervised by agencies/ institutions/people as follows:

I think, probably the websites are inspected if people make a complaint about these websites and the number and the frequency of the complaints increase. There are lots of websites. These should be investigated before they are established. I mean, in the beginning, the detailed examination should be made, then required permission is given to these websites for being opened. Maybe, at that time, we can prevent unwanted situations. It is too complicated to supervise the websites after they are constructed since there are too many websites nowadays...

I think there should be an institution to make the examination. It [the institution] should make pre-research about the website. The purpose, components, and content (such as texts and visuals) of the website should be analyzed by this institution. I mean, the institution should supervise based on the criteria and the founder of the websites should apply to this institution to take official permission... Moreover,

the website should have their own effective inspection mechanism. By this way, they can prevent most of the unwanted situation.

For Saniye, individuals should provide the safety of the media and media tools by on their own. She elucidated what individuals can do with examples:

They [individuals] should interrogate, analyze, make research and compare the information or the website that they investigate. For instance, generally, I make comparison the information on different websites. I do not copy and paste the information from one website. I make an investigation with a broader perspective from the well-known websites. When I start to meet the same information, I combine all the information, and then I present them to the kids. Moreover, sometimes, I do not just rely on just websites. I use the texts or documents which refer to the author(s) or written by well-known author. These are also reliable resources...

She explained what she can do to provide the safeness of the social media with these words:

To tell the truth, I do not share my private knowledge because of security. We hear lots of event about this. Therefore, I do not open my page to the public, my friends only see my Facebook page. Generally, I do not share anything related to myself, I follow the other people. My private life is not completely found on Facebook. Of course, you can follow and learn what other people do from there [Facebook]. However, I rarely share my photos...

The conversation between researcher and Saniye about how the pages are seen at Google search engine when the person writes the words that s/he wants to search was also amazing. She was aware of the range of the websites at Google changes according to the number and frequency of clicking them, how many commercials are there about them and how much money is given to Google by the founder of the websites.

Saniye's level related to reflect competency was close to advance since she advocated that individuals play an active role while providing their own security on social media. She gave importance to interrogating, analyzing, comparing the information before believing this information is true. She also considered that the problem of information pollution should be solved via agencies /institutions because people can believe every information that they see and hear without thinking and it can lead to undesired outcomes.



#### 4.2.4.1.2.5 Act

The Act and Create competencies intertwined for some parts particularly creating/ designing specific media (such as videos, photographs, brochures, book, journal, blogs, and social media). Hence, some of Saniye's replies are also explained at Create competency and in this part, the distinct parts of Act competency will be portrayed based on teacher's answers.

Saniye utilized WhatsApp to make contact and collaborate with her colleagues. On the other hand, she did not communicate and cooperate with governmental and non- governmental institutions one by one. She stated that

... Generally, I am talking with my colleagues via WhatsApp. They can give me information, and I can inform them related to an event or issue pertaining to school or change in the regulation of the Ministry of National Education. Except this, I do not make contact with other teachers that I do not know...

She made an explanation about what kinds of media and/ or media tools that she used while implementing activities related to ESD in her class with this statement:

I use public service announcements, cartoon, and videos prepared by different institutions (such as the Ministry of National Education, TUBITAK, universities) posters, photos, pictures... Hmm, I also utilize my drawings related to the water cycle. Before the training [PDT], I also utilize the videos [while implementing activities], however, under favor of training, I start to use them to promote children to involve more actively [during watching videos] ...

She also expressed which criteria are vital for her while selecting the media that she utilized in the activities related to ESD as follows:

I select the media which is appropriate for children age and developmental level and support my activities [from the point of objectives and indicators, concepts]. I examine the media in term of its reflection on the kids. I also give importance to how they [media] convey the message. I mean, directly or indirectly...

What's more, she elucidated which strategies she utilized while using media in ESD activities with these words:

... I provide that children look from different perspectives. I ask questions like who takes this photo? who created this video? which messages are given to use?... Before the training [PDT], I do not ask these types of questions. These type of questioning promote children to look the things critically...

Saniye's level of act competency is advanced since she could utilize different types of media and/ or media tools (such as public service announcement, videos, drawings, pictures, photos, and poster) throughout her ESD implementations. While

engaging with media, she promoted children to analyze and evaluate media messages and the aim of them by asking specific questions related to the messages. Additionally, she provided children to be aware of the media were created by someone with an aim via analyzing and evaluating the media critically. She also observed and aware of the changes in children's and her perspectives related to media. Moreover, she paid attention to children's age, developmental level and explicit as well as the implicit message of the media while selecting media for them.

To sum up, after PDT, Saniye becomes aware of ESD, and its components (environment, social and cultural and economic) and the topics (e.g., gender equity, gender discrimination, human rights, noise pollution) are encompassed by these components. What's more, there is a change in Saniye's CML level from med-bas (between medium and basic) to advance regarding most of the competencies (access, analyze & evaluate, create, reflect and act). Further, she utilized different types of media and various teaching strategies and/or methods to improve children's knowledge about and awareness of ESD and CML (access, analyze & understand and create).

#### **4.2.4.2 Domain of practice: Teacher Saniye**

Saniye's domain of practice is examined via document analysis of her monthly and daily plans, stimulated recall interviews (SRIs) and the field notes of implemented activities about ESD and CML after PDT.

In the light of document analysis as shown in Table 4.12, Saniye planned and implemented more activities targetting ESD after PDT than prior to PDT. Moreover, before PDT, in her activities, she mostly focused on environmental aspect (respect to nature) of ESD through CML. However, after PDT, she designed the activities including other components of ESD (social & cultural and economic) and related 7Rs (such as respect (gender equity), reflect (masterpieces in different countries) reduce, reuse, recycle) via CML.

Table 4.12

*Number of ESD and CML in Daily and Monthly Plans After PDT*

Months	Total obj.	Obj. 7Rs	Obj. CML	Total Act.	ESD in Act.	Media in Act.	CML in Act.	ESD & Media in Act	ESD & CML in Act.
<b>October</b>	42	1-reflect	3	42	4-respect 4-reflect	2 (documentary)	1 access-analyze & evaluate and create	1-reflect	-
<b>November</b>	45	2-reflect	3	44	1-redistribute 3-respect 3-reflect (knowledge)	3 (video, photograph)	-	2-redistribute 5-respect 1 reflect	5-CML access-analyze & evaluate and create – {1-respect, 4-reflect}
<b>December</b>	53	2-respect 1-reflect	3	39 (snow holiday)	1-redistribute 4-respect (democracy)	1	-	-	3-CML- access-analyze & evaluate and create {2-Recycle, reduce, 1-Respect, reuse (awareness & behavior), 1-Respect(social-gender equity)}
<b>January</b>	49	1-reflect 2-respect	3	28	1-redistribute 1-reduce 2 –respect & reflect(socio cultural)	3 (video)	1	1-reduce	3CML access-analyze & evaluate and create {1-reflect(socio-cultural), 2-respect( awareness, attitude & behavior) ALO 176}

The investigation of daily and monthly plans with regards to ESD and CML showed that Saniye touch on various topics related to 7Rs (respect, reflect, reuse, recycle and reduce) and three pillars of ESD (environment, social & cultural and economic) through CML. Moreover, she focused on redistribute component of 7Rs while implementing activities targeting ESD. On the other hand, she could not choose particular objectives for her activities since there is no objective especially aspiring to ESD's social & cultural and economic aspects and CML (regarding access, analyze & evaluate and create competencies) in Turkish National Early Childhood Education Program. What's more, when the activities were analyzed from the point of CML and media, it was observed that after PDT Saniye used media and CML strategies much more than before PDT. She utilized public service announcements, videos, drawings, pictures, photos, poster, documentaries, and concert videos as media. She frequently designed and implemented ESD activities through CML in her classroom to promote children's knowledge about, awareness of and attitude as well as behavior toward ESD and their CML (access, analyze & evaluate and create competencies).

In the subsequent section, the elucidative explanation related to applied and observed activities in the classroom will be made. Hence, SRIs and implemented activities were investigated from the point of ESD (from strong to weak approach sustainability practice) and CML (basic to advanced). To begin with, conducted activities were classified in terms of sustainability practice (from weak to strong approach) and CML (basic to advanced) at Table 4.13 in the light of activity plans, SRIs, and field notes. Then, detail information about two applied activities (A<sub>2</sub> and A<sub>4</sub>) will be given based on activity plans, SRIs and field notes since these two activities mainly delineated general viewpoint of Saniye's classroom implementations regarding indicating ESD and CML issues most overtly.

Table 4.13

*Analyses of the Places of ESD and CML in Activities after PDT*

CML	ESD		
	weak	Medium	strong
Basic	-	-	-
Medium	-	*A <sub>3</sub>	-
Advanced	-	-	*A <sub>1</sub> , A <sub>2</sub> , A <sub>4</sub>

\*A<sub>1</sub>: Eco-friendly Bag, A<sub>2</sub>: Girls and Boys Are Equal, A<sub>3</sub>: Adventure of the Water, A<sub>4</sub>: Noise Pollution

While A<sub>1</sub> and A<sub>3</sub> of the implemented activities came from TEMA Kids activity book (Activity 35 and 22), A<sub>2</sub> and A<sub>4</sub> were designed by Saniye. In the following section, A<sub>2</sub> and A<sub>4</sub> activities will be explained in detail.

In the A<sub>2</sub> activity, Saniye created and conducted a new activity (which was not found in her daily and monthly plans) focusing on gender equity. This was a Turkish language and art integrated activity. The main aim of the activity was to be aware of as well as knowledgeable about gender equity (girls and boys are equal). The sub-aims were to be able to analyze and evaluate the message of the visual materials (photos, pictures, and video), to reply to the questions and to engage in discussions.

The activity started with discussion part on whether there is a color of girl and boy, there is a play and game for specific to girls/boys, women and men can do every job, every vehicle can be driven by women and men, men can do housework or not and the reasons of them. After the discussion part, firstly children and teacher analyzed and evaluated the messages conveyed by the pictures and photographs related to gender equity and discrimination. Saniye asked some questions “what do you see in his photograph?” “What is the message of this picture?”, “who takes this photo?”... etc. The conversation between teacher and children in the following:

T: What is the reason for drawing this picture?  
C<sub>1</sub>: To state that men can cook a meal, do ironing and cleaning.  
T: Who draws this picture?  
C<sub>2</sub>: Painter.  
C<sub>3</sub>: A person who states boys and girls are equal.  
C<sub>4</sub>: A person who does not make discrimination.

After that, they watched the video on gender discrimination in children's games which was prepared by the private school (Terraki Vakfı Okulları) for "Children's Rights Cartoon Project". The pictures in the video were drawn by first-grade students in that school. Children and teacher discussed the messages of the video.

Lastly, children prepared a poster related to "girls and boys are equal" individually. While children were drawing their own poster, the teacher wrote their names on their paper. After kids finished their own posters, teacher desired them to explain what they want to say to the people and the activity was completed.

In this activity, Saniye used various media types (pictures, photos, and video) and A4 papers and crayons as materials and resources. As mentioned above, she made an assessment with children's posters.

For A<sub>2</sub> activity, in the light of the filed notes (researcher notes) teacher focused on ESD-social and cultural aspects [respect & rethink] throughout the activity. This activity constructed and applied based on children's needs and desire. During the interview, Saniye stated that

we had a problem with Caner's preferences and attitude toward pink color and sitting with girls in the class. One day, while I was distributing play doughs to the kids for free play, I wanted to give him pink play dough, but he was angry and did not desire to play it. In addition to this, he did not want to sit with girls throughout group working. He was again stressed while I said you could sit with girls because you were classmates and friends sharing the same classroom... Because of these events, not only I but also his peers are uncomfortable. Moreover, this week is "Human Rights and Democracy Week". Hence, I want to design and implemented this activity...

During the discussion part, while children stated their own thought about teachers' questions, they participated in the learning process actively. They generally explained their considerations with their own experiences (such as giving examples from their parents, siblings, relatives...). Moreover, when the teacher asked you, can girls be a firefighter /play football, some kids gave examples from the cartoons they watched. The conversation between teacher and kids will be given in the following:

T: Can girls be a firefighter?  
C<sub>1</sub>: They can. For example, there is a girl firefighter at the “Firefighter Sam (Itifayeci Sam).  
C<sub>2</sub>: Her name is Peni.  
T: Can girls play football.  
C<sub>3</sub>: There was a girl who was playing football at Super Pawies (Super Patiler).  
I saw there.

What’s more, children could analyze and evaluate the media messages in the photographs, and pictures in the light of teacher’s questions. The dialogue between teacher and children about the picture showing “girls and boys are not equal” will be presented as follows:

T: What the drawer of this picture state to us?  
C<sub>4</sub>: Girls and boys are not equal.  
T: Who draw this?  
C<sub>4</sub>: The person who discriminate.  
C<sub>5</sub>: This is not the correct picture. The bad people draw it.  
T: How can it be true?  
C<sub>5</sub>: If it was equal.

When the video related to criticizing children’s beliefs about and attitudes toward there are games for only girls and boys. While watching the episode demonstrating girls do not want to jump the rope with a boy and boys do not want to play with a girl, children gave a reaction to this situation and said that “ No! Girls also can play football.”

At the last part of the activity, children designed their own posters related to “girls and boys are equal!” Their posters showed that they could understand and analyze photos, pictures, and video effectively. The reflections of them were seen at their drawings. For instance, they did not draw girls within pink color or boys within in blue color. One child said, “I start to draw girls differently”. Some of the boys’ hair were drawn as pink at the posters. Children mostly use the sign of “ = ” and a pair of scales to show the equity of girls and boys at their poster. All of them indicates that CML and ESD-social & cultural can be used in EC learning environments if we could ask the right questions and utilize resources effectively.

The dialogue between researcher and teacher was very constructive, so teacher altered her thoughts about the topics of ESD and CML. She also was eager to attempt new things and adjust these things to her activity plans and classroom. She made an explanation with these words:

I have not planned and implemented any activity focusing on gender equity until now. Actually, I have not been aware of gender equity is also a topic in ESD before we talked about the contents of ESD...

Further, the teacher asked four different types of question to promote their analyzing, evaluating and creating skills. These were “instigating discovery (ID)” (What do you think whether boys can play housekeeping? Who takes this photo?), “eliciting predictions (EP)” (How can we draw this picture to state “girls and boys are equal?”), “promoting reasoning (PR)” (Why do they draw this picture) and “probing for understanding (PU)” (What do they want to tell us with this photo?).

The teacher chose many photos as well as pictures, and; a video which was comprehended easily by kids. She utilized computer and TV to demonstrate all of them to the children. To put it another way, before implementing this activity, she made detailed research to find and use more effective and appropriate media for children. She benefited from some criteria and elucidated them during SRIs. (For elaborative explanation see Resource Use heading). Overall, for this activity, Saniye supported children’s active involvement via hands-on and minds-on learning. Moreover, she used a robust approach to sustainability practice (social, cultural [respect & rethink] and advanced CML level (regarding access, analyze & evaluate and create competencies).

Besides, A<sub>4</sub> activity (which was not taken part in daily and monthly plans) about noise pollution was designed and applied by Saniye. This was Turkish Language, science and art integrated activity. The primary aim of the activity was to be knowledgeable about noise pollution, what causes to noise pollution, what are the negative effects of noise pollution. The sub-aims of this activity were to be able to analyze and evaluate the message of the visual materials (photos, pictures, and video), to draw posters to tell their opinions and to engage in discussions.

At the beginning of the activity, the teacher reminded children of other pollution types (such as water pollution, sea pollution, soil pollution, air pollution) that they had focused. Then, she made an explanation about noise pollution with examples and the difference between other types of pollution (e.g., we cannot see noise pollution). After this introduction part, children and teacher made the discussion about these questions: “what causes to what are the reasons of noise pollution, what are the negative impacts of noise pollution, what we should do to prevent the noise pollution.”



After discussion on each question, Saniye summarized children's opinions. At the end of the discussion, she gave information about "147", the number of ALO Noise Line (ALO Gürültü Hattı).

After that, the children and teacher watched and interpreted three videos. While two of them were public service announcements related to noise pollution made by Republic of Turkey Ministry of Environment and Urbanization, the other one was prepared by TUBITAK, MoNE, and universities to give information about noise pollution at the school and how to prevent this pollution. In addition, the messages of posters, pictures and photos were analyzed and evaluated Saniye put some questions to kids such as "what do you see in his photograph?", "what do you see at this photograph?" "What is the message of this picture?", "who takes this photo?"... etc.

In the last part of the activity, children constructed their own posters on noise pollution individually. Before children drew their poster, Saniye demonstrated some places on the page and made an explanation about them. For instance, she stated that the date was written here by showing the numbers, "My Noise Pollution Poster" was written here by indicating the sentence and your name was written here by demonstrating. After children completed their own posters, the teacher wanted them to elucidate what they desire to tell to the people, and the activity was finished.

In this activity, Saniye utilized various media types (videos, poster, pictures, and photos,) and A4 papers and crayons as materials and resources. She assessed the activity with kids' posters and related explanations.

Further, based on the field notes (researcher notes), in A<sub>4</sub> activity, Saniye focused on ESD-environment, social, cultural [respect] to promote children's awareness of and sensitiveness about noise pollution; and, their CML (access, analyze & evaluate and create competencies).

While discussing the causes of noise pollution, firstly kids focused on noise was made directly by a human without using any tools/materials (such as shouting, singing, crying). When the teacher asked what else can cause to noise pollution, they considered noise is coming from vehicles (i.e., car, loudspeaker) and tape recorder (e.g., loud music). Throughout the discussion, while telling their own views about noise pollution, children used cases (if we rang the doorbell for a long time, when our neighbor was not at home) and make-believe (different inmate types of sounds and

made role-playing as if s/he closes the cupboard fast); and, gave examples from everyday experiences (the school manager turned the volume of microphone too much). This also shows that kids can internalize the learning process.

In the activity, teacher concentrated on the effects of noise pollution on human and human health, not on the other living things, but only one kid gave an example from the video (related to the movement of a feather) that she watched before. Two of the kids drew living things such as butterfly and plants at their drawings. One of them drew a plant which had fallen its leaves because human shouted at. This is very astonishing since some kids were aware of the negative impacts of noise pollution on living things.

While Saniye was selecting the videos, photos, posters, and pictures; she said that she chose especially the media which were showing the noise pollution directly (means direct message related to noise pollution). The conversation between teacher and children will be given in the following while interpreting one of the public service announcements as an example of the direct message.

C<sub>4.5.6</sub>: We cannot hear! {In this video, a girl started to talk but, she cannot make herself heard because of noise }

T: Why cannot we hear her voice?

C<sub>11</sub>: Because there is too much sound.

C<sub>12</sub>: Because cars drive at full throttle.

T: Just for cars driving at full throttle?

C<sub>13</sub>: No, people also toot the horn.

...

Also, teacher fostered children to analyze and understand the messages by asking specific questions about these media (e.g., who take this photo? Why does s/he take this photo?). One of the dialogues between teacher and children during the analyzing messages process as follows:

T: What do you see at this picture?  
 C<sub>6</sub>: A women who closed her ears like this [showing with his hands].  
 T: Why did she close her ears?  
 C<sub>6</sub>: Because there is noise.  
 T: How do you understand that there is noise?  
 C<sub>6</sub>: Because she closed her ears like this.  
 T: What else?  
 C<sub>7</sub>: Because people toot the horn continuously or there is too much noise.  
 T: What are these [showing from the screen]?  
 C<sub>8</sub>: Loudspeaker.  
 T: What kinds of sound comes there?  
 C<sub>9</sub>: Song  
 ....  
 T: Who takes this photo?  
 C<sub>10</sub>: A photographer can take this.  
 T: Why s/he takes this?  
 C<sub>10</sub>: Because to express noise pollution to everybody.  
 ...

When we look at kids' posters, we can see the direct reflection of these visuals and interpreting process on kids' poster. For instance, they drew their posters by giving a direct message such as "hands covering ears". Moreover, while analyzing the pictures, the teacher asked why there was noise pollution in this picture, one of the kids said because it was the night. However, there was no clue except one woman was sleeping on the bed. Therefore, one kid preferred to draw the moon and stars to identify the time was night whilst drawing her poster. This reveals her create competency. During analyzing the process of the pictures, one of the kids said that this picture could be drawn by the painter. However, the other kids stated that this is too easy it could not be drawn by a painter. This is also remarkable. He can make a connection with previous activities.

Although the teacher did not show and make children interpret the visuals which did not demonstrate noise pollution, two of the kids separated their poster into two parts. One of the parts includes noise, but the other part does not. This is also amazing; it indicates that some kids consider that they can give their message with opposite situations. This also shows their CML regarding create competency.

What's more, the teacher asked different types of questions. These were "instigating discovery (ID)" (What causes to noise pollution?), "probing for understanding (PU)" (What are the impacts of noise pollution?), "promoting reasoning (PR)" (Why this picture is drawn?, Why does the Earth close its ears at this picture?)

and “reflection on feelings (RF)” (Do you want to be inside of this picture? Why/ Why not?).

The teacher gave importance to some criteria while selecting media and elucidated these in detail (See Resource Use). This also revealed that teacher had advanced CML level (regarding access, analyze & evaluate and create competencies).

The communication between the researcher and the teacher was beneficial. After Saniye was aware of noise pollution is also related to ESD, she made research on noise pollution and how to design and apply activity on noise pollution through CML. Moreover, then, she implemented this activity to promote children’s awareness of noise pollution and CML.

All in all, Saniye planned and implemented the activity to support children’s active involvement. She used a robust approach to sustainability practice (environment, social & cultural - respect) and advance CML level (access, analyze & evaluate and create competencies).

#### **4.2.4.3 Domain of consequences: Saniye’s salient outcomes**

In the light of “Selection of Topic”, “Teaching Strategies”, “Resource Use” and “Assessment Strategies”, elaborative explanation about A<sub>2</sub> and A<sub>4</sub> activities and related SRIs will be made in this section.

##### **4.2.4.3.1 Selection of topic**

The analysis of the topics of the activities regarding 7Rs and the components of ESD revealed that A<sub>1</sub> activity (Eco-friendly Bag) focused on ESD regarding respect to nature, reduce, reuse of 7Rs; and, environmental and economic aspects. Further, A<sub>2</sub> activity (Girls and Boys Are Equal) targeted respect to human rights and rethink of 7Rs and social & cultural aspect of ESD. A<sub>3</sub> activity (Adventure of the Water) aimed directly respect to water resources as well as ESD environment component, and indirectly reduce as well as ESD economic component. Lastly, A<sub>4</sub> activity (Noise Pollution) aspired to respect and ESD environment, social & cultural aspects.

Overall, while three of four activities (A<sub>1</sub>, A<sub>2</sub>, and A<sub>4</sub>) used strong sustainable approach by combining at least two aspects of ESD directly, one of them (A<sub>3</sub>) utilized medium sustainable approach. (See Table 4.13)

#### 4.2.4.3.2 Teaching strategies

Saniye utilized generally brainstorming, questioning, lecturing and analyzing and evaluating media messages during the observed activities to promote children's active participation in the learning process. She mostly used questioning and brainstorming especially while discussing topics and media (videos, pictures, photos, and posters) messages related to ESD to encourage children critical thinking skills. Expect for these teaching strategies, in A<sub>2</sub> and A<sub>4</sub> activities, learning by doing, make-believe play, and using case studies were conducted. In other words, Saniye was aware of CML and utilized its teaching strategies in her activities effectively.

Moreover, throughout SRIs, Saniye expressed about which teaching methods/strategies were used, what the reason for selecting these is and what the alternatives for them can be. Her explanations will be given respectively in the following part.

To illustrate, for an A<sub>2</sub> activity she stated that *we used questioning, brainstorming, lecturing, presenting. Moreover, analyzing visuals as teaching methods...*

In addition, Saniye explained why she would rather utilize these teaching methods/strategies as follows:

... it depends on the flow of the activity, I mean it depends on content... Of course, I think firstly should I start from which content. I mean, I consider whether I begin with a video that I show it at the end of the activity. When I start from the video whether they can reach the outcome, gender equity. Because children might just concentrate on playing or not playing a game. Therefore, I prefer to use questioning at first. Then we analyze visuals [pictures, poster, and photos]. While analyzing the visuals, I ask some questions such as "Who draws this picture?, Why s/he draws this picture?, What they want to tell us with this picture?" I want to ask these types of questions to promote children's critical thinking and analysis skills after your training [PDT]...after that, we analyze video...

Moreover, Saniye elucidated the alternative teaching methods for this activity with these words:

I can use creative drama. Children can make improvisation about gender discrimination. For instance, while boys are playing a game, girls do not want to join their game as in the video. Alternatively, other topics can be used and make children improvise it...

The examination of her statements revealed that she utilized teaching methods/strategies based on children's needs and developmental levels. She utilized some

questions to support children's CML. She also would rather use creative drama as alternative teaching methods/ strategies. All of them indicated that teacher gave importance to children's desire; and, their active involvement to and internalize the learning process. In addition, after PDT, Saniye changed her mind and adapted some questions to her activity.

On the other hand, for A4 activity Saniye expressed the teaching methods and/or strategies that she used in her activities with these words:

We used brainstorming again. We used pictures, lecturing, presenting, and videos. We utilize also visuals. Learning by doing... they make a connection to their everyday life and give examples from their daily lives. We also use cases because they imitate. For example, they imitate crying [like a baby], beep of the cars, the sound of a garbage truck, the voice of pitchman...

She made an explanation about the reason for choosing these teaching methods/strategies as follows:

[The teaching methods/ strategies that I use] It depends on the learning and teaching process according to children's interest, needs, and developmental level... The reason for using questioning to provide that children reach the answers to the questions through their own effort and give examples. By this way, each child can state their opinion... We ask questions such as "who draws this [picture]?", what they want to tell?... what the person who beep want to tell us? or which kinds of noise pollution are showed to us?"... My aim is to take children's attention and to promote children's active participation in the learning process again. In addition to these, to encourage children to analyze and evaluate the message of media via using brainstorming in the light of CML. I think they start to think about and look critically to media...

Additionally, Saniye exemplified alternative teaching methods/strategies that she can utilize with these words.

For instance, we can go to a noisy environment. Let children listen to the environment and guess which kinds of sounds cause to noise pollution. Moreover, then, they can draw the sounds of things cause to noise pollution... alternatively, go outside and listen to the sound that can hear at the garden. By this way, they can make a connection to everyday life. Alternatively, I make them listen to various sounds that cause to noise pollution such as sounds of high beep, crying, shouting...

When Saniye's expressions were investigated, it was perceived that she made an observation about children's needs, interest and change in terms of ESD and CML. She promoted children to imitate the sounds that cause to noise pollution and children's CML via questioning and brainstorming. She would rather use outdoors actively to support children's connection to everyday lives. Moreover, she also wanted

to children listen to sounds leads to noise pollution via media. It can be interpreted that she is aware of how she can effectively (which teaching strategies can be used to) foster children's active involvement into learning process while conducting activities on ESD through CML.

#### **4.2.4.3.3 Resource use**

For A<sub>2</sub> activity, Saniye utilized pictures, photos, and video (internet & computer), A<sub>4</sub> papers and crayons. She enucleated the reason for using these materials with these words:

...There are stereotypes in the society. I mean, girls cannot play with cars or boys cannot like the pink color because their all belongings are bought according to these stereotypes. I especially pay attention to it while selecting photos and pictures. For instance, a boy is playing house; the woman can be a service driver. I find the photos and pictures excluding the stereotypes. Therefore, I prefer to show them to the kids...

For video, today, we have already made an activity related to children's rights. By means of this activity [gender equity], we can make a connection to the previous one. In this video, actually gender equity is emphasized. You know, the boy is not permitted to play the game with girls because it is a girl's game or vice versa. After that, children [at the video] understand their fault and everybody can play the game what they want to play. I mean, in this video, at first gender discrimination is done and then, it is provided that children are aware of this discrimination. It is directly related to our topic. To tell the truth, the best video that I found is this video. I mean this is the most appropriate one for children...Because it includes visuals and simple expressions; and, is suitable for children's developmental level... In fact, children make a comment about [oh no, girls can also play football] the video without my questions while watching the video... Because I make a research about gender equity, but there is no video except this video that can be easily comprehend by children. There are some videos in the animation format that received an award. However, they are prepared in English...

The analysis of Saniye's statement indicated that she utilized various media types while conducting activity on gender equity (ESD-social & cultural aspect) through CML. When she was choosing the visuals (photos and picture) and video she was so selective and paid attention to the message of them related to existing stereotypes of society about gender. She found and shared the visuals to abolish these stereotypes. Moreover, while selecting the video, she had some criteria such as using more visuals, easily understandable messages and style of giving a message about gender equity. She also observed children's reaction during watching the video and shared her observation with the researcher. All of them revealed that there was a change in Saniye's CML because she planned to give messages about gender equity

via using visuals convey messages not only showing gender equity but also gender discrimination. She was also aware of how to support kids' awareness of ESD issue and their CMLs.

When it comes to A4 activity, Saniye utilized videos, photos, posters, and pictures. She expressed why she would rather use these media as follows:

While making research on this issue [noise pollution], I did not meet many videos. There is a public service announcement that is a short video prepared by the Republic of Turkey Ministry of Environment and Urbanization. The other video is related to noise pollution at the schools because you know children spend most of their time at the schools. It could be beneficial for us. While watching this video, I skip some parts, and I do not make children watch the last part of the video since these parts are not appropriate for children's developmental level and they can be bored. There is also a video prepared by TRT, but there are many scientific and detailed explanations such as elaborating decibel. I do not prefer to make children watch this video since they can be bored. I mean, [by means of these videos] I want children to see what we talk in the discussion part [of the activity]. For instance, the videos explain the negative effects of noise pollution, what causes to noise pollution. Which precautions can be taken is found especially in the video related to noise pollution at the schools. However, there is no video to explain general precautions can be taken such as we do not toot the horn. The TRT's video is about general precautions, but its starting part is too complex for kids. Therefore, I do not prefer to use it.

While choosing a picture, photos, and posters, I find the ones giving the direct message "there is noise pollution". I mean, there is a person who is disturbed and react to the noise such as closing the ears with hands. In addition to this, "What causes to noise pollution" such as tooting the horn, guns...I find the pictures covering these issues. I provide children to be aware of noise pollution. I do not show anything which not includes noise pollution because I am not sure whether they can understand/ feel the message or not. Thus, I would rather use visuals directly related to noise pollution. Actually, I cannot find any pictures which do not show a noiseless situation. If I can find, we can distinguish the visuals as including and not including noise, and we can emphasize the differences...

Based on Saniye's words, she used different media types and selected them according to some criteria such as appropriateness for children's developmental level, related to their everyday experiences and the style and content of messages given by media. She took attention to the lack of video suitable for early childhood kids. Moreover, she wanted to compare the visuals in terms of showing noise pollution and not showing noise pollution. However, she could not meet any visual as mentioned above while making research on Google. In other words, she made detailed examination about noise pollution in terms of media and suggested which media types targeting early childhood children can be prepared by experts in the future. All of these indicated that there is a change in Saniye's CML in terms of *aces*, analyze & evaluate,



create and reflect competencies. Further, she becomes aware that how to support children's CML (access, analyze & evaluate and create) and awareness of ESD and its components (environment and social & cultural).

#### **4.2.4.3.4 Assessment strategies**

For A<sub>2</sub> activity, Saniye would rather use posters which were prepared by kids as an assessment, and she made an explanation with this statement:

While they are designing their posters, it looks like an individual activity, but they are working at the big and same table. Thus, we can state it is a whole group. By this way, they can draw their own pictures via seeing their peers' drawings. I want children to create their own posters to get feedback from the kids... For instance, what they understand from the discussion part and the videos and the others [pictures and photos] that we watched, analyze and evaluate. I do not prefer to use worksheets. Instead of this, I want to see their thoughts and the outcomes of the activity. Thus, I would rather use posters...I mostly see the reflections of the activity on children's posters. I mean, I can reach the objectives and indicators. For example, Çağdaş drew a girl who is playing car and a boy who is playing house. Kemal drew a pair of scales to give the message "girls and boys are equal". On the other hand, Seda drew the sign of "=" between boy and girl and boy and girls are playing football to state "girls and boys are equal". Aylin stated that I drew a heart because the girl was very happy to play football with boys...

The analysis of Saniye's statement revealed that she could reach the objectives and indicators pertaining to ESD and CML (even if there are no specific objectives and indicators targeting gender equity and analyzing and evaluating media messages in Turkish National Curriculum) that she aimed. She gave importance that children stated themselves via drawing and talking. By means of posters, children's CML in terms of create competency was promoted. While some children gave their gender equity message with the sign of "=" and pair of scales, the others gave via drawing boys who are playing house and doing housekeeping, girls who are playing football and are minibuss driver. One child also drew her feeling at her poster. It is amazing because it shows that she can internalize the learning process.

What's more in A<sub>4</sub> activity, Saniye made an assessment with posters targeting noise pollution. She expressed the reason for using posters as follows:

When children are constructing their posters, they feel comfortable to draw what they think, learn, experience throughout the activity. By this way, I can be knowledgeable about their development and see the reflection of the activity and how they comprehend and shape the things in their minds that we focus on during the activity... Before drawing, I ask the children to guess what is written on the page by showing the statement and numbers. I explain what is written there,

respectively these show today's date, the topic of your posters and your name. It is an effective way since children are more conscious about what they are drawing... I want children to elucidate their posters to understand why s/he draws this picture. For instance, if I did not ask anything about his poster, I could not comprehend that Mustafa drew the guns since I thought that he drew the sound coming from loudspeakers. I mean, when I desire them to tell what they draw, it is a more effective way to understand what they want to convey as a message... I consider I could reach my aims because some children draw the direct messages related to noise pollution such as "closing ears with hands", a baby who is crying". Some of them draw cars, beep of the cars. Seda and Nergiz draw their poster via separating into two parts. While there is noise in the one part, there is no noise at the other part. One child draws the effect of noise pollution on the plant. Bersu said that the leaves of this plant fall down because the child shouts...

In the light of Saniye's words, she consciously preferred to use the poster to promote children to tell their own messages and thoughts. Moreover, she wanted them to explain their poster to support their self-expression. While drawing their poster, all children can also see what their peers draw. This leads to foster communication and interaction among them. While some children would rather give direct messages related to noise pollution, some of them draw their poster with different perspectives. To illustrate, two of them divide their poster into two part to give the messages both the effect of noise pollution and noiseless. One of them also conveys a message of the impact of noise pollution not only human beings but also other living things such as plants. It is astonishing since the teacher did not mention anything about these issues throughout the activity, but they can combine their previous experience with the new ones to create their own posters to tell their own messages. The analysis of the posters revealed that teacher reached the objectives and indicators related to ESD and CML in terms of access, analyze & evaluate and create competencies.

#### **4.2.5 Saniye's Overall Professional Growth**

In this section, Saniye's overall growth will be investigated in terms of CML competencies as well as level and ESD awareness respectively. Saniye's growth networks will be showed in Figure 4.3.

##### **4.2.5.1 Professional growth concerning CML issues**

When Saniye's CML levels before and after PDT were compared, it can be seen that the growth in her CML level in terms of most of the competencies (access, analyze & evaluate, create, reflect and act) since prior to PDT she used media just to visualize the learning process and take children's attention to the activity and did not

utilize any criteria while selecting them. On the other hand, after PDT she made detailed research about the media that she wanted to use in the activities in terms of appropriateness for children’s developmental as well as age level, the style, content, and comprehensibility of given messages. She made elaborative explanations about these criteria. Moreover, while examining the videos, posters, photos, and pictures in digital media, she became aware of a lack of media sources targeting ESD topics for early childhood children. Based on her observation about children’s change, she experienced which media types could be utilized, how children’s CML level could be promoted, how ESD and CML could be integrated, which criteria were significant while implementing ESD activities through CML in early childhood education.

#### **4.2.5.2 Professional growth concerning ESD**

Prior to PDT, Saniye would rather use mostly the activities from TEMA kids program, however, after PDT she also designed and applied her own activities focusing on gender equity and noise pollution. Further, before PDT she had not heard the concept of ESD, but after PDT during SRIs and the last interview, she made an explanation about what ESD is, which topics are covered by ESD and its pillars (environmental, social & cultural and economic) and the dialogue between researcher and her leads to change in her thoughts, awareness, and perspective about ESD. After PDT, she started to make research about different issues covered by ESD and consider how to integrate them in early childhood learning environments. Moreover, she emphasized that the education targeting sustainability should be given to the children from early years.

##### **4.2.5.2.1 Growth concerning selection of topics**

Table 4.14

*Analysis of Observed Activities in terms of Selection of Topics before and after PDT*

<b>Selection of Topic-ESD</b>	<b>Prior to PDT</b>	<b>After PDT</b>
Environment	3	3
Social & cultural	1	3
Economic	-	2

The comparison of four implemented and observed activities about ESD through CML before and after PDT in terms of selection of topic revealed after PDT there was a growth in Saniye's activities scope. While before PDT the activities targeted just one pillar of ESD, after PDT they covered two or more than two pillars of ESD. In other words, she determined the activities' topics by giving importance to this criterion.

#### 4.2.5.2.2 Growth concerning teaching strategies

Table 4.15

*Analysis of Observed Activities in terms of Teaching Strategies before and after PDT*

<b>Teaching Strategies</b>	<b>Prior to PDT</b>	<b>After PDT</b>
brainstorming, questioning	4	4
discussion	1	4
analyzing and evaluating, interpreting various media types	-	4
using case studies	-	1
make believe play\role- playing	1	3
concept map	-	1

When four implemented and observed activities before and after PDT were compared in terms of teaching strategies, it was seen that after PDT there was a growth in utilizing various types of teaching strategies particularly pertaining to CML while implementing ESD activities through CML.

#### 4.2.5.2.3 Growth concerning resource use

Table 4.16

*Analysis of Observed Activities in terms of Resource Use before and after PDT*

<b>Resource Use</b>	<b>Prior to PDT</b>	<b>After PDT</b>
pictures	2	2
photographs	1	2
recorded sound	1	-
Video	1	2
cartoon	-	1
public service announcement	-	1
poster	-	1
teacher's drawings	-	1

The analysis of all of the conducted and observed ESD activities through CML prior to and after PDT in terms of resource use revealed that there was a growth in utilizing various media types from teacher's drawings to public service announcement. This growth also indicated that Saniye provided opportunities for the children to have experience with distinct media types.

#### 4.2.5.2.4 Growth concerning assessment strategies

Table 4.17

*Analysis of Observed Activities in terms of Assessment Strategies before and after PDT*

Assessment Strategies	Prior to PDT	After PDT
Drawing	2	1
Creating poster	-	2
Design own product	-	1
Asking different types of question	2	4

When all of the applied and observed activities targeting ESD through CML prior to and after PDT were investigated, it could be observed that there was a growth in using various assessment strategies. Saniye preferred to utilize some assessment strategies to support children's create competency of CML. For instance, children had the opportunity to create their own poster and design their own products (e.g., making eco-friendly bags). What's more, after PDT in one of SRIs, Saniye stated that when children made their own products, they can easily internalize the learning process and talk with other people about what they learned during activity so, they can put them into practice.

Overall, Saniye's growth networks could be capsulized as in Figure 4.3. As perceived at the figure, the reflection of External Domain (PDT) on Saniye's Domain Practice (conducted activities) was seen since while implementing activities she mostly shared a different type of media (e.g., public service announcement, cartoon, poster, photo...etc.) focusing on different viewpoints as it was in PDT. What's more, the analysis of the post-interview during the fall semester (2016-2017) indicated that PDT had an explicit impact on Saniye's Personal Domain (awareness of ESD and CML level). To illustrate she stated that ESD should be given children from early years. The direct impact of the change in Personal Domain on Domain Practice was observed since she stated that she has not designed and applied any activities targeting "gender equity" (ESD-social & cultural) and "noise pollution (ESD-social & cultural

and environment)” up to now because she thought that ESD does not cover only environmental issues. The reflection of Domain Practice on Personal Domain can be seen as she constructed a schema in her mind about how to apply ESD activities through CML, what the children’s reactions could be, how to promote children’s active participation in this kinds of activities, their ESD awareness and CML levels (in terms of access, analyze & evaluate and create competencies).

Additionally, Domain of Consequences (assessment and observing the outcomes of selection various topics, resource use and teaching strategies) were impacted directly from Personal Domain since Saniye made an assessment based on her awareness of as well as experiences about ESD and CML. For instance, during SRIs, she explained the reason for using “assessment strategies, resource use and teaching strategies” as fostering children’s ESD awareness and CML levels. Moreover, the reflection of Domain of Consequences to Personal Domain could be perceived since, throughout the post-interview, she mentioned the change in not only her but also children’s ESD awareness and CML after this study. In addition, there was an explicit influence of Domain Consequences on Domain Practice because Saniye used various media types, teaching and assessment strategies in the light of the consequences of her conducted activities targeting ESD through CML. Lastly, the reflection of Domain Practice on Domain Consequences could be observed since while analyzing and evaluating different media types’ messages, Saniye perceived children were motivated to discover and understand the messages and made discussions about the aim and creator of the messages, and she experienced that it could be effective teaching strategy with respect to ESD and CML.

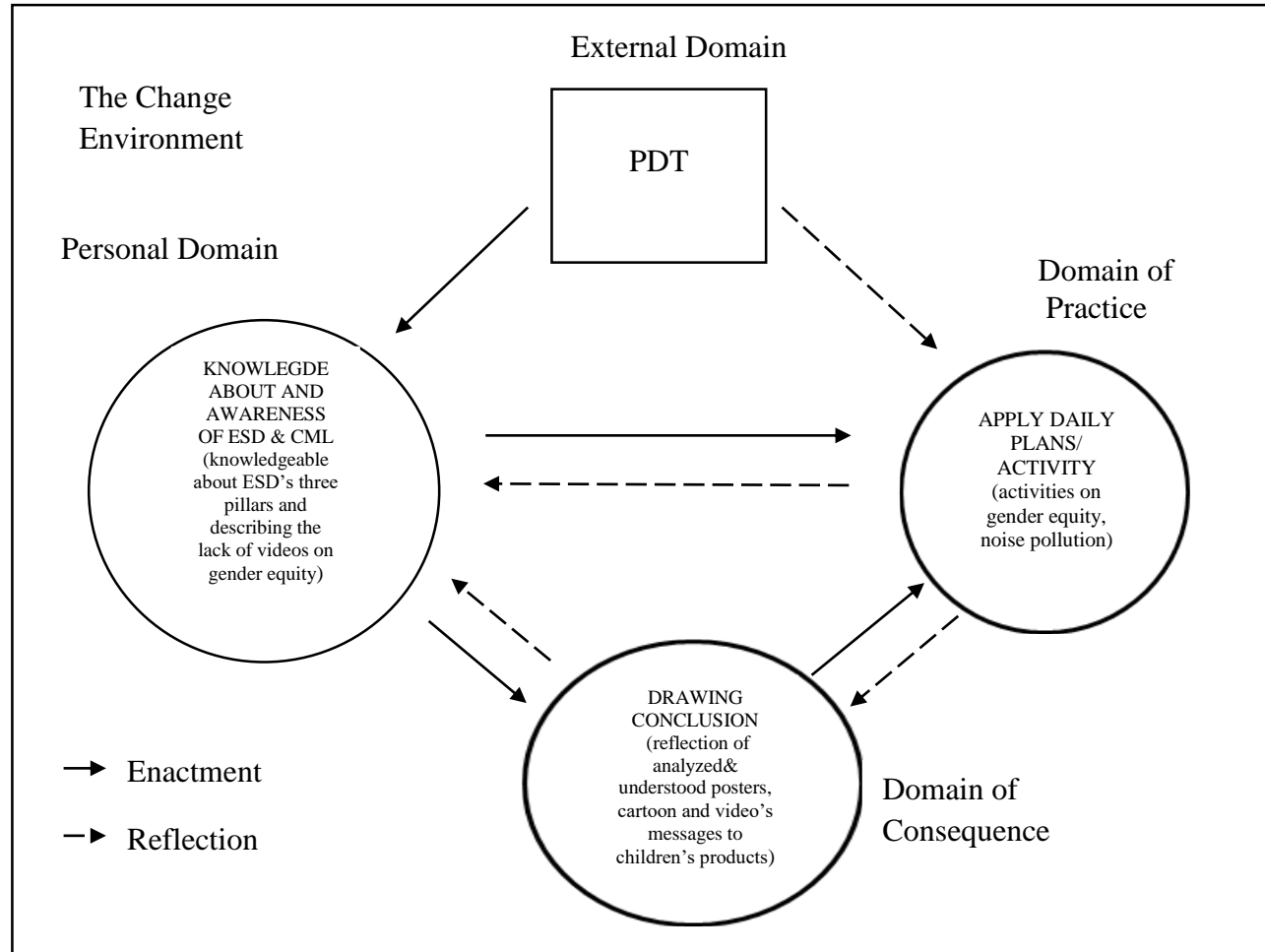


Figure 4.3 Saniye's Growth Network



The growth of Teacher Saniye regarding personal domain, domain of practice and domain of consequences after PDT were summarized in Table 4.18.

Table 4.18

*The Summary of Teacher Saniye's Growth*

<b>Teacher Saniye</b>	<b>Before PDT</b>	<b>After PDT</b>
<b>Personal Domain</b>	No ESD awareness Basic to medium CML	ESD and its pillar awareness Advanced CML
<b>Domain of Practice</b>	Weak to medium approach to sustainability Basic to medium CML	Strong approach to sustainability Advanced CML
<b>Domain of Consequences</b>	<b>of</b> Environment (social & cultural- implicitly)aspect of ESD No CML teaching strategies Picture, recorded sound, video No assessment strategies to support children's create competency	All aspects of ESD CML Teaching Strategies New resource use (public service announcement, poster, cartoon, teacher drawing) New assessment strategies to support children's create competency (creating a poster)

### **4.3 Examining Teacher Professional Growth: The Story of Umay**

#### **4.3.1 Umay in Context**

In this section, Teacher Umay's professional history, professional environment, and professional background are elucidated.

##### **4.3.1.1 Teaching background**

Teacher Umay holds a bachelor degree from the early childhood education field and is a master student in the Educational Administration Department. She had nine-year teaching experience and had been working at the preschool where the research was carried out for six years. She designed and implemented various projects, e.g., Hayatın Teknoloji Olmasın Hayatında Teknoloji Olsun [Your Life Will does not become Technology, Technology Will be at Your Life Project] with her colleagues. She involved in in-service training related to how to plan, design and apply a European Union project.

##### **4.3.1.2 School context**

Umay worked at an independent public preschool in Ankara, the capital city of Turkey. In this preschool, there were two types of school shifting, double shifting schooling, and full-time schooling. She was working full-time with her six colleagues. There were sixteen classes targeting children from 36 months to 66 months old. The school includes school director, two assistant directors, 25 early childhood teachers and 502 children.

None of the teachers at this school including Umay have participated in any PDT related to ESD through CML.

In this preschool, distinct projects were carried out throughout 2015- 2016 spring semester and 2016-2017 fall semester when this research was conducting. These were Hayatın Teknoloji Olmasın Hayatında Teknoloji Olsun [Your Life Will not Become Technology, Technology Will be at Your Life Project], Doğadan Sınıfa Geri Dönüşüm [Recycling from Nature to Class Project], Beslenme Dostu Okul Projesi [Healthy Nutrition Friendly School Project], Somut Olmayan Kültürel Miraslar [Intangible Cultural Heritage Project], Yankılansın Her Yerde Müzik Sesleri [Let Resonate Music at Everywhere Project], Aklından Bir Sayı Tut [Pick a Number Project]

] and Bir Çocuk Bir Fidan [One Child One Tree Project]. Although three of them focused directly on EE and/or ESD, only one of them targeted media. On the other hand, there was no specific program related to EE and /or ESD like TEMA Kids and/or Eco-schools.

The attitude of some teaching staff, school director, and assistant director mostly seemed to be neutral for involving in the research focusing on contemporary issues. On the other hand, some teachers and assistant manager had positive beliefs about and attitudes towards discovering new things and reflecting these on their activities. In this preschool, some informal exhibitions, parent involvement activities and seminars were organized.

In Umay's classroom, there were 19 children (7 Girls and 12 Boys) in the 2015-2016 spring semester. On the other hand, in the 2016-2017 fall semester, it was found that two boys who were also her student at last academic year had a speech disorder. In this semester, 16 children (5 Girls and 11 Boys) including two special needs kids were at the classroom.

### **4.3.2 Teacher Umay's Professional Practices before PDT**

In this section, Umay's professional practices before PDT, based on the Interconnected Model of Professional Growth are examined. Umay's Personal Domain (awareness of ESD and CML competencies and level), Domain Practice (implemented activities) and Domain of Consequences (resource use and assessment) are explained respectively.

#### **4.3.2.1 Personal domain: Teacher Umay**

In this part, Umay's awareness of ESD and CML competencies and level will be portrayed.

##### **4.3.2.1.1 Umay's awareness of ESD**

Before PDT, when Umay's awareness of ESD and explanations related to ESD were analyzed based on pre-interview, it was seen that she had limited knowledge and was not aware of all pillars of "ESD". After she perused the definition of ESD made by UNESCO, she expressed that

I heard this [ESD] concept. This education should be nature-based and focus on recycling. Mostly, targeting nature and use the nature within the activities or the inventions about this issue [ESD]...The resources should not be consumed continuously. I mean, related education could be given...Education [ESD] could be multidimensional...For this education, nature schools can be organized. Also, the education about this issue could be given at the universities in every department. I mean, every person should not focus on consumption instead of this production by mean of the education. Moreover, the government should also promote this education...we [early childhood teachers] could give this education [ESD] in early childhood education. Alternatively, at primary or other educational levels...

She made an explanation about the applied activities targeting ESD in her classroom during the 2015-2016 spring semester as follows:

I would construct this type of activities without knowing since I like and protect the nature and make research on it or use mostly waste materials in my activities related to recycling issue. I mean, I cannot say I did this or that but, at least two times in a week, based on recycling, we designed new things by utilizing the waste materials. Moreover, she gave examples of how she conducted activities with these words: At least two times a week, we implemented activities related to nature. [Throughout the activities,] we made observations not only at the outdoors but also indoors, made research and examination, we, ourselves, planted and cultivated...

#### **4.3.2.1.2 Umay's CML Competencies and level**

In this episode, Umay's CML competencies and level were examined regarding access, analyze and evaluate, create, reflect and act respectively.

##### **4.3.2.1.2.1 Access**

Umay could access and use various media types in her not only daily but also work life such as printed media, audio-visual media, social media and digital media. She ranged the media types that she used in her daily life from most preferred to least preferred like this: digital media (Google, internet), audio and visual media, social media and printed media. On the other hand, she changed the range of media types that she utilized in her working life like this: digital media (Google, Internet, application (Pinterest)), printed media, audio and visual media and social media (never used). She stated that visual and audio media organs came to her mind when she heard the concept of media. She allocated less time to media at her working life than at her everyday life. Media enlarge maximum 5 hours in her life.

It cannot be stated that I read novels and books, but I like to follow the journals related to history such as Atlas, National Geographic. I use visual and audio media to watch the news and utilize audio media to listen to music while driving a car in the mornings. For social media, I use WhatsApp to communicate with people. Moreover, Twitter. I use my husband's twitter account because I do not have an

account. I use twitter to follow the breaking news and to learn the people's views about an issue(s). I do not write anything on twitter. I am just a follower. I follow it to sound people out. I utilize WhatsApp and e-mail to make connections with the people.

In my working life, I use Google, the internet, and Pinterest. I utilize digital media, Google, and the internet while preparing activities and making a research on what I am curious about. Moreover, I use them to inform the parents, give information about parent involvement activities and to learn my rights as a teacher. I utilize WhatsApp to communicate with the parents.

#### **4.3.2.1.2.2 Analyze & Evaluate**

Umay has some criteria while utilizing the media in her daily and working life. She stated these criteria with these words:

I give importance to the reliability [in my everyday life]. For instance, when I read the news, I do not want to reach the fabricated news. I desire to read them from a reliable source. This is more accurate... For my working life, I put emphasis on to be creative, new information, reliable and to meet everybody's needs... If I plan the activities, I pay attention to its [media that I use] creativity because I myself also add something while implementing the activities. In this way, children's creativity is developed. I mean, when they see the different examples, their creativity is improved, I think... When I am making a research on the activities, I consider it is important that the activities or educational materials should be qualified and used for a long time but they should not expensive [to obtain cheaply] ... For instance, when making research, I realized the needs of parents about an issue(s). If I give them something that they need, they are not only knowledgeable about but also benefited from this issue.

Moreover, they feel satisfied and glad to learn this knowledge when their needs are met, I mean. If I gave them something that is their need, parents could not read this, and they do not care about this, as well...

Additionally, she stated the truthfulness of the content in the media was always important for her even if the knowledge can be revised from time to time. She elucidated how she distinguished whether the content in the media was correct with this statement:

Generally, I look at/ make research from the resources related to government. If it was news, I prefer to watch/ follow TRT news or Anatolian news agency. I mean, [I choose to follow] well-known media organs or the places that have more followers. They look more reliable. However, it cannot be correct every time...

She can distinguish opinion from knowledge via analyzing the expression style of the text. She made an explanation of the following:

To me, knowledge is certain, and its truthfulness is verified. However, the truthfulness of the view is not confirmed. I mean s/he tries to impose his/her

opinion on me. It can be understandable. For instance, on the same topic, one author write a conclusion based on his/ her findings from his/her study. On the other hand, another author just said for him/her, this causes to that. While the first one is knowledge, the second one is opinion.

She did not consider that the safety of the media that she used individually was ensured. She elucidated why she thought like this as follows:

...because I did not see any expression. Hmm at present there is an expression at WhatsApp. For instance, messages you send to this chat and calls are now secured with an end to end encryption; However, if the people want to reach your accounts, they can since we are connected to everywhere, and all our information is already at our cellphones. I do not believe that there is supervision about this issue. If something can occur, it can...

However, she was not knowledgeable about components of media's content. She just focused on the topics that she followed when the components of media were asked.

Before utilizing media and media tools, she put emphasis on the content and the visuals of the media messages and target audience with these words:

Its [media message] content is important. The visuality of it is also significant. However, the most important one is its content. I give importance to whether it address me or not. I mean whether it is suitable for my age. Alternatively, whether it is related to my occupation [early childhood education]. Therefore, the target audience is also crucial... These are vital for me because it [media message] is related to my area [early childhood education] and takes my attention...

Umay did not think that other people can reach to her personal information or the information related to her account when she was a member of a website. She explained the reason for it in the following:

Not to face undesired situation... I do not like to reach my phone number without my approval. For instance, the manager governing the city that I worked before sends messages every Thursday and Friday. I have not done anything about this issue. What can be done? They try to pull the people's votes even though I do not like this. They have right on their side...

The examination of Umay's analyze & evaluate level indicated that she gave importance to reliability. For her, the criteria of the reliability of the media and their messages are determined via whether media are the related to governmental agencies or well-known agencies or have more followers. Except for these, she did not mention anything. While she was selecting media in her daily and working life, she used personal (subjective) criteria and cannot explain their rationale very well. Hence, her

CML level was between basic and medium concerning analyze and evaluate competency.

#### **4.3.2.1.2.3 Create**

Umay generally used WhatsApp to communicate and Pinterest to see what can be done with waste materials. She used from time to time twitter to follow the agenda. While using Pinterest and Twitter, she did not share anything with her daily and working life experiences. However, she utilized WhatsApp to share the photos and documents related to activities. She made a detailed explanation with these words:

I have not shared the activities that I implemented yet there [Pinterest], but I want to share... I have not written any comment about the activities that I examined [on Pinterest]. I generally follow the sharing of other people since I have a chance to look at this [Pinterest] in a restricted time. I mean I do not have enough time for sharing something or writing a comment. I am surfing on the page and take the screenshot that I like. Then, download the photo of it... I utilize WhatsApp to send children's photos related to activities to their parents and to tell and share my experiences with them [in my working life]. I also use WhatsApp to send photos to my parents, friends and relatives [in my daily life]. However, I do not share a text or document that I write [in WhatsApp]. I also do not share and write anything at Twitter. Maybe I can do in future time.

Additionally, she expressed that she used Yahoo group for sharing her experiences with her friends graduated from the same department and university with this statement:

I had used this group up to three years ago. However, now I am not using it. Actually, I forgot my password. While using, I was always in contact with my friends... We have WhatsApp group including all teachers at the school. We share our activities and projects with this group every day.

On the other hand, she did not establish a web-site or blog to share her daily or working life experiences. Although she was a member of the web-sites related to early childhood education, she used these web-sites rarely. She generally preferred to share her knowledge and experiences with other people through face to face than online because she considered that face to face communication was more effective than other communication styles.

Up to now, she has not prepared any book, journal, and newspaper except brochure. She made the explanation as follows:

I have not published any book, but I consider to write a book such as storybook, activity book. We also prepared brochures for our activities and send them to the

parents to take their attention to our activities. By this way, we inform them about the content of the project, draw their attention to the project and provide their involvement in the project.

Overall, the analysis of Umay's statements revealed that her level related to create competency was medium since she was an active user of Yahoo Group and now uses WhatsApp actively even though she did not prefer to share knowledge and experiences with other people via media. On the other hand, she planned to prepare activity and storybooks for children in early years. Also, she constructed brochures for parents to give information about an issue or the content of the project. However, she utilized Twitter as only a follower.

#### **4.3.2.1.2.4 Reflect**

To Umay, the content conveyed with media and /or media tools should be supervised by agencies/institutions/ person/people. She expressed her opinion with these words:

...the content of the media should be inspected. At present, we use the internet based on the Ministry of National Education (MoNE)'s substructure. However, the internet that we use is restricted. Therefore, we cannot reach to the beneficial websites. For instance, on YouTube, there are very useful videos, but we cannot make children watch them because of being forbidden by MoNE. If media are supervised, all videos should be checked, interdicted and banned one by one not all of them. For instance, when I want to show a carton to the kids, I do not get children to watch a cartoon that I do not describe as non –educational such as Winks. However, there can be some teachers who ignore this issue. Hence, these type of cartoons [have negative effect on children] should be controlled but one by one. Otherwise, we cannot reach and watch beneficial ones as it occurs now. There are lots of prohibited places.

She believed that she could not do anything to provide her own security while using media and expressed her views as follows:

I mean, maybe I should not make online shopping, but I make. I should not write my TR identity number to everywhere, but I write. We write it to e-school via the internet. The people who want to find it, they can reach from there. We cannot do anything to prevent this because nowadays everything can do through the internet.

Umay stated that there should be the agencies/institutions/ person/people and should have a responsibility for providing the safeness of the media although she was not sure about their task scope. She made an explanation about these in the following:

Institutions and people should ensure the security, but I do not know what their task scope should be since at that time the information goes to someone or people. At this juncture, it cannot be reliable to collect all information from just one person



or some people. They can easily abuse this situation. Therefore, I am not sure about their task scope...

While using Pinterest, Umay took some precautions and elucidated with these words:

Generally, I write my previous surname. However, I am not sure how this situation protects me. I do not write my real name and use a nickname. However, I write TR identity number. When I write the TR identity number, they can easily reach to all information related to my identity. I think we did not pay attention to something just we suppose it.

Additionally, she was not sure what can be done to prevent sharing individuals' private information such as cell-phone number with other institutions and agencies since for her, the major responsibility about this issue belongs to the institution(s)/ agency(ies) that share individuals' information with others. Moreover, they believe that this situation cannot lead to occur any negative effect on individuals.

All in all, when Umay's statements are examined, it is perceived that her level regarding reflect competency remained between basic and medium since she was not sure what she and/or other people/ institutions should do to ensure safeness of media contents including her private knowledge. She felt herself powerless against media and believed that she could not do anything as an individual. Additionally, she did not talk about ethical rules and social responsibility and how to actualize them.

#### **4.3.2.1.2.5 Act**

The Act and Create competencies overlapped regarding some parts, in particular, creating/ designing media (such as videos, photographs, brochures, book, journal, blogs, and social media). Therefore, Umay's some answers are also found at Create competency and in the following part, the distinct parts of Act competency will be portrayed in the light of her answers.

Umay utilized cell-phone, WhatsApp and e-mail to contact her colleagues while preparing the projects. However, mostly they communicate with each other via face to face. She stated that they would rather communicate with governmental agencies generally face to face. If they did not have a chance to make a face to face communication with agencies, they would send an e-mail to them.

She made a detailed explanation related to media and/ or media tools that she utilized to foster activities about ESD in her classroom in the following:

Of course, I used media. If we did not have a chance or it was impossible to see/ observe the things/ issues in our school, I would show them children via the media. Generally, I utilize television and internet as media. I search on Google or download from YouTube. I show it on TV via computer ... or to support children's knowledge. For instance, I make children watch a video related to how paper is formed. I mean, we talk about issues such as we should not cut the trees or we should use both side of the papers because the paper is produced in a very long process and to grow up a tree endures too long time...

I frequently gave a place to these issues [related to ESD]. While preparing these activities, I pay attention to take children's attention, to meet children's needs, to be appropriate for their developmental level. I also focus on not only their play but also their learning. I select the activities based on these [criteria]. I combine the activities with amusing ones...

I use learning by doing, direct instruction and storytelling as teaching methods/ strategies while implementing the activities.

On the other hand, she did not touch on any strategies that can be used to promote children's CML levels by implementing ESD activities via CML in her classroom.

The examination of Umay's words indicated that her level regarding Act competency remained between basic and medium. Although she used digital media to make a research and find suitable audio & visual materials for children, she utilized these materials just to promote children to visualize the learning process. In other words, she did not have any aim related to supporting children's CML by using different teaching methods/ strategies. What's more, she did not use the media (such as a book, video, photos, pictures...etc) which were constructed and prepared by her.

To sum up, prior to PDT, Umay did not become aware of the concept of ESD exactly, and she thought that ESD covered the issues related to only nature and recycling. She also was not aware of which teaching strategies can be used to enhance children's CML while applying activities targeting ESD via CML. Further, her CML level remained between basic and medium.

#### **4.3.2.2 Domain of practice: Teacher Umay**

In this section, Umay's domain practice is examined based on document analysis of her monthly and daily plans, stimulated recall interviews (SRIs) and the field notes of conducted activities targeting ESD and CML before her participation in PDT.

By document analysis and as shown at Table 4.19, during the first data collection part (2015-2016 academic year-spring semester) Umay planned and implemented activities mostly focusing on environment pillar (such as respecting to animals, plants, keeping the environment clean...etc.) of ESD. However, she did not design and conduct activities targeting CML issues.

Table 4.19

*Number of ESD and CML in Daily and Monthly Plans Prior to PDT*

Months	Total obj.	Obj. 7Rs	Obj. CML	Total Act.	ESD in Act.	Media in Act.	CML in Act.	ESD & Media in Act	ESD & CML in Act.
<b>March</b>	28	1- respect	3	42	-	7(computer)	-	2- respect 1-reflect	-
<b>April</b>	30	1- respect 1 - reflect	3	34	1-reflect 2 - respect	3(computer)	-	1- respect	-
<b>May</b>	32	3- respect	3	38	2-respect 2-reuse	-	-	1- respect	-
<b>June</b>	23	2- respect	3	20	2 – respect (indirect)	1(computer)	-	-	-

The examination of the daily and monthly plans concerning ESD and CML revealed that Umay mostly targeted “respect” pertaining to the environmental aspect of ESD in her plans. This finding was also verified with the examination of daily and monthly plans’ objectives on ESD. What’s more, when the activities were analyzed regarding CML, it was observed that Umay sometimes utilized media (video, photographs, and pictures) and media tools (computer and projection). However, she did not use CML. From time to time, she applied ESD activities via media, but there were no activities focusing on ESD through CML in the classroom.

In the subsequent section, implemented and observed activities in the classroom would be portrayed elaborately. Accordingly, SRIs were examined concerning ESD (from strong to weak approach sustainability practice) and CML (basic to advanced). To begin with, based on activity plans, SRIs and field notes; implemented activities were presented in Table 4.20 from strong to weak approach sustainability practice and basic to advanced CML. After that, two applied activities (A<sub>2</sub> and A<sub>4</sub>) will be explained with the support of SRIs and field notes because these two activities are most symbolic ones of Umay’s classroom practices and demonstrate ESD and CML issues most clearly.

Table 4.20

*Analyses of the Places of ESD and CML in Activities Prior to PDT*

<b>ESD</b>				
<b>CML</b>	weak		Medium	strong
Basic	*A <sub>3</sub> ,	-	-	-
	*A <sub>1</sub> , A <sub>4</sub>	*A <sub>2</sub>	-	-
Medium	-	-		-
Advanced	-	-	-	-

\*A<sub>1</sub>: Our Nature, A<sub>2</sub>: Living things in Soil, A<sub>3</sub>: What happened to the caterpillar?, A<sub>4</sub>: My soda bottle project

In the A<sub>2</sub> activity, Umay implemented “Living things in Soil” from her daily plans. The original activity was implemented as it was planned except classifying the bug photos according to their characteristics (such as furry/not furry, colors, body parts...etc.).

Briefly, this was a field trip, science and play integrated activity. In this activity, children and teacher went to the school yard to make an observation about different kinds of bugs. Children explore the bugs and examine them with a magnifying glass. While observation, photos of explored bugs (e.g., ants, lightning bug, silverfish bug), snails and spider; and, spider webs and ant nests were taken. Then,

a small amount of soil were put into the container via shovel for making an experiment in the classroom to see the living things in the soil. After finishing observation and coming back to the classroom, Umay and children made the discussion about their observation at the school yard in the following:

T: What kinds of living things did we mostly observe at the outside?

C<sub>all</sub>: Ants.

T: yes, why did we see ants in this season?

C<sub>1,2,3,4</sub>: hibernation

T: Yes, they woke up from hibernation

...

After this discussion, they talked about living things in the soil (i.e., ants, snake, worms, mole...etc.). Afterwards, the teacher made a connection to soil pollution and took children's attention to this issue and what possible outcomes of this problem could be and how this problem can be solved. Then, they made the experiment. For this experiment, the teacher used a funnel, container and hand lamp. She put some soil inside the funnel with a torch. By means of this experiment, the living things that avoid from sunlight would drop into the container below of the funnel; and thus, children can observe some of the living things in the soil after a short time (this part was not observed during researcher's video-taping). After the experiment, the teacher encouraged the children to touch the soil. However, some of them did not want to touch it.

The photos taken at the school yard were uploaded to the computer to reexamine the bugs that children explored at the school yard. In the meantime, the teacher asked questions about the photos such as "what did we see in this area? What is this? (by showing the living things on the computer screen)" The bugs and spiders photos found by the teacher were also shown via computer once more. The teacher asked questions to determine whether children remember the names and characteristics of the bugs and spiders and which of them was also seen at the school yard. Teacher and children talked about what the differences between bugs and spiders. She asked them some riddles related to some bugs (e.g., firefly, ant, and silkworm) and spiders. The game "bugs and spiders" was played. The activity was completed with assessment questions (such as which materials did we use during the experiment, what was the role of the funnel? etc.).

In this activity, Umay utilized the internet as media and computer, TV and cell phone as media tools to show the photos of bug and spider found not only at the school yard but also on the internet.

Based on the filed notes (researcher notes), A<sub>2</sub> activity focused to give information about bugs, spiders and living things especially bugs inside of the soil but there are some misconceptions about spiders and bugs because of both of them under the Arthropoda division. Instead of it, the teacher would just focus on common bugs, the place(s) where they live and some properties (such as color, the number of legs...etc.). What's more, in too restricted time, the teacher tried to cover too many things. For example, after the field trip, she made the experiment, but the focus of the experiment was quite different from the main focus of the activity.

While talking about soil and the living things in the soil, teacher and children mentioned to ESD-respect by targeting not to throw litter on the soil because some living things are there. Umay made effective connection to an environmental aspect of ESD. Filed trip and observing with magnifying glass were very effective for kids. All of them actively involved in the learning process and were very curious to explore new things in the school yard. The discussion and sharing about snails between researcher and teacher were useful. The teacher was eager to make a research and explore new things.

Although the teacher used more visual materials (photos) in her activities, there is no link to CML. For instance, she asked kids questions about photos just focusing what they saw on those photos and used these materials to give them information about bugs and spiders' properties. The photos taken during the observation were an effective way for documentation and making assessment related to a field trip with children. Umay made research about bugs and spiders through the internet before conducting the activity.

Further, the teacher asked three kinds of question. These were “instigating discovery (ID)” (What is this [showing the photo]?), “eliciting predictions (EP)” (What did happen when we threw the litter on the soil?) and “probing for understanding (PF)” (Why did we see ants in this season?).

Overall, in this activity, Umay used more than weak and less than the medium approach to sustainability practice and more than basic and less than medium CML level since she did not use any CML strategies although she was good at using media in her activity.

On the other hand, in A4 activity, Umay applied “My Soda Bottle Project” from her daily plans by adding different kinds of waste materials.

Shortly, this was an art and literacy integrated activity. In this activity, the teacher demonstrated photos of reused waste materials as toys, pots, bird feeds, furniture...etc. While analyzing the reused materials at the photo on the computer screen, the teacher asked some questions kids such as what is constructed?, which waste materials are used for this one?, how this material can be constructed...etc. After a detailed examination of reused materials photos, the teacher gave information about the waste materials, e.g. soda bottles, bottle caps, empty paper rolls (previously prepared by her). Then, the children selected their own waste materials from the tables, and they decided what they wanted to make with their waste materials. During the decision process, teacher fostered children thinking process with questions. After this process, they made their own reused materials such as rockets, vase, human, soldier, cook, sculpture, rabbit...etc. After the children made an explanation about what they constructed, they played their materials for a while and then, this activity was completed.

In this activity, Umay used the internet as media and computer and TV as media tools to show different kinds of constructed products by reusing waste materials (e.g., such as plastic bottles, glass, and tyres) to the kids.

Additionally, in the light of the field notes (researcher notes), A4 activity just focused on the art activity using waste materials. In other words, although Umay aimed that children designed original things from soda bottles and other waste materials, she did not mention anything related to ESD. On the other hand, the method of learning by doing and presenting different types of waste materials to the kids and giving them the opportunity for selecting their own waste materials for their own design was very effective. Children were entirely concentrated on the activity.

At first, some children did not manage how s/he could use soda bottles, but they started to try, and they realized that they could do it. After that, they tried to create various products without copying their peers. This was also amazing because they were just three-year-old and they were generally tended to imitate their peers. They enjoyed being a part of this activity. After constructing their products, they desired to bring away them to their home and to play with them. Also, they did not want to get help from their teacher until they could not paste the waste materials with their own prints after several trying. This is also astonishing because they actually thought that these products belonged to them theirs.

While demonstrating the photos of distinct types of created products via reusing waste materials, Umay made some explanation of how these materials can be done. By this way, she gave some clues to the kids about the designing process of the products.

She used the internet and computer effectively for her activities. The photographs found by her were very appropriate for this activity and children; and, inspired them in creating their own products. This means that she utilized technological tools and media effectively. In addition to this, children were able to read visual material easily because they easily guess which type waste materials can be used for design the materials in the photographs. However, Umay did not touch on any CML strategies during the activity. She only asked questions to kids what they saw in the photographs.

Further, the teacher asked two kinds of question. These were “instigating discovery (ID)” (What do you see at this photo?) and “probing for understanding (PF)” (What kinds of material(s) are used to create this product [by showing from the screen]).

Overall, Umay used weak approach to sustainability practice and more than basic and less than medium CML level because she did not use any CML strategies although she asked some questions about the visual materials.

#### **4.3.2.3 Domain of consequences: Umay’s salient outcome**

In the following section, detailed elucidations on the domain of consequences will be given under the different headings as “Selection of Topic”, “Teaching



Strategies”, “Resource Use” and “Assessment Strategies” with the support of A<sub>2</sub> and A<sub>4</sub> activities and related SRIs.

#### **4.3.2.3.1 Selection of topic**

When the applied activities and related SRIs were investigated, it was seen that all of the activities were found at teacher’s prepared daily plans. The analysis of activities’ topics concerning 7Rs and the components of ESD revealed that A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub> activities focused on respect (to living things and environment), environment aspect of ESD while A<sub>4</sub> activity targeted indirectly reuse aspect, environmental aspects of ESD. What’s more, all of the activities were integrated and mostly consisted of Turkish Language and art activities. While A<sub>1</sub> (focusing on drought at the forest), A<sub>3</sub>, (targeting life cycle of butterfly) A<sub>4</sub> (aiming to create products by reusing the waste materials) activities were indirectly related to environment pillar of ESD, A<sub>2</sub> activity (intending living thing in the soil and to keep clean the soil) were explicitly related to environment pillar of ESD. The teacher only made a connection to ESD in A<sub>2</sub> activity by a discussion on the harmful effects of litter on the living things in the soil. Thus, A<sub>2</sub> was at between medium and weak when the other ones (A<sub>1</sub>, A<sub>3</sub>, A<sub>4</sub>) were found at the weak approach concerning sustainability practice. Umay used media as a tool only in A<sub>1</sub>, A<sub>2</sub>, A<sub>4</sub> and asked some questions (such as what is this, which waste materials are used for this one?, [by showing the photo]...etc). However, there were no CML strategies. Therefore, while A<sub>1</sub>, A<sub>2</sub>, A<sub>4</sub> were at between medium and basic, the other one (A<sub>3</sub>) was found at the basic regarding CML.

#### **4.3.2.3.2 Teaching strategies**

During SRIs, the researcher put questions to Umay about which teaching methods/ strategies were used while implementing the activities and the reason(s) of choosing those. Umay generally used distinct teaching methods/ strategies such as direct instruction, questioning, telling a story, learning by doing, sequencing, and making an observation when applying the observed activities. For a detailed explanation, her statement about A<sub>2</sub> and A<sub>4</sub> activities will be presented as follows:

To illustrate, in A<sub>2</sub> activity, she stated that

There is direct instruction, we made an experiment...in fact, I demonstrate the experiment...They [children] themselves went outside [school yard], observed. I used learning by doing and questioning...

She explained the reason(s) why she preferred to use these methods and/or strategies with these words:

...We ourselves made research whether bugs' types from which we examined via the internet on the computer and TV screen and of which we drew the pictures in the classroom were in our school yard or not. At least, children knew what they tried to find. For instance, they did not know that the bee is also an insect and the butterfly is also in an insect...By these [teaching methods/ strategies] they themselves could research and explore different kinds of bugs...

She elucidated the alternative teaching methods for this activity in the following:

...We can analyze a book. Books, I can bring books related to insects. We can analyze the insects in the books with or without magnifying glasses. Hmm... how we can make the experiment. We can make it in the school yard. We can dig the soil and observe which living things are there. However, we cannot see the living things escaping the light but we can tell it. I mean they are living in the soil because of light...

The analyses of her words revealed that she would rather utilize digital (internet,) or printed media (book) and media tools (computer, TV) since wanted that children were knowledgeable about the topic (bugs and bug types). When she was telling her opinion about alternative teaching methods/ strategies, she also did not give up the first-hand experience of children in the school yard. While she was explaining the alternative methods/ strategies, she drew attention to their advantages and disadvantages.

On the other hand, for an A<sub>4</sub> activity, Umay made an explanation about teaching methods and/or strategies as follows:

They [children] learned by doing since during the process, they thought and were active. I mean, this was child-centered activity, children played an active role throughout the activity...I also asked questions to them about the photos which are related to reused materials and shown with computer and TV.

She also stated the reason(s) for selecting these teaching methods/ strategies with these words:

...To support children constructing their authentic products. To promote their active involvement in the learning process. Otherwise, most of them can make the same thing [products made from waste materials] with their peers...

What's more, Umay elaborated alternative teaching methods/ strategies for this activity with this statement:

I can structure the activity. However, at that time, can they design original products? Of course, it cannot be like this activity. They cannot create authentic products.

When Umay's explanations were examined, it was perceived that she preferred to utilize media (photos of reused materials) and asked questions about them (e.g. what do you see at this photo, what kinds of material(s) are used to create this product) to encourage children to design original reused products from waste materials. When she was making an explanation about alternative methods/ strategies, she would prefer more teacher-directed strategies. However, she emphasized that at that time children's creativity could be restricted. This means that she gave importance to planning and implementing child-centered activities.

#### **4.3.2.3.3 Resource use**

For A<sub>2</sub>, Umay utilized photos which were taken by a smartphone and were found by her via the internet. All these photos were shown with computer and TV. Additionally, children used magnifying glasses during observation at the school yard. For the experiment, funnel, a small amount of soil, hand lamp and container were used. She elucidated why she preferred to use these materials in the following:

We took the photos of bugs that they [children] saw and found. Then I showed them with computer and TV. I thought that they would like this...My main aim in showing them [photos] is to talk about the properties of the bugs that we saw in the school yard. However, we cannot see the details in the photos since the ants, and the other bugs remained too small to distinguish them from another thing at the photos. Therefore, we talked about the photos that I downloaded via the internet. While selecting the bug photos via the internet, I gave importance to choosing particularly the colorful ones since we only see black and brown bugs in our daily life. However, there are also colorful ones that take our attention. I want to show them to kids to draw their attention much...We used a magnifying glass in order to motivate the kids to make a research and observation about the bugs at the school yard...

Based on Umay's expressions, she used media (photos) and media tools (computer and TV) to foster children's knowledge about bugs. While showing the photos, she asked some basic questions (such as what is this?, what is the color of it?...etc.) to promote children to read the visuals. However, she did not use any CML strategies and ask any questions to support children's CML.

Additionally, in A<sub>4</sub>, Umay utilized computer and TV to demonstrate the photos of created products by reusing materials to children. For art part of the activity, waste

materials such as soda bottles, bottle caps, empty paper rolls...etc. were used. She made an explanation why she selects these media, media tools and materials with these words:

... If I did not show sample created products, children could not decide what they want to construct in a short time even if they had an experience related to designing products via reusing the materials. When they see different products such as sofa made by the tyre, they can determine quickly and design their own products without imitating their peers. If I said what you could make using soda bottles without showing any sample and told them you could make car, rocket, a child stated that I would make a rocket and the rest of them would follow him ... Moreover, I want to take their [children] attention to the activity...

While selecting waste materials, I thought about what children can be done with the materials. I mean, generally, boys are tending to construct the car. Therefore, I put bottle caps. I also preferred clean and easily reachable/ found waste materials...

The examination of Umay's statement revealed that she used media and media tools to take children's attention, motivate their creative thinking and support them in constructing authentic products. In other words, she used media to foster the activity. However, she did not utilize any CML strategies and asked a question except for basic ones to promote children's CML.

#### **4.3.2.3.4 Assessment strategies**

For A<sub>2</sub>, Umay finished the activity by asking some questions and explained her aim with these words:

I asked some questions such as "which materials are we used?", "what did we see in the school yard?"... My aim is to provide that children remember what we did during the activity and ensure their continual learning. Moreover, by means of these questions, I can perceive that I reach to objectives that I planned...

Based on Umay's expressions, at the end of the activity, she could mostly reach the objectives and indicators that she intended. However, she did not put any objectives and indicators especially targeting ESD-respect and CML while planning the activity.

When it comes to A<sub>4</sub> activity, Umay made an observation about children's learning process and wanted children to explain their products to their peers. She shared her observation as follows:

It is interesting that some children preferred not to use soda bottles. They created their products without soda bottles. We made a similar activity at the end of the first semester, but at that time they could not create as authentic material as at this activity. They design amazing things...I can say that I reach the objectives and indicators that I determined...

In the light of Umay's statement, she determined whether she reached the objectives and indicators via observing the children through the activity. However, she did not aim any objectives and indicators focusing on ESD-reuse and CML. Moreover, she did not mention anything / ask any questions about the reason for reusing the waste materials.

#### **4.3.3 Participation in PDT**

Umay involved in five-day-PDT with her two colleagues from the same preschool throughout seminar period in September 2016. Even though she was eager to participate this training, it was too complicated to make time arrangement for three teachers since she also had to attend to another seminar for five days organized by Ministry of National Education at the different school. On the other hand, this seminar period only endured seven days from 9:00 am to 12:00 pm. Some official meetings had to be organized by the school director and assistant directors during the seminar period. Hence, the researcher and teachers decided to meet mornings for three days and afternoons for two days. After these challenges were eliminated, PDT was conducted. Umay stated that she has not been knowledgeable about "global warming" up to now and glad to participate in this training. When we are discussing on media messages and how children can understand them, she expressed that starting from now, while selecting any media such as cartoon, film, she tried to be careful about which unwanted messages are given to the children. At the end of the PDT, she drew a poster that showed inputs and outputs of the world. She wrote a slogan, "the things that we give to the Earth guarantee our gaining", for her poster. For her, if people use water and electricity wisely and use renewable energy source as inputs of the world, the output of the world is much greener Earth.

#### **4.3.4 Umay's Professional Practices after PDT**

In this part, Umay's professional practices after PDT are explained in the light of the Interconnected Model of Professional Growth. Umay's Personal Domain (awareness of ESD and CML competencies and level), Domain Practice (conducted activities) and Domain of Consequences (selection of topic, teaching and assessment strategies and resource use) are portrayed respectively.

#### **4.3.4.1 Personal domain: Teacher Umay**

In this section, Umay's awareness of ESD and CML competencies and level are presented.

##### **4.3.4.1.1 Umay's awareness of ESD**

The examination of Umay's awareness of ESD after PDT based on post-interview revealed that she was knowledgeable about ESD and aware of the concept of "ESD". She made an explanation about the importance of ESD in the early years with these words:

I have heard the concept of ESD.

... Education must start at a pre-school level for sustainable development. Actually, the basis of the entire education must be given at pre-school because we all know that 80% of our personality, behaviors, and thoughts is formed between the ages of 0 to 6. 80% is not a very small part of it.

On the contrary, it is a very very big part of it. The younger the child is, the more permanent education becomes a part of his or her personality. In order to teach them how to maintain a better life and how to leave the Earth as a more livable place, I think this education must be given at a young age at pre-school. We start to educate them at a young age, but as the kids we educate are the future adult, I mean, at least starting from this level, we should help them develop such behaviors for them to raise awareness in their own children and the people around them in the future. This way, they can make their own children and people around them more sensitive, or maybe at least, they can raise awareness of them. Maybe, they cannot interfere a lot, but at least, they create awareness and illuminate those around them, I believe. It is like a drop effect. You know when a drop falls, it spreads; like that I mean, I did not know what global warming means until recently. However, children at pre-school already know what it is.

Moreover, their parents really like something like this, you know. Actually, it is a point to be considered, but nowadays, it is not paid much attention in our country. Well, it is something, a matter to be appreciated in time.

To Umay, ESD covers various topics related to different pillars. She expressed her views as follows:

I think, well, energy conservation can be through the soil. In fact, it includes everything, I mean water. Well, they all have a role in the progress of our society, you know. All of these should be continued, I mean, maintained so life could also continue. I mean, it includes nature, environment, the Earth, everything. Animals, all of the living creatures, human relations as well as our respect for each other... Then, let's say social, economic, environmental...

She used different teaching methods and strategies while utilizing media and media tools throughout her activities to promote children's ESD awareness via CML. She reported that with these words:

You see; I told it myself. Well, I showed the visual material to the children and asked questions to them about it to lead them to think, and to help them use their creativity in a way. So., it was mostly questioning. What else did we do? Of course, we made field trip. We did observation, but we continuously did questioning with the children in general. No matter what kind of activity we did, it always included questioning. I supported the children with questions for them to think and answer, to pay attention to the events and focus on them, and to set up a cause and effect relation. I believe it continued all the time. It is not only the questions I asked during and after we were watching the posters, videos, and animations but also while reading books and doing observations, too. We used it in all of them. Again, we used it in our activity of art, too. There were presentations of products and posters in all of them. I used a questioning technique in them, too...

What's more, Umay made an explanation about her observation related to change in children's thoughts about ESD with these words:

For example, first, we did a project with the kids about the global warming. While doing it, in the beginning, when I asked the questions of the children, their answers were generally about trash like "We should throw our rubbish into the bin." Alternatively, "We should not throw trash into the water.". However, on the concept map, we created at the end of the project, the children's answers were related to electricity, exhaust, cars' exhaust gases, well; what was that? – About the seas and fish. They paid great attention to the living creatures. All they said were about the living beings. While at the beginning it was only about trash, at the end of the project, I believe, we reached the desired goals. We heard such answers from the children that they were quite creative. Yes, there were really very creative answers. I mean, we can see that process, you know. The difference is remarkably big between the initial and final concept maps. The children mentioned not wasting electricity and water, not spending too much electricity, and economizing those all the time. That is to say; it reached its goal. They also said that garbage should be piled separately... yes; like storing them in different places... They all learned it very well.

Overall, Umay was more aware of ESD and the topics targeting ESD and its pillars (environment, economic and social & cultural). She shared her observation related to change in children's views from ESD- environment aspect to ESD- environment and economic (reduce and recycle) aspects at the end of the one-month project about global warming. She emphasized the role of especially early childhood educators to promote children's awareness of and attitude and behavior towards ESD issues. She pointed out that ESD should be started from early years since children are the future citizens of the country and they can affect the people in their environment starting from their own families like drop effect.

#### **4.3.4.1.2 Umay's CML competencies and level**

In this part, Umay's CML competencies and level are examined concerning access, analyze and evaluate, create, reflect and act respectively.

##### **4.3.4.1.2.1 Access**

Umay could access and use distinct media types in her daily and working life, e.g. social media (Twitter, and WhatsApp), digital media (internet), printed media (book), audio-visual media (television) for various aims. She allocated approximately five hours to the media. She made an explanation with this statement:

...when I hear the notion of the media, I would say printed, written or audio, all the media. You know magazine, television, radio, internet... All comes to my mind when you say media. I mostly use digital media in my daily life. Visual and audial media come as the second, and social media and printed media follow them. It is very bad indeed. It is a pathetic situation. I use digital media, Google, and the internet in my educational life to do research or when I am curious about something. I use visual and audial media to watch the news, Twitter to follow the up-to-date things and learn people's thoughts, and WhatsApp to communicate. I am in constant communication with my circle of friends. I also use e-mail in the same way.

...In my professional life, I use printed media more often. Visual, audial and digital media come after that I can say. I use books and posters as printed media related to whatever the topic is. I use television to present the videos as visual and audial media. Moreover, I generally use digital media, Google, and the internet while preparing an activity or to learn my employee personal rights. Also, I search for activities on Pinterest. I use WhatsApp with the aim of communication with my co-workers and the parents. I use it often. Umay did not use E-Governmental portal because she did not need to utilize it.

The analysis of Umay's level related to access competency revealed that she utilized various types of media effectively to support her personal development not only daily but also educational and professional life. She also used them to enrich the activities, make adaptation to her activities and to give information to the parents. Her media using preferences change according to her needs in her daily and working life. Hence, Umay's level regarding access competency is "advanced".

##### **4.3.4.1.2.2 Analyze & Evaluate**

While using distinct media types, Umay gave importance to some criteria such as creativity, originality, reliability, attractiveness...etc. Additionally, after PDT, she became aware of media can manipulate some issues. Therefore, she advised examining these issues carefully. She could distinguish view and knowledge



according to their scientific basement. She was knowledgeable about components of media's content. She expressed her views with these words:

For my daily life, if we look at it as an activity, creativity is important. It is important that it be creative, original and one of a kind. It is significant that it is enjoyable. If it has data truly based on reliable sources as a result of research or something, then it attracts my attention even more. I mean, it must be reliable. These are important.

Again, also in my professional life, the same reliability is crucial. Consequently, as original things, well, events, etc. or the things I will share with the parents of the children are also related to my professional life, it is again important that they be reliable, original, outstanding, fun. These are important, and also, it is important that the information be updated.

Umay reported that the content of the media that she reached and used includes visual and writing parts. She made the explanation as follows:

We achieve content. We reach the very own thoughts of the person or cooperations that establish that media as a content. It depends on us whether we trust them or not. Alternatively, it depends on their ability to convince us. These establishments support their ideas not only through the written material but also through visuals to make them trustworthy with the aim of attracting more people to their cooperation or getting them to give support.

Umay elucidated the importance of media content's truthfulness and how she could understand its truthfulness in the following:

Of course, it is very important for me that the content is true because I am using it in my professional or educational life, my personal – well, how can I say - should I say my employee personal rights..? I mean, it is very crucial that it be true because I am shaping my future, or informing the children and their parents about the issue accordingly. You see, its accuracy is significant. Giving a correct information is substantial.

To understand if the content of the media is correct, I search about the responsible person or cooperation. I question if they have any benefit from it. I might check what kind of a profit for themselves they can get while doing this. For example, lately, there has been a widespread rumor about palm oil causing cancer. I do not believe that's the case. I have not done any research yet, but I suppose it must surely be useful for someone because although the names of the products are shared, if you check their content, palm oil is not there. I think it suits someone's book; that's why they are doing it.

She expressed her views which sources were more reliable with these words:

It is academic. I mean, it is about people like professors, associate professors, etc. who work or serve at universities. You know, the information they give sounds more reliable because it comes as a result of a certain study or maybe their own thoughts. Let's say, for example, I do not want young children of 60-72 months to start studying at primary school. Then, I do research and reach a result in that direction. Another person might support the idea that children must start primary

education that young. S/he thinks it is appropriate, and applies research accordingly, and gets a result accordingly. However, I am the one who will check both of them and decide. Of course, I choose whichever sounds logical to me. They both might be credible. They both might have researched according to their own ideas and reached conclusions accordingly. It is still up to me to obey them or not.

Moreover, she explained how she distinguished whether the media content cites knowledge or opinion as follows:

Well, if the knowledge is obtained as a result of a scientific study, then, I would say “Yes, that is knowledge.” However, if it reflects a more subjective point of view, then, of course, it is realized that it is his/her thought. That is surely right if it includes the personalized comments and thoughts of a person, but if it is a result of scientific work, then I call it knowledge.

To Umay, the safety of media and media tools mostly cannot be ensured. She stated her opinion like this:

No, I do not think so. Oh, but, I am sharing all my information. Moreover, I do not think so because I suppose everyone can reach it anyway whenever they want to. I mean, there are many hackers. Everyone can do whatever they want to. We are at the mercy of other people. I mean, it is an issue at their mercy. We are at their mercy, too. Otherwise, everything is accessible to anyone, I think.

She also thought that the users’ personal information should not be opened to the access of other people while using the internet. She made an explanation about this issue with these words:

No, of course, it should not be open. Nobody needs to learn about me. What are they going to do with my information, anyway? They do not need to know the things about me because I share them if I want to and also because of safety reasons to some degree.

Before using media/media tools or deciding to use media/media tools, Umay attached importance to the target audience, the content of the messages as well as topic, its domain, and originality. She elucidated in the following:

Yes, I act according to the target group when I use them in my professional life because we are aiming at a very young group of children. We cannot make them watch a video taken for the adults. Well, even if we make them watch it, they would not understand. We pay attention to sharing the things in a way they can understand. I am especially careful about the target group. The content of the topic I will give, and the messages... These are important. I pay attention to them. I pay attention to all the things you said. As I said before, the originality of the activities is important to me.

Umay’s level related to analyze & evaluate competency is “advanced” since she was aware of media can easily manipulate the information and the content that

she reached. For Umay, although some knowledge is derived from scientific studies, these studies can also convey the message(s) according to their authors' viewpoint. At this juncture, people should determine which one is more reliable. To her, people should decide for themselves whether they share personal information with others.

#### **4.3.4.1.2.3 Create**

Umay used Twitter, WhatsApp, and Pinterest as social media and network for different aims such as following breaking news and events and communicating with people...etc. She made a detailed explanation with these words:

I follow the daily news and events on Twitter and check the activities on Pinterest. I follow the events most of the time. Especially the foreign resources, I find them more creative, you know. I think the reason for this is that our creativity got very rusty. Moreover, I use WhatsApp to contact with the parents about the family participation.

However, she did not share any content (such as photo and video) and write any text about any issue via her social media accounts. She was the only follower of the other people's account and sharing. She expressed the reason of it with this statement:

Actually, I do not have much time. I do not share them because of the safety issues on Twitter. I mean, there is not much to be shared anyway. What do people write? They comment on each other. What can they share? They share pictures, which I do not find necessary. Maybe, in the future, if I start such a business, I mean, like doing and selling things, then, of course, I share them. So, I do not share them for the time being.

I do not have time to share my experiences about my professional, private or educational life. My time is limited.

There is not an address [website – blog] that I specifically follow. I am not a member, either. I pay more attention to wherever attracts my interest. I check on Pinterest things like artistic activities or works of creative drama. Well, what else? Music... As I am not a graduate of a girls' vocational high school, about the area of music, I am kind of... I mean, I think, the music education given at the university was not that helpful. I still believe it is not. I do not know how it is done but I only follow them. I search what I am thinking of, or what I am trying to find out. That's it. I do not do things like logging in to write comments to this, and follow that. I mean, I do not do such things...

Umay has not designed and opened a web-site and blog to share her views/ activities up to now. On the other hand, she prepared a brochure and a poster related to global warming targeting parents. The aim of the designing a brochure and the

poster was to give information about what she and children would carry out throughout the project.

When Umay's level related to creating competency was examined, it was perceived that her level was advanced since she designed printed media to inform parents about her global warming project. While she was following social media networks such as Pinterest she gave importance to its creativity, originality, and content (art, creative drama, and music activities). Based on these criteria, she mostly preferred to follow international sources on Pinterest. She also contacted the parents via WhatsApp to make a declaration about parent involvement activities. Even though she was an active follower and user of social media, she did not prefer to share anything through her social media accounts because of some issues such as security.

#### **4.3.4.1.2.4 Reflect**

Umay considered that the content which is presented by media/ media tools should be supervised because it is easily reachable even children and it causes to media pollution. She made an explanation why she thought like this in the following.

Of course, they should be inspected because they do not address a specific age group. Televisions are on at home all the time. Alternatively, we see many things on the billboards while passing through the streets in our cars. We see them, and so do our children. So, of course, they should be inspected. They have to be inspected.

She stated her opinion about how media contents can be supervised by agencies/ institutions/people with these words:

In my opinion, all should be inspected, but the existence of such an establishment is kind of difficult because there is a lot of, how can I say, media mess. A lot...It is not only television which is in media but magazines, internet, and those advertisements I mentioned before written or visual. They all exist, so I do not know which one they are going to inspect, but at least, what is done can be standardized. For example, we are not being inspected every moment; however, we have certain standards while working, do not we? We believe we get more efficiency when we follow the standards. Alternatively, I do not know. We know that it is the situation. If the issues about the advertisement and other areas get standardized, there must be a sanction to those advertising and using the media tools when they get caught. For instance, violence should be allowed to a certain degree because children see them, too. Alternatively, the pictures on the billboards should not include any sexual content because people have their privacy. Everyone can wear what they wish to. It is OK for me, but they should not be perceived as normal by the young children. We already live in bad times to protect the children. They should not think that they are normal. So, they must be restricted. I mean, the

inspection of the things which can have a negative effect must be applied regarding ethics, personality, reliability.

To Umay, there should be agencies/ institutions/people to provide the safety of the media and media tools. However, she was not sure what they could do, and thus she only gave some suggestions as follows:

Regarding safety, for example, there are hackers, so it is inevitable that information is stolen. IT specialists solve it better. I do not know what kind of things or what can be done, but I believe that something can be done for safety issues, and for others not to reach any personal details about us. It has to be applicable, I think. Moreover, it is those who will do that. I do not know what they can do. Encryption systems are not really efficient. I mean, those people coping with it can break the codes if they want to. So, there must be something more professional. I do not think these are enough.

She expressed her views about what she can do to provide the safeness of media and/or media tools with these words:

I cannot do anything. Then, I should never be a member. Well, if I really want it to be safe, then, I can consult some institutions. It might be possible to reach something through the legal process. It can be figured out like that. Something like this can be done, but I guess we do not feel the necessity to do it. Well, Turkish society, unfortunately, is acquiescent.

She did not share her personal information such as “TR identity number” with other people while using social media because of a safety issue. However, she believed that if people wanted to reach this information, they could easily reach.

Moreover, she conveyed her thoughts about her experiences related to receiving messages from people and institutions such as parliamentarian, local governments in the following:

...People who do not share their own personal information with others should not disturb me through phone calls. Initially, they should be given some awareness. They should figure it. They cannot disturb people by saying “I am a deputy, I am a mayor.” People do not have to read their messages. First, they should gain awareness. Yes, they should be inspected, but you know.. We should start from the top because those at the top already do it, so why not the others?

The analysis of Umay’s expressions revealed that her level was advanced regarding reflect competency. She was aware of how children were surrounded by media, and they can easily reach to media. She advocated that there should be a standardization policy about media to prevent its undesired effects on children. She did not believe that the required precautions were taken to provide safeness of media and or media tools and she considered that more complicated and broader ones should

be taken. She highlighted that the supervision about this issue should start from institutions/ agencies/people that are found at the higher position in the society and then should be enlarged to the whole society.

#### **4.3.4.1.2.5 Act**

The Act and Create competencies overlapped for some parts especially creating/ designing specific media (such as videos, photographs, brochures, book, journal, blogs, and web-sites). Thus, some of Umay's views are also presented at Create competency part, and in this section, only different pieces of Act competency will be examined in the light of her explanation.

Umay used WhatsApp to contact and collaborate with her colleagues. In addition to this, she used e-mail to communicate and cooperate with governmental institutions, non-governmental institutions, and universities. She made the explanation as follows:

In my professional life, I use them to get in contact with my colleagues. Other than this, of course, I use media or media tools to provide cooperation with other institutions and organizations. I use them when I come across a problem. Alternatively, I use them to achieve information. I already get in touch with the university where I am doing a master's degree by using such things. So, yes, I use them.

Actually, I --an association, I guess, was it an association?- However, well, an international organization... I, in fact, contact with the WWF representative of Turkey there. I contacted them because they had been doing presentations about global warming by visiting schools. I guess, to tell the truth, it was the director to whom I sent an e-mail but s/he never replied. The person I talked to on the phone told me they would turn back to me, but they did not.

Umay elucidated what kinds of media and/ or media tools that she utilized during implementing activities targeting ESD in her classroom in the following:

I use posters, cartoons, videos caricatures, books, pictures...Before the training [PDT], I did not utilize posters like this. We have not interpreted the messages that the posters convey to us until this training... We also analyze and understand the messages of cartoons and videos...

She reported which criteria were crucial for her while choosing the media that she used in the activities focusing on ESD with this statement:

It was significant that children can understand it. The materials I use should have included understandable and clear visuals and been suitable for the level and age of the children. They should have contained visuals according to the behaviors I

wanted the children to gain, or according to the information I would give. It should have served its purpose.

Further, she explained which teaching strategies she carried out while utilizing media in ESD activities with these words:

... I promote children to examine and comprehend the messages. For instance, I ask questions like who created this poster/ caricature? Which messages are given to us? If you designed this poster, how did you construct it? ... I mean, I ask questions to support their critically thinking and creativity...Before the training [PDT], I do not ask these kinds of questions...

Umay's level of act competency was advanced since she could use various types of media and/ or media tools (such as posters, cartoons, videos caricatures, books, and pictures) during her ESD practices. She encouraged children to analyze and evaluate the messages of different media types by asking specific questions about each medium. Also, she fostered children to create their own media by asking "probing for understanding" and "promoting reasoning" questions. Further, she gave importance to children's age as well as developmental level, and appropriateness for activity aims while selecting media. What's more, she made contact with WWF to get support related to global warming.

All in all, after PDT, Umay was aware of ESD and its pillars (environment, economic, social & cultural) and the issues (i.e., energy conservation, water conservation, respect to each other, human rights...etc.) related to each pillar. Moreover, Umay's CML level changed from med-bas (between medium and basic) to advanced regarding CML competencies (access, analyze & evaluate, create, reflect and act). She also used distinct media types and teaching strategies and/or methods to enhance children's knowledge about and awareness of ESD and CML (access, analyze & understand and create) throughout one-month global warming project.

#### **4.3.4.2 Domain of practice: Teacher Umay**

Umay's domain of practice is investigated through document analysis of her monthly and daily plans, stimulated recall interviews (SRIs) and the field notes of conducted activities targeting ESD and CML after PDT.

By document analysis as presented in Table 4.21, Umay constructed and conducted much more activities focusing on ESD after PDT when it was compared with the ones before PDT. Even though she generally targeted environmental aspect

(respect to nature) of ESD via activities before PDT, she aimed all aspects of ESD (environment, social & cultural and economic) and related 7Rs (such as redistribute, rethink, reduce). While prior to PDT, Umay did not plan and applied any activities related to CML, after PDT, she started to design and implemented ESD activities through CML. As seen in Table 4.21 via the rightmost column, there is a significant and visible increase in the number of ESD through CML activities.



Table 4.21

*Number of ESD and CML in Daily and Monthly Plans After PDT*

<b>Months</b>	<b>Total obj.</b>	<b>Obj. 7Rs</b>	<b>Obj. CML</b>	<b>Total Act.</b>	<b>ESD in Act.</b>	<b>Media in Act.</b>	<b>CML in Act.</b>	<b>ESD &amp;Media in Act</b>	<b>ESD&amp; CML in Act.</b>
<b>October</b>	49	3-respect	3	52	1-respect	8	2	2-reflect	-
<b>November</b>	43	2-respect	3	56	-	3	-	1- redistribute 1-reflect	1-reflect
<b>December</b>	47	1-respect 1-reflect	3	36	7 reduce 3 respect 7 reuse 5 recycle 3 rethink 2 redistribute	-	-	-	23 –ML-access-analyze & evaluate and create 5 reduce 8 respect 6 reuse 3 recycle 1 rethink
<b>January</b>	34	1-respect	3	40	2-respect 1-reduce	3	1	-	-

The examination of daily and monthly plans regarding ESD and CML revealed that Umay mostly focused on the majority of 7Rs (reduce, respect, reuse, recycle and rethink) and three components of ESD (environment, social & cultural and economic) through CML during in December. What's more, she implemented activities targeting different aspects of 7Rs (i.e., redistribute) throughout global warming project conducted in December. However, she could not select specific objectives for her activities because there are no objectives covering social & cultural and economic aspects of ESD and CML. When the activities were investigated in terms of CML issues, it was perceived that after PDT, Umay utilized media and CML strategies to support children's access, analyze & understand and create competencies. While conducting one-month project, she used videos, drawings, pictures, posters, cartoons...etc. as media. In conclusion, the frequency of ESD activities through CML throughout a semester increased. By this way, she could foster development of children's knowledge about and awareness of and attitude as well as behavior toward global warming, and promote their CML (access, analyze & evaluate and create competencies).

In the following section, conducted and observed activities from a one-month global warming project would be examined in detail.

This project was constructed and conducted by Teacher Umay in the light of the researcher's feedback. It included 33 activities targeting ESD and an evaluation part (containing different activities). It was completed with an exhibition. 14 of 33 activities focused on ESD through CML. For the present study, four of them was observed. Based on the analyses of activity plans, SRIs, and field notes, they were categorized from weak to strong approach regarding sustainability practice and basic to advanced regarding CML. The related findings were presented in Table 4.22. More elucidative information covering activity plans, SRIs and field notes of the first and last activities (A<sub>1</sub> and A<sub>4</sub>) will be given to examining the impact of the project on Umay's professional growth and children's awareness of global warming and CML.

Table 4.22

*Analyses of the Places of ESD and CML in Activities after PDT*

CML	ESD		
	Weak	Medium	strong
Basic	-	-	-
Medium	-	-	-
Advanced	-	-	*A <sub>1</sub> , A <sub>2</sub> , A <sub>3</sub> ,A <sub>4</sub>

\*A<sub>1</sub>: Introduction to Global Warming, A<sub>2</sub>: My Global Warming Poster, A<sub>3</sub>: Recycling, A<sub>4</sub>: Save Water

The name of this project was Doğamda Kurtarmak Var [There is Protection at My Nature]. Its slogan was Geleceğim İçin Tasarruflu, Tekrar ve Tasarlayarak Kullanıyorum (3T Kuralı) [I reduce, reuse and redesign the things for my future (3R Rule)]. Its aims were (a) to make children be aware of “global warming”, (b) to support children understanding the causes of global warming, (c) to provide children what they can do to prevent global warming and internalize their solutions, (d) to provide that children are responsible for protecting the Earth and the living things on it and (e) to promote children to gain behavior related to reducing, reusing and using waste materials for different aims. Umay determined children’s knowledge about and awareness of global warming by preparing concept maps with children before and after the project. Throughout this project, Umay covered many issues (i.e., water and electric consumption, recycling, reusing, preparing food for animals, sharing the sources with other people via non-governmental charity institution, respect to the environment and living things ...etc.) targeting ESD and its all components via global warming.

In the following section, A<sub>1</sub> and A<sub>4</sub> activities will be explained more detailed.

A<sub>1</sub> activity was a Turkish language and art integrated activity. The objectives and indicators of the activity were mainly (a) to give attention to the object, situation, and event, (b) to focus on the things that are paid attention, (c) to make detailed explanation the situation that draws child’s attention, (d) to state his/her prediction, (e)

to express him/herself in front of the group self-confidently and (f) to analyze and understand the visual materials. The activity started with different posters' analyses. In this part, children sat as a semi-circle and Umay took their attention to the poster by asking "according to you, why do I hang these papers on this wall? After children told their views, she made an explanation about the poster and informed children that these were called as "poster". After the brief introduction, children and teacher understood and analyzed the posters regarding their messages, visuals, components, and designers.

After the analyzing part, Umay asked children "If you want to design a poster related to Earth, how can you design it?" Children created their own posters. When each child completed his/her own poster, Umay asked questions about the poster such as "what did you draw at your poster? What did you want to tell us?" and took notes what children stated at the back of the posters. A child's explanation was like this:

This tree's [showing his/her drawing] leaves were defoliated since the Earth is too dirty. At this side [showing his/her drawing], the tree's leaves were not defoliated because enough amount of water was given to it.

After note-taking part, teacher hanged all children's posters on the board. Teacher and children reanalyzed the posters. During this process, firstly Umay read what children tell about their picture, after that if children desire, they make an addition to their explanations.

At the last part of the activity, the teacher made a connection to global warming. Umay and children discussed global warming and formed a concept map related to it. For instance, Ekin stated that "if people spread the garbage, Earth becomes dirty, vegetables cannot be grown and we cannot buy them from the market and cannot make a meal with them. Earth can die, and if there was no water [in the Earth], plants could not grow." Su reported that "we may be without water and starved". Arda explained that "if Earth becomes dirty, it will die and space also cannot live." The activity was completed with the preparation of the global warming concept map.

In this activity, Umay utilized two media types (pictures and posters) and A4 papers and crayons as materials and resources. The assessment part of the activity was made with a concept map.

Based on the field notes (researcher notes), Umay implemented activity related to global warming causes and consequences. Although she intended to target mostly environment aspect of ESD, she focused on two components of ESD-environment (air pollution, water pollution, water consumption) and social & cultural aspects (gender roles) throughout the activity. In other words, the scope of activity was shaped by children's needs.

Throughout the analyzing and understanding part of the posters on global warming causes and consequences, there was a dialogue between teacher and children as follows:

T: What do you see on the 4<sup>th</sup> poster?  
C<sub>1</sub>: Earth!  
T: How is the Earth seen?  
C<sub>2</sub>: Cars, chimneys...  
C<sub>3</sub>: Dirty, it is crying.  
T: Why is Earth crying?  
C<sub>4</sub>: It is dirty!  
T: Why does the Earth become dirty?  
...  
C<sub>5</sub>: Smoke  
C<sub>2</sub>: Tyre.  
T: What does Earth want to say to us?  
C<sub>6</sub>: I am dirty.  
C<sub>7</sub>: Clean me!  
T: Who design these posters?  
C<sub>8</sub>: You  
C<sub>9</sub>: Parliament  
C<sub>10</sub>: Photocopier  
C<sub>11</sub>: Printer  
T: What are used while preparing a poster?  
C<sub>8</sub>: Pictures.  
T: What kinds of the picture?  
C<sub>12</sub>: Earth.  
C<sub>11</sub>: Flowers.  
...

This dialogue indicated that children could analyze and comprehend the media messages at the posters in the light of teacher's questions.

Moreover, during creating their own posters, from time to time, Umay talked with children what they plan/ want to draw as a poster one by one and promoted them to think about their posters' messages. The analysis of children's message written by teacher revealed that children could personalize Earth as a human since some children drew Earth as boy, happy, unhappy, having hair at their posters. Additionally, some

kids divided their posters into two parts. While one part showed a positive situation, the other side demonstrated a negative one. It was the reflection of the posters that they analyzed with teacher's questions. Umay also gave the opportunity to each child to explain his/ her poster in front of their peers. This supported children's CML regarding understanding and analyze competency.

The activity was finished with a discussion about what global warming is and its consequences. Based on the discussion children and teacher shaped a concept map. The concept map had been hanged on the wall throughout the project. This also gives children a clue "now we are carrying out the project related to global warming" visually. While forming this map, some children's views were amazing since they can make a connection with a decrease in the amount of water and decrease in animals, plants, products (such as vegetables) and meals. While creating a concept map, kids affected each other, and their views also changed. This is also an example of peer learning. The teacher also gave positive reinforcement.

Moreover, while talking about preparing a meal, children and teacher focused on gender roles (i.e., whether fathers can cook or not). This was a fruitful discussion, and all the children agreed that fathers could also cook like mothers. All of them indicated that ESD- environment and social & cultural, and CML could be utilized in EC learning environments if we could ask questions to promote children to think critically and use resources effectively.

What's more, the teacher asked four distinct types of questions to support children's analyzing, understanding and creating skills. These were "instigating discovery (ID)" (What do you see on this poster?), "eliciting predictions (EP)" (What would happen when the Earth becomes warmer?), "promoting reasoning (PR)" (What does it mean with this picture? Why does Earth get warmer?) and "probing for understanding (PU)" (Who design these posters?).

Teacher selected five posters and a picture which were understood easily by children. While she was choosing the posters, she also used some criteria and made detailed explanation during SRIs. (See Resource Use heading) Further, Umay also prepared brochures related to the project to give information to the families. In this brochure, she also declared ten things to overcome global warming. It was seen some reflection of this brochure on children's posters. She also created a poster to annunciate

the project to the whole school. All of them showed her access, understand and analyze and create competencies of CML.

All in all, during this activity, Umay promoted children's active involvement through hands-on and minds-on learning. Moreover, she utilized a robust approach to sustainability practice (environment, and social & cultural [respect, reduce & reflect] and advanced CML level (regarding access, analyze & understand and create competencies).

On the other hand, A<sub>4</sub> activity explicitly focusing water conservation was a Turkish language and art integrated activity. The major objectives and indicators of the activity were (a) to integrate all the learned things (such as conservation and recycling concepts and connections among the issues) throughout the project, (b) to understand the relationship between global warming and water consumption, (c) to express him/herself in front of a group (d) to understand and explain the visual materials and (e) to create original products (poster) based on their experiences during the project.

The activity began with six posters' analysis. These posters were related to water conservation, water pollution, environmental pollution, deforestation, drought, water consumption and the water cycle. Before examining the posters, Umay gave some time to children in order to determine which one(s) catch their attention mostly. After that, she promoted each child to share his/her thoughts. Children found three posters as the most attractive ones. The first one showed a polar bear tapping broken pieces of the ice. The second one had two sides. While one side demonstrated a healthy environment with a green tree, fertile soil and clean water, the other side showed an unhealthy environment, dry tree, arid land, and dirty water. The last one indicated that a tap tried to keep a water drop.

During the poster analysis process, Umay made a connection to the global warming by asking "how do we help to the polar bear to protect its home?" Children and teacher talked about what they had been done up to now via the project. Each child expressed their thoughts about the posters. Children analyzed and comprehended their messages with the help of Umay questions such as "What do you see in this photo?", "What happened at this poster?", "Why does the tap hold the drop?" etc.

Moreover, Umay made an explanation about the water cycle by showing each step with the help of the poster. At the end of the poster examination, the teacher asked “if you design a poster related to “water”, how do you create your poster?” to promote children to make their own poster. Umay wanted each child to explain his/her poster after finishing it. She also took notes about their drawing.

Umay read the book focusing the place of water in our daily lives and the environment, the importance and role of water for the environment, water conservation and alternative energy sources via using water. In this book, the scope was told via asking questions such as “Have not you seen the small ponds occurring after rain?” The teacher also asked the same questions to the kids.

After book reading, children constructed their own water cans by using their water bottles. They also decorated their water cans with crayons, markers, and stickers. A4 activity was completed with this art activity.

In this activity, Umay utilized two distinct media types (posters and book), A4 papers, waste water bottles, markers, crayons and stickers as materials and resources. She assessed observing children during the art activities and taking notes about their explanations related to their own posters.

What’s more, in the light of the field notes (researcher notes), in A4 activity, Umay targeted ESD environment (reduce [water consumption] and reuse [constructing water cans]), economic (recycle [supporting recycling via putting waste into distinct bins based on their primary material]) and social & cultural aspects (respect [fostering to protect polar bears’ habitats, preparing food and shelter for animals]) to promote children to be aware of global warming and develop positive attitude and behavior towards what can be done to overcome global warming. Using this activity, she also supported the enhancement of their CML (access, analyze & evaluate and create competencies).

At first, children cannot understand the poster that shows the polar bear tapping the ice. They thought that polar bear collected the papers. However, after Umay’s questions about the habitat of the polar bear they tried to guess what happened at that poster. The dialogue between teacher and children was as follows:



T: Which one(s) draw your attention most?  
 C: Bear and drop.  
 T: Why do they take your attention?  
 C: Because the bear is collecting the papers.  
 T: What is a bear doing here?  
 C: It is collecting the papers.  
 T: What it is?  
 C: Polar bear?  
 T: Where does the polar bear live?  
 C: On the ice!  
 T: What is made up of the ice?  
 C: Water!  
 T: What forms when the weather becomes cold?  
 C: Snow!  
 C: Andddd ice.  
 T: Look! The ice on which polar bear is broken. What happened when the ice is broken? What is there at the bottom of the ice?  
 C: Water.  
 C: It drops into the water.  
 ...

During analyzing the process, teacher also made connection to the previous ESD activities in the project such as to keep clean the environment, to put waste into different bins according to their primary material, feed the animals (i.e. birds) with food that we prepared and to construct shelter for animals (e.g. cats) at the school yard. It is very beneficial for kids to see the whole picture.

Moreover, while talking about the posters, the teacher asked children what can be done for helping polar bear to protect its habitat. Children stated that “we should bring more tape”. After the teacher paid their attention to previous activities, one child expressed that “we should give a meal to the animals otherwise they could be hungry, we should look after the animals”.

Further, while analyzing the poster about the fertile & arid land, children can establish the relationship between the experiment and the poster. By this way, they reexamined the results of the experiment. In this experiment, they made observation the changes in fertile and infertile soil. This also shows that children internalize the project and each specific issues related to the project.

It was seen the reflection of the analyzed posters and experiment on children’s own poster and messages related to water/water conservation. For instance, some children divided their papers into two parts. While one part showed fertile land, the other demonstrated arid land. Some children emphasized clean and dirty water

concepts. One child highlighted wisely water usage, and he stated that all things that had to be done were written in a book related water. It can be interpreted that Umay selected attractive posters and effectively promoted children to analyze and understand the messages of them.

Although one child's poster was not directly related to water/ water consumption, he designed his poster to cover the issues related to global warming project. This also shows his CML regarding creating competency. The connection between sun and book is unbelievable. He can explain the connection between sun-tree-paper and book. His fantastic explanation of the poster was given in the following.

...

C: Sun warms mountains, and the books are formed.

T: How are the books formed?

C: The books are made up of papers. Moreover, the papers are made up of the trees. The trees are in the mountains.

When the process related to analyzing the posters and creating their own posters was considered it can be stated that teacher fostered children's CML concerning access, analyze & evaluate and create competencies.

Before reading the book, Umay gave information about the book such as book title, the author's and illustrator's name, and the publishing company. While book reading, teacher preferred to make interactive book reading and she also stated that she selected to read this book because it does not include water consumption directly but it asks some questions and draw kids' attention to where the water is in our lives (sea, river, lake) and at which places we use water in our daily lives such as making a shower, drinking water... etc. (For detailed information see "resource use" heading) Teacher adapted while book is reading such as she did not read "tutumlu" [thrifty] instead of this word she stated that we should use water that we need.

Also, the teacher asked five distinct types of questions. These were "instigating discovery (ID)" (What is there under the ice?), "probing for understanding (PU)" (Why does this poster take your attention?, What does this poster mean? ), "promoting reasoning (PR)" (Why does the tap hold the drop?), "eliciting predictions (EC)" (What happened are there?) and "serving as a catalyst (SC)" (How do we save water?, How can we help polar bear?).

Umay used some criteria while choosing media and explained these in detail (See Resource Use). This also indicated that teacher had advanced CML level (regarding access, analyze & understand and create competencies).

All in all, Umay constructed and applied integrated activity to promote children's active involvement, and hands-on and minds-on learning. She used a robust approach to sustainability practice (environment, economic and social & cultural) and advanced CML level (access, analyze & understand and create competencies).

#### **4.3.4.3 Domain of consequences: Umay's salient outcomes**

In this section, detailed explanation A<sub>1</sub> and A<sub>4</sub> activities and related SRIs will be made under the headings of "Selection of Topic", "Teaching Strategies", "Resource Use" and "Assessment Strategies".

##### **4.3.4.3.1 Selection of topic**

Although all activities were related to global warming, the observed activities focused on specific issues. The examination of the activities' issues regarding 7Rs and the components of ESD indicated that A<sub>1</sub> activity (Introduction to Global Warming) targeted ESD regarding respect, reduce and reflect, and environment, and social & cultural components. Moreover, A<sub>2</sub> activity (My Global Warming Poster) aimed respect to nature, recycle, reduce, reuse of 7Rs and environment, social & cultural and economic aspects of ESD. A<sub>3</sub> activity (Recycling) focused not only recycling but also reduce, reuse and redistribute and environmental and economic aspects of ESD. Lastly, A<sub>4</sub> activity (Save Water) aspired to respect to nature, recycle, reuse, and reduce of 7Rs and ESD environment, economic and social & cultural aspects. In conclusion, all the activities used strong sustainable approach by combining at least two aspects of ESD directly. (See Table 4.22)

##### **4.3.4.3.2 Teaching strategies**

Umay planned and implemented child-centered activities by using various teaching strategies such as brainstorming, questioning, lecturing, book reading, a group working, observation, mini field trip, show and tell, and analyzing and evaluating media messages to support children's active involvement in the learning process. She mostly utilized questioning and brainstorming particularly during

discussing on the issues and media (videos, posters, and books) messages related to global warming to promote children to develop critical thinking skills and holistic view about global warming. To put it another way, Umay was aware of CML and utilized its teaching strategies in her activities effectively. Except for these teaching strategies, in A<sub>1</sub> and A<sub>4</sub> activities, learning by doing, and interactive book reading were carried out.

Additionally, during SRIs, Umay elucidated which teaching methods/strategies that she used, the reason(s) of choosing these and the alternatives of them. Her statement will be presented respectively in the subsequent part.

For instance, for an A<sub>1</sub> activity, she reported that *we talked about global warming and used questioning, discussion, brainstorming, reading and analyzing visual materials as teaching methods/ strategies...*

Moreover, Umay made an explanation why she preferred to use these teaching methods/strategies in the following:

Directing the children to think about it... Well, I wanted them to create something original by themselves, you know. I wanted them to learn it by doing and experiencing it. Also, I mean, first we observed some posters, and then, we did our own posters. At that point, I was curious about how they would put together and present what was talked about on a paper.

... I asked them an overall question like "What do you think the reason can be why I posted these papers here?" before looking through the posters. And then, we analyzed all the posters one by one, step by step. You see, I wanted them to not only reach a general idea but also to get to the details. I wanted to look through the posters by dividing them into smaller parts. What does this poster mean to tell us? What does it mean that a hand holds the World? Who do you think the person who prepared these posters can be? The reason why I asked all these questions is that I wanted them to guess who might have prepared the posters. We had a training about media literacy. There we gained a knowledge about how to do this. So, I used it to, I mean, raise some awareness in children about the fact that the posters had been prepared by someone to, you know, tell us something.

Further, Umay expressed the alternative teaching methods for this activity with these words:

To draw children's attention and we watch animation. In the beginning, we would make them watch an animation. Or, we could organize a trip related to this. Where could it be? The weather is cold now though, but if it were in another season... If it was warm, we could go to somewhere like a park, and talk about this starting from that point of view. We would still put an emphasis on visual things like a field trip or animation. And also, because of the age group, I would tend to use visual things in addition to things they could do and experience more.

The analysis of her expressions indicated that she used teaching methods/strategies to implement hands-on and minds-on activities and support children creating their own products and learning by doing. She also promoted children's analyzing and synthesizing skills. She used some questions to foster children's CML. She preferred using analyzing and understanding animation and field trip as alternative teaching methods/ strategies to encourage their active involvement in the activity. All of them revealed that the teacher paid attention to enhance children's awareness of global warming and CML and their creativity regarding giving their messages via drawing. Further, after PDT, Umay changed her perspective and adapted some questions especially targeting ESD messages through CML to her activity.

On the other hand, for A<sub>4</sub> activity Umay explained the teaching methods and/or strategies that she utilized in her activities with this statement. *We used questioning, discussion, brainstorming, reading and analyzing visual materials and interactive book reading. I mean, while book reading my aim is not to give information directly*

She elucidated the reason(s) of selecting these teaching methods/strategies in the following:

I used the questioning method because I wanted them to give examples from their own experiences, from what they understood. I wanted to include them into the process by making them more active in it. That's why I used it.

For example, I showed them the polar bear picture, and they gave answers. Then, I asked questions about why and how ice is formed. Here, I aimed to help the children to be able to go deeper and think more about the picture they were looking at, and make sense of it. I would say, you know, I wanted them to look at it not like an unobservant person but as a mindfull person having an eye out. For them to have a more criticising awareness, I asked them questions like "It is trying to save its own house. Then, how can we help it? What are we doing?" Especially, you know, "what are we doing, are we helping?" I wanted to learn if they thought what we were doing at that time could be helpful to the polar bear or not. I said "the things we were doing" because, you know, we can think about things like "The Polar bear lives on the poles, so what can we do to help it?". I mean, I asked them this to learn to what degree they thought we were helping it. The reason why I asked questions like "What is trying to be told on these posters? Which pictures are used on them?" is to make reading the visuals easier for them.

Further, Umay epitomized alternative teaching methods/strategies that she can use with these words:

We could turn this into a game. Let me put it this way; a Pole Family. I am explaining this over the poster right now. So, there might be some cracks, and a couple of children could act as sticky tape. We could picture that moment. I mean, each poster could be portrayed by a few children. One would be a tap, another one

a water drop. One could be a dry branch or arid land. It could be done. You know, we could do something like this, something different. I do not know, what else we could do again for them to be able to come up with a genuine thing. I would choose something like a different method by which they could internalize the process better.

When Umay's explanations were examined, it was seen that she provided opportunities for children to involve in the learning process actively and internalize the process. Mostly, she used questioning, discussion and brainstorming to promote children's critical thinking skills and awareness of connection(s) among the issues related to global warming. She emphasized that how individuals can be a part of the solution to decrease the effect of global warming. In other words, she supported children to see the whole picture of global warming via implementing ESD through CML activity. She would rather use creative drama as an alternative teaching method to foster children reflect their feelings and thoughts about the issues on the posters. In conclusion, Umay is aware of which teaching strategies can be used effectively to encourage children to think critically and to comprehend the relationship among the topics while conducting activities on ESD through CML.

#### **4.3.4.3.3 Resource use**

For A<sub>1</sub> activity, Umay utilized posters, picture, A<sub>4</sub> papers and crayons as media and material. She enucleated the reason for using these materials with these words:

I used posters. I found them on Google, from, you know, the results when you write "Poster about the global warming" or "Poster about the world pollution" and searched. I used the posters. The reason why I used these posters is, I mean, I thought it was quite simple. I paid attention to them is appropriate for the age of the children. Well, I preferred the posters which could attract the attention of the children and which the children could understand without any difficulty. Apart from this, I mean, posters which are not only about the health but thirst were also possible. Indeed, I could have hung other posters, too. It was not only pollution or air pollution. You see, I picked a few of them. There is water, world pollution, air pollution, water pollution, thirst, and trees. It is not just a topic, I mean, I wanted to clarify the fact a little more that there are many other things caused by global warming.

... The last time we had a chat, you know in the one we did some brainstorming about global warming. There was actually a poster there, too. I cut a picture and stuck it to there. Again, it was for getting the attention of the children. During this project, we will repeat it again. That picture would attract their attention. Therefore, I put that picture on. Otherwise, I could also draw an arrow as "What is global warming?", too, but I wanted it to be kind of proper.

The examination of Umay's expressions revealed that she used two different media types while applying activity related to global warming (ESD-environment [air

pollution, water pollution, water consumption]) through CML. When she was selecting the posters and picture, she gave importance to their appropriateness for children's developmental level and their attractiveness. She also paid attention that children can easily understand and interpret their messages about global warming. She used a concept map as a teaching and assessment tool to make children focus on global warming, project topic, and be aware of they are conducting the project on this topic. While designing cardboard for concept map, Umay decided to use a picture representing global warming and chose it via Google. All of them indicated that there was an agenda in Umay's mind and based on this agenda she selected and used media. Also, she became aware of how to promote children's awareness of the connectivity of ESD issues and their CMLs.

For A4 activity, Umay used posters, book, A4 papers, crayons and waste materials as media and material. She enunciated why she preferred to utilize these media in the following:

There were posters and a book called "Water is life". There were photocopying papers for the children to prepare posters, paint, and water bottles. I paid attention to simplicity. I mean, they should have been simple enough for the children to understand them more quickly. I did not look for complicated things regarding visuality. I especially looked at the plain ones.

Moreover, also, when there was a drawing, I checked if it was appropriate for the child's age. For instance, the water cycle seemed a little bit too complicated, but as the drawings were cute, I chose it because it might appeal to that age group. However, in general, I chose simpler and more understandable posters.

Moreover, the reason why I used the book was that I found it appropriate to that age group and level. Also, it is because there are questions about it. Instead of giving information, it does not say only "Water is life. Why is it life?". It shows using visuals where the water is, and what we can do with it. That is why I chose it. We created our water cans by reusing waste bottles. We would use them to water our seeds that we put into soil three days ago.

In the light of Umay's words, she utilized distinct media types and chose them in line with some criteria e.g. simplicity and clarity of visuals and drawings, and appropriateness for children's age and developmental level. Moreover, she would rather use the book, "Su Yaşamdır [Water is Life]" because it gave the opportunity to Umay for interactive book reading with its questions and attractive and easily understandable drawings. The book also promoted children to an aware place of the water in our daily lives via giving examples. In other words, the aim of the book was not only to give information to children about water but also to

understand the role and importance of the water in our everyday life. By reusing water bottles as water cans, Umay desire to take children's attention that they can design useful and durable new materials having new usage aims. She gave children responsibility for looking after the seeds. To sum up, Umay was aware that how to enhance children's CML (access, analyze & evaluate and create) and awareness of ESD and its components (environment and social & cultural) with integrated activities.

#### **4.3.4.3.4 Assessment strategies**

For A<sub>1</sub> activity, Umay preferred to use posters which were created by children to make an assessment, and she expressed her views with this statement:

We formed a concept map on global warming. First, we talked about global warming. Then, the children told their own ideas. Here, the aim was both to make an activity assessment and to help them focus more on what we talked about.

Moreover, in the process, during our project, we will already repeat, you know, what they said from there again. Yet, at least for now, from what they said to me while creating a mind map, it looks like there already is awareness about global warming. Moreover, also, it is a reflection of the posters we observed because, in the air pollution poster, there were earth pollution, water pollution, and air pollution. For example, Özgür said s/he cannot buy anything. S/he said people could not do their job; they cannot do the jobs they want to do. I asked him/her to give an example, and s/he said: "My father wants to go to work but he cannot, my mom wants to cook but she cannot buy anything." In addition to that, Ege said if people throw their trash here and there, no water is left on earth, the world dies, no vegetables grow, so we cannot buy them from the market, and as a result, we cannot cook. Moreover, Saygın said if the world is dirty, the world gets dry, trees and flowers get thirsty, and seas become full of trash...

The examination Umay's expressions indicated that she mostly could reach her aims related to ESD and CML although there are no specific objectives and indicators targeting global warming, and analyzing, understanding and creating media messages in Turkish National Curriculum. She promoted children to express themselves and to share their views with their peers. Based on researcher notes, children created their own posters after analyzing and understanding posters regarding ESD messages (such as water and air pollution). This is also an assessment strategy since each child explained what they drew not only to Umay but also their peers. Umay took notes what children stated about their posters. In addition to this, she hanged all the posters to the board in order for all children can examine their peers' poster, as well. The analysis of children's posters revealed that most of the children reflect the posters' messages that



they analyzed reflected their own created posters. All of them demonstrated that Umay could support children's ESD awareness and CML regarding create competency.

What's more in A<sub>4</sub> activity, Umay made an assessment with children's posters focusing on water conservation. She elucidated why she would rather use posters as an assessment tool as follows:

First, we asked the children what kind of a poster they would prepare if they were (asked) to, and then, we wanted them to prepare a poster for them to show what they would create about the things they learned, I mean, how can I say? Well, you know, for them to internalize the situation, I actually choose the simplest ones when I choose it myself. Yet, if you have a look, you will see the children draw so complicated things on the posters while preparing them. Like, they draw something everywhere, they are very confusing, and they have a story. They explain it with a serious manner like this goes to somewhere, that does something, etc. etc. Here, their aim is to understand the issue; and there, their aim is to express the issue. I wanted them to explain their pictures by asking questions in order to lead them to express themselves because children express themselves and their emotions not only by talking but also through non-social and non-verbal ways of expression. You know, normally, we try to write like that, or ask even if we do not write. I actually wrote it here because we would repeat it, you know. Sometimes, children can forget it, or add to it. That is why I wrote it. The children gave right answers when I asked them questions. For example, Kerem said "I am holding the pipes to prevent the water running, and trying to turn off the faucet knob. He said that there was a book about water, and there was everything in it, which was rather interesting. He said there was a book telling him what he should do. He said fish were dead in the water. For instance, we did not talk about the fish, but he said it directly...

When Umay's explanations were examined, it was perceived that she would rather utilize children's posters as an assessment tool to encourage children to internalize the learning process and support their creativity. Umay wanted them to explain their posters in order to foster children to express themselves via telling their own messages and thoughts. The teacher shared her observation about children's drawings. For instance, she stated that even though she gave importance to select clear and easily understandable posters, children preferred to draw more complex ones including complicated messages. Some of them drew things that were not talked about during the activity. Based on the researcher's note, children reflected the things on the poster that they examined such as dividing posters into two parts as fertile & infertile land. All of them revealed that Umay reached the objectives and indicators targeting ESD and CML regarding access, analyze & evaluate and create competencies.

For researcher, this project was completed with children's slogans for their group poster work and second concept map. Therefore, in this part slogans and some

of the children's opinions on how to protect the Earth will be shared. Slogans were: "(a) Do not pollute the environment. Otherwise the microbes will make us ill, (b) If you do not put the litter to the garbage bin, the animals die, (c) Do not throw litter to the sea, fish become extinct. If you pollute, it becomes dirty, and (d) Go to a mechanic to remove your car's exhaust. To give a promise not to pollute the Earth." Some of the children's views on the second concept map are: "(a) if we throw litter to the ground, the sun will become hot, and the Earth's head will sweat, (b) If we cut the trees, we cannot breathe. We should water the trees, (c) we should not throw dirty things to the ground and water because the fish will die, (d) The cars' exhaust should not pollute the Earth. The animals cannot live in a dirty Earth. We should not throw litter to the ground. The trees should not dry. The Earth should not be a worry, (e) we should not waste the papers because the tree is not cut, and (f) We should use water wisely. We should use electricity wisely." Overall, the analysis of children's expressions demonstrated that at the end of the one-month project, children were aware of global warming, its reasons, consequences and how to overcome this issue. Moreover, children's CML were supported effectively with different activities.

#### **4.3.5 Umay's Overall Professional Growth**

In this section, Umay's CML competencies, as well as level and ESD awareness, will be investigated to describe her overall growth. Umay's growth networks will be portrayed in Figure 4.4.

##### **4.3.5.1 Professional growth concerning CML issues**

The comparison of Umay's CML levels before and after PDT revealed that her CML level change basic-medium to advanced in terms of access, analyze & evaluate, create, reflect and act competencies because before PDT she utilized media to draw children's attention to the activity and envisage the learning process, but she did not use any criteria while choosing them. On the other hand, after PDT, she gave importance to appropriateness for children's developmental as well as age level, the simplicity and comprehensibility of given messages while selecting distinct media types. She made a detailed explanation related to these criteria. Moreover, she prepared a poster to publicize the project topic, global warming, at the preschool and designed a brochure for parents to give information about the project. She also made a connection with non-governmental organization, e.g., World Wide Fund for Nature

(WWF) to want them to give a seminar related to global warming to the children. Also, she created a concept map cardboard to determine children's thoughts about global warming. She supported children's critical thinking via asking different types of questions. She became aware of which media types could be used, how children's CML level could be encouraged, how ESD and CML could be integrated, which criteria were crucial while conducting ESD activities via CML in early childhood learning environments.

#### **4.3.5.2 Professional growth concerning ESD**

Before PDT, Umay carried out the prepared daily plans with little modifications, however, after PDT she constructed and conducted a one-month project on global warming with the support of the researcher's feedback. Prior to PDT, although she had heard the concept of ESD, she thought that ESD focused on nature and recycling. However, during SRIs and last interview, she reported that she was not knowledgeable and aware of global warming before PDT. Besides, she became aware of ESD covered many issues related to the environment, economic and social & cultural pillars. The dialogue between researcher and Umay revealed that she comprehended the complexity of global warming topic and its connections with other issues such as water and electricity conservation, recycle, reuse, respect to nature, plants and animal, sharing resources with other living beings...etc. For designing a project about global warming, she also made research to obtain detailed knowledge about global warming and especially to find appropriate media types for children. She also emphasizes that ESD should be started from early years. Moreover, she highlighted that children are our future citizens and they will establish their own family and grow up their children. Therefore, if they are raised as environmentally friendly individuals, they can also bring up environmentally responsible people like a snowball effect.

#### 4.3.5.2.1 Growth concerning selection of topics

Table 4.23

*Analysis of Observed Activities in terms of Selection of Topics before and after PDT*

<b>Selection of Topic-ESD</b>	<b>Prior to PDT</b>	<b>After PDT</b>
Environment	4	4
Social & cultural	-	3
Economic	-	3

When four conducted and observed activities targeting ESD through CML prior to and after PDT were examined with respect to selection of topic, it was perceived that after PDT there was a crucial change and growth in Umay's activities' scope. Before PDT, the activities just focused on ESD environment aspect. On the other hand, after PDT activities covered at least two pillars of ESD. In other words, while selecting a project, topic, global warming, she paid attention to this criterion.

#### 4.3.5.2.2 Growth concerning teaching strategies

Table 4.24

*Analysis of Observed Activities in terms of Teaching Strategies before and after PDT*

<b>Teaching Strategies</b>	<b>Prior to PDT</b>	<b>After PDT</b>
brainstorming, questioning	4	4
discussion	1	4
analyzing and evaluating, interpreting various media types	-	4
Group work	-	1
Field trip	1	1
interactive book reading	-	2
observation	1	2

The comparison of four applied and observed activities prior to and after PDT regarding teaching strategies revealed that there was a growth in using different teaching strategies such as group work, analyzing and understanding media messages, and interactive book reading while conducting ESD activities through CML to support children’s critical thinking and active involvement.

#### 4.3.5.2.3 Growth concerning resource use

Table 4.25

*Analysis of Observed Activities in terms of Resource Use before and after PDT*

<b>Resource Use</b>	<b>Prior to PDT</b>	<b>After PDT</b>
pictures	1	3
photographs	2	-
animation	0	1
posters	-	3
book	-	2
teacher’s drawings	1	-

When the implemented and observed ESD activities via CML before and after PDT were examined with respect to resource use, it was perceived that there was, a growth in using various media types from animation to book and posters. This growth also demonstrated that Umay gave opportunities for the children to analyze and understand various media types’ messages.

#### 4.3.5.2.4 Growth concerning assessment strategies

Table 4.26

*Analysis of Observed Activities in terms of Assessment Strategies before and after PDT*

<b>Assessment Strategies</b>	<b>Prior to PDT</b>	<b>After PDT</b>
Finding a slogan	-	1
Creating poster	-	3
Design own product	1	3
Making a concept map	-	2
Drawing	1	1
Observation	1	3

The analysis of all conducted and observed activities focusing ESD via CML before and after PDT revealed that there was a growth in using various assessment strategies to support children's CML regarding create competency and their critical thinking skills. Throughout the activities, children created their own posters not only by themselves but also by groups, and they designed their products such as water cans. Moreover, they determined a slogan for their posters. At the beginning and end of the project, Umay and children prepared a concept map. Based on the Umay's statement in the last interview, while at first children mostly focused on litter and keeping clean the environment, at last, they emphasized more specific issues such as water, electricity conservation, reusing and reducing paper usage, and the gases coming from exhausts...etc.

All in all, Umay's growth networks could be encapsulated like in Figure 4.4. As seen at the figure, the reflection of External Domain (PDT) on Umay's Domain Practice (planned a project on global warming) was perceived because while conducting activities she promoted children's critical thinking abilities via asking different types of questions. Further, the examination of post-interview and SRIs in the fall semester (2016-2017) revealed that PDT had a crucial effect on Umay's Personal Domain (awareness of ESD and CML level). For instance, she advocated that ESD

should start from early years and highlighted the role and importance of early childhood education targeting ESD to raise future environmentally friendly citizens. She also stated that she did not know of global warming (which is PDT's topic) before PDT. She thought that ESD covered only nature and recycling issues before PDT, however, after PDT, she made an elucidative explanation about ESD's three pillars. She was also aware of what kinds of questions should be asked to encourage children's understanding and analyzing skills.

Moreover, she made a connection with one of the important NGOs, WWF. Also, the change in Personal Domain had a direct influence on Domain Practice. For example, during the activities, she supported to create their own products (e.g., posters, water cans, puppets, materials constructed with papier-mâché ...etc.) as it was in PDT.

Moreover, activities in the project focused on distinct but connected issues (such as water conservation, recycle, reuse, reduce...etc.) related to global warming, and posters, books, animation, videos, and pictures were used as media types targeting these issues in order to foster children to be aware of multidimensionality of global warming. The reflection of Domain Practice on Personal Domain can be observed since Umay established a schema in her mind about how to carry out ESD activities via CML, what the children's reactions could be, how to support children's understanding multidimensionality of ESD and their active involvement in these kinds of activities, ESD awareness and CML levels (in terms of access, analyze & evaluate and create competencies).

Further, Domain of Consequences (assessment and making the observation the output of selection various topics, resource use and teaching strategies) were influenced directly by Personal Domain. To illustrate, during SRIs Umay stated that her project topic (global warming) was multi-dimensional since she planned and implemented activities focusing on different issues pertaining to global warming. To support children's create competency level, the poster was prepared, and slogans were determined by them as outputs of the activities. She assessed children's development in the light of her awareness of as well as experiences about ESD and CML.

Additionally, the reflection of Domain of Consequences to Personal Domain could be comprehended since, during the post-interview and SRIs, she shared the comparison of first concept map with the second. She stated the second one showed that she could

reach her aims via conducting the project. There was a change in not only her but also children's ESD awareness and CML after this study.

Moreover, an influence of Domain Consequences on Domain Practice was observed since Umay utilized various media types, teaching and assessment strategies based on outcomes of the activities focusing ESD via CML. For example, throughout SRIs Umay reported that she was not sure whether children can establish the connection between what the book told and what they did up to now for decreasing the effect of global warming. Therefore, she decided to plan for extra activity to support children about this connection. Lastly, the reflection of Domain Practice on Domain Consequences could be seen because, during SRIs, she shared her observation and made an explanation, although she and children did not talk about paper/ recycling paper how paper is formed in that day, a child drew his poster on trees based on the connection of sun-tree-paper. She interpreted that this was the reflection of productive and useful analyzing and understanding process related to media message focusing on global warming throughout the activities. In other words, Umay realized those teaching strategies that she used during activities enhanced children's ESD awareness and CML.



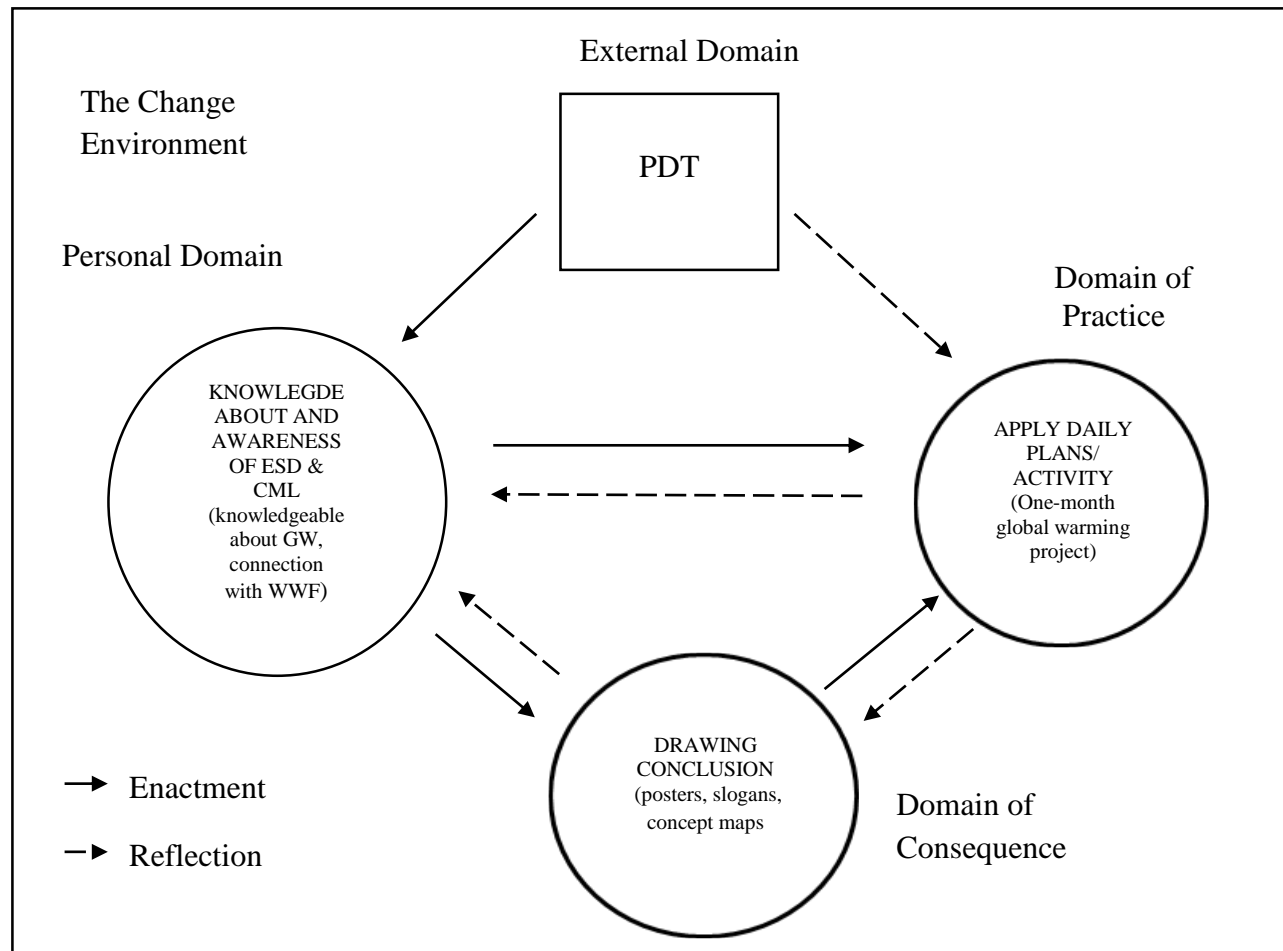


Figure 4.4 Umay's Growth Networks

The growth of Teacher Umay regarding personal domain, domain of practice and domain of consequences after PDT were summarized in Table 4.27.

Table 4.27

*The Summary of Teacher Umay's Growth*

<b>Teacher Umay</b>	<b>Before PDT</b>	<b>After PDT</b>
<b>Personal Domain</b>	No ESD awareness Basic to medium CML	ESD and its pillar awareness Advanced CML
<b>Domain of Practice</b>	Weak approach to sustainability Basic to medium CML	Strong approach to sustainability Advanced CML
<b>Domain of Consequences</b>	Environment aspect of ESD No CML teaching strategies Picture, photograph No assessment strategies to support children's create competency	All aspects of ESD CML Teaching Strategies New resource use (animation, poster, cartoon, teacher drawing) New assessment strategies to support children's create competency (design product, concept map)

## **4.4 Examining Teacher Professional Growth: The Story of Lale**

### **4.4.1 Lale in Context**

In this section, Teacher Lale's professional history, professional environment, and professional background are elucidated.

#### **4.4.1.1 Teaching background**

Teacher Lale holds two bachelor degrees from child development and early childhood education department. She had twenty-years working experience and had been working at the preschool at which the research was conducted for one and half year. She also was the candidate of creative drama leader in Çağdaş Drama Association. Moreover, she was interested in playback theatre. She has also worked as a creative drama teacher at this school throughout the club hours since September 2017.

#### **4.4.1.2 School context**

Lale worked at the same independent public preschool with Umay. Hence, in this section, just exclusive information belonging to Lale will be presented. She was working in full-time like Umay. At the afternoon session, she carried out creative drama sessions with the mixed age group. She has not involved in any PDT focusing on ESD via CML

At this preschool, during the 2015-2016 spring semester and 2016-2017 fall semester when this study was fulfilled, Lale also conducted the same projects as explained in Umay's case. Moreover, she did not implement any specific program targeting EE and /or ESD like TEMA Kids and/ or Eco-schools.

Lale was working with colleagues having two different views about supporting and being a member of research on contemporary issues. While some educators, school director, and assistant director's attitudes towards being a participant of a study mostly were neutral, some teachers and assistant manager had positive beliefs about and attitudes towards exploring new things and adapting them to their activities. The researcher reached Lale teacher with Umay's help. At this preschool, some informal exhibitions, parent involvement activities, field trips extra-curricular activities and seminars were held.

In Lale's classroom, there were 20 children (14 girls and six boys) in the 2015-2016 spring semester. In the 2016-2017 fall semester, 15 children (eight girls and seven boys) were there. While in 2015-2016 semester there was no inclusion student, in 2016-2017 semester, there was an inclusion student who had mental and physical disorders. As an informal observation of researcher, the child having special need showed some behavioral problems (such as crying, shouting...etc.) when he changed his learning environments (from classroom to the atelier and/or drama class). Therefore, Lale had some difficulties from time to time while conducting her project after PDT.

#### **4.4.2 Teacher Lale's Professional Practices before PDT**

In this section, in the light of the Interconnected Model of Professional Growth, Lale's professional practices before PDT are investigated. Detailed explanation about Lale's Personal Domain (awareness of ESD and CML competencies and level), Domain Practice (conducted activities) and Domain of Consequences (resource use and teaching and assessment strategies) are made one by one.

##### **4.4.2.1 Personal domain: Teacher Lale**

In this part, Lale's awareness of ESD and CML competencies and level will be presented.

###### **4.4.2.1.1 Lale's awareness of ESD**

The analysis of pre-interview revealed that Lale had not heard the concept of ESD. After she read the definition of UNESCO's on ESD, she stated that she was not aware of the things at the definition. Therefore, she did not make any explanation about the conducted activities targeting ESD. At this juncture, the researcher promoted Lale to elucidate which teaching methods and /or strategies that she used while implementing activities on the environment throughout 2015-2016 spring semester in the following:

First of all, it is important to determine what attracts the attention of the children according to their age group and level of interest. If you present the things in a monotonous way as if you are at primary or high school, it is not possible to attract their attention and interest, but if you set them in motion and make them more active by participation and experience, they attract the children's interest more, and more efficiency is provided this way. It is mostly about making the children more

active. Their access to information must be easy. Of course, they are basic and tiny little information most of the time.

#### **4.4.2.1.2 Lale's CML competencies and level**

In this part, Lale's CML competencies and level were analyzed concerning access, analyze and evaluate, create, reflect and act respectively.

##### **4.4.2.1.2.1 Access**

Lale could access and utilize several media types in her every day, and working life, e.g., printed media, audio-visual media, social media and digital media. She made a range the media that she utilized in her daily life from most favorite to least favorite as follows: digital media (Google, internet), social media (Twitter, Facebook), audio and visual media (television), and printed media (journals). For working life, she used mostly audio and visual media (television, computer) and then digital media (Google, Internet) actively. She reported that when she heard the concept of media, "audio and visual tools that provide reachability everywhere" came to her mind. She spent less time on media in her working life than in her daily life. Media covers a maximum of 5 hours of her life. She did not use media to make communication since she would rather face to face communication.

They are all kinds of devices providing access to everywhere as audio, visual and a whole network. For example, when I say radio, television, media, they come to mind. Of course, there are also written ones in addition to these. For instance, there are magazines. It is magazines most of the time, indeed, like humor magazines.

Moreover, there are also newspapers. I mean, that kind of printed media. Twitter is for following the daily news because I learn about the incidents in Turkey and all around the world from Twitter. I do not feel the necessity to watch the news at home on television. I watch it only if it is really really important, and only if I come across it. On Facebook, I generally glance through. I use Facebook more often because we carry it with us all the time on our mobile phones and smartphones. I just take a glance at it and then log out. I am not someone who shares many posts. I tried Instagram, but I could not open an account. I mean, as I do not feel a big insufficiency in my life without it, I tend to use it, but then, I do not get engaged in it in any way. I watch media on television only if there are good TV series of 40-50 minutes, not the Turkish ones. I generally watch the series on Digiturk. I watch them and also see the documentaries. I mean, other than this, I do not really zap the TV channels. Some time ago, I was reading the Atlas Magazine because of my interest. Also, I was checking the Artı Photography Magazine with the aim of checking places to visit, but now, it is not something I am interested in. I buy and read a book only if I come across one I am really very interested in, or if I find a book and topic which makes me curious. Other than that, I am not really that interested in printed media.

In my professional life, as the age group of the children is young, I have to give them both aural and visual materials because they have very short attention spans. Additionally, a 3-year-old child likes musical things and visuals with motions. However, if the age is older, s/he would like a storybook or she could accompany me when I sing. Yet, they listen to it very well when there is music in the background. Otherwise, they do not pay any attention. So, because of the age group, I especially include visuals and audios. I do not use media for communication because everyone communicates one to one. I have a WhatsApp group for the parents. I do an announcement there when I cannot reach any parents, and when there is something I have to announce urgently. I mean, I use WhatsApp when I have to tell the same thing to everyone, or when there is an exceptional situation or something about the institute. I get involved then, but other than those times, I think it is pointless. Every time is taking their phones in their hands as they wish, they write something this or that on WhatsApp, write about their private lives. I think I am a little worse than other people at things like these.

Based on Lale's expression, her access competency level was advanced since she used different media types and had knowledge about their strong and weak sides. However, she did not want to allocate too much time for media in her not only daily but also working life.

#### **4.4.2.1.2.2 Analyze & Evaluate**

Lale gave importance to some criteria while using the media in her daily and working life. She explained these criteria in the following:

Well, first, I think about how big the topic I am dealing with is. No matter it is on the internet or television, the most important thing is the accuracy rate of it. If I am curious about something, if it is necessary, first I search it on the Internet. The validity of a topic and news is important to me. If I come across with a lie, I can zap or quickly skip down the post on Twitter. If something attracts me, reliability is important. In my professional life, it is important that the content be appropriate for the age of the child. Are the children scared? What is their reaction? If, at that event or when watching that event on media, the children give especially a reaction of fear; or if it creates anxiety in them, I do not use them because I believe that such things are permanent.

Moreover, Lale reported that the truthfulness of the content in the media should be ensured. She elucidated its reason with these words:

Sometimes, you come across such a topic that you see it everywhere in many different resources and results. You cannot make sure if it is not true when you hear something you personally apply in your life on television or the internet. Sometimes, I think the reason for a very simple issue is to create an agenda. That is why its accuracy is important to me.

Lale also made an explanation about how she distinguished whether the content in the media was correct or not with this statement:

I look at the effect which is normally revolving around. However, I cannot understand any of the feedback with a subliminal message, no matter how much it is. They pass so fast, maybe they are repeating some things very often. I cannot catch them but I give notes to them according to what I see on the screen. Visual effects must be lively for the children. There definitely has to be some music. Also, for instance, the attention of the children when saying the shapes to complete one another, and the system while giving 1-2-3 are very important. In some effects, the song is good, but the video is not good at all. Of course, I do not buy those because the children do not watch them. They give the same response I give immediately...

For Lale, an individual can distinguish opinion from knowledge about any issue if s/he has pre-knowledge and/or experience about this issue. She expressed her views in the following:

You already get an idea when you read it. So, you understand what the person wrote about any topic either based on knowledge or not. When you observe the events around you, and when you evaluate them, you get unavoidably an accuracy rate in your subconscious. The answer is given accordingly. For example, you know the numbers very easily as 1-2-3. It is also something like that, I guess. It also has to do, for example, with you having a grasp about that issue or not. Some things are being written about the issue, but if you have different background knowledge about various topics, then you can confirm them. I think this is also about the previous experiences. If you do not have any prior knowledge, it gets difficult for you to distinguish things, and you can even believe in everything.

Lale did not believe that the safety of the media that she utilized individually was provided. She stated why she considered like this as follows:

I do not think it is provided in any way. I guess the internet exclusively hides all the information because I am not a computer professional, but I can guess that those people will be able to reach any data whenever they wish to.

On the other hand, Lale had no knowledge related to components of media content. She made an explanation about how she selected videos pertaining to the activity topic especially specific concepts such as numbers in the following:

... There are more YouTube videos because, in those, animals jump, and in the background, it counts as 1-2-3, which attracts their attention more. For this reason, I mostly try to give/choose the suitable visuals for the topic with a conceptual aim. I mean to say, with a conceptual aim in mind rather than randomly.

Before using media and media tools, familiarity was an essential criterion for her. Lale expresses her thoughts with these words:

I check the incoming emails to see if they come from some address that I am familiar with. If it is from someone I know, then I open it. If it is from anywhere I do not know, it can be a message or e-mail, I delete it automatically without even reading it because the content is probably not something I am interested in. I think that it is most probably an advertisement, and I do not even read it, but instead, I delete it directly...

Lale considered that people could not reach to her personal information or the information pertaining to her account if she does not want to share them when she was a member of a website and/or using a website. She elucidated its reason in the following:

They should be out of the reach for others not to share them. I believe it should belong only to the website, and only they must be able to use it. I mean, you must have already given your details during the registration process, and I only wish that they would be consent with only the information you have already given to them.

When Lale's analyze & evaluate competency level was analyzed it was perceived that she put emphasis on reliability and truthfulness while using media in her daily life. However, she determined whether media content that she used was true or not via examining the quality of visuals (e.g., effects) and sound (i.e., music) since she believed that she could not understand any subliminal message of media. Moreover, she just gave importance to familiarness before utilizing any media and/or media tools. In other words, she used a subjective criterion. While selecting media for her working life, the criteria were their appropriateness for children's age and children's reaction to them. All of them indicated that her CML level was between basic and medium concerning analyze and evaluate competency.

#### **4.4.2.1.2.3 Create**

Lale mostly utilized Facebook, Twitter, and WhatsApp to share information, follow the agenda and make a declaration. She generally did not prefer to share her experiences related to her every day and working life in the social media. She would rather not be super active (7 days 24 hours) user 7. However, from time to time, she shared field trip photos with parents via WhatsApp to inform them about the activities. She made an elucidative explanation in the following:

I used social media to share information, generally the announcements of the police, announcements of the courses, and on special days, the posts – if there is any - sent to me on Facebook. I mean, I use such kind of things which are important and meaningful for the day. I use WhatsApp if there is something to share with everyone or a group, or if there is an announcement I want to make. I have never used it for the school issues, but if I want to organize an event and announce it to everyone, then, I generally announce things like that on Whatsapp. Alternatively, if everyone is curious about something which I know, then I answer them. Other than these, I do not use it 7/24.

In general, I have never shared my own photo. It was always others who shared it. Yet, if there is something I share, for example, the photo of a place I visited, I share it for the group of people who would normally go there but they could not. If there



is really beautiful scenery in a place I visit, I share the images of it. That is all. I mean there are no photos or posts I share on Facebook other than these. In other cases, I share probably a photo someone sends to me.

I do not use media to share my own experiences from my professional life, but some of my friends do that. For example, they share the activities they do in the class, but I do not have such a habit. I have not needed something like sharing such things on Facebook or setting up an internet site to share them on. However, let's say there is an event at school, or a trip is organized, then I take a couple of photos for the parents to see that their children participated in it because, before this, I take written permission from the parents and share these with them. That is to be able to inform and show them what their children did and to satisfy their curiosity. Other than that, there is nothing important that I do. I do not post many things.

Further, she did not construct any web-site or blog to share her every day or working life experiences. She did not follow and /or was a member of any website and/or blog related to early childhood education. She generally would rather share her knowledge and experiences with other people through face to face than online because she did not like being online every time. She expressed her thought with these words:

I do not follow any blogs. However, if a visual or something else is necessary, or artistic activity, then I surf the web for a long time by doing overall research. I enter the websites where I find visuals or where there can be images. Alternatively, when it is necessary, I visit many different internet sites to find more detailed ones. Other than that, I do not enter a website just to see what and why they do with it. I do not have such endeavors like creating a website or a blog and sharing things there. Someone does that anyway. I help him/her right away. I do not try to hide this, but I think it does not exist in my culture. I do not have such concerns as a culture of sharing, delivering things, showing off with even the smallest things I buy or so. Yet, if someone asks me about something I have, I tell them how it is, I help them. It is not with the aim of hiding. It is just a habit of my nature, I guess.

Until now, she has not created any book, journal, and newspaper except brochure individually. She elucidated this situation as follows:

I did not do that individually. In one of the schools I worked before, a brochure was required to be prepared for an event. Then, I got on the computer and prepared the brochure using that program. Of course, we had collected many pictures and so, but it was something special for the event. I did it because it was necessary, but I have never had a personal effort like making a brochure and sending them to the parents. I have never felt the necessity for something like that. Of course, in a procedure, if it is required to make a brochure for a group event, then I sit down and do it, but other than that, I do not make a brochure just because I want to and hand it out. I do not take a photo or video and share it on purpose, but if it is necessary, I can do it. Only if it is for the institute and necessary for a group.

Overall, the examination of Lale's words indicated that her level was medium regarding create competency because she was knowledgeable and aware of how she can use social media to create an account to share document and photo although she did not prefer it. She also had an experience about preparing a brochure as group work.

However, she was not keen on creating anything if there was no need or a mission was not given to her. Time to time, she used WhatsApp for informing parents such as making a declaration about activities and sharing activity photos. Moreover, she was aware of getting permission from parents to send children's photos even if she used WhatsApp group. Besides, she prepared and used power points to give information to children about the activity topic.

#### **4.4.2.1.2.4 Reflect**

For Lale, the content conveyed with media and /or media tools should not be supervised by agencies/institutions/ person/people since she advocated individuals should make self-control about this issue. She expressed her views with these words:

No matter how many institutions or establishments inspect, you cannot prevent it unless the family is conscient. In any circumstances, s/he perceives and follows that knowledge because, for example, it is funny but, years ago there was "Kurtlar Vadisi" [a famous soap opera including violence]. When its popularity was at the top, I had this 6-year-old student. I remember him/her saying "Kurtlar Vadisi is on today, everybody should watch." Apparently, the series had such an impact on the kid that he tries to make his friends watch it. It does not matter how much you try to prevent; this kid tends towards violence. So the family has to be conscient although some institutions could control. At the end of the day, the audience has to be conscient. That is why people should control themselves. If someone else says it, it does not matter because if that person feels like doing something, s/he will do it anyway; so there has to be self-control.

She considered that individuals should not give too much information about their private life while using social media. To her, except this, we cannot do anything to ensure our own security and made an explanation in the following:

For example, you should not publish your private life on Facebook or Instagram very often. I believe that we should not give too many information about our private life in such cases. However, at the same time, I do not believe that I have many things that I can do. Today technology improves at such a pace that you cannot even catch up with the newest developments.

Lale did not believe any institution can inspect media effectively and shared her view about this situation and knowledge related to the supervision of the internet broadcasting as follows:

... Sometimes, ttnet or other companies that provide internet connection limit the use of the internet in their own ways. However, these limitations are made by the websites or TV channels. They all limit the content in some ways, but I do not think it works because, you know, the access network is too extensive. I always believe that if people are determined, they can cross the mountains. I mean, there is no control. We only have RTUK, but it is all about series. As far as I know, there is

no other way to control. That is why I think the public should be informed. Concerning control, I believe that a person can flout the ban if they want.

While utilizing social media, Lale paid attention to share something related to her private life at a minimum level. She reported her views with this statement:

At a minimum level; I never post anything about my private life. However, nowadays, as my friends tag me in their posts, my private life is mostly published. No matter how many limitations I set, the boundaries are crossed at this moment. For example, a friend insists on publishing or just takes a picture and posts it on Facebook, and as s/he is my friend; everybody can have access to the visuals of my private life automatically, and I cannot limit it mandatorily. I am careful not to post things about my private life as I do not trust social media and websites. That news that we have read, for instance, imagine you are on holiday, and there is no one at home.

Moreover, one of your friends, who is a thief, breaks into your house. Alternatively, just a thief, that is what I have heard; the thief posts the goods s/ he is stolen or something. S/ he would run away from the prison and opened a Facebook account. The police caught him and put him in prison again. That is to say, in any case, the slightest thing you or anyone who is on social media have done is a bug you give away to the whole society.

On the other hand, she advocated websites on the internet should be supervised to provide individuals' safeness but she was not sure whether there were any institutions or not that supervised these websites.

All in all, when Lale's explanations were investigated, it was seen that her level was medium concerning reflect competency. She did not talk about ethical rules and social responsibility and how to actualize them although she advocated that individuals should be educated about the media instead of supervision of media content. For her, even if institutions inspected media, they cannot change individuals' mind. Therefore, people's awareness should be raised. Moreover, she believed that she could not do anything individually except for not sharing private knowledge to ensure her safeness at the social media.

#### **4.4.2.1.2.5 Act**

The Act and Create competencies intertwined regarding some parts especially creating/ designing media (such as videos, photographs, brochures, book, journal, blogs, and websites). Hence, Lale's some replies are also presented at Create competency, and in the subsequent part, only different pieces of Act competency will be given based on Lale's explanations.

Lale generally used WhatsApp and e-mail to make contact with her colleagues to share their resources about the activities. She made an explanation with these words:

We generally use WhatsApp or e-mail. If that person is from my class or my age, I can say things like “I did this and it worked for my kids, I can also give this to you”. Sometimes they prepare YouTube videos or things about the media and give them to me. That is how we support each other. We complete each other.

She elucidated media and/ or media tools that she used to promote activities about the environment (since she has not heard ESD) in her classroom as follows:

Mostly slides, short, attractive films that are no longer than 6 minutes, or moving visuals. Apart from those, we can get into 3-d visuals, but that would be too much for our conditions. They can be things that they can see, perceive and touch. We do not have many options apart from these; only TV, slides or films.

While using media and /or media tools during the activities, she paid attention to some criteria. She expressed her view in the following:

Basically, I try to use moving visuals which are suitable with the kids’ age group and attention level. It is essential that the kids be active in an environment where they can learn by doing and experiencing.

On the other hand, she did not make any explanation about teaching strategies that can be utilized to support children’s CML levels via applying activities targeting environment using media and/or media tools in her classroom.

When Lale’s words were analyzed, it was perceived that her level was medium concerning Act competency. Even though she selected media which is appropriate for children’s age and developmental level and utilized videos including animated visuals and music, she did not use any teaching strategies and/or methods to promote children’s CML (such as analyzing and understanding media messages). While she prepared power points for children by using animated visuals, music pictures, and photos, she did not create any book, journal, video, photos, pictures...etc for her activities. Moreover, she did not communicate with other governmental and non-governmental institutions and universities to make a collaboration.

In conclusion, before PDT, Lale has not heard the concept of ESD. Therefore, she was not knowledgeable about the pillars of ESD. In addition to this, she was not aware of which teaching strategies and/or methods can be utilized to encourage children’s CML while implementing activities focusing ESD through CML.

Furthermore, her CML level was mostly medium regarding create, reflect and act competencies.

#### 4.4.2.2 Domain of practice: Teacher Lale

In this part, her monthly and daily plans' document analysis, stimulated recall interviews (SRIs) and the field notes of implemented activities focusing ESD and CML before her involvement in PDT are investigated to describe Lale's domain practice.

In the light of document analysis presented at Table 4.28, throughout the first data collection part (2015-2016 academic year-spring semester) Lale constructed and conducted activities mainly targeting environment pillar (i.e., to respect animals, plants, environment, to keep the environment clean...etc.) of ESD. Nevertheless, she did not create and implement activities focusing on CML issues.

Table 4.28

*Number of ESD and CML in Daily and Monthly Plans Prior to PDT*

Months	Total obj.	Obj. 7Rs	Obj. CML	Total Act.	ESD in Act.	Media in Act.	CML in Act.	ESD & Media in Act	ESD & CML in Act.
<b>March</b>	28	1- respect	3	42	-	7(computer)	-	2- respect 1-reflect	-
<b>April</b>	30	1- respect 1 - reflect	3	34	1-reflect 2 – respect	3(computer)	-	1- respect	-
<b>May</b>	32	3- respect	3	38	2-respect 2-reuse	-	-	1- respect	-
<b>June</b>	23	2- respect	3	20	2 – respect (indirect)	1(computer)	-	-	-

When the daily and monthly plans were examined regarding ESD and CML, it was perceived that Lale just used media as a tool to support ESD activities (mostly on

“respect” related to the environmental component of ESD). This output was also confirmed with the analysis of daily and monthly plans’ objectives about ESD. Further, the examination of the activities concerning CML revealed that Lale time to time used media (video, photographs, and pictures) and media tools (computer and projection), but, she did not focus on CML. As seen in Table 4.28, Lale sometimes implemented ESD activities by using media, however, no activities were targeting ESD via CML.

In the following part, conducted and observed activities in the classroom would be elucidated. Hence, SRIs were investigated regarding ESD (from strong to weak approach sustainability practice) and CML (basic to advanced). Initially, by activity plans, SRIs and field notes; conducted activities were shown at Table 4.29 from strong to weak approach sustainability practice and basic to advanced CML. Then, explanation about two implemented activities (A<sub>1</sub> and A<sub>4</sub>) will be made with the help of SRIs and field notes since these two activities are the most representative ones of Lale’s classroom implementations and revealed ESD and CML issues most unambiguously.

Table 4.29  
*Analyses of the Places of ESD and CML in Activities Prior to PDT*

CML	ESD		
	weak	Medium	strong
Basic	-	-	-
	-	*A <sub>1</sub>	-
Medium	*A <sub>2</sub> ,A <sub>3</sub> ,A <sub>4</sub>		-
Advanced	-	-	-

\*A<sub>1</sub>: Planting Tree Festival, A<sub>2</sub>: Small Ant, A<sub>3</sub>: The Life Cycle of Butterfly, A<sub>4</sub>: Frogs

In the A<sub>1</sub> activity, Lale conducted “Planting Tree Festival” from her daily plans. However, she changed the activity’s learning process completely. In other words, she designed a new activity. First of all, "basil" was planted in the school garden. After that, she and children came back to the classroom and watched a cartoon related to the

life cycle of a bean. During the second time of cartoon watching, teacher time to time stopped the cartoon and asked questions such as what is this? (showing the TV screen), what are the needs of bean to grow? ...etc. By this way, the assessment of the activity was made.

In short, this was Turkish language and science integrated activity including field experience. Lale aimed to provide that children become aware of the existence of the flowers at their environment and do not to step on them especially at the preschool garden, to encourage them to look after the flower and to make an observation about their behaviors towards to the flowers. Therefore, she preferred to plant a flower with children.

The activity started with planting basil. During planting, she showed and gave information about roots of the basil. She asked questions to the children what basil needed to grow up. The teacher brought some fertilizer and added this to the soil while planting the basil. After the planting process was completed, each child smelled the basil and went back to the classroom. Before watching the cartoon, children and Lale talked about what they did during the planting and what they should do while looking after the basil. The cartoon whose name was "Elif and Development of the Bean" was watched via television and computer. In this cartoon, Elif learned the growing process of bean step by step, what are the necessary things for beans to grow up healthy and the parts of plants (such as root, stem, leaves...etc.) and their roles. Lale provided that children re-watched the cartoon, but at this time she sometimes paused the video and asked the questions, e.g. "how does bean grow?", what happened when the bean is watered?, why does bean need to sunlight?"...etc. The activity was completed with this questioning part.

In this activity, Lale used the cartoon as audio-visual media and computer and TV as media tools to watch the video.

In the light of the field notes (researcher notes), A<sub>1</sub> activity targeted to give information about roles of plants in our lives and their life cycle to support children's knowledge about and awareness of plants, and to plant a flower to promote their environmentally friendly behavior (plant the flower, do not step on the flower and do not pick the flowers) via giving them responsibility about looking after the plant. In other words, this activity focused on environmental aspects of ESD-respect to plants.

Planting flower in the preschool garden was one of the effective ways to take the children's attention to the plants and its importance in our lives.

During planting basil, the teacher gave information about basil's part such as root, flower and asked some questions, e.g., what we call this part (by showing plant's part), what basil needs to grow healthy. Because of weather conditions, just teacher planted basil and children observed the teacher. If children had a chance to plant basil, it would be more useful for them. On the other hand, Lale gave responsibility to children for looking after the basil. Further, while planting the flower, a child stated that "I will bring a glass of water tomorrow when I come to the school". Some of them supported her opinion with their statements. This revealed that some children could internalize what the teacher wanted them to do.

After planting basil, children and Lale came back to the classroom and discussed on what they did and talked about in the garden. This mini assessment was also effective transition to the cartoon.

Children watched the cartoon very carefully and were able to read visual material because they could reply to the questions related to the video. This also demonstrated they were ready to CML education.

The cartoon was prepared by SMG publishing house which was one of the big children's book publishing company. However, the level of the video could be more complicated for kids because there were many new words (i.e., germination, minerals, carbon dioxide, fertilizer, fertilization...etc.) that children cannot understand easily. However, it was good that using different music types when the images on the scene changed to take kids' attention. While giving information about the life cycle of the plant, each phase was shown by related visuals separately in the video. This was also beneficial for children to visualize the explanations in the video.

At the last part of the activity, Lale stopped the cartoon betimes and asked questions what children see on the screen and how the bean grows, what there are, what happened after that...etc. In the meantime, Lale assessed the activity with these questions.

Although the teacher used cartoon (audio-visual media) in her activity, she did not state anything about CML objectives while explaining the activity's objectives and



indicators. This is also demonstrated that she did not target anything related to CML, even if she used media and media tools in her activity.

While interviewing, she declared that it was too complicated to find an appropriate video for a younger age especially for three-year-olds. It can be interpreted that she used technological tools and media actively while searching suitable media for children in her working life.

What's more, the teacher asked four kinds of question. These were "instigating discovery (ID)" (What are they [showing the screen]?), "eliciting predictions (EP)" (what happened when the bean is watered?), "probing for understanding (PF)" (how does bean grow? what can we do to prevent plant's fading?) and "promoting reasoning (PR)" (why does bean need to sunlight?)

To sum up, in this activity Lale utilized more than weak and less than the medium approach to sustainability practice and medium CML level because she did not utilize any CML strategies even though she supported children's knowledge about and awareness of plant life cycle via cartoon. Moreover, although she intended to promote children's environmentally friendly behavior, she did not give the opportunity to children to plant their own plants.

On the other hand, in A<sub>4</sub> activity, Lale conducted "Frogs" from her daily plan. Merely, music and art parts of the original activity were implemented. However, the implementation range of them was changed. Moreover, power point presentation related to frogs and role-playing part were added. The activity was finished with the assessment part.

Briefly, this was a Turkish Language, science, play and music integrated activity. In this activity, first of all, the song related to frog listened. After that teacher showed the power point including frog sound, the pictures, photos and animated images related to the frogs (such as different types of frogs and frogs eating a fly, frogs moving/jumping, frogs making sound...etc.). Teacher prepared the power point. While demonstrating the power point teacher asked questions to children "what we call this animal ( by showing visual)?" "what is the frog doing in this visual?", "what can it do by moving this area (by showing visual)?"...etc. After analyzing the visuals process, children made role-playing according to teacher's instruction related to frog. For

instance, the teacher stated that "we are now at the creek and we are frogs. We are swimming in the creek. Ohh lion is coming to the creek to drink water. Can lion see us? Nooo! Okay, let's hide!" At the end of the role-playing part, children sang and danced with the song pertaining to frog. Afterwards, they made their own frogs as an art activity. In this activity, every child cuts each part of the frog from the paper, pasted them to another paper and made their own frog. The assessment was done by asking some questions such as "how does a frog make a sound?", "which colors do frogs have? What is the color of your created frog?".

In this activity, Lale used the internet, powerpoint consisting of pictures, photos, animated visuals and music as media and computer and TV as media tools to give information to the children about the frog, how frog makes a sound, how it eats something, how it moves and which colors they have...etc.

What's more, on the basis of the field notes (researcher notes), in A<sub>4</sub> activity, teacher focused on frogs (different types of frogs (different colors), how frogs eat, what the frogs eat, how they move, and the cooperation between animals (commensalism)) and its life cycle. For this, teacher created power point containing different pictures, photos, and animated visuals.

Lale prepared her own power point for this activity to take children's attention. This was also beneficial for kids to visualize the frog and its life, characteristics and life cycle. The visuals of the power point were appropriate for the children's level. Hence, children followed them very carefully and were usually able to read visual materials because they frequently can reply the questions related to visuals asked by the teacher. (They looked carefully to the screen if there are animated images such as a frog catching the fly, making sound and jumping frog.) However, while analyzing the visuals on the power point, teacher and children just concentrated on what they see on the screen. No questions related to CML were asked. On the other hand, she prepared a strong powerpoint especially animated ones and used technological tools and media effectively for this activity.

Also, Lale used an animated visual to overcome the misconception about "the frog catch fly with its hands". For this, the teacher wanted that children looked at the screen carefully and she also took their attention by asking questions "Look! Look! Can the frog catch the fly?". The teacher also utilized a photo to promote that children became

aware of there was a cooperation between animals. The photo (a frog carried about the slug) showed by the teacher is an example of commensalism. It was more important and interesting that this kind of cooperation was given to young kids. She elucidated that the photo “you are also carried by cars you can think like that”. However, she would use another resemblance while explaining this situation because both of them are living things and not a tool but a car is a vehicle and is just used for being practical. While interviewing, Lale reported that she continued to demonstrate this photo to the children from time to time, she encouraged them to catch the point. This would be a significant experience for children.

The discussions among kids about what frog eats were also beneficial and supported to follow the visuals on the screen. Moreover, some of them shared their experiences related to frogs. For example, a child stated that there were frogs in his garden.

During the role-playing part, children could internalize the learning process. They could behave as if they see the lion and elephant at the creek. Teacher supported their role-playing by singing “frog song”.

On the other hand, the art activity was a structured activity, and thus, there is no creativity regarding children’s thinking process.

What’s more, the teacher asked four kinds of question. These were “instigating discovery (ID)” (What we call this animal [showing the screen]?), “eliciting predictions (EP)” (what do you think whether the frog can catch the fly or not?), “probing for understanding (PF)” (what is frog doing here [by demonstrating the photo]?) and “promoting reasoning (PR)” (why does frog carry umbrella?).

Overall, in this activity, Lale used weak approach to sustainability practice and medium CML level since she did not talk anything about CML objectives and utilize any CML strategies although she used media and media tools effectively throughout the activities. In addition, Lale only focused on frogs, and she did not make any connection to other aspects of ESD except for environment aspect. She tried to emphasize the cooperation between animals. However, children cannot make sense of this issue for this activity.

### **4.4.2.3 Domain of consequences: Lale's salient outcome**

In the subsequent section, A<sub>1</sub> and A<sub>4</sub> activities and related SRIs were analyzed under the headings of “Selection of Topic”, “Teaching Strategies”, “Resource Use” and “Assessment Strategies” respectively to describe Lale's domain of consequences in detail.

#### **4.4.2.3.1 Selection of topic**

The examination of implemented activities and related SRIs revealed that although all activities were derived from Lale's prepared daily plans, she made some changes and redesigned the activities. Further, all activities were integrated activity and generally included Turkish language and science activities. When the topics of the activities were analyzed in terms of 7Rs and the pillars of ESD, it was perceived that all activities targeted living things (e.g., plant, ant, butterfly, and frog) and their habitats (i.e. soil, tree and creek) (directly and indirectly related to respect environment aspect of ESD. For instance, while A<sub>1</sub> (respect to flower and their habitat) were directly related to “respect” of 7Rs, A<sub>2</sub> (ants and their habitat), A<sub>3</sub> (caterpillar and its habitat) and A<sub>4</sub> (frogs and their habitat) were indirectly related to “respect” with some messages (such as cooperation and mutualism). In other words, in A<sub>1</sub> activity, teacher aimed to promote children to behave environmentally friendly such as do not step on the plants and flowers, do not pick the flowers. Therefore, A<sub>1</sub> activity remained between weak and medium approach while others (A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub>) were at a weak approach regarding sustainability practice. (See Table 4.29) Lale utilized power points prepared by her as media in A<sub>2</sub>, A<sub>3</sub> and A<sub>4</sub> activities and cartoon in A<sub>1</sub> activity. In addition to this, she asked questions about the visuals at the cartoon and power point presentation (such as what happened when the bean is watered?, why does bean need to sunlight?, what is frog doing here [by demonstrating the photo]?). However, she did not use any CML strategies. Hence, while A<sub>1</sub> was at between medium and basic level, the others (A<sub>2</sub>, A<sub>3</sub>, and A<sub>4</sub>) were found at the medium level regarding CML.

#### **4.4.2.3.2 Teaching strategies**

Throughout SRIs, the researcher asked questions to Lale in order to determine which teaching methods/ strategies were utilized while conducting the activities and why they were selected. During the activities, Lale mostly used various teaching

methods/ strategies, e.g., learning by doing, direct instruction, questioning, TV technique, role-playing, instructing via power point and using flashcards. Her explanation about A<sub>1</sub> and A<sub>4</sub> activities will be given in the following:

For instance, in A<sub>1</sub> activity, she reported that *we used generally learning by doing, direct instruction and questioning...*

She made an explanation about why she would rather use these methods and/ or strategies with the statement:

.... I mean, the purpose is to create an event that is valuable for them, that belongs to them. Then, I thought they should begin protecting the other plants, too, starting with this one. I mean, that is what I just thought. The purpose was that if they took care of the flowers, they planted themselves, I thought they would also take care of the other plants, too; you know, by doing and experiencing. But we can only understand it after some observation. In the cartoon, for instance, we watched it without a pause first, and then we watched it again with pauses. I asked them questions about the beans, like how do they grow or what are these and stuff. My aim here was to get a feedback about how carefully they watched the video. Before that, when I paused the video, they said "don't pause the teacher" and such. Plus, they should first see the whole picture, and then they answer my questions. So, I tried to complete the parts they have missed pausing the video here and there.

She expressed the alternative teaching methods for this activity as follows:

I guess it would be something like drama. Apart from this though, if you create such an environment, the kid can do it by doing, experiencing and impersonating. Otherwise, I cannot think of anything else. Maybe TV shows can do, but we have got to find the ones suitable for their level. For 3-year-old kids...I mean, you should find something that is suitable for 3-year-olds so they can express the kids what you want. However, in the end, I believe that it would be much more efficient if you let them touch or see things that belong to them.

The examination of her explanations indicated that she preferred teaching methods and/or strategies to provide children's active involvement in the process. She used the cartoon as media and asked questions about the cartoon, but she did not actualize any teaching strategies targeting CML. She used questioning as a teaching strategy to determine whether children watched the cartoon carefully or not and based on the outcomes to give children feedback. While talking about alternative teaching methods and/or strategies, she gave importance to children's active involvement with the help of creative drama. Moreover, she advocated that it was necessary to promote children to visualize the learning process with audio-visual materials.

On the other hand, Lale elucidated teaching methods and/or strategies for A<sub>4</sub> activity as follows:

There were a presentation and an examination of it, like a small game or improvisation and a situation with 1-2 sentences. Then there was a questioning activity about the color, features or feet of the frog...

Further, she also reported the reason(s) for choosing these teaching methods/strategies with these words:

Because the age-group was very young and I could only grasp their attention in this way. If I had given this in another way, they would never have listened. The questioning part was to identify the features of the frog...

In addition, for this activity Lale elucidated alternative teaching methods/strategies in the following:

A class could have been decorated, and we could've gone on from that. However, it requires big facilities and better conditions. I mean, there could have been a frog simulation like a space simulation around, but they require tremendous materials. So this is the best environment we can create with the conditions the school has.

The analysis of Lale's expressions revealed that she used teaching methods and/ or strategies which were appropriate for children's level. She provided children opportunities via using visual materials and role-playing for internalizing the learning process. While explaining alternative teaching methods and/or strategies, she advocated that her activity be the most effective one under the public preschool environment conditions. She also used questioning related to the visuals at the power point presentation, however, she aimed to inform children about the frog and its characteristics rather than to raise children's CML.

#### **4.4.2.3.3 Resource use**

For A<sub>1</sub> activity, Lale used cartoon which was prepared by SMG publishing house. The cartoon was shown on computer and TV. Additionally, under children's observation, teacher planted a "basil" in the school garden via adding fertilizer. She made an explanation why she would rather utilize them in the following:

My purpose with the cartoon was to show how this plant grows, that it was a seed at the beginning and what it needs as a seed and what we should be careful with while growing it up; that we must not step on it and it has to be watered and kept clean. This was what I thought; I mean, I aimed to consolidate the cartoon so they could learn it better. Plus, the cartoon is pretty short. I thought they could keep focused on it as it was only 10-minutes long.

Why basil is that they had planted flowers before, and I observed that they were not attentive to it. That is why I planted basil. Otherwise; I would plant pine tree somewhere in the backyard, but I thought they should plant flowers as they are smaller and not very ostensible; so that they could realize smaller plants too.

In the light of Lale's expressions, she utilized media (cartoon) and media tools (computer and TV) to enhance children's knowledge about the plants and their growing process from seed to plant and to raise their awareness of what the required things are to support plants' growing and to develop their environmentally friendly behavior. While selecting the cartoon, she gave importance to the appropriateness of duration to children's age and development. On the other hand, she did not utilize any CML strategies to promote children's CML. She desired to draw children's attention to flowers and not to step on them and not to pick them via planting "basil".

What's more, in A<sub>4</sub> activity, Lale used a powerpoint presentation which was designed by her. In this powerpoint presentation, there were photos, pictures, animated visuals and music related to frog, its life, characteristics, types of feeding, movement, and sound. She utilized computer and TV to make power point presentation. For the art part of the activity, colorful papers, scissors, and glues were used. She elucidated why she chose to use powerpoint as media with these words:

The reason why I prepared power point was to get them to attend because they never listen. That was a moving slide. I prepared it as the visuals were moving so they could attract the kids' attention.

When Lale's statement was analyzed, it was perceived that she created power point presentation including lots of visuals and music to draw children's attention to the activity and to promote children's involvement to the learning process. In other words, she just used media to support the activity. On the other hand, she did not use any CML strategies to enhance children's CML.

#### **4.4.2.3.4 Assessment strategies**

For A<sub>1</sub>, Lale completed the activity via asking questions about the cartoon and planting basil and reported her to intend in the following:

I tried to get feedback. I mean on how much they remember from our conversation while planting basils, how carefully they watched the videos... Plus, I wanted to complete the missing parts. Some kids are really knowledgeable; they easily grasp things. Most probably, the necessary feedback has been taken from them. But as some of them are not very into it structurally, I do not think they learned much. I should get feedback on if I reached my goals that I would set up

at the beginning of the activity or not, which is not possible before Monday because there should be some time-gap. I am very curious about how the kids will react while giving them to their families downstairs [in the garden]. I am focused on it right now...

In the light of Lale's expressions, while some of the children could show indicators at the end of the activity, some of them could not because of their interest. She did not aim any objectives and indicators related to CML for this activity. Although she determined objectives and indicators are targeting ESD-respect, she did not make any assessment of them at the end of the activity since they were the long-term objectives and indicators such as environmentally friendly behavior.

On the other hand, in A<sub>4</sub> activity, Lale assessed asking questions at the end of the art part of the activity and making observation throughout the activity. She made an explanation why she preferred to ask questions with these words:

Mostly the reason for asking questions was that they could identify the frog and understand its movements. But they have grasped most of it, because when I said "Lion is coming, hide yourselves, frogs", they all hid very well and once they even mocked frog. During that activity, I asked "Which color is a frog?" they said "Green!". When I said "Say the other colors," they did it, but when asked about theirs, they said "Green". They have earned awareness about the frogs.

When Lale's statement was examined, it was perceived that she could reach the objectives and indicators about frog at the end of the activity since she shared her observation and children's answers to her questions. Nevertheless, she did not target any objectives and indicators related to ESD-respect and CML.

#### **4.4.3 Participation in PDT**

Lale participated in five-day-PDT with her two counterparts at the same preschool during seminar period in September 2016. Although she was willing to involve this training, it was too challenging to find the suitable period for all three teachers since her other two colleagues had some responsibilities throughout the seminar period. Moreover, she had to attend some official meetings that were organized by the school director and assistant directors during the seminar period. Nevertheless, the seminar period in September 2016 merely lasted seven days from 9:00 am to 12:00 pm. Accordingly, the researcher and teachers determined to meet mornings for three days and afternoons for two days for PDT. After these hardships were overcome, PDT was implemented effectively. Lale declared that she had not known ESD and "global warming" up to now. She was pleased to be a participant of



the PDT. Throughout all sessions of the PDT, she was an eager-beaver teacher and actively involved in the process. She stated that she would watch the films (advocating human-based global warming and non-human based global warming) to understand the whole messages about global warming. At the end of the PDT, she drew a poster by dividing into two parts of her paper. At one part, there was a green Earth with trees, and at the other part, there was a dried Earth with dirty smoke and was no life.

#### **.4.4 Lale’s Professional Practices after PDT**

In this section, to describe Lale’s professional practices after PDT, her Personal Domain (awareness of ESD and CML competencies and level), Domain Practice (implemented activities) and Domain of Consequences (selection of topic, teaching and assessment strategies and resource use) are presented in turn based on the Interconnected Model of Professional Growth.

##### **4.4.4.1 Personal domain: Teacher Lale**

In this part, Lale’s awareness of ESD and CML competencies and level are the portrayed.

###### **4.4.4.1.1 Lale’s awareness of ESD**

When Lale’s awareness of ESD after PDT in the light of post-interview was investigated, it was perceived that she the heard the concept of ESD and was knowledgeable about ESD and aware of its three pillars (environment, economic and social & cultural), and shared her observation related to change in children’s awareness after her project “ESD”. She expressed her views with these words:

I have heard the concept of ESD. When said “education for sustainable development”, we directly think of recycling, because we practice it. Apart from recycling, global warming...

moreover, recycling all the rubbish at home.... There is this waste issue, for instance. It is all about recycling or the economy. Reducing the rate of consumption at home or, like, using only the amount you need... Sharing the opportunities or supporting each other can do...There are the environment, economic, social and cultural aspects of ESD. It was convenient for us to assign recycling as it was the most suitable topic for pre-school and I could collect more data about it. If there were such books or visuals about another topic, they would also do.

Lale utilized various teaching methods and strategies while using media and media tools during the activities to encourage children's ESD awareness via CML. She reported that with these words:

I used ÇEVKO and TAP's posters and brochures to give information. I, also, used ÇEVKO's books and videos. We analyzed them. We tried to understand the messages they tried to express. Then, we prepared our own book, brochure and posters and we made our own videos. Moreover, we organized a trip to the Mamak dump site.

Additionally, Lale elucidated her observation about change in children's thoughts about recycling with these words:

However, it was also effective for kids. When they want to throw the paper away, they look for recycle bins for paper. They know that the paper will end up in recycling. It has unavoidably made an impression on them.

All in all, Lale became aware of ESD and the topics related to ESD and its pillars (environment, economic and social & cultural). She shared her observation pertaining to change in children's awareness of ESD and its environmental and economic (reduce and recycle) pillars at the end of the nine-day project about recycling. Moreover, she made research on recycling and contacted non-governmental agencies and used their resources (video, brochure, posters, and books) in the project. She also organized a field trip to Mamak Recycling Center. In other words, during this project, she was also knowledgeable about and collaborated with NGOs dealing with the recycling issue in Ankara where the study was conducted.

#### **4.4.4.1.2 Lale's CML competencies and level**

In this section, Lale's CML competencies and level are analyzed concerning access, analyze and evaluate, create, reflect and act in turn.

##### **4.4.4.1.2.1 Access**

Lale could access and utilize various media types in her daily and working life such as social media (Facebook, Twitter, Instagram and WhatsApp), digital media (internet, Google), printed media (book, poster, brochure) and audio-visual media (television, power point presentation) for different targets. She spent approximately two hours every day to the media both every day and working life. Moreover, she enlarged her media definition. She elucidated in the following:

...when I hear the notion of the media, poster, brochure, television, Facebook, Twitter, book. All audio and visual publications come. Instagram, Internet...

In my daily life, I utilize social media the most. I follow the daily news via Twitter. When I am bored, like in a meeting, I play games and such. Alternatively, when there is something auidial that I am interested in but bored, I play games, also. I do not use media or media tools to communicate unless I am obliged to; you know voicemails or video messages. I only use it when necessary; otherwise, I do not use it to announce something. I do not deal with them. I mostly use it to do research. Alternatively, in other cases, I just use it as a follower. I use Instagram as a follower. I do not utilize it to contact other people. For example, when I am supposed to prepare an activity for kids, I get online and check if there is any PowerPoint presentation or any art activity about the topic. I look for different landscape or nature visuals that I can use in the activities. I mean, mostly for school things...

... I make use of printed or visual & audial media at work. We mostly read books, story books or sometimes I use PowerPoint presentations rather than books depending on the process of the activity. So it depends. Sometimes we have stories every day. Alternatively, sometimes, for example, now that I am working on a project, I am reading a book which is in PowerPoint presentation. Once, I needed to do improvisation, so I read a story; but apart from it, I started using the photos I hadprinted. For example, when I let the students out, I add nature visuals to the presentation. Then I say things like related to the pictures and photos "Now improvise this", "What do you see?", "What do you think they want to say here?". At this moment, I use the visuals that I would download. For example, I asked them to mimic a facial expression in the story while I was mimicking a long face. But this one also became a visual. It actually goes together with this way. I have media or media tools that I use to communicate at work. When you look at it, social media does not occupy my work life much, but of course, we use the Internet; for WhatsApp for instance, which I use occasionally to announce something for the parents. Alternatively, sometimes I send those pictures or videos that I take during the activity.

On the other hand, Lale did not use E-Governmental portal.

When Lale's level related to access competency was examined it was seen that she used distinct types of media effectively based on her daily and working life needs. She generally utilized social media to follow the agenda in her everyday life. She also used printed, digital and audio & visual media to support children's CML, to enrich the activities, to adapt while planning art activities and to give information about the activities at the preschool to the parents. Moreover, while making the definition of media, after PDT, she also mentioned social media in this description. Thus, Lale's level concerning access competency is "advanced".

#### **4.4.4.1.2.2 Analyze & Evaluate**

Lale paid attention to some criteria such as media's truthfulness as well as appropriateness for children's level, the reliability of media resources, quality of the

media (e.g., their content and printing) and clarity of their messages...etc. while using media in her daily and working life. Moreover, after PDT, she became aware of information pollution in the media. Individuals should verify the information that they reach through media even if they use university resources. She advocated that individuals can distinguish view and knowledge about any issue by making research on it. She had known about media content's components. She made a detailed explanation with these words:

In my daily life, I give importance to whether the topic that I follow is right or wrong. I visit some websites, and I check if there are presentations for the kids and if they are suitable for their level. I check if it sounds logical if it is true and so on. I also check if it is absurd or normal; like if they even have titles, - the things that I will use in the class-, to what degree it is true because you can change everything in the media. I am concerned about it. I check the things that I mentally believe they are right to a certain extent at least.

For my professional life, among the tools that I use, the sources of strong institutions or firms such as ÇEVKO or public service ads are the best -or let's say well-known productions. In the books, especially storybooks, visualization is important. I try to make a point of using stories that the kids can easily see, understand and at the same time that does not affect their psychology [in a negative way]. The printing of the visuals are also important; like does it draw attention? Are they too confusing or too plain? Are they suitable for the kids' level? Then, you should check the written part below: has it been written according to the standard book size; or is it too small or too big? I check all these things; where the text is placed; if the topic is clearly explained, and so on. For example; if that is a visual for wind, how much has the wind been emphasized? Like, are the trees' branches bent well enough; does it clearly highlight the concept of wind? When I print it out, I check if it is the correct photo to express the perception of wind for the kids. Its suitability for their level is also very important. They should not be too crowded; instead, they should be plain, and the focus should be on the topic...

Lale stated that the media content that she reached and utilized contains sound, movement, visual, and color, illumination and writing parts. She explained as follows:

In the context of media, there is mostly text and visuality... there are films, motion, audio, stimulus, voices in different tunes, lights and colors in different tones, etc.

Lale expressed that media content's truthfulness was crucial for her with this statement:

Once I have reached the true knowledge, so have the kids because I am the mediator. I find the information and I am the one who expresses them to the kids because whatever I give, the kids inherently receive as they are young and able to accept everything. But only if I find them through strong sources as much as possible; I believe that as long as I find the true knowledge, I can canalize the kids in the correct direction.

She elucidated which resources were more reliable in the following:

I check the person or institution who prepared the media, to understand if the context of the media is true or not. Now ÇEVKO, for instance; when you look at it, public service announcements are televised very often. Moreover, almost everybody has heard about ÇEVKO; it is a well-known institution. Moreover, it has been commanding the market for long. In this case, I believe it would be reliable. Also its past is important. A new institution needs 2-3 years to settle down; and think about ÇEVKO, which is 10-15-20 years old; at least I know that it has been on the market since the '90s. So I think it becomes professional enough.

What's more, she made an explanation how she distinguished whether the media content conveys knowledge or opinion as follows:

[To distinguish whether the media content conveys knowledge or view] we need to research because there is too much disinformation in media. I mean, you cannot confirm this topic without research. Even the information from a very trustable university can be miswritten in media. Like calculating the body-mass index; which happened to me once... You check it online as you do not remember and somebody over there says "This is wrong". These types of mistakes are made. Even we might unavoidably be deceived by them.

Lale did not consider that the safety of media and media tools was provided.

She expressed her view like this:

I do not think so. When you are friends with unnecessary people, there might be really absurd images. In that case, I just leave that page. In Twitter, for example, there was such a weird image, then, I unfollowed it. I automatically control myself. As soon as I encounter an unpleasant image from a Facebook friend, I unfriend them. I generally follow the ones who have the same style as me.

She did not allow that her personal information was accessed by other people while utilizing the internet. She elucidated this issue with these words:

I do not permit open access to my user profile. If it opens, it does; but if it does not, I try to reach the same source from other websites, because I do not know who is on the other side. For safety...

Lale gave importance to "utilization of qualification" before using or determining to utilize media/media tools. She made an explanation about it in the following:

I pay attention to the quality of use of those media before using or determining to use them. For example, I downloaded WhatsApp. However, I would just buy the phone; I needed to send an image urgently; so I downloaded WhatsApp right away. You know, when you get a new phone, some essentials have to be in your phone such as WhatsApp. That moment I could send the tests. However, I do not normally use WhatsApp for any unnecessary photos except for the urgent ones. Once, I took too many photos, but I never send them unless it is obligatory. Only when it is crucial when it is necessary... I use it rare enough only to meet my needs.

The examination of Lale's words revealed that her level was "advanced" regarding analyze & evaluate competency. She became aware that individuals cannot believe information on the media unconditionally since the information can easily be changed and individuals can reach incorrect one. She trusted resources of the experienced institutions, and she was knowledgeable about their vision and statue. While determining which media can be used in the activities, she made a detailed examination. She also emphasized that if she reaches reliable knowledge as a sender, the receiver, children, also reach/learn reliable knowledge.

#### **4.4.4.1.2.3 Create**

Lale utilized WhatsApp, Facebook, and Twitter as social media for various targets such as making a declaration for parents, following the declaration related to various training and following breaking news and events ...etc. She elucidated with these words:

I use WhatsApp generally to make an announcement for parents or to send images to somebody urgently or for special posts. Moreover, I opened the Facebook account because everybody is there, but I only follow some announcements. This is how I opened a Facebook account: at first, I did not have any account, and I was taking dance lessons. I had to open an account and be a member of the course's group on Facebook so that I could learn the figures. That was an institution where I was taking personal lessons; that is why I had to be a member of the group so I could practice the figures they learn that day at home. This is how I started using Facebook. Then, I started to follow other courses, too. I continued using it in order to follow the posts or the information they give in the courses that I took. As for WhatsApp, as I said before. Also, I use Twitter because you know, you cannot watch TV all the time, but you can follow the breaking news through it. So, I use it because it is necessary. As for the others, I do not even have them.

Further, through her social media account, Lale would share her experiences in her daily life with audio & visual media (e.g., photo and video) that she created if there was a need. She expressed its reason with this statement:

If that is something that I am obliged to post, then I post it. Last time, for instance, I posted my brother's video because he was going to send it to me. He was going to appear on TV, so I took his video since they did not take it. I asked my brother "Should I post it on Facebook?" he said "yes", because it would appear on his page and he would be able to share it himself, too. For his own customer potential and such, you know, to advertise; and it is just because he is my brother. The source is reliable; I know who shares it, so I share, too; otherwise, I do not share.

On the other hand, she did not write and share any text via her social media accounts. Moreover, she did not use media to share her daily and working experiences. She explained their reasons in the following:

...I never posted any texts because I do not need to. I do not use social media to share my experiences in my private or work life, either. Well, if anybody is interested, they call me personally anyways; besides, they are the ones I am in touch with. Alternatively, if anyone from work needs to share something with me, they already come and ask me in person, and I try to help them. It is generally because such issues are going on in the workplace. They are done generally in person...

Lale has not designed and opened a web-site and/or blog to share her experiences with her every day and working life. She just created a web-site to carry out the responsibilities of the training related to computer. Also, she did not follow any web-site and/or blog about early childhood education. She expressed its reason as follows:

I do not follow [any web-site and /or blog] since I do not feel any need. These things are derived from needs. If I feel any need, most probably I should contact face to face with the place that I have to follow. I think it should more secure by this way.

Although she prepared a video related to her project, recycling, for parents she did not prepare any book, journal, and newspaper. She made an explanation about with these words:

... My announcement for parents is a video from WhatsApp, which was a project about recycling. I sent it the video of it to the parents through WhatsApp. However, it was my own parents-group; I mean, my target group was certain; there was no one else apart from them.

The analysis of Lale's expressions indicated that her level was advanced concerning create competency since she prepared a video to give information about the recycling project to the parents. Even though she was knowing how to design a web-site, she did not prefer to use them actively to share her experiences about her daily and working life there. She emphasized that she used social media and shared something there if there was a need. She stated she shared her brother's video on Facebook to publicize his job because the resource was safe. In other words, she did not use her social media accounts to share something due to security issues.

#### **4.4.4.1.2.4 Reflect**

Lale thought that the content which is conveyed by media/ media tools should be supervised because the content should be correct and be appropriate for target audiences' physical and psychological well-being. She expressed her views with these words:

There should be inspections so that it expresses the information properly; of course, if the inspector desires it, too. Also, such things as the suitability of that thing to the age group of whomever it addresses, how it affects the target person's psychology should be inspected. For example, you cannot let a kid watch a horror movie, because it will lead to fear and anxiety; the kid cannot sleep at night, I mean to prevent adverse impact.

To Lale, parents play a crucial role for supervision of media content, and there can be some institutions to promote parent about how media contents can be supervised. She made an explanation about this as follows:

That is a bit complicated because families are in charge of it as the primary factor. Families should control their kids. I am not sure how much families can help, but at least, there could be consultancy to support families. There could be independent associations or institutions that have expertise in this field. Also, there could be printed publications or public service announcements which says "Do not let your kids watch this and that.". The government could also support them.

Lale advocated that there should not be agencies/ institutions/people to ensure the safety of the media and media tools since for her this issue should depend on individuals' preferences. She elucidated in the following:

It is personal use, after all, no matter how many institutions or establishments there are in social media. You cannot control something that is personal. That person can do whatever they want to do. Even though you tell them it is right or wrong, if that person wants to do something, they can do it anyways. I mean they do not mind you. That is an individual thing, eventually. It depends on the person no matter how much you inform them. In mass communication tools, as well, there are those who share information as if they are from reliable sources, like a book. They could also be controlled, but, as long as they publish for a certain status. It is human nature eventually; if a person wants to achieve something, they can reach whatever they want as long as they are determined. So I do not know to what extent it can be prevented. It depends on the person, as I said. There is the issue of ethics on the other hand. You publish something with the purpose of informing, but it is all about the person anyways. Institutions or establishments do not benefit from it, maybe, but at the end of the day, it could be beneficial for those who desire to do the reasonable, hang or catch up with innovations/ information or just out of curiosity. It could be an alternative, that is to say.

What's more, Lale gave examples how supervision of media content can be as follows:

I give importance whether it is reliable information or not. Otherwise, its context, on the other hand, depends on the topic that it analyses or if it is something absurd or not. Like, you cannot consider someone who analyses a cartoon equal with anyone who analyses a regular or horror movie. They cannot focus on the same points. They concentrate on different things because the criteria are different concerning the target group.



She made an explanation about what she can do to ensure the safety of media and/or media tools with these words:

I try not to post anything about my private information on Facebook or others as much as possible except for a couple of things, which is just because others post, too. It always asks me like “Update your profile”, to update the missing pages, but I have never filled it, and I am not planning to. I do not want my private life to be so open on Facebook. I do not want to be like those who post their empty plates, either, because it is special to me. However, I am in such a situation: I am more comfortable with someone with whom I can speak in person as they know everything about me. However, on Facebook, I have another friend with whom I do not talk much; so they learn only as much as they need to learn, which is by chance. However, the people that I personally keep in touch, they can learn everything about me although we do not talk face to face all the time. However, with the ones you had been in touch with but lost connection... Hmm, they can see everything; but the ones that you are not very close [cannot see everything]. Eventually, your friends on Facebook are the people who already know you. However, I am concerned about this hacker thing, you know unnecessary people can have access to your profile; that is why I do not want to post everything. The purpose is safety. They can be used in everything. Photoshop is very common today.

When Lale’s words were examined it was perceived that her level was advanced regarding reflect competency. She advocated that individuals should control media that they used by themselves since she believed that if a person wants to reach and use information and media, s/he can do and any institutions/organizations cannot prevent this. She thought that social media could not be supervised because social media was personal use media type. Therefore, each person can decide what they want to share there on his/her own. Lale did not prefer to share her private information and open her social media account to the public because of security problems. To Lale, families have a crucial role while selecting and utilizing appropriate media for their children. At this juncture, the independent institutions and organizations can help them. Some public service announcements about this issue can be prepared to inform parents.

#### **4.4.4.1.2.5 Act**

The Act and Create competencies intertwined for some parts in particular creating/preparing/designing specific media (such as videos, photographs, brochures, book, journal, blogs, and web-sites). Hence, some of Lale’s expressions are also given at Create competency section and in this section, merely distinct parts of Act competency will be investigated based on her statement.

Lale utilized WhatsApp to communicate and cooperate with her colleagues. Additionally, she contacted non-governmental organizations (NGOs) and received support from them regarding resources such as posters, brochures, videos, and book. She elucidated in the following:

We have announcements through WhatsApp among friends. When we work as a team, other friends, of course, add the things that I cannot find. It was the case in the previous works, too. They were completing my missing parts, or I was completing theirs. Then, we have better results when we work as a team than individually.

... I attended ÇEVKO's meeting. They gave me the necessary posters and directed me at crucial points. They provided the necessary material and documents, and I took them. That it was visual, the text was small and suitable to the topic and the type size was big drew the attention of the kids. Especially the images drew their attention and they loved it.

Lale made an explanation which media and/ or media tools that she used while conducting activities focusing ESD in her classroom with these words:

I use posters, cartoons, videos, brochure books, power points ...Before the training [PDT], I did not use posters and a brochure like this. We have not constructed the messages of printed and digital media ... In addition, we analyze and comprehend their messages...

What's more, she stated that which teaching strategies she conducted while using media in ESD activities with this statement:

...Because they are six years old. No matter how many books you read to them, or how many documentaries you let them watch, which 5 minutes is not too much, after all; as learning by doing and experiencing is much more effective, big images on big screens like big type size texts, audio, music, PowerPoint presentations, and questions have a bigger impact on them. I also use creative drama...

Moreover, I foster children to understand the messages and create their own messages. For example, first of all, they meet to the poster and brochure, and then they design their own posters and brochures... I mean firstly, I try to form schema in their mind then we can convey their messages...

She explained which criteria were important for her while selecting the media that she utilized in the activities targeting ESD as follows:

The kid's age, prior knowledge, and visuality are important. They should be able to see and understand easily, and at the same time, their psychology should not be affected. The images' print is also very important. It should be minimal, plain and the focus should be on that image; it should include clear images. It should be suitable for the purpose...

The analysis of Lale's explanations revealed that her level of act competency was advanced since she could utilize distinct media types (such as posters, brochures,

cartoons, videos, books, power points and pictures) while implementing ESD activities. She also promoted children's CML via asking questions about each medium to analyze and evaluate various media messages.

Moreover, she encouraged children to design their own media and give their messages. Further, she contacted NGOs to take support for the recycling project and to reach various media types created by them. She also paid attention to children's age, their pre-knowledge about the activity topic, the quality, and clarity of the visuals and appropriateness for activity aims while choosing media.

To sum up, after PDT, Lale heard and became aware of ESD, and its components (environment, economic, social & cultural) and the topics (i.e., conservation, sharing resources, reduce, reuse, recycling...etc.) related to each component. Additionally, Lale's CML level changed from medium to advanced concerning CML competencies (access, analyze & evaluate, create, reflect and act). She also utilized different types of media and teaching strategies and/or methods to raise children's knowledge about and awareness of recycling, and CML (access, analyze & understand and create) throughout nine-day recycling project.

#### **4.4.4.2 Domain of practice: Teacher Lale**

To describe Lale's domain of practice after PDT, document analysis of her monthly and daily plans, stimulated recall interviews (SRIs) and the field notes of implementing activities focusing ESD and CML were examined.

In the light of the document analysis as shown in Table 4.30, the comparison of the number of ESD activities before and after PDT indicated that Lale designed and implemented much more activities targeting ESD after PDT. Before PDT, in the activities she focused on mostly environmental pillar (to respect animals, plants, environment, to keep the environment clean...etc.) of ESD, however, after PDT, she targeted all pillars of ESD (environment, social & cultural and economic) and related 7Rs (such as redistribute, rethink, reduce). Even though prior to PDT, Lale constructed and conducted no activity pertaining to CML and ESD through CML, after PDT, she created and applied CML and ESD activities through CML. There is a significant and apparent increase in the number of ESD through CML activities as observed in Table 4.30 with the rightest column.

Table 4.30

*Number of ESD and CML in Daily and Monthly Plans After PDT*

<b>Months</b>	<b>Total obj.</b>	<b>Obj. 7Rs</b>	<b>Obj. CML</b>	<b>Total Act.</b>	<b>ESD in Act.</b>	<b>Media in Act.</b>	<b>CML in Act.</b>	<b>ESD &amp;Media in Act</b>	<b>ESD&amp; CML in Act.</b>
<b>October</b>	46	2-respect 1-reflect	3	42	3-respect 2-reflect	1	3	2-reflect	1-CML-access-analyze & evaluate and create 1-resdistribute
<b>November</b>	50	1-respect 1-reflect	3	42	1-redistribute 1-respect 2-reflect 1-reuse 1-rethink 2-recycle	4	1	1-reflect 1-recycle	7-CML-access-analyze & evaluate and create 6-recycle 1- respect
<b>December</b>	47	1-respect	3	41(snow holiday)	1 respect	5	2	1-reduce	7 –CML-access-analyze & evaluate and create 1respect 6 reuse
<b>January</b>	38	1-reflect	3	29	2-respect  3-reduce 1-reflect	3	1	1-reflect	1-CML-access-analyze & evaluate and create 1-respect

When the daily and monthly plans were investigated concerning ESD and CML, it was perceived that Lale generally gave a place to respect, reuse, recycle and redistribute of 7Rs and three components of ESD (environment, social & cultural and economic) through CML in the 2016-2017 academic year, fall semester. Throughout nine-day recycling project carried out in November, Lale applied activities targeting mostly recycling and respect aspects of 7Rs. On the other hand, she could not choose specific objectives for her activities from the existing early childhood curriculum because there are not any objectives encompassing all three components of ESD and CML. Hence, she constructed new objectives for the activities. The analysis of the activities after PDT regarding CML issues revealed that Lale used media and CML strategies to promote children's access, analyze & understand and create competencies. During the nine-day project, she utilized public service announcements, posters, brochures, book, cartoon, power points, pictures ...etc. as media. Overall, during the fall semester, the frequency of ESD activities via CML escalated. Accordingly, Lale could provide that children improve their knowledge about and awareness of and attitude toward recycling and respect, and change in their CML levels (e.g., access, analyze & evaluate and create).

In the subsequent section, carried out and observed activities from the nine-day recycling project would be investigated comprehensively.

This project was designed and implemented by Teacher Lale based on researcher's feedback. 10 activities were covering eight days and targeting environmental and economic aspect of ESD. Also, one day was allocated for an exhibition. The project was finished with the exhibition to share all children's products such as posters, book, and video with whole school and parents. 9 of 10 activities were pertaining to ESD via CML. The field trip was carried out to Mamak recycling project. The activities throughout five days of them were observed. These activities were categorized from weak to strong approach concerning sustainability practice and basic to advanced regarding CML issues in the light of the examination of activity plans, SRIs and field notes. The findings of the analyses were shown in Table 4.31. Detailed information related to activity plans, SRIs and field notes of A<sub>2</sub> and A<sub>3</sub> activities will be presented to analyze the influence of the project on Duru's professional growth and children's awareness of recycling and CML. These two activities were selected since they gave more full information about the content of the project.

Table 4.31

*Analyses of the Places of ESD and CML in Activities after PDT*

CML	ESD		
	Weak	Medium	strong
Basic	-	-	-
Medium	-	-	-
Advanced	-	-	*A <sub>1</sub> , A <sub>2</sub> , A <sub>3</sub> ,A <sub>4</sub>

\*A<sub>1</sub>: My Recycling Book, A<sub>2</sub>: My Recycling Poster, A<sub>3</sub>: Recycled Products, A<sub>4</sub>: Field Trip to Mamak and My Recycling Brochure

The name of this project was “Recycling Project”. Some of its aims were (a) to be aware of recycling, (b) to support children preparing their own book about recycling, (c) to be knowledgeable about visual materials and to design a similar one (d) to become aware of the waste materials can be recycled to the new products and (e) to be able to distinguish different kinds of materials according to their properties. Before starting the project, children and their parents prepared a file including photos and pictures about recycling (such as recycling process, which materials can be recycled). By this way, children had a pre-knowledge about recycling. At the beginning of the project, Lale wanted children to present and share their file with their peers. Throughout the project, Lale mostly focused on the issues (e.g., recycling, respect for nature and keeping the environment clean) targeting two pillars of ESD (environment and recycling).

In the subsequent part, A<sub>2</sub> and A<sub>3</sub> activities will be elucidated more exhaustively.

A<sub>2</sub> activity was a Turkish language, art and play integrated activity. The objectives and indicators of the activity were briefly (a) to be knowledgeable about visual materials (such as book and poster) and to design a similar one, (b) to understand the components of visual materials and (c) to create a poster and book related to recycling. For this activity, the teacher and children went to an atelier at the preschool. Çevre Koruma ve Ambalaj Atıkları Değerlendirme Vakfı [Environmental Protection

and Packaging Waste Recovery and Recycling Trust] (ÇEVKO) and Taşınabilir Pil Üreticileri ve İthalatçıları Derneği [Portable Battery Manufacturers and Importers Association] (TAP)'s posters were hanged on the atelier's walls.

The activity started with analyzing children's yesterday's drawings on recycling. The teacher asked questions about yesterday's activity, e.g. what did we do yesterday?, why did you draw these pictures?...etc. By asking these questions, the teacher made a connection to create a book on recycling. The range of the pictures for book's pages was determined with the nursery rhyme. After all, pictures were ranged, the story was read by the teacher to the children.

After that, children went around the atelier with the rhythm of tambourine and when the tambourine stopped children went to near to the posters and analyzed it according to teacher's questions (e.g., what do you see at this poster?, what does it mean?...etc.). Before this, Lale informed children about the name of the papers hanged on the walls as a poster. After all, posters were analyzed and listened to each child's response, the teacher took children's attention to the writing parts of the posters, and she asked children "to you what is written there" and "what do we call this writing". After this discussion, the teacher stated its name was "slogan". Then, Lale asked children "If you want to design a poster pertaining to recycling, how you can design it and they drew their own posters related to recycling. When each child completed his/her posters, the teacher wanted them to tell his/ her posters and find a slogan for their own posters. The activity was completed with writing slogans for children's posters. Some of the children's slogans were "I put the batteries in the environment to the recycling box and clean the Earth", "to put all the waste materials on the world to the recycling boxes" and " to be late for recycling boxes".

In this activity, Lale used two media types (book and posters) and A4 papers and crayons as materials and resources. The assessment part of the activity was made with the observation the process.

In the light of the field notes (researcher notes), Lale conducted activity related to recycling of the different kinds of the materials (such as paper, plastic, glass, and metal), collecting batteries separately and what individuals can do to support these processes. Teacher-focused on ESD environmental and economic aspects (to keep clean the environment and recycling).

During forming a book on recycling via children's drawings and related explanations, first of all, children reanalyzed their drawings and shared with peers what they drew. While discussing on what they can do with these pictures, a child stated to prepare a book. The dialogue between teacher and children in the following:

...  
T: Why did we draw these picture yesterday?  
C<sub>1</sub>: Book!  
T: About what?  
C<sub>2,3,4</sub>: Related to recycling!  
T: Okay, did everyone draw a picture, did not you?  
C<sub>ALL</sub>: Yesss.  
T: Why did we draw a picture? How many pages are at a book?  
C<sub>5</sub>: Too many pages.  
T: But each of you drew a picture. What we can do these [pictures]?  
C<sub>6,7</sub>: We prepared a book.  
T: But is there one page in the book? How do we create a book?  
C: By drawing one more picture!  
T: What else?  
C: No, no, we can put all the pictures together!  
T: For whom do we prepare this book?  
C<sub>2</sub>: For Earth!  
C<sub>3</sub>: For our mother and fathers!  
C<sub>8</sub>: For younger children!  
...  
C<sub>10</sub>: For animals and plants!  
...

After this discussion, children and teacher determined the range of pictures for the book. However, each child wanted that his/her picture was at the beginning. Therefore, pictures were ranged via nursery rhyme. After collecting the pictures together as a book, the teacher read the book to children. While collecting the pictures, Sarp warned the teacher to put his drawing correctly. Lale asked what can the name of this book be and children proposed different names for this book. Some of them were "recycling book", "recycling children", "recycling human beings", "recycling waste materials" and "recycling family". However, they cannot decide on a name. Therefore, the teacher used an election strategy to designate the book name.

Nevertheless, it could not work because children have had not any experience about the election. Accordingly, the teacher put all the names on the cover page of the book. Then, they found an author name for their book. After a discussion, they decided on their classroom name, "Busy Bees", as an author name. Children explained the reason(s) (e.g., informing people about recycling and for recycling and soil) why they created based on teacher's questions. The observation process related to book



preparing process showed that children were aware of how a book was formed and the elements of the book (such as picture, text, author, its name) and target audience, aim and message of a book. In other words, children CML (analyze & evaluate and create competencies) and awareness of ESD –recycle and respect were promoted through this activity.

After that, the process related to understanding and analyzing posters' messages was carried out. NGOs prepared the posters used for this process. Their colors and slogans were very attractive to children. They were also appropriate for children's level regarding their messages and quality of the visuals. They were hanged on the walls that children can easily reach and explore. Teacher utilized some creative drama techniques which were beneficial to promote children to analyze different posters in depth. After children examined the posters regarding messages and visuals, teacher and children discussed on slogans. The dialogue between teacher and children as follows:

T: As you see, there was text which was written by capital letters on the posters.

To you, what can be written there?

C<sub>3</sub>: Do not bring the batteries to the Earth!

C<sub>4</sub>: To put milk boxes to this recycling box related to cardboard, Coca-Cola boxes to this box [showing his hand at the poster], plastics bottles to the plastic recycling box, glass bottles to the glass recycling box!

C<sub>7</sub>: To put batteries in the special box!

...

T: To you, what is the name of the writing texts on the poster?

C<sub>2</sub>: Recycling text!

T: But I do not ask what the texts convey, I asked what we call them.

C<sub>8</sub>: Recycling text!

T: What else?

...

T: We call them the "slogan."

After this discussion, the teacher read the slogans on the posters. The reflection of this process was seen on children's own posters and slogans. Some of them also tried to write the letters like the posters on the wall. This also demonstrated that this activity supported children's CML (access, analyze & evaluate and create competencies).

The activity was finished by designing posters and finding slogans for the posters. Throughout this process, the children worked on their posters enthusiastically.

Further, all parts of this activity were conducted at the atelier. It also affected the children's concentration positively.

Additionally, the teacher asked three distinct types of questions to promote children's analyzing, evaluating and creating skills. These were "instigating discovery (ID)" (What do you see at this poster?, What do we call the text at the poster?), "promoting reasoning (PR)" (What do you mean with this poster? What is your slogan for this poster?) and "probing for understanding (PU)" (For whom do we prepare this book?, How do we create a book?).

What's more, the discussion between teacher and researcher was very productive to demonstrate what the teacher considered and believed about her activities and project. She was also enthusiastic about her project. She changed her mind and adapted some new things to her activities. She was delighted with the flow of the project. She realized that media was one of the effective ways to give the right message(s) about ESD-recycle and respect.

All in all, throughout this activity, Lale encouraged children's active involvement via hands-on and minds-on learning process and teaching strategies. Moreover, she used robust approach to sustainability practice (environment and economic [keep the environment clean and recycle] and advanced CML level (concerning access, analyze & evaluate and create competencies) to support children's awareness of ESD and their CML levels.

On the other hand, A<sub>3</sub> was Turkish Language, creative drama and math integrated activity and focused on recycling of different waste materials and the product obtained from recycled waste materials. The major objectives and indicators of the activity were (a) to distinguish different waste materials based on the properties, (b) to put waste materials to the correct recycling boxes, (c) to be able to work in a group, (d) to be knowledgeable about waste materials can be converted new materials via recycling process and (e) to analyze and understand the media messages. Creative drama classroom was used for this activity. Lale prepared the classroom before children came. She prepared four boxes for paper, plastic, glass, and battery and put them in each corner of the classroom. Moreover, she designed name badges representing four different waste materials (paper, plastic, glass, and battery). She also

threw the distinct materials (not only real ones but also their pictures) to the classroom ground.

When children came to the classroom, Lale wanted them to walk around, look and examine the classroom. After that, the children started to walk with music. Lale stated them when the music stopped, each of them took the material and/or its picture from the ground and put it to the correct recycling boxes at the corners. When the music started again, children began to walk around the classroom. This situation continued until all waste materials, and their pictures were collected. After the waste collecting process was completed, the teacher wanted children to select a recycling box, and she delivered children name badges related to their recycling box and its waste material. After that children and teacher examined each box whether waste materials and their pictures put into the correct recycling boxes or not. Time to time, children regrouped waste materials because of incorrect classification.

Moreover, there were some materials and their pictures (such as metallic boxes) which did not belong to any recycling boxes. After regrouping phase, the teacher made a mini assessment by summarizing and asking questions about the process (e.g., what did we do?, why did we collect the waste materials?) Then, teacher requested children to go to the recycling box which they wanted and to demonstrate a material in their boxes with their bodies. After that, each child showed the material that the teacher instructed with his/her body and told its properties. Afterwards, the teacher gave instruction via music. Children danced with music. When the music stopped, with their bodies they demonstrated a material which they wanted/ a paper/ a huge battery with a whole group/ respectively. Individually, they also showed a plastic bottle and jacket which is recycled from the plastic bottle.

Further, they demonstrated a metallic box and bicycle which is recycled from the metallic box. Moreover, they showed waste oil in the bin and diesel oil which is converted from waste oil. During this process, after each improvisation, the teacher asked children to tell their materials' properties with one sentence. After this creative drama part, children and teacher watched ÇEVKO's public service announcements related to recycling of paper, glass, plastic, and metal waste materials. In addition to this, children analyzed and understand the videos based on teacher's questions (such

as who prepare this video?, why do people prepare this video?, For whom this video is prepared?). The activity was completed with video analysis process.

In A<sub>3</sub> activity, Lale used two different media types (pictures and public service announcements), distinct waste materials, recycling boxes and name badges as materials and resources. She also used computer and projection as media tools. She made assessment by asking questions about the learning process and observing children especially throughout creative drama part.

Additionally, based on the field notes (researcher notes), in A<sub>3</sub> activity, Lale focused on environmental and economic aspects of ESD (recycle [collecting distinct types of waste materials], and respect [to keep clean the environment]) via implementing the activity related to recognizing different kinds of waste materials (such as paper, plastic bottle, glass bottle, batteries) and different recycling boxes, recycling (how to support the recycling process of the waste materials and batteries), recycling process of the waste materials and the products at the end of the recycling process. Using this activity, Lale fostered children to be aware of recycling, developed positive attitude and behavior towards recycling and enhanced their CML (access, analyze & evaluate and create competencies).

When children came to the drama classroom, they were shocked because of the view of the classroom. Although Lale stated children to start walking, some of them remarked that they could not walk among these staffs due to messiness. The teacher put on music through a computer, and she declared that while music was playing, children walked around the class and when the music stopped they collected the waste materials and put these to the correct boxes. However, they always wanted to collect the items since they did not like the view of the classroom.

Moreover, the name badges were a very effective way to motive children to take responsibility because some of them said that they were like as a teacher.

While collecting waste materials, at first, the teacher did not give any clue about the process. There were some real materials such as soda bottles, batteries, plastic bottles and different kinds of paper. However, there were also pictures of the waste materials on the paper. Therefore, children cannot decide where they should put these papers, and they decided to put them into the paper recycling box. However,

while regrouping the materials, they were aware of the papers including the waste materials' pictures and these pictures should be put into the correct boxes. In other words, they made a rearrangement about these papers.

Throughout the creative drama part, children internalize the learning process. They can improvise the waste materials not only individually but also as small and whole group.

During watching the videos, they can make the connection between a book which was read three days ago and the video that was watched today regarding their characters. This also shows that they could read visuals critically and Lale supported their CML especially regarding analyze & evaluate competency.

Further, the selected videos were very useful especially metaphors (such as one tones= 17 trees and when we added the trucks carrying Turkey's one-year garbage they can surround the Earth). Children watched these videos very carefully. In these videos, music, and questioning technique were used. During the videos, two different people talked about litter problem in Turkey, recycling of different waste materials and how children can support the recycling process. At the end of each video, the message (however, we cannot do this without your support. Please, hereafter let we put waste materials to the recycling bins! And share this knowledge with our friends!) was given to the children. At the end of the message of each video, some kids expressed their views (such as when I grow, I will state to the naughty men not to pollute the Earth/ I will do like at the cartoon). The teacher always asked critical questions about videos. The dialogue between teacher and children in the following:

- T: What did Çevki state to you?  
C<sub>1</sub>: Let put waste materials into the recycling bin.  
T: Why did he say this?  
C<sub>2</sub>: Because we pollute the nature.  
C<sub>3</sub>: Not to pollute the nature.  
C<sub>4</sub>: Not to break nature's rules and to clean it.  
...  
T: For whom, this video is prepared?  
C<sub>5</sub>: For us.  
C<sub>6</sub>: For children.  
C<sub>7</sub>: For Earth.  
T: If you prepared a video, how would you create it?  
C<sub>8</sub>: I would prepare a video about saving the Earth.  
...

All of these showed that through this activity children's CML (analyze & evaluate and create competencies) and their awareness of ESD (recycle and respect) were supported.

Moreover, Lale selected effective media tools and videos for this activity. This also showed her CML level was advance regarding access, analyze & evaluate competencies.

While interviewing, Lale reported that there was no audio visual media or videos related to the recycling process of waste oil and batteries. She advocated that these kinds of videos be necessary because visuals provided children to imagine and consider how the recycling process about waste oil and batteries. Otherwise, they could not visualize knowledge, and continual learning cannot occur.

What's more, Lale asked four different types of questions. These were "instigating discovery (ID)" (What is the characteristic of this material? Which recycling box is more appropriate for this material?), "probing for understanding (PU)" (What did Çevki state to you?, For whom, this video was prepared?), "promoting reasoning (PR)" (Why did he say this?, why do they prepare this video?), and "encouraging creative thinking (CT)" (What/ How could you be, if you were a material in this box?, If you prepared a video, how would you create it?)

Overall, Lale designed and implemented creative drama integrated activity to encourage children to internalize the learning process with their active participation, and hands-on and minds-on practices. For this activity, she utilized a robust approach to sustainability practice (environment, economic and social & cultural) and advanced CML level (access, analyze & evaluate and create competencies).

#### **4.4.4.3 Domain of consequences: Lale's salient outcomes**

In this section, under the headings of "Selection of Topic", "Teaching Strategies", "Resource Use" and "Assessment Strategies", A<sub>2</sub> and A<sub>3</sub> activities were examined in detail based on the analysis of SRIs.

#### **4.4.4.3.1 Selection of topic**

When the activities' topics were analyzed concerning 7Rs and the pillars of ESD, it was perceived that all activities (A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, and A<sub>4</sub>) focused on respect to nature and recycle of 7Rs and environment and economic aspects of ESD. In other words, all the activities utilized strong sustainable approach by combining two components of ESD directly. (See Table 4.31)

#### **4.4.4.3.2 Teaching strategies**

Lale constructed and conducted activities to promote children's active involvement in the learning process by utilizing distinct teaching strategies and/or method e.g. storytelling, presenting, learning by doing, discovery learning, questioning, brainstorming, creative drama, field trip and analyzing, evaluating and creating media messages. She generally used questioning, discovery learning and learning by doing as teaching strategy and/or method especially while analyzing, evaluating and creating media (i.e., book, poster, brochures, pictures...etc.) messages related to recycling and keeping the environment clean to encourage children's critical thinking skills and creativity. In other words, Lale gave importance to implement activities to foster children's hands-on and minds-on learning and enhancement of their CML.

In the following part, respectively A<sub>2</sub> and A<sub>3</sub> activities' teaching strategies/methods, the reason(s) of choosing these and the alternatives of them are explained in detail in the light of the analysis of SRIs.

For A<sub>2</sub> activity, Lale made an explanation about teaching strategies and /or method in the following:

I used posters as printed media. It was mostly by seeing, examining, looking into details, identifying and making sense of them. Then, the size of the posters here and the examination of it before... Moreover, then, they saw what happened next and examined the slogans. Mostly by doing and experiencing, I mean; they were quite active today. I only asked questions and gave instructions; I tried to make them find it out in these ways, you know, like through discovery. We prepared a book using the pictures that they had drawn; we assigned the title and author of the book. Then, they created their own posters and made up slogans for them...

In addition, she expressed why she would rather utilize these teaching methods/strategies with these words:

It is because I thought I could address this age group best in this way. They cannot recognize texts; since they can perceive and make sense of visual objects best, I thought of a method like this. Normally, I was planning to read stories to them. I was planning to make them interpret by asking them which one should come first; but when I thought they would instinctively say “Mine first!”, I preferred to use the nursery rhyme. I wanted them to assign the title of the book because they created it themselves. I wanted the title to be the one that they wanted, but when they failed to make a collective decision, I thought about getting all their opinions and writing them all like the names of the book. About preparing their own posters and slogans, I wanted them to reflect what they understood from recycling individually.

.... We discussed on whether the book consisted of one page or not and how many pages are included. Then, I asked, “We only have one picture, what do we do now?” My purpose in asking these questions was to direct them to express their ideas on how to form the book. I tried to make them find a solution like they all have one page for each picture, but if I am not mistaken, there was only one who came up with it... Moreover, my purpose in asking questions about the title and the author of the book was to raise their awareness of the constituents of a book. Moreover, I asked for whom they prepared the book to draw their attention to the fact that the book was meant to express a message...

Moreover, Lale believed that her teaching techniques were more appropriate for this activity. She stated her view about this issue as follows:

It could have been 3D, for instance. They could have seen inside of the battery and the world, like a bell glass but with our conditions, we could only achieve this.

When Lale’s statement was examined, it was perceived that she preferred to use teaching methods/ strategies to promote children awareness of recycling and media messages related to recycling. For this, she conducted the child-centered activity and foster children to create their own media products (such as book and poster) throughout the activity. She utilized questioning and some creative drama techniques to support children’s CML regarding access and analyze & evaluate competencies. What’s more, she was sure about using more effective teaching methods and strategies, and thus, she did not want to change existing ones with alternatives. To put it another way, she designed and conducted this activity consciously to encourage children’s awareness of ESD and their CML. Moreover, after PDT, Lale started to use some strategies related to CML in the activity while analyzing, evaluating and creating ESD messages through CML.

On the other hand, for A<sub>3</sub> activity Lale elucidated the teaching methods and/or strategies that she used in her activities with this statement.

Interpretation of images and videos... I used them. There was also a little bit of drama. However, these were the only concrete materials. Then, they became integrated with drama. I also checked how they would conceptualize the recycling



process of different materials with walk/dance and stop and show activity with music in the drama part. I directed them individually, and then as a group. I said “The paper was like this at first; then what happened to it?”, “Role-play a coat, each of you!”.

Moreover, I was not too involved in it when they were collecting the waste materials and pictures. I wanted them to guess where to throw them into. Then, I asked the students near each recycling bin if waste materials were in the correct places or not. Then, I asked them what kind of material they would be if they were thrown into this and that box after collecting them in right or wrong ways. Moreover, I asked them to express it through their bodies like what kind of battery, paper or a different material they were. I also directed them to analyze and evaluate images and their messages by asking questions about the video.

She explained the reason(s) of choosing these teaching methods/strategies in the following:

I thought that it was suitable for the age of six. I wanted to see what they made up in their minds in the improvisation and drama part. Moreover, I thought it would be a preparation for drama; plus, I wanted to see that they internalized it enough to personalize themselves as a recycling bin. I said “Become a tin now, what happens to you?” in order to see if they comprehended it or not. Besides, as I observed, there had not been any group-acting up to now. So I asked them to role-play batteries as a group, to support creating a team-spirit. I asked if the materials in each box were thrown into the right or wrong box so that they could realize which box each material should be thrown into. Moreover, the reason why I asked them to express one material there by their bodies by asking questions about the materials in the boxes was to see if they were aware of which box they were in. Moreover, to see what kind of waste material they would be among themselves, I asked them what kind of a battery they were so that they could see there were different models of batteries. I also paused the videos and asked questions in order to see if they grasped the concepts in it or not. And my purpose with the questions like “Why/for what has this video been created, by who? With what purpose?” was to get them to realize that these videos were prepared by some people to give a message.

Furthermore, Lale advocated the teaching methods and/ strategies were adequate for this activity. She reported that

I think it is enough with this version. Under these circumstances, only we can carry out this [teaching methods and/or strategies].

The analysis of Lale’s explanations indicated that via creative drama she provided opportunities for children to participate actively in the learning process and internalize the process. During the creative drama process, she supported children’s creativity, group working and awareness of different kinds of waste materials. While analyzing and evaluating of video messages related to recycling process of distinct waste materials, she promoted children’s critical thinking skills and awareness of recycling process and its importance for Earth and how they can support it and what their roles are. In addition, she believed that this activity could be conducted

effectively with these teaching methods and/or strategies. Therefore, she did not state any alternative ones. To sum up, Lale selected these teaching methods and/or strategies consciously to enhance not only children's ESD awareness but also their CML (regarding analyze & evaluate and create competencies) effectively.

#### **4.4.4.3.3 Resource use**

For A<sub>2</sub> activity, Lale used children's drawings, posters of ÇEVKO and TAP, tambourine A<sub>4</sub> papers and crayons as media and material. She clarified the reason for using these materials with these words:

We used the kids' pictures from yesterday to prepare the recycling book for the class. I used ÇEVKO and TAP's posters about recycling and waste batteries. The reason why I used these posters was that the size of the posters was appropriate because it would be easier for the kids to detect the details with this size. The messages were appropriate to the kids' levels. I also tried to hang them at a level they could reach, and with the size, they could easily attain; so they could easily view them. I helped them study each poster one by one by using a tambourine. By doing this, I prevented the students from piling up in front of any poster. I gave each student enough time to study the poster.

The examination of Lale's expressions demonstrated that she utilized children's drawings and posters as media while conducting activity related to recycling and keeping the environment clean (ESD-environment and economic) via CML. She used children's drawing to support them in preparing a book about recycling. She preferred to use two NGO (well-known organizations about recycling and collecting the batteries)'s posters which were appropriate for children's developmental level regarding their visuality, messages, and dimensions. She also paid attention that these posters were hanged on the wall at a certain level that children can easily see, touch and analyze. In addition, she used a tambourine to motivate children to analyze and evaluate the posters and their slogans. In other words, she can choose and use media effectively to promote children's ESD awareness and CML

For A<sub>3</sub> activity, Lale utilized pictures, ÇEVKO's public service announcements, music distinct waste materials, recycling boxes and name badges as media, tool, and material. She explicated why she would rather use these media in the following:

Because there were only boxes related to these as recycle bins and they would see boxes like these... so they could relate it to everyday life. I used music as a tool while collecting the waste materials and their pictures. Name tags... I aimed to

make them realize that the ones, for example, who have paper-collector name tag were only responsible for the paper box and have the others at other boxes give the paper waste to them. I did so in order to make them realize that they had tasks and duties. The reason why I put the pictures of the waste materials is to make them predict the material of the bottle of mineral water and that they have to be thrown into the glass bin as well as to prevent potential accidents.

I made use of public service announcements because they only heard of it literally through the materials I provided or the pictures they had brought or from my speeches. However, I did it thinking if they saw the process of recycling step by step in a public service announcement, it would be more permanent and they could consolidate their knowledge better. Besides, the messages in the videos were clearly expressed, and they were appropriate for the kids' levels. That is why I used them.

Lale also drew attention to the lack of public service announcements about waste oil recycling process and the process related to batteries with these words:

A public service announcement could have been prepared for oil. As it is not a common visual object, it is not very permanent in kids' minds. For example, the waste oil is collected, processed, but if only they showed what happened after the process. Moreover, the same with batteries... There is no data about production and processing periods, otherwise would be more permanent and settled down in people's minds.

Based on Lale's words, she used pictures and public service announcements related to the recycling process of distinct waste materials and the products that were obtained after the recycling process. She utilized public service announcements to provide that children visualize the recycling process and how they can make a contribution to the recycling process. Also, she selected them since their messages were appropriate for children developmental level. Moreover, she used waste materials' pictures to promote children's analyze and evaluate skills since first they analyzed what the material was at the picture, and then they decided to which recycling box was appropriate for this material. Four different recycling boxes were used to ensure that children made a connection to everyday life because they mostly saw these boxes in their life. She also utilized name badges to motivate children to internalize their responsibility. What's more, Lale shared her detection about the deficiency of public service announcements of ÇEVKO and TAP. This also showed that she made detailed research on this issue. In conclusion, Lale became aware that how to promote children's CML (access, analyze & evaluate and create) and awareness of ESD and its components (environment and economic) with creative drama integrated activity.

#### 4.4.4.3.4 Assessment strategies

For A<sub>2</sub> activity, Lale would rather observe the learning process to make an assessment, and she shared her observation with these words:

As for the book, it reached its goals; they remembered the events they did the previous day. The aim was to recognize visual materials and imitate them, identify their image, understand the elements there and to be able to form their own recycling posters, which was achieved. Most of them expressed their thoughts through their posters with great interest and curiosity. I tried to give the concept that there are text and images in books as well as various visuals and slogans on posters. Certain images were formed in their minds. Especially the word “recycling” was perfectly set. The details of it will become more evident in the future; maybe in a brochure. Whatever they have learned better will be reflected later. For now, what they have learned best is the symbol of recycling. I believe the kids formed up at least some ideas about the posters. Considering the ones, they have created now, I believe that they will elaborate on the poster about the next topic while they are preparing it because they have clearly grasped the concept of the poster.

When Lale’s expressions were investigated, it was seen that she could reach her aims pertaining to ESD and CML even though there are no particular objectives and indicators focusing on recycling and understanding media components, analyzing, evaluating and creating media messages related to recycling in Turkish National Curriculum. After analyzing and evaluating poster and their slogans, children created their posters enthusiastically and reflected their thoughts about recycling to their posters and slogans. In the light of researcher notes, while children created their own posters, some of them tried to write something with letters that they knew. This is also a fantastic reflection of analyzing and evaluating the process of posters and slogans since children did not learn writing at the preschool. Moreover, during the book preparing process, Lale encouraged children to talk about their drawings and messages related to them with their peers. By this way, children can analyze and evaluate their drawing messages. All in all, based on Lale’s observation, she could promote children’s ESD awareness and CML concerning access, analyze & evaluate and create competencies.

Additionally, in A<sub>3</sub> activity, Lale made assessment by asking questions and observing children throughout the learning process. She elucidated why she used these assessment strategies and shared her observation as follows:

I aimed to make them be able to understand and perceive the idea that the materials on the ground have different bins. That is what they exactly did. I did not want to add much glass to avoid injuries, and I put some pictures instead. The pictures of

batteries were all thrown into the paper bin. They could group the real thing, which they can touch, in a correct way. I think that I reached my aim; I see that everything has been grasped. Moreover, I realize that it has been unintentionally engraved in their subconscious. I also saw through the improvisations that they had done according to the instructions I had given during the creative drama process that they have internalized the process pretty well. After this period, I did a mini evaluation by asking some questions, which was to find out their ideas about collecting waste materials. It also came from the children. Some of them came and said we put to paper here, plastic there, batteries and glass there and so on. Then they said, “we put the glasses in the correct place”. I mean, when you look at it, they explained the process pretty well. In the end, I checked if they received the messages about the recycling of the materials in the videos by asking questions during and after the video. I got really satisfying feedback at this point, too. That is to say; it became clear that when you prepare a perfect environment and atmosphere, they could easily adapt. Of course, it is because we had given the necessary prior knowledge before we came up to this point. Otherwise, if they had entered into it out of the blue, they would never have reacted this way; it is because we had laid the groundwork for it.

The examination of Lale’s explanations revealed that she could reach her targets related to ESD and CML especially focusing on distinguishing waste materials based on their properties and analyzing and evaluating media messages about recycling. The teacher shared her observation about children’s performance throughout the creative drama process. For her, most children can distinguish waste materials and group them to the different recycling boxes and reflected this via their improvisations. Moreover, she emphasized that children can understand and interpret media messages about the recycling process. What’s more, she drew attention to when the learning environment was prepared effectively for children regarding materials and resources; they can easily adapt to and internalize the learning process. Based on research notes, after the video analyzing the process, some children gave messages to take responsibility for recycling, keeping the Earth clean and warning people about these issues. All of them indicated that Lale could support children’s awareness of ESD and their CML regarding access, analyze & evaluate and create competencies.

For researcher note, at the end of the project, children and parents prepared a video about accumulating batteries at the special bins. It is also noteworthy since parents also involved in learning process actively.

#### **4.4.5 Lale’s Overall Professional Growth**

In this section, to portray Lale’s overall growth, her CML competencies, as well as level and ESD awareness, will be examined. Her growth networks will be presented in Figure 4.5.

#### **4.4.5.1 Professional growth concerning CML issues**

When Lale's CML levels before and after PDT were compared it was perceived that her CML level changed medium to advanced regarding access, analyze & evaluate, create, reflect and act competencies since before PDT she used power points and flash cards as media to draw children's attention to the activity. On the other hand, after PDT, she utilized different kinds of media (such as a poster, book, brochures, and public service announcements) which were prepared by NGOs (ÇEVKO and TAP). She made elucidative explanations about which criteria (e.g., reliability, quality of visuals, clarity of messages..etc.) were vital for her and their reasons. She also made a connection with not only NGOs (ÇEVKO and TAP) but also governmental agencies (Mamak Recycling Center) to receive support for her recycling project concerning resources and materials. At Mamak Recycling Center, the experts gave children information about the recycling process and how they can grow plants via using biogas.

Moreover, after PDT, she gave more importance to ethical issues pertaining to supervision of social media account. She also emphasized that families should be conscious of the effect of media messages on children's lives and NGOs should inform and foster families be aware of this issue. She promoted children's critical thinking by asking different kinds of questions and their creativity via creative drama practices. She also continued to use media effectively to foster children's CML after her project. She had an experience about and was aware of how ESD activities through CML could be constructed and conducted, and which media types could be utilized, how children's CML level could be promoted and which criteria were vital while implementing ESD activities via CML in early childhood learning environments.

#### **4.4.5.2 Professional growth concerning ESD**

Before PDT, Lale did not hear the concept of ESD and was not aware of its components. She carried out activities focusing on just environment aspect of ESD directly or indirectly. Throughout the activities, she generally aimed to give information about the activity topic. On the other hand, after PDT, Lale was aware of ESD concept and its pillars and explained each pillar by giving examples. For instance, she stated that ESD covered many issues related to environment, economic and social & cultural pillars from global warming to sharing resources and cooperation. She also

designed and implemented the nine-day project on recycling. During this project, she used creative drama and field trip to provide that children internalize the learning process. Before starting this project, she made a connection with NGOs and Mamak Recycling Center. She attended in seminars of ÇEVKO. Moreover, she encouraged her preschool's food handlers to accumulate the waste oil in a bin and give this oil to the institutions making biodiesel. Moreover, she shared her project effect on children's awareness of, attitude and behavior toward recycling.

#### 4.4.5.2.1 Growth concerning selection of topics

Table 4.32

*Analysis of Observed Activities in terms of Selection of Topics before and after PDT*

<b>Selection of Topic-ESD</b>	<b>Prior to PDT</b>	<b>After PDT</b>
Environment	*4	4
Social & cultural	-	-
Economic	-	4

\* One activity directly the others indirectly related to the environment

The examination of four conducted and observed activities focusing on ESD via CML before and after PDT regarding selection of topic revealed that after PDT there was a vital change and growth in Lale's activities' content. Prior to PDT, only one activity was directly related to environment aspect of ESD and media used as a tool. On the other hand, after PDT activities covered two pillars of ESD (environment and economic aspects) and CML. To put it another way, after PDT she was aware of ESD, its pillars, and recycling, and she reflected these while selecting a project topic.

#### 4.4.5.2.2 Growth concerning teaching strategies/ methods

Table 4.33

*Analysis of Observed Activities in terms of Teaching Strategies/Methods before and after PDT*

<b>Teaching Strategies</b>	<b>Prior to PDT</b>	<b>After PDT</b>
brainstorming, questioning	4	4
Discovery learning	-	1
analyzing and evaluating, interpreting various media types	-	4
Group work	-	1
Field trip	-	1
Storytelling	-	1
creative drama	-	1
Role-playing	-	2

When four conducted and observed activities before and after PDT in terms of teaching strategies were compared, it was seen that there was a growth in utilizing different teaching strategies/ methods such as creative drama, field trip, discovery learning, group work, analyzing and understanding media messages...etc. While implementing ESD activities via CML to promote children's critical thinking skills, creativity, and active participation.



#### 4.4.5.2.3 Growth concerning resource use

Table 4.34

*Analysis of Observed Activities in terms of Resource Use before and after PDT*

<b>Resource Use</b>	<b>Prior to PDT</b>	<b>After PDT</b>
pictures	3	2
photographs	3	2
powerpoint	3	1
posters	-	1
book	-	1
children's drawings	-	1
brochures	-	1
public service announcement	-	4
cartoon	1	-

The comparison of conducted and observed ESD activities through CML prior to and after PDT regarding resource use indicated that there was a growth in utilizing different media types from book and brochures to public service announcement. In other words, this growth also revealed that Lale provided opportunities for the children to have an experience related to analyzing and evaluating distinct media types' messages.

#### 4.4.5.2.4 Growth concerning assessment strategies

Table 4.35

*Analysis of Observed Activities in terms of Assessment Strategies before and after PDT*

<b>Assessment Strategies</b>	<b>Prior to PDT</b>	<b>After PDT</b>
Finding a slogan	-	1
Creating poster	-	1
Preparing a book	-	1
Creating a brochure	-	1
Observation	1	2
Asking questions	4	2

When all applied and observed activities targeting ESD through CML prior to, and after PDT was analyzed in terms of assessment strategies, it was perceived that there was a growth in utilizing several assessment strategies to promote and evaluate children's CML in terms of create competency and their critical thinking skills. During the activities, children prepared their own book with a whole group and designed their own posters and brochures individually. Further, they found a slogan for their posters. One and a half month after the project, Lale shared her observation about children's awareness of, and positive attitude and behavior toward recycling.

Overall, Lale's growth networks could be summarized like in Figure 4.5. As showed at the figure, the reflection of External Domain (PDT) on Lale's Domain Practice (constructed a project on recycling) was seen since while implementing activities she also asked different types of questions to encourage children's critical thinking abilities and creativity. Throughout the project, she promoted children to design their own products (e.g., book, posters, brochures, video (with parents' support) as it was in PDT. During the activities, Lale also used creative drama method and some of its techniques to motivate children for active participation and provide them to internalize the learning process. Moreover, the analysis of post-interview and SRIs in the fall semester (2016-2017) indicated that PDT had a noteworthy impact on Lale's

Personal Domain (awareness of ESD and CML level). Before PDT, she was not aware of ESD, its pillars and issues, however, after PDT she elucidated these and gave examples about them from her experiences related to global warming (PDT's topic) and recycling (her project topic). In other words, before PDT, she was not knowledgeable about and aware of global warming and recycling.

Additionally, while planning her project, she communicated with NGOs (ÇEVKO and TAP) and governmental institution (Mamak Recycling Center) to get support from these institutions regarding resources and materials. Furthermore, the direct influence of the change in Personal Domain on Domain Practice was observed since after she was aware of ESD and its pillars, she planned and implemented recycling project targeting ESD and its environment and economic aspects. After PDT, she became aware of which questions should be asked to promote children's understanding, analyzing and evaluating skills. She used them effectively throughout the project. The reflection of Domain Practice on Personal Domain can be perceived because Lale had an experience and constructed a schema in her mind pertaining to how to conduct ESD activities through CML, what the children's reactions could be, how to foster children's active involvement, motivation and creativity with these types of activities, ESD awareness and CML levels (with respect to access, analyze & evaluate and create competencies).

What's more, Domain of Consequences (having experiences about selection various topics, resource use and teaching and assessment strategies) were affected directly by Personal Domain. For instance, during post-interview, Lale stated that she chose recycling as a project topic because she believed that six-year-old children could easily understand this topic and she can also reach knowledge, resources, and materials about this topic easily. To enhance children's create competency level, book, poster, and brochures were prepared, and slogans for poster and headings for brochures were determined by them as outcomes of the activities. She made an assessment about children's development based on her awareness of as well as experiences about ESD and CML. In addition, the reflection of Domain of Consequences to Personal Domain could be understood because during SRIs, she shared her observation at the end of the activity and stated that if you prepare to learn environment effectively to support children's needs and interests in terms of materials, resources and tools, they can easily adapt to and internalize learning process. She also remarked that after this study, there

was a change in not only her but also children's ESD awareness and CML. Further, an effect of Domain Consequences on Domain Practice was observed because Lale used different media types, teaching and assessment strategies by outcomes of the activities targeting ESD through CML. To illustrate, while Lale used a book and pictures and photos as media in an activity, she preferred to utilize posters/ public service announcements/ brochures for the other activities. Lastly, the reflection of Domain Practice on Domain Consequences could be perceived since throughout post-interview Lale reported that she also continued to use CML teaching strategies and several media types in her other activities and projects. Moreover, during post-interviews and SRIs, she expressed that she will use posters and brochures for her activities and project since she thought that when children had more experience about creating posters and brochures, they could give their messages very effectively via their own media. To put it another way, Lale realized that assessment strategies that she utilized during activities improved children's ESD awareness and CML.

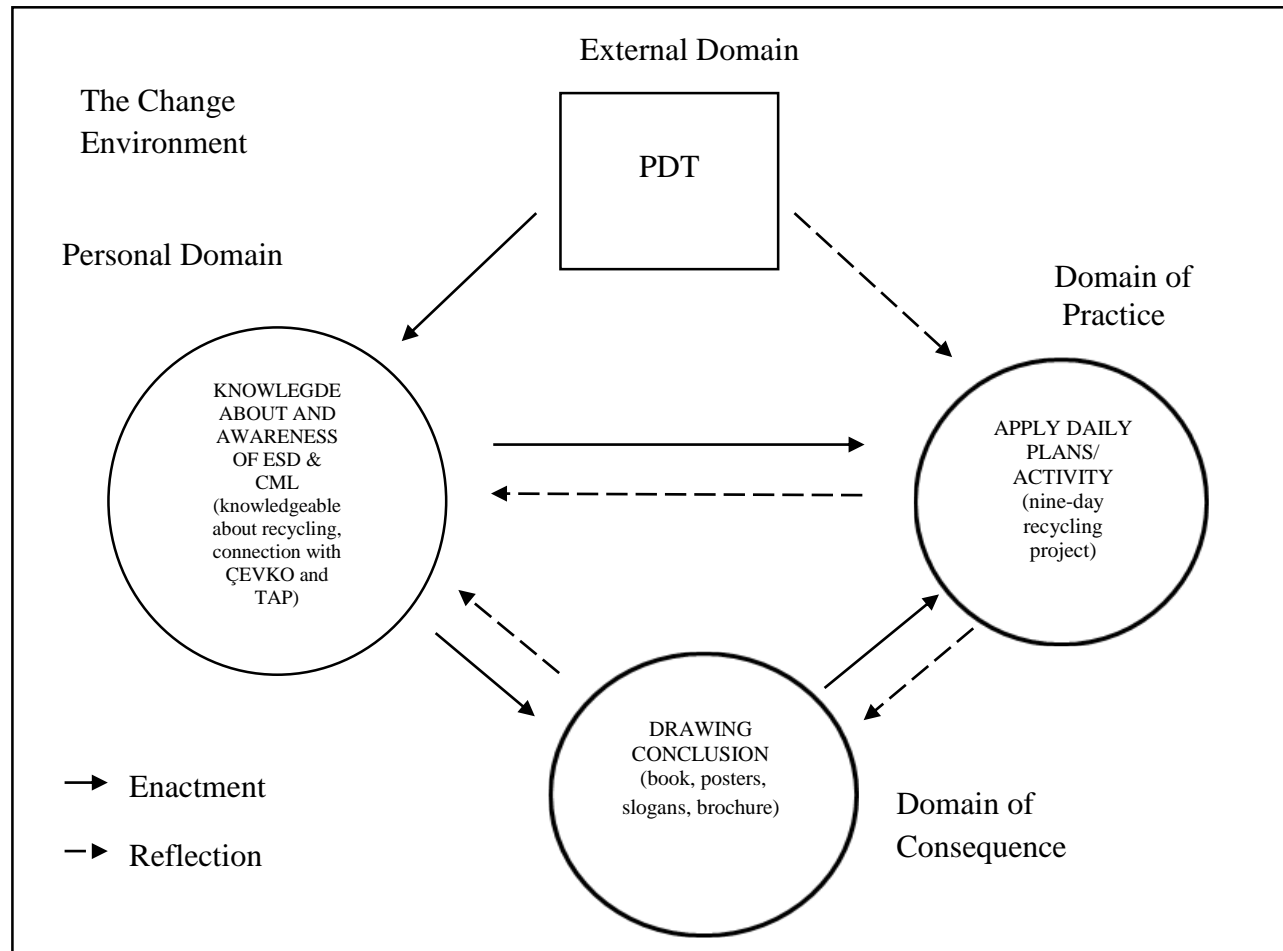


Figure 4.5 Lale's Growth Networks

The growth of Teacher Lale regarding personal domain, domain of practice and domain of consequences after PDT were summarized in Table 4.36.

Table 4.36

*The Summary of Teacher Lale’s Growth*

<b>Teacher Lale</b>	<b>Before PDT</b>	<b>After PDT</b>
<b>Personal Domain</b>	No ESD awareness Medium CML	ESD and its pillar awareness Advanced CML
<b>Domain of Practice</b>	Weak approach to sustainability Medium CML	Strong approach to sustainability Advanced CML
<b>Domain of Consequences</b>	Environment aspect of ESD No CML teaching strategies Picture, photograph No assessment strategies to support children’s create competency	All aspects of ESD CML Teaching Strategies New resource use (NGOs’ posters, brochures, book, public service announcements, children’s drawings) New assessment strategies to support children’s create competency (create poster, book, brochure)

All teachers’ growth regarding personal domain, domain of practice and domain of consequences after PDT were summarized in Table 4.37.

Table 4.37

*The Summary of All Teachers' Growth*

	<b>Before PDT</b>	<b>After PDT</b>
<b>Personal Domain-ESD</b>	<ul style="list-style-type: none"> <li>only one of the four teachers had heard of the concept of ESD</li> <li>none of them were aware of its pillars (environment, social &amp; cultural and economic) and related issues.</li> <li>Teachers' knowledge about ESD and ESD related issues are generally very low</li> </ul>	<ul style="list-style-type: none"> <li>All teachers could make detailed explanations about them</li> <li>All teachers acquired a notion that ESD should start from the early years since children's behavior and attitudes mainly are developed in these years</li> <li>Teacher Duru-ESD and EE are distinct concepts</li> <li>Teacher Saniye-"gender equity" activity.</li> <li>Teacher Umay-change in children's awareness of recycling, water, and electricity conservation, and reusing paper</li> <li>Teacher Lale-changes in not only her ESD awareness but also children's awareness of attitudes and behaviors toward recycling</li> </ul>
<b>Personal Domain-CML</b>	<ul style="list-style-type: none"> <li>Three teachers' CML levels were "medium"</li> <li>One teacher's level was "basic"</li> </ul>	<ul style="list-style-type: none"> <li>All of them were advanced</li> <li>All of them know media components</li> <li>While selecting media for their activity, teachers started to analyze them regarding media components such as clarity of messages and quality of visuals.</li> <li>CML teaching strategies while conducting activities and /or projects targeting ESD through CML</li> <li>more importance to ethical issues about supervision of media and CML education for individuals</li> </ul>
<b>Domain of Practice</b>	<ul style="list-style-type: none"> <li>mostly used a weak to medium sustainability approach</li> <li>the number of the activities focusing on EE/ESD in their daily and monthly plans were low</li> <li>they were not aware of CML and its teaching strategies and how to carry out these strategies.</li> <li>all teachers did not plan and implement ESD activities through CML.</li> </ul>	<ul style="list-style-type: none"> <li>change in the number of ESD activities via CML.</li> <li>educators used CML teaching strategies to support children's critical thinking skills,</li> <li>promoted children to create their own media products individually and/or with a group work to convey their own messages about specific ESD topics.</li> <li>to use different media types and research how they selected and used media focusing on ESD.</li> <li>Duru and Saniye preferred to conduct four separate (not connected) activities,</li> <li>Umay and Lale preferred to design and implement projects focusing on specific ESD topic (i.e. global warming and recycling).</li> <li>they did not define/ choose particular objectives and indicators for their activities since there is no objective especially aspiring to ESD's social &amp; cultural and economic aspects and CML in Turkish National Early Childhood Education Program.</li> </ul>
<b>Domain of Consequences</b>	<ul style="list-style-type: none"> <li><b>Selection of topic</b>-environmental aspect of ESD</li> <li><b>Teaching Strategies</b>-no CML teaching strategies</li> <li><b>Resource use</b>-book, video, pictures, power point- they generally used media to draw children's attention to a topic and to visualize what they were learning.</li> <li><b>Assessment Strategies</b>-asking question, drawing</li> </ul>	<ul style="list-style-type: none"> <li><b>Selection of topic</b>-all three aspects of ESD- related to everyday life &amp; children can understand ESD issues</li> <li><b>Teaching Strategies</b>-CML teaching strategies-to promote children to analyze and evaluate media messages about different ESD topics-observations related to changes in children's analyze &amp; evaluate and create competencies.</li> <li><b>Resource use</b>-different types of media (i.e. posters, brochures, public service announcements, animation...etc.) -they were aware of and knowledgeable about how to support children's CML and awareness, attitude and behavior related to ESD issues</li> <li><b>Assessment Strategies</b>- creating poster, creating brochure, design own product, find a slogan, preparing a book, making concept map and asking questions-promote children's create competency</li> </ul>

As a summary, this chapter presented the discussion of the data of the four teacher participants. It started with a figure that illustrated how the data were presented throughout the chapter. While presenting the data of each teacher, the components of ICMPG namely personal domain, domain of practice and domain of consequences were explained in detailed. Each section finished with teachers' overall growth in elucidating teacher's ICMPG components. This provided a detailed account of each of the teachers' growth and change as a result of the PDT. It ensured a snapshot of how each teacher's personal domain, domain of practice and domain of consequences were affected by their involvement of the PDT which illustrated how targeted PD could be a useful strategy for changing teachers' knowledge, practices in new areas of education, in this case, CML and ESD.



## CHAPTER 5

### DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

*“Just as a flower which seems beautiful and has color but no perfume, so are the fruitless words of the man who speaks them but does them not.”*

*John DEWEY*

Based on the findings presented in chapter IV, the discussion, implications, and recommendations of the current study are presented respectively in this chapter. For the discussion part, the findings of the present research are compared and contrasted with international and national studies. In the light of the discussion, the implications and recommendations for practice and further studies and researcher criticism on the theoretical background of the study are portrayed.

#### 5.1 Discussion

The present study aimed to determine changes regarding (a) early childhood teachers' awareness of education for sustainable development (ESD), (b) their level of critical media literacy (CML); (c) their implementation of ESD via CML in early childhood learning environments and (d) the learning outcomes (i.e. children's awareness of ESD, and their CML levels) that arose from their implementation after the professional development training (PDT). An overview of teachers' professional growth regarding their ESD awareness, CML level, practices, and outcomes is provided in conjunction with existing literature. Then, the influence of PDT on teachers' professional growth - the positives and the challenges - is elucidated based on literature review.

## **5.1.1 Overview of Teachers' Professional Growth**

### **5.1.1.1 Personal domain components**

On the basis of the Interconnected Model of Professional Growth (ICMPG) (Clarke & Hollingsworth, 2002; Hollingsworth, 1999), in the present research, personal domain components were early childhood teachers' ESD awareness and CML levels. Therefore, in this section, their professional growth related to ESD awareness and CML levels are discussed.

#### **5.1.1.1.1 ESD awareness**

All the participating teachers' overall professional growth related to ESD awareness are shared, followed by their individual differences.

Although Ärlemalm-Hagsér and Sandberg (2011) reported that minority of the participants, 32 daycare attendants, had never heard of the concept of SD before they attended in a course related to SD, in the present study before PDT, only one of the four teachers had heard of the concept of ESD, and none of them were aware of its pillars (environment, social & cultural and economic) and related issues. Umay stated that she had heard of the ESD concept but, she could not make any explanations about the ESD components and issues except keeping nature clean, and recycling. When Duru read UNESCO's definition of ESD, she identified that she applied similar activities to UNESCO's description. Saniye and Lale did not elucidate anything about ESD. Teachers' knowledge about ESD and ESD related issues are generally shallow. Similar outcomes were found by several researchers (Inoue, O'Gorman & Davis, 2016; Inoue, O'Gorman, Davis & Ji, 2017) in different countries (Australia, Korea, and Japan). Only Saniye agreed with the UNESCO's statement and expressed that we need to go beyond knowledge otherwise it cannot be converted to changed attitudes and behaviors.

After PDT, all teachers were aware of ESD content, its pillars, and related issues, and could make detailed explanations about them. Furthermore, the participating teachers acquired a notion that ESD should start from the early years since children's behavior and attitudes mainly are developed in these years. By mean of such education, educators can make a contribution to raising environmentally friendly future citizenship as reported by Lasen, Skamp, and Simoncini (2017). Each

teacher drew attention to different aspects of the concepts as Ärlemalm-Hagsér and Sandberg (2011) described.

For instance, during the interviews, Duru emphasized that ESD and EE are distinct concepts. To her, while ESD encompasses issues pertaining to environmental, social & cultural and economic aspects, EE includes topics related to just the environment component. Duru stated that before PDT, she believed that children could not understand ESD issues, however, after PDT, she emphasized that children could comprehend these as shown by numerous researchers (e.g., Alici, 2013; Cengizoglu, 2013; Palmer, Bajd, Duraki, Razpet, Suggate, Tsaliki, Paraskevopoulos & Skribe-Dimec, 1999; Palmer & Suggate, 2004). She believed that teachers could efficiently plan and implement activities targeting ESD through benefitting from and making connections to everyday issues, events, and situations. She also reported that before PDT, she thought that ESD focused on only the environmental aspect, and thus she implemented activities related only to this aspect. However, after PDT she effectively constructed and conducted activities aiming at other distinct pillars of ESD.

Additionally, Saniye highlighted that after PDT, her awareness of ESD has increased. She started to conduct ESD activities very often. During stimulated recall interviews (SRIs), she also shared her experiences related to a “gender equity” activity. She stated she had not planned and applied this perspective to any activity targeting gender equity until now. However, she declared that children’s involvement in the activity was astonishing and resulted in a range of experiences for children. She stated that she raised children’s consciousness about this issue. Children were also aware of some ESD topics such as noise pollution and environmentally friendly behaviors and can now make a connection to their daily lives especially related to noise pollution and gender issues. Likewise, Ärlemalm-Hagsér and Sandberg (2011) found that daycare attendants also gave place to fundamental values such as democracy, gender equality and social relations throughout their implementations after participating in the course related to SD.

Umay commented that she had heard of the ESD concept but, her outline of ESD consisted mainly of nature and recycling issues. She also expressed that she was not knowledgeable about “global warming” previous to the PDT. Later, during the post interviews, she was able to elucidate about ESD, its pillars, and related issues. She

identified that ESD should begin from early childhood education since, for her, children who are aware of using Earth's resources sustainably will affect their parents, siblings, and relatives and their own future families, and thus society's positive perspectives about and attitudes and behavior toward this issue will be like a snowball effect as emphasized by literature (e.g., Grodzinska-Jurczak, Stepska, Nieszporek & Bryda, 2006; Palmer, 1996; UNESCO, 2008). She shared her observations about change in children's awareness of recycling, water, and electricity conservation, and reusing paper after she implemented the one-month project on global warming. Similarly, Lewis, Mansfield, and Baudains (2010) declared that if children participate in practices about sustainability actively, it was perceived that there were changes in children's knowledge about environmental issues, and attitudes and behavior toward them.

Although Lale had initially reported that she was not aware of the ESD concept before PDT, she made an explanation about ESD, its pillars and related issues based on her experience about global warming (PDT) and recycling (her project) after PDT. As Rogoff (2003) stated, an individual's practical knowledge derives from their workplace and their life experience. During the post interview, she shared changes in not only her ESD awareness but also children's awareness of attitudes and behaviors toward recycling. Likewise, Alıcı (2013) found that there were changes in children's knowledge about and awareness of recycling and their behaviors towards recycling after they participated in a six-week recycle, reduce and reuse education. Lale stated that she preferred to plan and conduct a nine-day project on recycling because she could acquire resources related to recycling and obtain knowledge about it easily. Further, she promoted her preschool's food handlers to collect waste oil in a bin and send this oil to the institutions making biodiesel.

The findings of this study were somewhat consistent with the outcomes of studies in the literature focusing on ESD and teacher education. For instance, Ärlemalm-Hagsér and Sandberg (2011) also found that early childhood teachers who had attended part-time in-service education course related to SD initially perceived SD as a discrete notion, but for its teaching, a holistic approach is required. Moreover, as Hedefalk, Almqvist, and Östman (2014) declared, early childhood teachers in the present study started to give a place for ESD to develop environmentally responsible

citizens. Additionally, Dymont et al. (2014) conducted professional development sessions related to ECEfS with pre-service and in-service teachers based on ICMPG and found that after professional development there was a positive change in participants' understanding and knowledge about ECEfS. Their comprehension about ECEfS changed from the environmental focus to also considering social, economic and political aspects as it was in the present study. Further, Foley, Archambault, and Hale (2015) reported that teacher candidates attending "Sustainability Science for Teachers" course with integrating technology and digital storytelling understood that sustainability is a multifaceted and interconnected system. Similar to the present study's findings, their conceptual comprehension of sustainability developed. Their descriptions about sustainability also changed from quite shallow to more robust and sophisticated. In addition, these teacher candidates realized their role in providing a more sustainable life and the critical mission of education to contribute to this goal. When the national studies were reviewed, only very few such as Feriver et al. (2015) seem to focus on the topic. In this study, the authors' implemented a transformative learning program for early childhood teachers to support their sustainability perspectives. However, there were no obvious findings of teachers' understandings of EfS/ESD. Rather, it was found that the role of support and challenge, and the structure and content of the EfS implementation were effective facilitators of this program. In addition to this, discussions, group projects, critical thinking, and self-evaluation were necessary activities for the effective transformative learning program. Nevertheless, there was no ongoing support after this program, and they did not make any observation about teachers' implementation in their classroom.

#### **5.1.1.1.2 CML issues**

In this part of the chapter, initially, all teachers' overall professional growth in CML issues are explained, and then their individual differences are given. While CML issues are elucidated, changes in teachers' CML levels and competencies are presented.

Mainly, in the light of analyses of pre- and post-interview, after PDT, there was a growth in all teachers' CML levels regarding their 'access, analyze & evaluate, create, reflect and act' competencies. While three teachers' CML levels changed from "medium" to "advanced", that of the other teacher changed from "basic to medium"

to “advanced”. Noticeable growth was seen at analyze & evaluate, create, reflect and act competencies. Similarly, Alıcı and Şahin (2016) also found that after elective undergraduate course there were changes in early childhood pre-service teachers’ ML competencies and level. Throughout this course, participants had the experience to implement an activity targeting ML. This experience impacted their perspective how to ML can be conducted in early childhood settings. Similar results were also obtained by Alıcı and Gökbulut (2017). They reported that early childhood pre-service teachers’ ML competencies and level changed after they participated in 21-hour process drama sessions. To illustrate, in the present study, while selecting media for their activity, teachers started to analyze them regarding media components such as clarity of messages and quality of visuals. Moreover, they began to use CML teaching strategies while conducting activities and /or projects targeting ESD through CML. After PDT, they also gave more importance to ethical issues about the supervision of media and CML education for individuals.

When it comes to individual differences regarding “access competency”, based on examination of pre- and post-interview, all the participating teachers demonstrated improvement. For instance, Duru was the only teacher who used E- Governmental Portal in Turkey both before and after PDT. After PDT, she was more knowledgeable about its interface, functions, links (payment and applications (i.e., health) of this portal. Before the PDT, TV and social media were the only two forms of media, she reported utilizing, but after PDT, newspapers, and TV, come to her mind when the concept of media is referred to. While before PDT, she used digital (internet), printed, social media and audio-visual media - from most to least - after PDT, she utilized digital, printed and social media at the same level as in her daily life. In her working life, her media usage range changed from printed media (before PDT) to audio-visual, digital and printed media (after PDT). She also offered a more detailed, expanded explanation about the types of media (such as videos, cartoon, public service announcements, etc.) that she used actively in the classroom after PDT.

Teacher Saniye made similar explanations about the concept of media as visual tools (TV, internet, radio, and computer) before and after PDT, although she stated that she became aware that media concepts also covered printed texts after PDT. Even though her use of social (Facebook and Instagram) and digital media (Google and Pinterest), in her daily and working life, remain the same before and after PDT, she utilized more

audio-visual media and printed media in her every day and working live after PDT. Also after PDT, she included references for how she used and adapted printed children's journals (i.e., Meraklı Minik [Curious Kid]) in her classroom activities. Further, she started to spend less time on media in her daily life.

Umay described the media concept as visual and audio media before PDT, while after PDT, she described it as printed and audio and visual media (e.g., journal TV, radio, and computer). Her personal media use preference ranking, from most to least, digital media (Google, internet), audio and visual media, social media and print media in her everyday life before and after PDT. In her professional life, she mostly utilized digital media (Google, Pinterest), printed media, audio and visual media and social media before PDT. After PDT, she used printed (book, poster), audio-visual (video) and digital (Google, Pinterest) respectively. She reported that she benefited from mainly printed media (e.g., book, poster, brochure, pictures, etc.) to enrich the activities and to give information to the parents throughout the one-month global warming project.

Teacher Lale identified media as “audio and visual tools that provide access to everywhere including printed media (journals, newspapers)” before PDT. After PDT her definition of media had expanded to encompass not only printed media such as posters, brochures, but also Facebook and, Twitter. In other words, she started including social media in her media description. Before PDT, she ranked media types from most used to least used as digital media (Google, internet), social media (Twitter, Facebook, and WhatsApp), audio and visual media (television), and printed media (journals) in her daily life. After PDT she reported that she utilizes more social media (Facebook, Twitter, Instagram, and WhatsApp), followed by, digital media (Google, internet), printed media (book, poster, and brochure) and audio-visual media (television). Professionally, she utilized mainly audio and visual media (television, computer) and then digital media (Google, Internet). After PDT, she started to utilize printed media, audio-visual and digital media at the same level. She did not prefer to allocate much time to media if there was no need.

When it comes to individual differences concerning “analyze and evaluate competency”, in the light of analyses of pre- and post-interview before PDT, Duru utilized some basic strategies (media's popularity, originality, and creativity) without giving it much thought while selecting media. On the other hand, she made a detailed

explanation of some criteria for book selection. She had no knowledge related to components of media's content. After PDT, during the post interviews, she reported that she started to place more importance on reliability, convenience, practicality, and appropriateness of children's age while selecting media products for her teaching activities. She also used some distinct strategies such as analyzing the resource of knowledge, citation, verifying the other sources (printed and digital media) than that of before PDT to validate the truthfulness of content of various types of media and to distinguish view and knowledge. Moreover, she knew media content components (such as text, visuals, sound, visual and sound effects, writing style...etc.) and elucidated them.

For Saniye, before PDT, while using media, in particular, social media, she paid attention to some effective strategies (e.g., analyzing the pages and arrangement of privacy settings). On the other hand, her friends' advice was also important to her. She was not knowledgeable about the components of media's content. After PDT, she started to emphasize some criteria such as interest area, the topic of the text, type size of topics, pictures, photos and text, appropriateness of the context for children's age level, developmental level in her working life. Moreover, she made an elucidative explanation about media content components, e.g., visuals (such as photos, pictures, and videos) and writing (such as texts, headings, different font size). Further, she elucidated her steps and strategies on how to reach reliable media and the reliable media sources such as TRT (the government TV channel). Also, she started to use the terminology like the main aim, sub-aim, and subliminal messages while explaining media messages. She was also aware that she should analyze and cross-examine the media sources to verify the credibility of the content of various types of media and to distinguish opinions from knowledge. This was also advised by Hobbs (2010) as one of the instructional practices of ML.

Teacher Umay gave importance to reliability while using media before PDT. She determined whether media and their messages were reliable or not, based on who provide their resources (i.e., governmental, channel, agencies/ well-known agencies) and the popularity such as the number of users and followers. While choosing media in her every day and working lives, she utilized personal (subjective) criteria and did not elucidate their rationale. She declared that she did not see any warnings and/or information about how media's security is provided, except for the social media



application WhatsApp (referring to the “messages you send to this chat and calls are now secured with an end to end encryption” statement WhatsApp users can see while using the app). After PDT, she emphasized criteria such as (e.g., creativity, originality, reliability, attractiveness...etc.) while utilizing various media types. She gave more importance to reliability criterion because if she obtained reliable information, she would shape her thinking and give information to children and parents based on this information. What’s more, she was aware that some issues could easily be manipulated by the media. She elucidated this situation with her experience concerning the palm oil issue<sup>6</sup>. Thus, she proposed to investigate the issues, events, and situations more carefully. She stated that although individuals can distinguish views and knowledge as to whether it has a scientific base or not, they should analyze and evaluate the messages of text carefully. She made a detailed explanation about media content components and how institutions can use these components to take people’s attention and convince them.

Another participant, Teacher Lale paid more attention to reliability while using media in her daily life before PDT. For this criterion, she just looked at familiarity. To her, there was information pollution (fake news) in the media and that the media can manipulate information. Moreover, appropriateness for children’s age and children’s reactions and feelings were vital for her while utilizing media in her working life. She thought that she could not adequately understand the subliminal media messages. Therefore, she just examined the quality and attractiveness of visuals and music. She believed that if she had pre-knowledge about any topic, it would be difficult to distinguish views and knowledge. She was not knowledgeable about matters related to components of media content. On the other hand, after PDT, she started to give importance to the quality of the media (e.g., their content and printing) and clarity of their messages in her daily and working life. She made an elucidative explanation about her criteria while selecting especially books and videos and public service announcements for children. She advocated that individuals should validate the information that they reach via media even if they utilize scientific resources. She

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<sup>6</sup> Even though palm oil is used for multiple aims from food to biodiesel sectors, there are lots of debates on palm oil production process. Nonetheless, the analysis of the literature revealed that some of the issues related to these debates are misleading the people and causing to occur question mark about palm oil in their minds (Tan, Lee, Mohamed & Bhati, 2009).

explicated media content's components like sound, movement, visual, color, illumination and writing parts. She trusted well-known NGOs' (such as ÇEVKO) resources because of their long-year experience in that area. She highlighted that if she obtains knowledge as a sender, children as receivers can also obtain/learn reliable knowledge.

When it comes to individual differences concerning "create competency", based on examination of pre- and post-interview before PDT Duru used her social media accounts (such as Facebook and Instagram) to share good examples in her working life. If she shares photos and videos related to children, she would rather utilize WhatsApp and e-mail as she believes these tools are more secure and reliable. She had experience in designing and utilizing a website. She prepared a brochure for parents with her colleagues to inform them about matters before yet, she has no experience preparing a book and/or journal. After PDT, she started to use Twitter more as a source for current news. She continued sharing children's photos and videos on WhatsApp groups instead of any other social platform because of security concerns. However, she stored most of the photos and videos on her computer without sharing with anybody. She also prepared a brochure and article for a parent to inform them about some issues. Although she had experience with different types of media (i.e., websites and blogs), she was reluctant to share anything about her working life in any platform owing to security problems and lack of time.

Also, before PDT although Saniye shared photos about her daily and working lives at social media accounts (i.e., Facebook and Instagram), she did not share any document and text containing her opinion, experiences and conducted activities at social and digital media (websites and blogs). She believed that she should be more experienced than age currently is in early childhood education in order to design a website and blog related to her working life. She prepared a brochure with her colleagues. After PDT, she started to use social media accounts (e.g., Facebook, Instagram, and surprisingly Swarm<sup>7</sup>) to be aware of her (digital) friends, to do research and follow the breaking news. Even though still concerned about the security issues, she shared photos, and

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<sup>7</sup> Swarm is a mobile application that permit users to share their locations and personal experiences about those locations with their friends.

videos related to the activities at the classroom on Facebook closed group (only teacher and parents were members). She and her students prepared videos including students' views, feeling and wishes for special days (such as New Year, mother's and father's days) to share with parents.

What's more, before PDT, Umay did not share anything related to her working life on Pinterest and Twitter even though she was an active user of them as a follower. She also had an experience with using a Yahoo group. She preferred to use WhatsApp to share the photos and videos about the activities with parents. She usually utilized WhatsApp to share her everyday experiences with her friends and relatives. However, she advocated that face to face communication was better and more effective than writing about her experience on a website and/or blog. She prepared a brochure to give information about an issue and/ or project to the families. After PDT, she continued not to share anything and to write comments at social and digital media platforms because of security and lack of time. She used these platforms to get knowledge about specific issues such as breaking news, analyzing creative drama, music and art activities and adapting them to her implementations...etc. She created a brochure related to her one-month global warming project to give information to the parents. She also prepared a poster to publicize the project topic to the whole preschool and parents. She also continued to use WhatsApp to make announcements about parent involvement activities.

Furthermore, before PDT Lale shared information about various training events, photos pertaining to trips, and text related to birthday celebrations, though these she did not prefer to share things related to her daily and working life experiences. She shared field trip photos after taking their permission and informed them about the activities via WhatsApp. She prepared, with her colleagues, a brochure related to the activity for parents. Moreover, she prepared and utilized a power point to inform children about the activity topic. However, she was not enthusiastic to create anything if it was not required, or any directive was not given to her about it. After PDT, she shared her brother's video taken by her on Facebook because the source was reliable and the video was used for an advertisement of her brother's job. She continued not to share anything about her working life on social and digital media platforms due to security problems. She also preferred to use face to face communication. Except for the only time she prepared a video about a nine-day recycling project for parents and

shared it via WhatsApp. She also encouraged children and parents to create their own video about collecting batteries at a particular container. Although she was knowledgeable about how to design a website, she did not prefer to create a website to share her experiences.

When it comes to individual differences concerning “reflect competency”, in the light of analyses of pre- and post-interview, before PDT Duru advocated that the websites belonging to governmental and non-governmental institutions should be supervised by these institutions based on their own regulations. She stated during the post interview that there should not be any institution to control individuals’ social media usage. To her, people have the right to say and write what they want; if you do not like their comments and views, you do not follow them. Individuals should check themselves about social media issue. She stated that she was not sure about how an institution can examine media and which criteria should be used and whether the scrutiny is fair to all people or not. She provided for her own security without sharing her personal knowledge. For her, she did not do anything except this since everything was stored somewhere without people’s approval. After PDT, she continued to justify her beliefs. For example, she stated that people should be educated about CML issues instead of accepting everything in media as a fact without questioning. By means of this education, it is provided that individuals are not exposed to media; rather, they can analyze and evaluate their messages, and they will not believe everything without thinking. Therefore, this education should be started in the early years. She made a detailed explanation about why she planned and conducted activities targeting CML issues in her classroom. She initiated research on warning signs before films, and how these signs are determined for each film. She also criticized the role of RTUK.

Before PDT, Teacher Saniye believed that institutions could review media up to a level at which people’s private life and their personal rights to write and state their own views cannot be intruded upon. For her, the websites and social media accounts including inappropriate things should be inspected by their browsers (e.g., Google) and various social media founders and their teams. She thought that individuals should provide their own security by not visiting unknown and insecure websites and sharing personal information on social media accounts. If they cannot provide their own security, at that time an institution can be involved in this process. She advocated that institutions can applied sanctions based on regulations which do not interfere in

individuals' private life. After PDT, she advocated that media contents should be reviewed because some media content created information pollution (fake news) and affected people's lives negatively. She made a detailed explanation of how a website can be established and how the institutions can supervise it. She believed that individuals should provide their own safety by analyzing, making a search and comparing the information with other sources. She explained this process with her experiences and how to combine all information and to synthesize before presenting knowledge to the children. She was also knowledgeable about how the websites are ranked by any browser.

Before PDT, Umay made an explanation about MoNE's internet connection and its restrictions. For her, there were many forbidden websites even if some of these were also useful. Hence, it is too complicated to show videos without downloading them from their home. She advised that resources should be reviewed one by one and then the inappropriate ones should be banned. Although she considered that institutions should provide security of media, she was not sure how they check media because at that time all information will go to the same place/ person and this can be abused easily. She commented that she can provide for her own safety without writing her TR number everywhere and can make an online shop for herself, and she reported that she did these activities. In addition to this, she used a pseudo name. However, she believed that she could not protect herself against the media since she thought that she could do a few things and these were not insufficient. After PDT, she advocated that the content of media should be supervised since it is easily reachable by all individuals from a young age to older ages. She drew attention to billboard commercials including sexual content and their harmful effects on children's development because the number of child abuse events has increased and children do not see these commercials as abnormal. She was not sure how the media could be supervised since there were various media types from print to digital and individuals are surrounded by them. She proposed that a standardization policy could be carried out to prevent unwanted impacts on children and if any media did not actualize this, they would be exposed to sanction. To Umay, providing safety of media and /or media tools was too tricky and complicated. Therefore, she did not have any opinion about this issue. Moreover, she declared that the supervision of this issue should begin with institutions/

agencies/people who are in the higher positions in the society and it should encompass the whole society.

Before PDT, Teacher Lale highlighted that individuals should take self-control about media content. To her, if individuals and families were not aware of the negative impacts of media on them and their children, other people and/or institutions cannot do anything to prevent the adverse effects via supervising media content. Although RTUK and some internet service providers supervised TV (especially soap operas) and internet, they cannot/do not reach and inspect all media effectively. Even if institutions did review media, they could not change individuals' mind. Hence, individuals' awareness should be raised, and they should become conscious media users and audiences. She thought she could take a few, tiny precautions (such as not sharing her private information on social media). However, except for this, she cannot do anything because of rapidly developing the technology. After PDT, she considered that media content should be supervised since the content should be true (if the examiners also want it) and suitable for target audiences' physical and psychological well-being. She also continued to advocate that individuals should be conscious media users and audiences instead of relying on media reviewing and its content. She also stated that individuals should control media that they utilized by themselves because she believed that if a person desires to reach and use information and media, s/he can achieve and any institutions/organizations cannot restrain this. At this juncture, families have a crucial role while choosing and using suitable media for their children. She drew attention to the independent institutions and organizations that can help parents about this issue via preparing printed media (e.g., poster, brochure, and book) and public service announcements. She also declared that individuals should be free to write and share what they want on social media, and institutions cannot supervise this because using social media is related to individuals' personal right.

When it comes to individual differences concerning "act competency", based on examination of pre- and post-interview, before PDT, Duru used WhatsApp to communicate with her colleagues and e-mail to ensure cooperation with governmental and non-governmental institutions. Via WhatsApp, they shared their experiences about activities and lists of beneficial children's books. While conducting TEMA Kids' activities targeting mostly respect for the environment and living things, she used media (e.g., books and videos) as a tool. She preferred to use TUBITAK's children's

books because they were cheaper and had printed quality and beautiful pictures. She did not use any CML teaching strategies. She thought that she gave a place ESD in her activities without being aware of UNESCO's aim related to ESD, and ESD concept and its pillars. After PDT, she also continued to use WhatsApp and e-mail to provide communication and cooperation. She designed and implemented ESD activities targeting its different pillars (environment, economic and social & cultural) through CML. Although Ärlemalm-Hagsér and Sandberg (2011)'s study elucidated teachers' understandings, attitude, and pedagogies related to sustainable development, they did not make a comparison between the result before and after the course because they did not detect the situation before the course. Therefore, this study was unique to present the comparison of early childhood teachers' ESD understanding and CML competencies and levels before and after PDT. Duru also used distinct media types (e.g., public service announcements, animation, cartoon, book, and poster). While selecting the media, she gave importance to whether they were suitable to activity's objectives and indicators or not, and their appropriateness for children's developmental level and interest as advised by Rogow (2015). While using media she asked different types of questions to promote children to analyze and evaluate media messages, and thus, she encouraged their CML as proposed by Project Look Sharp and Rogow (2017).

Before PDT, Teacher Saniye used WhatsApp to make contact with her colleagues and to declare and follow the announcements related to the preschool. However, she did not make contact with governmental and/ or non-governmental institutions. She mostly conducted TEMA Kids' activities focusing on general respect for nature and living things. She also used various media (such as photos, videos, sound) as tools to promote children to visualize and understand easily what she instructed. On the other hand, she did not utilize any CML teaching strategies. After PDT, she continued to utilize WhatsApp to make contact with her colleagues. She constructed and applied ESD activities focusing on its three pillars via CML. She used distinct media types (i.e., public service announcements, cartoon, videos, posters, photos, pictures and her drawings). The videos were prepared by the Ministry of National Education, TUBITAK, universities. While selecting these media, she paid attention to their appropriateness for children's age and developmental level, whether they fostered the activities regarding objectives, indicators, and concepts or not, how they conveyed the

message and their impact on the children as advised by Rogow (2015). Moreover, she asked different types of questions to promote children to criticize and look at things from different perspectives. She stated that after PDT, during the activities, she started to ask different types of questions to promote children to analyze and evaluate media messages and their CML as suggested by Project Look Sharp and Rogow (2017).

Before PDT, Umay used WhatsApp and e-mail while making contact with her colleagues and governmental agencies. However, she preferred to use face to face communication. She implemented activities that just targeted respect for nature and living things. She used media (such as photos and video) as tools to support children's learning and knowledge and to visualize what she instructed. To select suitable media for the activities, she conducted research via Google. However, she did not use any CML teaching strategies to promote children's CML. After PDT, she continued to use WhatsApp and e-mail to communicate with her colleagues and governmental agencies. In addition to this, she contacted the non-governmental agency (WWF) to get support related to her global warming project. Moreover, she constructed and conducted a one-month global warming project. By means of this project, she implemented activities focusing on all ESD pillars via CML. She used distinct media types (e.g., posters, cartoons, videos caricatures, books, pictures) during this project. While selecting the media, she gave importance to children's developmental level, clarity of their messages and comprehensibility of their visuals and their appropriateness for activities' content and objectives and indicators as advised by Rogow (2015). Throughout the activities, she started to ask different kinds of questions about each medium (i.e., poster, caricature, book, etc.) to encourage children to analyze and evaluate media messages, and thus, to promote their CML as proposed by Project Look Sharp and Rogow (2017).

Before PDT, Teacher Lale utilized WhatsApp and e-mail to share resources related to the activities with her colleagues. She applied activities targeting only respect for nature and living things directly and indirectly. She used media (e.g., video and power points including photos, pictures, and animated visuals) to support children to draw children's attention to the activity. While selecting these media, she paid attention to whether they were suitable for children's age level and interest or not. She also preferred to use animated visuals while preparing power points. However, she did not use any CML teaching strategies. After PDT, she continued to use WhatsApp and e-



mail to communicate and cooperate with her colleagues. In addition to this, she contacted NGOs (such as ÇEVKO and TAP) to receive their support concerning resources (i.e., posters, brochures, videos, and book). She designed and implemented a nine-day recycling project. During this project, she carried out activities focusing mostly on ESD environment and economic aspects. She used posters, cartoons, videos, brochure books, power points as media. While selecting these media, she paid attention to their dimensions and their appropriateness for activities' topic, and aims, and having more visuals and less writing part. Moreover, she gave importance to children's age and their pre-knowledge, quality of visuals, clarity of media messages and the effect of media on children's psychological well-being as advised by Rogow (2015). She supported children to have experience with different media and then to create their own media. She also asked different types of questions to encourage children to analyze and evaluate the media messages as proposed by Project Look Sharp and Rogow (2017). By means of this process, she fostered children CML regarding access, analyze and evaluate and create competencies.

The outcomes of the present study were similar to Flores-Koulis, Deal, Losinger, McCarthy, and Rosebrugh (2011)'s research findings. For them, if CML education was not given to the pre- and in-service teachers, they would not be aware that CML was necessary for students to support their access, analyze & evaluate and create competencies. They also found that teachers should educate children regarding media messages with critical questions such as "where they come from, what their purposes are, and who is creating them". Moreover, teachers should promote children to create their own message(s) via planning and conducting the activities related to CML. Funk (2013) examined the effect of the course on Critical Media Literacy in Teacher Education Program on in- and pre-service teachers. The results of this study revealed that teachers perceived CML as a pedagogy rather than content and considered that via this pedagogy they could utilize media technology to enhance students' critical thinking skills. Similarly, in the present study, teachers started to use media to promote children's critical thinking skills. Moreover, Garcia, Seglem, and Share (2013) constructed and conducted "Teacher Education Program" at the university for a Master degree and undergraduate course (pre- and in-service teachers at K-12 level) to promote teachers' CML levels. At the end of the course, the authors perceived that pre-service teachers established an awareness of "hegemonic ideology"

that revealed their inquiry- and pedagogical framework and anticipated this shift could impact pre-service teachers' future implementation of classroom activities. They also reported that such pedagogy, coming not only from theory and but also from pre-service teachers' experiences, is a significant aspect for thinking how to integrate CML into any topic and grade. The findings of this study also confirmed the significant impact of PDT (in the present study) and teachers' implementations after PDT on not only teachers', but also children's, life regarding CML.

All in all, even though the current research presented similar results with the studies in the literature, there was no study focusing on ESD, CML and teacher education at the same in early childhood context. Therefore, this study's findings made a significant contribution to not only international but also national literature regarding the comparison of both early childhood teachers' and children's ESD understandings and CML competencies and levels before and after PDT.

#### **5.1.1.2 Domain of practice: Teachers' implementations**

In this section, early childhood teachers' professional growth related to their learning activities' implementation is discussed by Interconnected Model of Professional Growth (ICMPG) (Clarke & Hollingsworth, 2002; Hollingsworth, 1999). Initially, all teachers' common overall professional growth characteristics are shared, and then their individual differences are commented on.

Duru and Saniye Teachers worked at a public preschool that is a member of TEMA Kids and applied TEMA Kids activities regularly. Therefore, before PDT, they gave much more place to the activities targeting EE in their daily and monthly plans as was also found by Kahrman (2016) for a teacher working at Eco-schools. On the other hand, Umay and Lale worked at a public preschool and conducted activities to follow the Early Childhood National Program's guidelines. Hence, the number of the activities focusing on EE/ESD in their daily and monthly plans were low when they were compared with that of Duru and Saniye. Although Duru and Saniye implemented the TEMA Kids program, the activities of the program were not related to all pillars of ESD, mainly social and cultural aspects. They mostly used a weak to medium sustainability approach as reported by several researchers (Inoue, O'Gorman & Davis, 2016; Inoue, O'Gorman, Davis & Ji, 2017) in different countries (Australia, Korea, and Japan). What's more, the analysis of all teacher practices indicated that they were

not aware of CML and its teaching strategies and how to carry out these strategies. Only Duru used some related teaching strategies during book reading. However, she did not ask specific questions to promote children's analyze & evaluate competency. In other words, before PDT, all teachers did not plan and implement ESD activities through CML.

After PDT, there was the growth of all teachers' activities regarding ESD pillars and CML issues. This improved situation was also supported by the growth of teachers' ESD awareness and their CML levels. The examination of their daily and monthly plans also demonstrated that there was a noteworthy change in the number of ESD activities via CML. Moreover, educators used CML teaching strategies to support children's critical thinking skills, as Funk (2013) reported. They also promoted children to create their own media products individually and/or with a group work to convey their own messages about specific ESD topics as advised by Rogow (2015). They started to use different media types and research how they selected and used media focusing on ESD. While Duru and Saniye preferred to conduct four separate (not connected) activities, Umay and Lale preferred to design and implement projects focusing on specific ESD topic (i.e., global warming and recycling). While Duru carried out one TEMA Kids activity of four activities, Saniye applied two TEMA Kids activities. While conducting the TEMA Kids activities, they also made some changes to adapt CML teaching strategies. Although there was growth of teachers' implementation with respect to ESD and CML issues, they did not define/ choose particular objectives and indicators for their activities since there is no objective especially aspiring to ESD's social & cultural and economic aspects and CML (in terms of access, analyze & evaluate and create competencies) in Turkish National Early Childhood Education Program (2013) as declared Chapter II. Teachers' individual dissimilarities will now be explained in the following paragraphs.

When Duru's activities in daily and monthly plans before and after PDT were investigated regarding ESD pillars and CML issues, it was perceived that there was visible change in the activities she prepared. For instance, before PDT, Duru mostly focused on the environmental aspect of ESD and the 'respect' aspect of 7Rs (keep the environment and its resources clean, respect to living things), and mainly used books as media. Although she conducted ESD activities with media, she never implemented ESD activities through CML. The analysis of four observed activities for SRIs

indicated that all activities used a medium sustainability approach, but only one of them was close to a medium level regarding CML issues. The others remained at a basic level. On the other hand, after PDT, the number of activities targeting all ESD pillars and various 7Rs (i.e., reflect, reduce, redistribute...etc.) and ESD activities via CML had increased. Moreover, she used different media types (e.g., book, poster, pictures, photographs, cartoon, public service announcements, animation...etc.). When her daily and monthly plans were analyzed, it was seen that there were additional notes about ESD and CML issues and how they were adapted to the activities. The examination of four observed activities for SRIs revealed that three of the four activities used a strong sustainability approach and advanced CML. She also declared that regularly conducting ESD activities through CML promoted children's knowledge about, awareness of, and attitudes toward ESD's topics (i.e., animal breeding, forest fire) and their CML (access, analyze & understand and create competencies).

The comparison of Teacher Saniye's activities in daily and monthly plans regarding ESD components and CML issues showed that there was a noteworthy change in her activities. To illustrate, before PDT, she generally aimed at ESD's environmental component and the 'respect' (keep the environment clean and respect to nature and living things) aspect of 7Rs. During these activities, she sometimes used video, photographs, and pictures as media. Even though she applied ESD activities with media from time to time, she rarely implemented ESD through CML in the classroom. When four observed activities for SRIs were examined, it was perceived that, while two of the four activities used weak to medium sustainability approach, the other two activities utilized weak sustainability approach. Moreover, three of these were found at a basic level regarding CML, when just one activity was at a medium level. On the other hand, after PDT, the number of the activities targeting all ESD pillars and related 7Rs (e.g., respect reflect, reduce, reuse, recycle, redistribute) and ESD activities through CML had risen. Further, Saniye utilized public service announcements, videos, drawings, pictures, photos, poster, documentaries, and concert videos as media. When four observed activities for SRIs were analyzed, it was seen that three of the four activities used a strong sustainability approach and advanced CML. Only one of them utilized a medium sustainability approach and medium CML. In other words, Saniye frequently constructed and conducted ESD activities through CML in her

classroom to encourage children's knowledge about, awareness of, and attitudes as well as behaviors toward ESD topics (e.g., gender equity and noise pollution) and their CML (access, analyze & evaluate and create competencies).

When Umay's activities in her daily and monthly plans before and after PDT concerning ESD components and CML issues were compared, it was observed that there was a significant change in her implementation. For example, before PDT, she mostly focused on ESD's environmental component and the 'respect' (such as respecting animals, plants, keeping the environment clean...etc.) aspect of 7Rs. Further, time to time she utilized video, photographs, and pictures as media. Even though she carried out ESD activities with media, there was no activity targeting ESD via CML in her classroom. The examination of four observed activities for SRIs indicated that while three of the four activities used a weak sustainability approach and basic CML, one activity remained between a weak and medium sustainability approach, and was basic and medium regarding CML. On the other hand, after PDT, the number of the activities focusing on all ESD components and related 7Rs (reduce, respect, reuse, recycle, redistribute and rethink) and ESD activities via CML had increased. Moreover, she utilized videos, drawings, pictures, books, posters, cartoons...etc. as media. The analysis of four observed activities of the one-month project for SRIs revealed that all activities used a strong sustainability approach and advanced CML. To put it another way, by means of a one-month project and also the other activities, she could promote development of children's knowledge about, awareness of, and attitudes as well as behaviors toward ESD topics (such as global warming, deforestation), and could support their CML (access, analyze & evaluate and create competencies).

The comparison of Teacher Lale's activities in daily and monthly plans before and after PDT concerning the ESD pillars and CML issues demonstrated that there was a vital change in her learning activities. For example, before PDT, Lale implemented activities mostly aiming at ESD's environmental pillar and the 'respect' aspect of 7Rs (e.g., to respect animals, plants, environment, to keep the environment clean...etc.) directly and indirectly. Lale sometimes used video, photographs and pictures, animated visuals and power points as media. Although she conducted ESD activities with media time to time, she did not carry out activities focusing ESD through CML in her classroom. When the four observed activities for SRIs were investigated, it was

perceived that while three of four activities used a weak sustainability approach, the rest remained at a weak and medium sustainability approach. Further, three activities were found at medium regarding CML issues, but the other remained between basic and medium CML. On the other hand, after PDT, the number of the activities targeting all ESD pillars and related 7Rs (redistribute, rethink, reduce, respect and recycle) and ESD activities through CML has risen. Also, she used public service announcements, posters, brochures, book, cartoon, power points, pictures ...etc. as media. The examination of the four observed activities of the nine-day project for SRIs indicated that all activities used a strong sustainability approach and advanced CML. In other words, Lale could encourage children to enhance their knowledge about, awareness of, and attitudes toward ESD topics (such as recycling, sharing the resources, human rights) and CML (access, analyze & understand and create competencies) via not only the nine-day recycling project but also using the other activities conducted through the semester.

The kinds of outputs of the current study verified Kahrman (2016)'s results of research on 838 Turkish early childhood teachers (working eco-school and ordinary schools)' implementation and views about ESD. In this study, she found that lack of formal training and lack of teaching and learning ESD resources were the most important obstacles for teachers in applying ESD activities. When the present study's findings related to teachers' implementations about ESD before and after PDT were compared, it was perceived that by means of PDT and on-going support after PDT that fundamental change in their ESD practices occurred and teachers started to apply ESD activities effectively and regularly. Additionally, Flores-Koulish, et al. (2011) also reported that CML could be applied effectively in early childhood learning settings within various topics by teachers if they attended in training/ program/ course related to CML as it was in the present study.

### **5.1.1.3 Domain of consequences: Teachers' conclusions from their practices**

In this part, early childhood teachers' professional growth about their conclusions drawn from their ESD practices through CML are discussed. Based on ICMPG, if teachers are exposed to an external domain such as PDT, they can apply what they experience throughout PDT in their classroom via their daily plans and/or activities (Clarke & Hollingsworth, 2002; Hollingsworth, 1999). After the

implementation process of the daily plans and /or activities, they can draw a conclusion(s) for their future actions (activity and/or project plans) and practical knowledge (Korthagen & Vasalos, 2009; Witterholt, Goedhart, Suhre & Streun, 2012). Hence, respectively, the growth of “selection of topic”, “teaching strategies”, “resource use” and “assessment strategies”, and teachers’ common and, then, individual conclusions related to each of are presented in the following section.

When teachers’ activities related to “topic selection” were analyzed regarding the ESD pillars, it was perceived that there was growth in the selection of topics for all teachers, as prior to PDT, they generally focused on only on the environmental aspect. After PDT, Duru, Saniye, and Umay Teachers chose topics to cover all ESD pillars. Lale selected a project topic covering two pillars of ESD. Moreover, all teachers shared their observations about development/ change in children’s knowledge about and awareness of attitudes and behaviors toward ESD issues. Also, Duru, Saniye, and Umay advocated that ESD should start from early years to raise environmentally friendly citizens as reported by Kahrیمان (2016). On the other hand, Lale highlighted that if learning environments are designed based on children’s needs and interests, you can reach your objectives and indicators easily and effectively as a teacher. Further, all teachers made a detailed explanation about ESD and its pillars in the light of their conclusions drawn from their changing practices. For instance, Saniye stated that she had not constructed and conducted an activity on gender equity until this research. Duru declared that everything in our daily life could be connected effectively with ESD and thus children can easily internalize ESD issues. To Umay, after her one-month project, there was a fundamental change in children’s awareness about global warming in the light of the analysis of concept maps (before and after the project). Lale stated that she observed children’s awareness of, and changed attitudes and behaviors related to recycling and collecting waste materials into the different bins.

What’s more, the comparison of “teaching strategies” before and after PDT revealed that there was a crucial change. For instance, after PDT, all the teachers started to use CML teaching strategies. They also encouraged children to analyze and evaluate media messages about different ESD topics by asking different types of questions. Also, after PDT, they used questioning, brainstorming, and discussion as teaching strategies. After PDT, while Duru utilized creative drama, using model/puppet, Saniye used group work, role-playing and using case studies. When

Umay used group work and interactive book reading, Lale utilized field trips, creative drama, role-playing, group work, and storytelling. All of them explained the reason for using these teaching methods as to provide children's active involvement in the learning process as proposed by NAMLE (2007), Partnership for 21st Century Skills (2010) and Rogow (2015). In addition to this, they ensured that children internalized the learning processed via these strategies. They also reported that they asked different types of questions about different media types, questioning, brainstorming and discussion to support children's critical thinking skills as declared by Funk (2013) and expanded their awareness of ESD topics. Moreover, Duru and Lale stated that they continued to use CML teaching strategies after this research was completed at their site and intended to utilize these the next semester. All teachers shared their observations related to changes in children's analyze & evaluate and create competencies. For example, Saniye expressed that not only the children but also she as the teacher started to look at, analyze, and interpret media from different perspectives. Duru believed that CML education should begin in the early years since individuals in the future will be unable to believe everything that they see, watch and read in the media without critique as declared by NAMLE (2014).

When "resource use" before and after PDT was examined, it was seen that there was an obvious change. For example, after PDT, teachers started to use different types of media (i.e., posters, brochures, public service announcements, animation...etc.) that they did not utilize before PDT. All teachers' expressions indicated that there was a growth of their CML levels and they were aware of and knowledgeable about how to support children's CML and awareness, attitude and behavior related to ESD issues. They made elucidative explanations about why they preferred to use these resources after PDT. However, before PDT they generally used media to draw children's attention to a topic and to visualize what they were learning. Similar findings were obtained by Altun (2013). In this qualitative study, he worked with 55 teachers (Early Childhood, Primary, Turkish Language, Social Studies, Science, Mathematics...etc.). 70% of the teachers stated that they utilized media to "(a) enrichen the courses, (b) provide permanent learning, (c) draw students attention, (d) improve general knowledge, (e) use instruction tool that makes easy to reach to information".

On the other hand, after PDT, Duru would rather use public service announcements about sustainability topics since children did not have any experiences in analyzing,



evaluating and interpreting their messages. While selecting the public service announcements, she gave importance to the characters (i.e., mother and baby and child) and concepts (such as crying baby because of noise pollution) because she thought that children could make a connection with their everyday lives and would internalize the learning process. Moreover, she paid attention to children's developmental levels and connections to ESD while choosing media.

What's more, Saniye chose video including messages about existing stereotypes in society about gender. While selecting the video, she had certain criteria, e.g., using more visuals, easily understandable messages, and the style of giving a message about gender equity. She also shared her observation about children's reactions during the video (children stated that everybody could play any game that he or she wanted). Further, while selecting pictures and photos, she put emphasis on visuals conveying messages about not only gender equity but also gender discrimination. In regards to her chosen topic of noise pollution, she reported that there was no video related to noise pollution that was appropriate for early childhood. She also stated that she could not find any pictures and photos illustrating a lack of noise pollution. Hence, she proposed that experts should prepare different media types that targeted noise pollution and that was suitable for early childhood children in the future since, to her, it was more effective to use media giving two alternative messages. In other words, she used "cross-media comparison" advised by Hobbs (2010) as an instructional practice. She declared that she started to use media more frequently and effectively after PDT.

Also, while selecting media, Umay gave importance to the appropriateness of children's developmental levels as well as age, attractiveness, easy comprehensibility, simplicity, and clarity of visuals and drawings. After PDT, she used various media types regularly and actively throughout the one-month project. She stated that during a discussion about water and electricity conservation, children gave examples from the videos that they watched, and analyzed and evaluated their messages.

Furthermore, Lale utilized two well-known NGO's posters, brochures, public service announcements and books as media. While selecting these, she gave importance to their appropriateness for children's developmental levels regarding their visuality, messages, and dimensions. She reported that there is no public service announcement about waste oil (how biodiesel can be obtained from waste oil) and waste batteries,

and she recommended that NGOs should prepare these as, based on her observations, when children see the recycling process of the waste materials, they can easily internalize and put it into practice. She also stated that she continued to use media actively and more frequently in her activities and projects after the recycling project. In other words, the growth of “teaching strategies” and “resource use” revealed that teachers started to use various instructional practices such as “using information search and evaluation strategies”, “reading, viewing, listening and discussing” close analysis, cross-media comparison and gaming, simulation and role-playing” as identified by Hobbs (2010). Moreover, these developments indicated that Rogow (2015)’s four pillars of MLE implementation, namely “modeling, questioning, decision making and integration” were actualized through the teachers’ ESD practices via CML.

The comparison of “assessment strategies” before and after PDT demonstrated that there was a noteworthy change. For instance, after PDT, teachers began to utilize “creating poster”, “creating brochure”, “design own product”, “find a slogan”, “preparing a book” and “making concept map” as assessment strategies to promote children’s create competency about ESD messages. Each teacher’s detailed explanation is given in the following part on this chapter.

Duru used creating a poster with group work as an assessment strategy. She explained her reason as about seeking to understand how children convey their messages about noise pollution within their groups. She also wrote children’s names on their posters and made an explanation that when other people look at your poster, they read your name on it and they will know who create this poster. She shared an observation about their posters and stated that children generally focused on the harmful effects of noise pollution on people’s health. Moreover, she used “design a product” as an assessment strategy since she wanted to observe how children reflect on their analysis and evaluation of cartoons on their own products. She generally stated children designed their own bottles according to their replies throughout the video analysis process. In other words, she used these assessment strategies to promote children’s ‘create’ competency.

Saniye utilized creating a poster as an assessment strategy to get feedback from children about what they understood from the media analysis process because, while the children were drawing their poster, they felt comfortable to reflect what they

consider, learn and have experienced. She stated that she observed children reflect what they understand since children drew “=” sign, a pair of scales, a girl playing football, a boy playing house in their posters to give a “girls and boys are equal” message. Moreover, some children drew “closing ears with hands”, and a baby who is crying” to give messages related to noise pollution with their posters.

Teacher Umay used creating a poster and making a concept map as assessment strategies to see what children understand from the poster analysis process. The analysis of children’s poster indicated that children mostly reflected on the posters’ messages that they analyzed and reflected in their own created posters. She also utilized “finding a slogan” as a group for their posters as an assessment strategy to encourage children to be aware that posters also include writing parts, which are called slogans.

Lale assessed her own practices of observing the learning process and used preparing a book, creating a poster and finding a slogan for the poster as assessment strategies. Her aim of using “preparing a book” was to encourage children to be aware of the components of the book (such as pages, drawing, writing parts, cover, title...etc.). Her intention of utilizing “creating a poster and finding a slogan” was to see what they learned from the poster analysis process. The examination of the poster and slogans showed that they could understand the concept of recycling and reflected this in their poster and slogans. Moreover, some children tried to write their own slogans on their posters. Further, Lale planned to use different assessment strategy (creating a brochure) for the next activity in the project. She also stated that she would use these assessment strategies for her other activities and projects to determine whether children understood the concept of a poster and a brochure and their components.

Overall, all teachers’ explanations about assessment strategies indicated that they could achieve what Rogow (2015) stated as teacher takeaways “to give children opportunities to make media to help them internalize the notion that all media are ‘constructed’- the concept from which all media analysis flows” (p.102).

### **5.1.2 The influence of PDT on Teachers’ Professional Growth**

In the light of ICMPG, professional growth cannot occur unless PDT, in the external domain, is carried out. In other words, PDT is the key element for professional

development (Clarke & Hollingsworth, 2002; Hollingsworth, 1999). Hence, in this section, the relationship between PDT components (aim, content, teaching strategies, resource use, and assessment strategies) and teachers' personal domains, as well as classroom practices, are discussed respectively. Then, this PDT's stronger and weaker aspects are shared.

When PDT's aims were considered, it was seen that PDT positively impacted all teachers' ESD awareness and CML competencies as well as their levels. To illustrate, by means of cross-media comparison, close media analysis process, and related discussions, teachers had experience with skills such as to "be able to distinguish between GW (Global Warming) messages regarding its quality, veracity, and credibility", and "be able to comprehend GW messages which are conducted by media tools". They can now use these skills while selecting media for their own activities.

What's more, PDT content was determined by needs assessment results since, for Hollingsworth (1999), targeting teachers' interests and concerns was one of the effective characteristics of professional development. While PDT planning, change and/or growth in teachers' subject matter knowledge about ESD (what ESD is, what its pillars are, what global warming is) and CML (what media, media types and their component are) and pedagogical content knowledge (CML teaching strategies, how to combine ESD topic with CML issues) was targeted. The analysis of teachers' explanations about ESD and CML after PDT indicated that there was significant growth concerning ESD awareness and CML issues. In addition to this, they can now put these achievements into practice with their activities and/or projects focusing on ESD through CML. In other words, PDT led to change in and then the growth of the teacher's personal domain and domain of practice. In the literature, some studies found a similar result with university students. For instance, Pearson, Dorrian, and Litchfield (2011) found that university students' knowledge, attitudes, and conservation behaviors about a highly endangered orangutan could be enhanced via utilizing visual media. Moreover, Foley, Archambault, and Hale (2015) reported that pre-service teachers participating in a "Sustainability Science for Teachers" course with integrating technology and digital storytelling were able to comprehend that sustainability is a multifaceted and interconnected system. What's more, Share (2017)

conducted research on climate changes messages and how these messages shape public statement on climate change. For him, via CML, an audience will be aware of dominant ideologies in the media and can then struggle with these ideas. He advocated that if individuals learned to critique media messages and dominant ideologies, they would then be able to create their own media messages that challenge dominant myths and then promote others in the society to create alternatives for a healthier and more sustainable Earth.

Also, throughout PDT, that is while conducting the activities, various teaching strategies (e.g., reading, viewing, listening, analyzing and evaluating media messages, discussion, group work, critical thinking, issue analysis, examining a case study, role playing, telling a story) proposed by Hobbs (2010) were used. The examination of teachers' teaching strategies showed that they also utilized many of these strategies while also applying these to their own activities/ projects to promote children's critical thinking skills and to analyze & understand as well as create competencies, which are also determined as *habits of inquiry* and *skills of expression* by NAMLE (2007).

During PDT, different resources (worksheets, videos, articles, power points, caricatures, a cover of magazines, newspapers, fragments of documentaries, cartoon, and commercial) were used to provide teachers with experience of different media types giving distinct messages about GW and to make a multimedia comparison. Teachers also utilized distinct media types (cartoon, videos, caricatures, brochures, public service announcements) while carrying out ESD activities via CML. For instance, Saniye also used photos and pictures giving alternative messages about gender equity.

Moreover, at the end of each session of PDT, the assessment was made by asking questions, telling a story, creating and improvising commercial, and creating posters. In other words, teachers created their own media products to convey their own learning from PDT. In addition to these, assignments were given to encourage the teachers to access and analyze & evaluate different media types targeting younger and older audiences. They also shared their findings with colleagues at the beginning of the sessions. It was hoped that these sharing and discussion parts might affect each teachers' research and critical thinking skills, and thus their own resource selecting criteria. The examination of teachers' assessment strategies indicated that they also

used creating a poster, creating a product and book to assess the activity and to foster children to convey their messages via their own product.

Overall, it was found that PDT impacted teacher's personal domain and domain of practice directly, and the domain of consequence indirectly. Likewise, Anderson and Moore (2006) also reached results that indicated that a new course for teachers leads to change in the domain of practice, the domain of consequences, and personal domain. They reported that for teachers' growth, they needed more detailed data and in-depth data analysis. Moreover, Hollingsworth (1999) reported that a professional development program did result in a change in the growth of teachers' personal domains and domains of practice.

When the effectiveness of PDT is evaluated about the criteria based on the literature review, it was seen that PDT has both stronger and weaker aspects. For Hollingsworth (1999), there were six conditions ("time", "contextual relevance", "opportunities for action and reflection", "support/collegiality", "professional responsibility, collaboration and decision making", and "immersion and involvement in learning communities"), with related characteristics for effective professional development program. Further, Villegas-Reimers (2003) and Guskey (2003) declared some properties for effective professional development. However, most of these are similar to Hollingsworth's characteristics. Therefore, the stronger and weaker aspects of the PDT that is the focus of this study's were determined by Hollingsworth's criteria. In light of Hollingsworth's criteria, the stronger and weaker aspects of PDT can be stated as follows. The strong sides of PDT were: (a) to design based on needs assessment,

(b) to promote teachers' subject matter knowledge and pedagogical content knowledge related to ESD and CML issues,

(c) to foster their CML competencies and level,

(d) to provide them to experience and observe how to conduct activities targeting ESD topics via CML and

(e) to foster group work

On the other hand, the weaker aspects of PDT were

(a) being “one-shot workshops”/ “single loop learning” and

(b) its duration was short.

However, when professional development is thought of as a process including PDT and the after PDT period, the present study met most of Hollingsworth’s criteria since, after the PDT period, the teachers took advantage of on-going support from this researcher through informal dialogue, and feedback/ suggestions for their activities/projects and SRIs. Also, the teachers had a chance to implement what they learned during the PDT and to observe and assess their implementation via SRIs. In other words, the teachers were active learners and reflective practitioners as a result of the PDT.

## **5.2 Implications and Recommendations**

In the current study, based on a needs assessment, a 10-hour PDT was designed for early childhood teachers. Throughout PDT, 10 activities targeting ESD via CML were conducted to promote early childhood teachers’ ESD awareness and their CML competencies (access, analyze & evaluate, create, reflect and act) and levels, and their implementation related to ESD through CML in their classrooms. While applying each activity, various teaching strategies (e.g. analyzing and evaluating media messages, discussion, group work, critical thinking, role-playing, telling a story...etc.), resources (such as videos, caricatures, cover of magazines, newspapers, fragments of documentaries, cartoon, commercial...etc.) and assessment strategies (i.e. asking questions, telling a story, creating and improvising commercial...etc.) were used. The outputs of the present study showed that PDT led to the growth of teachers’ personal domains (ESD awareness, CML competencies, and level) and domains of practice (teachers’ practices about ESD through CML) and their domains of consequence (teachers’ new conclusions from their implementations). These findings were also verified by various data sources (such as teachers’ documentation, SRIs, interviews, and field notes). On the basis of these outcomes, some implications and recommendations arising from this study are offered in the following parts.

### **5.2.1 Implications for Educational Policy and Practice**

In this part, the contributions of the present study's outcomes to the research literature on teacher education, curriculum, lack of resources, and how best to work with children, are shared.

The needs assessment part of the current study revealed that early childhood teachers were not aware of ESD even if they were working at preschools following environmentally friendly curriculum such as TEMA Kids. Moreover, prior to the research, they generally applied activities targeting only the environmental aspect of ESD (such as keeping the environment clean, respect for nature, animals, and plants...etc.). They also were not aware of CML, and their competencies and levels mostly remained between basic and medium. The analysis of their activities regarding ESD and CML issues revealed that they used between weak and medium sustainability approaches and were at basic CML levels. Hence, in the present study, PDT was conducted to enhance teachers' ESD awareness and CML competencies and levels and their ESD practices via CML. The findings indicated that the PDT and after the PDT period resulted in the growth of the teachers' personal domains, their domain of practice, and their domains of consequence.

All of these outcomes drew attention to the lack of education about ESD and CML since the teachers are "the locomotives of putting the principles into practice in educational systems". If they are not aware of principles about ESD and CML, they are unable to support education that promotes change in children's awareness of skills, attitudes, and behavior toward ESD topics and their CML competencies and levels. In other words, teachers are unable to raise environmentally friendly and media literate citizens. As stated by Björneloo, Chapman, Hopkins & Rickinson (2008) school systems cannot lead change in societies regarding ESD initiatives without the support of educators. Hence, the education system should encourage them and offer direction. Moreover, without giving more importance to pre- and in-service education, it cannot be expected that teachers perceive CML as a need and for children to have the skills to "access, analyze, evaluate and communicate with media and popular culture" (Flores-Koulish, Deal, Losinger, McCarthy & Rosebrugh, 2011). To put it another way, pre-service and in-service teacher education targeting ESD and CML should be planned for and conducted effectively. For pre-service education, in particular,



compulsory and /or elective courses related to ESD and CML could be introduced into Faculties of Education in universities. If it is possible, teacher candidates could be introduced with ESD in their first year since this would be more beneficial for them regarding the development of their knowledge, comprehension, skills, and values about sustainability (Evans, Stevenson, Lasen, Ferreria, & Davis, 2017). Moreover, long-term in-service training should be designed and implemented. Throughout this training, teachers should be more active and get ongoing support from the trainer(s) to plan and implement effective activities. They could also be encouraged to create and attend teacher networks to share their experiences about their practices and to collaborate with other practitioners (Inoue, O’Gorman, & Davis, 2016). Teachers should be strongly supported to participate in such training. For this, the government should make long-term policies with the support of academicians working on teacher education, ESD, and CML.

Furthermore, as one of the teachers advised, the Turkish National Curriculum should be revised since no objective and indicator supports children’s ESD awareness, especially of social & cultural (human rights, gender equity) and economic (sharing resources) aspects, and it should also be rewritten to include CML issues, in particular, analyze & evaluate and create competencies. When the curriculum is examined, it is seen that there is no specific explanation about indicators targeting ESD social & cultural and economic aspects and CML competencies as described in Chapter II. At this point, the curriculum could be revised in the light of these suggestions to contribute to growing up environmentally friendly and critical media literate children. Moreover, a booklet/ teacher resource book including specific activities for CML and ESD and how to integrate ESD with other topics should be prepared since ESD implementation should be more systematic and cross-disciplinary due to its multifaceted structure (Evans, et al., 2017). Besides, the government should establish an educational policy to encourage schools in ECE to make and conduct their own annual plans for sustainable development based on the renewed curriculum. These plans should be prepared with the support of experts and academicians, and they should follow the implementation process of the plans. By this way, schools could have a chance to see their plans’ weak as well as strong sides, evaluate and revise them for future. Thus, these plans could integrate into their existing educational program effectively.

Additionally, in the present study, teachers drew attention to the lack of media resources (audio & visual, digital and printed) related to ESD topics (gender equity, noise pollution, waste oil and batteries, global warming) for young children's age and developmental levels in terms of their messages, visuals and sounds. At this juncture, media producers should be encouraged to create more media resources suitable for early childhood children via collaborating with educators and giving importance to their suggestions and advice.

Last but not least, the current study indicated that there were also change in children's awareness, skills, attitudes even behaviors toward ESD issues and their CML competencies and levels as a result of their teachers participating in the PDT. Teachers' observations, children's product, and field notes also supported these outcomes. In other words, if teachers know how to conduct activities to reach specific outcomes related to ESD and CML, and experts encourage them to experience new ideas and ways of teaching, educators could change not only their own lives but also children's lives positively into the future. They could contribute to raising environmentally and sustainably responsible and media literate future citizens. To put it another way, change/ development occurs with small steps, however, these can collectively impact the big picture of sustainable futures.

### **5.2.2 Recommendations for Improving PDT Effectiveness**

As mentioned in the discussion part of this chapter, in the present study, a 10-hour, one-shot PDT was conducted because of time restrictions on both the teachers and the researcher. In Turkey, there are two seminar periods (at the end of June and at the beginning of September) and these periods cover the maximum ten days. However, from time to time, the number of days can decrease owing to regulations and holidays. This PDT had to implement in five days since at the time that this study was carried out, only seven days were allocated to the seminar period. Generally speaking, it would be more ideal if future PDT could be implemented in a broader time frame. Moreover, the duration and context of PDT could be extended, and then implemented fortnightly for a semester. During this time, the teachers could conduct detailed research for their assignments throughout the PDT. Network meetings and discussion groups could also be organized to support their professional development.

About further possible research, this study was completed with four early childhood teachers at two different public preschools in Ankara. This study could be repeated with other teachers in other districts of Turkey since all districts have their own characteristics regarding teachers, children and school potential. In this way, the effect of PDT on other teachers and thus, children can be critically examined.

Besides, this study was planned and implemented as dissertation research. The researcher did not get support from any national or international NGOs, General Directorate of Teacher Training and Development of Ministry of National Education (MoNE), or other governmental institutions (such as TUBITAK) or international institutions. Hence, this study's scope can be enlarged to cover nationwide teacher training with the support of other institutions, including not only universities but also governmental and non-governmental institutions and agencies such as UNESCO. Moreover, this study can be redesigned as cross-cultural research with the involvement of international experts and institutions outside of Turkey.

### **5.2.3 Recommendations for Further Studies**

Based on the current research findings and researcher experiences, some short term and long term action plans and related future studies for emerging researchers could be proposed.

The present study determined that there was an incoherence between the early childhood teachers' statement and their implementations about ESD. The researchers could investigate what the reason for it. They could examine the existing training, programs, seminars, and workshops related to professional development regarding ESD and its pillars. To identify the weak and strong sides of these professional developments, researchers can collect in-depth data from educators who attend these programs and their practices via qualitative research methods. As a result of these studies, the current in-service education could be strengthened. In other words, for a short-term action plan, early childhood teachers' ESD implementations would be enhanced with effective professional development.

When it comes to long-term action plan, the attention is drawn to the pre-service training. In Turkey, the number of courses targeting ESD is low, and these courses are not widespread in each university. Accordingly, researchers could analyze

early Turkish childhood pre-service teacher education in terms of ESD and its pillars to determine whether ESD is given place in the courses, or there is a compulsory and/or elective course(s) and if there is a course how it is conducted in terms of theoretical and practical sides or whether this course(s) is constructed to cover ESD's multifaceted dimensions. Further, a new course for pre-service teachers would design and carry out to promote pre-service teachers' ESD awareness and their ESD implementations during their school experiences. Moreover, pre-service development can also observe after their graduation with longitudinal research. Based on the outcomes of the studies, the course(s) would be renewed. To conduct effective solutions for the lack of ESD in pre- and in-service education, both short-term, and long-term action plans should be operated simultaneously.

For CML, this issue has started to be studied nowadays. Hence, early childhood teachers do not have any idea about this concept. Therefore, researchers could focus on mostly pre- and in-service teacher education as a first step. They could make research on effective characteristics of courses and/or training targeting CML.

All in all, by making further research on ESD and CML, we, experts, provide to develop more qualified early childhood teachers concerning ESD issues and CML competencies.

### **5.3 The Outcomes of the Study: Self-Reflection as a Researcher**

Throughout this chapter, I discussed the findings of the present study and made an explanation about this study's implications and gave recommendations about further studies. In this section, I want to elucidate on this study's theoretical contributions. I offer two contributions, one focused on Bronfenbrenner's theory and another that brings together CML and ESD.

#### **5.3.1. Rethinking Bronfenbrenner**

As I explained in chapter II, I utilized Bronfenbrenner's Ecological System theory as a theoretical background of the current study. At the beginning of this study, I decided to use this theory since I believed I could easily explain the effect of teacher and media on children's development. However, I was not sure how I can put ESD inside of this theory and/ or how I can explain the importance of ESD on children's

lives via using this theory because this theory puts child at the center of the model and explicates that child can be affected from each layer of the model and does not refer to ESD and /or ESD issues (i.e., food security, inequalities, gender discrimination, poverty...etc.). This theory also claims that children/ individuals as independent living beings from the environment and they can only be influenced by policies, media, and education. In other words, even if Bronfenbrenner called his theory “ecological system theory”, there is no connection to the environment and its components except human-made things. It means that this theory was developed based on anthropocentric view although ESD highlighted that individuals should have an eco-centric view to leave the sustainable world for future generations. Hence, I started to research about new version or ESD adaption version. After an exhaustive review of the literature, I discovered McCrea and Littlelyke (2015)’s ECEfS adaptation of Bronfenbrenner’s ecological approach model. They put ESD at the outer part of Bronfenbrenner’s model to cover all layers. It means that all ESD issues impact each layer, and thus, children’s life at the end. For instance, a problem at the outer layer (such as poverty, deforestation, human rights, drought...etc.) will affect children’s lives. On the other hand, individuals also cause to emerge ESD issues such as climate change. There is a question mark in my mind, how we can show this interaction(s) with Bronfenbrenner’s layers. When we think about the ecosystem, human beings are also a member of it; we are in a relationship with the living and non-living things. This relationship has been affecting Earth’s not only current but also future conditions. Hence, if we put a child at the center of the model without giving importance to his/her interaction(s) with the environment and its components, it would be wrong. What’s more, the layers system cannot represent the complexities of interactions among the systems effectively. Elliott and Davis (2018) have sought to address these issues through updating and conceptualizing Bronfenbrenner’s theory in the light of sustainability issues. In my opinion and based on my study, more work on Bronfenbrenner’s theory will renew the theory for the 21st century.

Moreover, while I was making research on ESD and CML, I realized that both of them used critical theory and pedagogy as a theoretical background. When I consider the aims and explanations of critical theory, there could be a confliction between critical theory and Bronfenbrenner’s theory. For Bronfenbrenner, if we give education to children to support their connected layers, we can raise a well-educated

generation. On the other hand, critical theory criticizes the current educational system and promotes children/ individuals to find the things in their environment that are problematic and to change them with better ones. In other words, children should be active in solving problems related to their environment. While ecological system theory emphasizes that a holistic approach be vital for education, critical theory suggests that children should be critical thinkers and active agents for defining and solving problems about SD. For me, I am quite comfortable bringing together both Bronfenbrenner's theory of ecological systems and educational critical theory. I believe they can complement each other rather than been seen as separate or conflicting.

### **5.3.2 The Intersection of Points ESD and CML**

This project is unique in a sense that it brings together ESD and CML in the early childhood education context. The model on page10 shows the connections and overlaps between these two sub-fields that illustrate the common critical attributes of educational approaches, pedagogies, and principles. I believe this model can be useful for educators to assist them to see that these different fields are actually very similar. By recognizing their similarities, teachers may be more willing to use ESD and CML to enrich their classroom practices with children.

As a summary, this final chapter overviewed the discussion, implications, and recommendations for the current study. For the discussion part, the findings were compared and contrasted with literature from international and national studies. Then, the implications of the research and recommendations for practice, policy and effectiveness of PDT and further studies were portrayed. This chapter was finished via presenting a section on researcher's critique of the theoretical background of the study and highlighting her contributions to theory.

To conclude the present thesis, the researcher focused on the value of this study. It was shown that there was a real lack of understanding of critical contemporary issues around sustainability and critical media literacy amongst the early childhood teachers in the current study. However, it also revealed that professional development for teachers could make a real difference to their ESD awareness and CML levels as well as competencies and ESD practices through CML. The researcher suggested that

education policy makers, teacher educators, and researchers both in Turkey and in many other international contexts need to continue to look at these areas in order to provide skilled teachers who can work effectively about ESD and CML issues with young children. This will help the next generation to become environmentally friendly and critical media literate citizens who can influence the present and the future positively. Further, early childhood teachers are more than capable of creating a curriculum to tackle challenging issues when given the professional tools to support this vital work.

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## APPENDICES

### APPENDIX A

#### Stimulated Recall Interview Questions

- 1) Bu aktivinizdeki kazanım ve göstergeleriniz nelerdi? Bunlara ulaşabildiniz mi?
- 2) Bu aktivide hangi teknik ya da methodları kullandınız? Neden bu methodları kullanmayı tercih ettiniz?
- 3) Bu aktivitede hangi araçları kullandınız? Neden bu araçları kullanmayı tercih ettiniz?
- 4) Bu aktivite için alternatif öğretim teknik ya da stratejileri neler olabilirdi?
- 5) Aktiviteyi uygularken beklediğiniz dışında gelişen bir durum oldu mu? Bu durumda ne yaptınız?
- 6) Bu aktivitede çocuklar beklediğinizden (planlanladığınızın dışında) daha farklı tepki ya da davranış gösterdiler mi? Bu durumda ne yaptınız?
- 7) Aktivitenizi uygularken çocuklarla ilgili dikkatinizi çeken bir durum oldu mu? Bu durumda nasıl bir strateji geliştirdiniz?
- 8) Aktivite sırasında neden bu soruyu sordunuz/bu şekilde davrandınız/ bu şekilde düşündünüz?
- 9) Aktivitinizde neden büyük grup ve/veya küçük grup ve/veya bireysel etkinlik türünü tercih ettiniz?

## APPENDIX B

### Sample Interview Questions

Essential Competencies of Digital and Media Literacy-Hobbs (2010)	Interview Questions
Access	1) Medya denince aklınıza ne geliyor? 2) Günlük hayatınızda a) Kullandığınız medya araçlarını sınıflar mısınız? b) Medya araç ya da araçlarını iletişim kurmak/sağlamak amaçlı kullanıyor musunuz? Evet/hayır ise sebebini açıklar mısınız?
Analyze & Evaluate	7) Medya araç veya araçlarını kullanarak ulaştığımız içerik nelerden (hangi öğelerden) oluşmaktadır? 8) Medya araç veya araçlarını kullanarak ulaştığımız içeriğin doğruluğunun sizin için önemini açıklayınız? 14) Herhangi bir medya aracını kullanmadan ya da kullanmaya karar vermeden öncelikle nelere dikkat edersiniz? Sebeplerini açıklar mısınız? (mesaj içeriği, hedef kitle, etkililik)
Create	16) Sosyal medya hesabınızı ya da hesaplarınızı hangi amaçla kullanıyorsunuz? Bu hesap ya da hesaplar aracılığıyla oluşturduğunuz içerikleri paylaşıyor mısınız? (Örneğin, facebook sayfanızda ya da blogunuzda yazmış olduğunuz herhangi bir yazıyı, çektiğiniz fotoğrafı ve/veya görüntüyü paylaşıyor mısınız?) Evet ya da hayır ise sebebini açıklar mısınız?
Reflect	10) Medya araç ya da araçlarının aktarmış oldukları içerik kurum /kuruluş ya da kişi/ kişiler tarafından denetlenmeli midir?

Sample Interview Questions-Cont'd.

Reflect	a) Evet ise sebebini açıklar mısınız? Bu denetim nasıl yapılmalı? Bu konudaki kurum /kuruluş ya da kişi/ kişilerin sorumlulukları ne olmalıdır? b) Hayır ise sebebini açıklar mısınız?
Act	20) Dönem boyunca medya araç veya araçlarını kullanarak sürdürülebilir kalkınma için eğitimi (örneğin günlük planlar ve etkinliklerle v.b) öğrencilerinize hangi yollarla aktarabilirsiniz? a) Bu konuya günlük planlarınızda yer veriyor musunuz? b) Evet ise planınızı hazırlarken nelere dikkat ediyorsunuz? (Hangi teknik ve medya araç veya araçlarını kullanmayı düşünüyorsunuz? Sebebini açıklar mısınız?) c) Hayır ise bununla ilgili günlük plan hazırlasaydınız, nelere dikkat ederdiniz? (Hangi teknik ve medya araç veya araçlarını kullanmayı düşünürdünüz?) Sebeplerini açıklar mısınız?

## APPENDIX C

### Sample Plans

Öncelikle eğitimci katılımcılara seminer dönemi boyunca katılacakları 10 saatlik eğitimin içeriği ile ilgili bilgi verir. Günlük eğitimlerin birbirine geçmiş iki kısımdan oluşacağını söyler. İlk kısım daha teorik olup konuyla ilgili bilgileri içerirken ikinci kısım ise bu bilgilerin uygulama kısmını içerecektir.

#### **PLAN-1: MEDYA VE SÜRDÜRÜLEBİLİR KALKINMA İÇİN EĞİTİM NEDİR?**

**Konu:** Medya ve medya çeşitleri, sürdürülebilir kalkınma için eğitim

**Süre:** 120 dakika

**Araç ve gereçler:** medya ve medya çeşitlerini ve sürdürülebilir kalkınma için eğitimi anlatan power point sunumları, çalışma kağıtları, videolar

#### **Kazanımlar:**

1. Medyanın ne demek olduğunu söyler.
2. Medya çeşitlerini söyler.
3. Sürdürülebilir kalkınma için eğitimin ne demek olduğunu söyler.
4. Sürdürülebilir kalkınma için eğitimin alt boyutlarını söyler ve örnekler vererek açıklar.

#### **Uygulama:**

**Aktivite 1:** medya ve medya çeşitlerini ve sürdürülebilir kalkınma için eğitimi anlatan power point sunumları, küçük grup tartışma, kağıtlara notlar yazma

Bu ilk oturumumuzda öncelikle medya ve medya çeşitleri ve sürdürülebilir kalkınma için eğitim ile ilgili bilgi edinip bu kavramlarla ilgili uygulama yapacağız. Bu uygulamayı yaparken sürdürülebilir kalkınma için eğitimin konularından biri olan küresel ısınmaya değineceğiz.

Öncelikle size verilen kağıtların ön kısmındaki medyanın tanımını, neleri içerdiğini ve medya ile ilgili bilgilerinizin kaynağı ile ilgili soruları cevaplanmanızı istiyorum.



Daha sonra ise aynı kağıdın arka kısmındaki çevre eğitiminin tanımı, neleri kapsadığı ve çevre eğitimi ile ilgili bilgilerinizi içeren soruları cevaplamanızı istiyorum.( Bakınız Ek-1)

Daha sonra bu soruların cevaplarının katılımcılar tarafından paylaşılması istenir. Cevaplar üzerinden tartışılır.

Medya ve medya çeşitleri ve de sürdürülebilir kalkınma için eğitim ile ilgili power point sunumu paylaşılır.

## **EKLER**

**Ek-1**

ADI-SOYADI .....

Tarih.....

**MEDYA NEDİR?**

**MEDYA NELERİ KAPSAR?**

**MEDYA İLE İLGİLİ BİLGİLERİZİN KAYNAĞI NEDİR?**

ÇEVRE EĞİTİMİ NEDİR?

ÇEVRE EĞİTİMİ NELERİ KAPSAR?

ÇEVRE EĞİTİMİ İLE BİLGİLERİNİZİN KAYNAĞI NEDİR?

## APPENDIX-D

### UZMAN GÖRÜŞÜ FORMU

Değerli Uzman,

Bu form okul öncesi öğretmenleri için hazırlanmış 10 saatlik eğitimi içeren beş plan hakkındaki görüşlerinizi belirlemek ve bu görüşler ışığında uygulama yapmadan önce gerekli değişiklikleri yapabilmek amacıyla hazırlanmıştır. Bu formda her bir plan için değerlendirmeniz gereken altı kriter bulunmaktadır. Her bir planla ilgili görüşlerinizi ilgili kriterlerin karşısına belirtebilirsiniz.

Desteğiniz için çok teşekkür ederim.

Arş. Gör. Şule ALICI

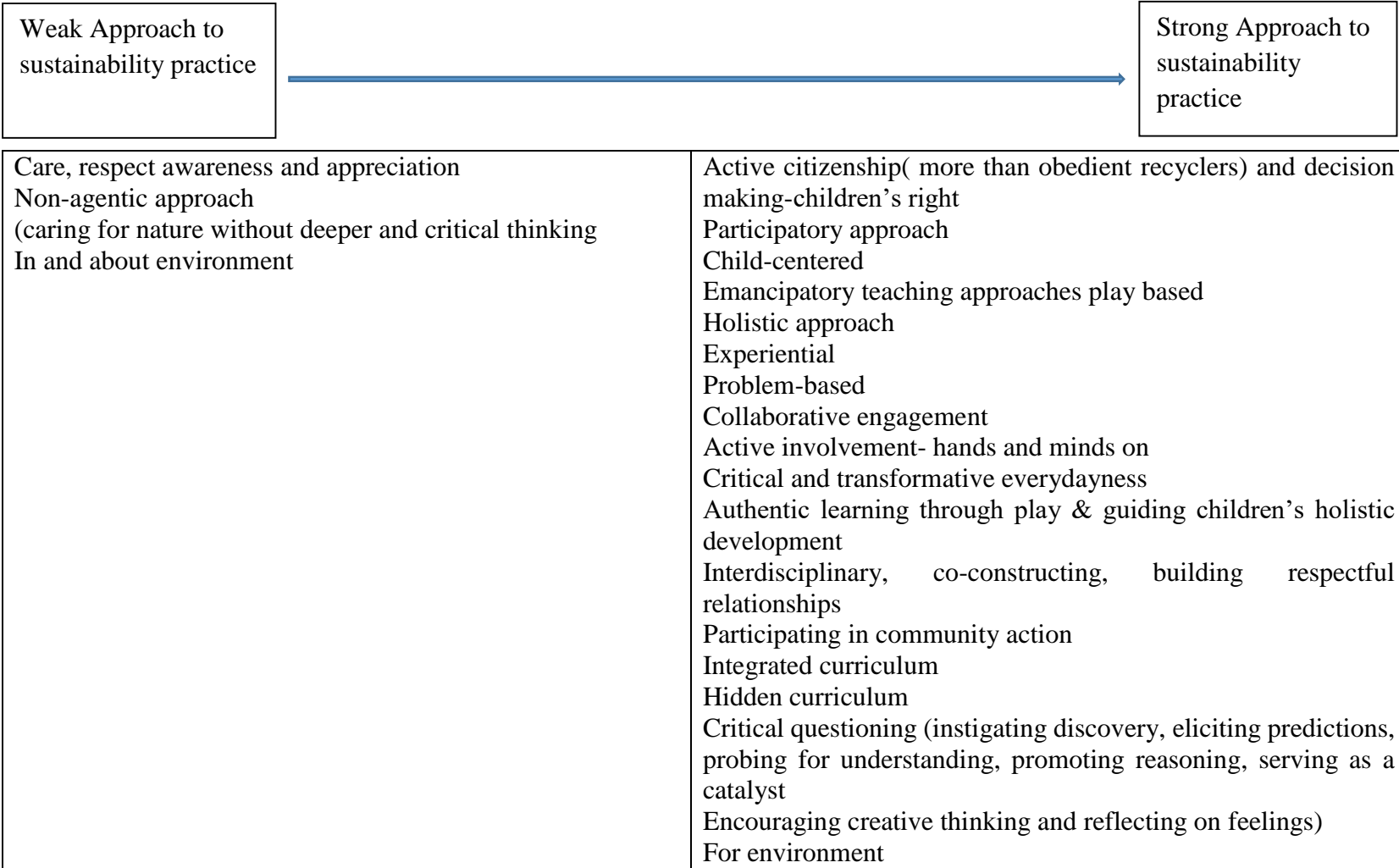
#### Plan-1

Kriterler	Uygundur	Uygun Değildir	Öneriler
Kazanımlar içerikle uyumlu mu?			
Kazanımlar hedef kitleye uygun mu?			
Kullanılan araç ve gereçler yeterli ve hedef kitleye uygun mu?			
Planların süresi hedef kitleye uygun mu?			
Planlardaki yönergeler açık ve anlaşılır mı?			
Çalışma kağındaki sorular açık ve anlaşılır mı?			

## APPENDIX E

CML Levels	Explanations
Basic	<p>Be able to use media and media tools ask what they see at the visuals?</p> <p>Be able to use media and technological tools.</p> <p>Be able to use relevant information about these tools.</p> <p>Be able to share his/her knowledge with other people.</p>
Medium	<p>Be able to use media and media tools purposely and support kids to interpret the messages on media/media tools</p> <p>Be able comprehend messages which are conducted by media tools.</p> <p>Be able distinguish messages in terms of its quality, veracity and credibility.</p> <p>Be able to think potential effects or outcomes of these messages.</p> <p>Be able to generate a content via using his/her creativity and own tool(s).</p>
Advanced	<p>Be able to ask questions kids to interpret the message critically and encourage them create their own message through using their own media/ media tools</p> <p>Be able to give importance to the content(s) and aim(s) of message, and audience while creating his/her message.</p> <p>Be able to use some techniques to conduct his/her own message(s).</p> <p>Be aware of ethical principles and his/her responsibility.</p> <p>Be able to put these principles and responsibilities into practice.</p> <p>Be able to reflect these principles and responsibilities his/her own identity, communication behavior.</p> <p>To be able work individually and collaboratively to share his/her knowledge with families, colleagues and community.</p> <p>To be able work individually and collaboratively to solve the problems with families, colleagues and community.</p> <p>To be able to participate as a member of a community at local, regional national and international levels.</p>

ESD	Explanations
Weak	Outdoor nature experiences, outdoor play, science activities not making connection to ESD, nature play
Medium	Focusing on just environment aspect –respect worm farm, planting garden water cycle
Strong	Social-cultural and economic aspects of ESD- reflect, redistribute, recycle



## APPENDIX F

### ETHICAL PERMISSIONS

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ  
APPLIED ETHICS RESEARCH CENTER



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30 ARALIK 2015

Gönderilen: Yrd. Doç. Dr. Volkan ŞAHİN

İlköğretim Bölümü

Gönderen: Prof. Dr. Canan SÜMER

İnsan Araştırmaları Komisyonu Başkanı

İlgil: Etik Onayı

Sayın Yrd. Doç. Dr. Volkan ŞAHİN danışmanlığını yaptığınız Şule ALICI "Okul Öncesi öğrenme ortamlarında medya okuryazarlığı kapsamında sürdürülebilir kalkınma için eğitimin araştırılması" başlıklı araştırması İnsan Araştırmaları Komisyonu tarafından uygun görülerek gerekli onay 08.01.2016-31.12.2016 tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Canan SÜMER

Uygulamalı Etik Araştırma Merkezi  
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Prof. Dr. Meliha ALTUNİŞİK

İnsan Araştırmaları Komisyonu

Üyesi

Prof. Dr. Mehmet UTKU

İnsan Araştırmaları Komisyonu

Üyesi

Prof. Dr. Aydın BALAMIR

İnsan Araştırmaları Komisyonu

Üyesi


Prof. Dr. Ahmet SOL

İnsan Araştırmaları Komisyonu

Üyesi



PERMISSION FROM MINISTRY OF NATIONAL EDUCATION



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03.03.2016

ORTA DOĞU TEKNİK ÜNİVERSİTESİ REKTÖRLÜĞÜNE  
(Öğrenci İşleri Daire Başkanlığı)

İlgi: a) MEB Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 2012/13 nolu Genelgesi,  
b) 19/02/2016 tarihli ve 2184 sayılı yazımız.

Üniversiteniz Eğitim Fakültesi Doktora Öğrencisi Şule ALICI' nın "Okul öncesi öğrenme ortamlarında medya okuryazarlığı kapsamında sürdürülebilir kalkınma için eğitimin araştırılması" başlıklı tezi kapsamında çalışma yapması Müdürlüğümüzce uygun görülmüş ve araştırmanın yapılacağı İlçe Milli Eğitim Müdürlüğüne bilgi verilmiştir.

Uygulama formunun (6 sayfa) araştırmacı tarafından uygulama yapılacak sayıda çoğaltılması ve çalışmanın bitiminde bir örneğinin (cd ortamında) Müdürlüğümüz Strateji Geliştirme (1) Şubesine gönderilmesini arz ederim.

Ali GÜNGÖR  
Müdür a.  
Şube Müdürü

07-03-2016-4221

GÖRÜŞME ELEKTRONİK İMZALI  
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## APPENDIX G

### CURRICULUM VITAE

#### PERSONAL INFORMATION

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#### EDUCATION

Degree	Institution	Year of Graduation
MS	Middle East Technical University, Early Childhood Education	2013
BS	Gazi University, Biology Education	2007
High School	Bornova Anatolian High School	2001

#### WORK EXPERIENCE

##### Year Place Enrollment

2007- Present METU Early Childhood Education Department Research Assistant

## FOREIGN LANGUAGES

Advanced English

Basic German

## CERTIFICATE

2016

Çağdaş Drama Deneği

Creative Drama Leader

## PUBLICATIONS

Yılmaz,N., & **Alıcı, Ş.** (2011).Investigating pre-service early childhood teachers' attitudes towards the computer based education in science activities. *The Turkish Online Journal of Educational Technology*,10(3), 161-167.

**Alıcı, Ş.**, & Gökbulut, Ö.Ö. (2017). Investigation of Process Drama Workshops' Impact on Early Childhood Teacher Candidate's Media Literacy Levels, *Creative Drama Journal*,12(1),47-68

### Conference Papers:

Yılmaz,N., & **Alıcı, Ş.** Investigating pre-service early childhood teachers' attitudes towards the computer based education in science activities, International Educational Technology Conference (2011), www.iet-c.net.

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**Alıcı, Ş.**, Olgan, R., & Öztekin, C. An influence of environmental education practice on kindergarten children's conceptions about future environment, *The 65<sup>th</sup> OMEP World Conference*, 2013

**Alıcı, Ş.**, Olgan, R., & Öztekin, C. What's going on at home: is it garbage or waste? *The 66<sup>th</sup> OMEP World Conference*, 2014.

**Alıcı, Ş.**, Olgan, R., & Öztekin, C. The impact of environmental practice on kindergarten children's perceptions and behaviors about composting, *The 66<sup>th</sup> OMEP World Conference*, 2014.

**Alıcı, Ş., & Şahin, V.** Investigation on Education for Sustainable Development in Early Childhood Classrooms: The case of 7Rs, *The 67th OMEP World Conference*, 2015.

**Alıcı, Ş., & Baran, E.** A Case Study on Learning Together: Faculty Mentoring Project, *"European Conference on Educational Research (ECER)"*, 2015.

**Alıcı, Ş., & Şahin, E.** A Matter of Education for Sustainable Development: Public Opinion about Nuclear Wastes, *III rth International Eurasian Educational*, 2016.

**Alıcı, Ş., & Gökbulut, Ö.Ö.** Investigation of Process Drama Workshops' Impact on Teacher Candidate's Media Literacy Levels, *EECERA 26<sup>TH</sup> Conference*, 2016.

**Alıcı, Ş., & Şahin, V.** Advocating to be a Media Literate Preservice Teacher: A research of the First Implementation of a New Course in Higher Education in Turkey, *EECERA 26<sup>TH</sup> Conference*, 2016.

**Alıcı, Ş., & Şahin, V.** Advocating to be a Media Literate Preservice Teacher: A research of the First Implementation of a New Course in Higher Education in Turkey, *EECERA 26<sup>TH</sup> Conference*, 2016.

**Alıcı, Ş., & Şahin, V.** Exploring Early Childhood Learning Environments in terms of ESD and Media Literacy: A Needs Assessment Study of the Turkish Context, *9<sup>th</sup> World Environmental Education Congress* 2017.

## APPENDIX H

### TURKISH SUMMARY

#### TÜRKÇE ÖZET

### MESLEKİ GELİŞİM PROGRAMININ ELEŞTİREL MEDYA OKURYAZARLIĞI ARACILIĞIYLA TÜRK OKUL ÖNCESİ ÖĞRETMENLERİNİN SÜRDÜRÜLEBİLİR KALKINMA İÇİN EĞİTİM İLE İLGİLİ MESLEKİ GELİŞİMLERİNE ETKİSİNİN ARAŞTIRILMASI

#### GİRİŞ

Medya ve Sürdürülebilir Kalkınma için Eğitim (SKE) arasındaki ilişki hakkında var olan kaynakların analizleri bazı araştırmacıların, medya ve okulların genç insanların çevreyle ilgili bilgilerini etkileyen iki ana kaynak olduğunu bulduğunu göstermiştir (Blumer, 1979; Hausbeck, Milbrath & Enrigh, 1992; Connell Fien, Lee, Sykes & Yencken, 1999). Meksika ve İngiltere’de 256 okul çocuğuyla (7-9 yaş arası) yapılan bir çalışma çocukların çevreyle ilgili bilgilerinin çoğunu % 45 ile medyadan (televizyon ve kitaplar gibi) edindiğini göstermiştir (Barraza & Cuaron, 2004). Bonnet ve Williams (1998) da 4-6 yaşlarındaki çocukların çevreyle ilgili bilgilerinin temel kaynağının okulları, anne babaları, akrabaları ve televizyon olduğunu saptamıştır. Medya (özellikle televizyon) çevreyle ilgili eğitimde hayati bir yol teşkil eder (Ballantyne & Packer 2005). Huckle (1995)’a göre, insanlar medya aracılığıyla hem yakın ve uzak çevreleri hem de çevreyle ilgili problemler hakkında farkındalık ve anlayış kazanabilir çünkü görsel medyadaki görüntü ve sesler bireylerin inanç, tavır ve kimliklerini oluşturmada önemli bir rol oynar. Roth (1992)’a göre SKE’in ana amacı sürdürülebilir gelişme için uzun soluklu eylemleri destekleyecek anlayış, beceri, tavır ve ruh haline sahip olan “çevreyle ilgili bilgi sahibi yurttaşlar” yetiştirmektir. Bu

hedefe ulaşmak ve insanları çevre ve çevresel problemler hakkında eğitip onlara ilham veren zengin çoklu algılı tecrübeler sunmak için medya tam tamına uygun bir araçtır (Zimmermann, 1996) ve bu yüzden herhangi bir okulun SKE müfredatının hayati bir parçası olarak düşünülmelidir. Medya bireyin bilgi, anlayış, tavır ve becerileri üzerinde olumlu bir etkiye sahip olmasına rağmen, medya mesajları çocuk eğlence programlarında olduğu gibi çoğunlukla gizli ve alışılmadık olarak kalır. Örneğin, hedeflenilmemesine rağmen çocuklar eğlence programlarından “değerler, klişeler, ön yargılar” hakkında bilgi edinebilir (Torres & Mercado, 2007). Türkiye’de bilgisayar ve internet kullanımının ortalama 6 yaşında başlarken, cep telefonu kullanımının da 7 yaşında başladığı ve 6-10 yaşlarındaki çocukların % 52’sinin günde 3 saatten daha fazla TV izlediği ve çoğunlukla çizgi film izlediği (TUIK, 2013) düşünülürse, bireyleri medyanın potansiyel negatif etkisinden korunmayı öğrenmeye teşvik etmek için (Eleştirel)Medya Okuryazarlığı’na ihtiyaç vardır (Potter, 2013). O zaman eğitim “medya okuryazarlığı eğitimi genç insanlara - anasınıfından üniversiteye - okudukları, gördükleri, duydukları ve iletişim kurdukları her şeye karmaşık medya çevrelerinde muhakeme ve eleştirel düşünme uygulama yetkisi verdiği” için Eleştirel Medya Okuryazarlığı (EMO)’nı geliştirmede (NAMLE, 2014, p. 7) ve “eğitimin ve toplumun yeniden yapılanma ve demokratikleşmesi”nde (Kellner & Share, 2007, p.4) anahtar bir rol oynamalıdır. Toplumda (E)MO’yu inşa etmek hem bireylerin çabalarını hem de uzmanların rehberliğini gerektirir (Potter, 2013). Öncelikle, öğretmenler medya okuryazarı olmalıdır ki, sonra da çocuklara medya okuryazarlığı olan bireyler olmada yol gösterici bir rol oynayabilmelidirler (Hobbs, 2010).

Önceki Avrupa Bilgi Topluluğu ve Medya şefi Reding (2007)’e göre medya okuryazarlığı aynı zamanda bilgi ve iletişim hizmetlerinin hızlı bir seviyede gerçekleştiği teknolojik açıdan ileri seviyedeki toplumlarda etkili katılımın ön koşuludur. Dijital teknolojiler çoğu iletişim hizmetlerinin merkezindedir, bu yüzden medya okuryazarlığı bugünün toplumunda her alanda yer almamızı sağlayan geleneksel medyanın yanı sıra mevcut dijital çağda geniş bir dizi beceriyi kazanmak için hayati olarak görülür. Bireyler bu gelişmeleri yakalayamadıkça, yetenekli ve iyi bağlantılı kişilerle öyle olmayanlar arasında gün be gün artan bir ayrışma olacaktır. Bu nedenle Küçük Çocukların Eğitimi Ulusal Birliği (NAEYC)/Fred Rogers Merkezi (2012) hizmet öncesi ve hizmet içi öğretmen eğitiminin; derinlemesine, uygulamalı ve kafa yorulan medya tecrübelerini, devamlı desteği, medyadaki mevcut değişimler ve programdaki kullanımları hakkında bilgili olmalarını sağlamak için en yeni

teknolojiye ve enteraktif medyaya ulaşımı kapsamı gerektiğini vurgulamıştır. Öğretmenlere keşfetmeleri ve bu araçları okul müfredatında nasıl kullanacakları ve müfredata nasıl verimli, isteyerek ve gelişime uygun şekillerde dâhil edecekleri üzerine tecrübe sahibi olmaları için fırsatlar sağlanmalıdır. Hobbs ve Jensen (2009) tarafından belirtildiği gibi, Medya Okuryazarlığı (MO) ile alakalı gelecek çalışmalar iki konu etrafında yürütülecektir: (a) medya okuryazarlığıyla eğitim teknolojisinin anasınıfından 12. sınıf müfredatına kadar dâhil edilmesi arasındaki karşılıklı ilişki (b) medya okuryazarlığı eğitimiyle bilimin yanı sıra beşeri bilimler ve sanatın arasındaki bağlantı.

Eleştirel medya okuryazarlığıyla ilgili kaynakların analizi göstermektedir ki araştırmacılar eğitimcilerin, öğrencilerin eleştirel medya okuryazarlığı seviyesini nasıl yükseltmesi gerektiğinin yanı sıra eleştirel medya okuryazarlığının ve/veya medya okuryazarlığının nasıl tanımlanabileceğiyle ilgili oldukça farklı görüşler ortaya koymaktadır. Örneğin, Rogow (2015) EMO'nun Okul Öncesi (OÖ) programlarına dâhil edilmesinin öğretmenlerin temel düşünce mesajlarıyla açıklanan etkili eğitim yaklaşımlarıyla mümkün olabileceğini iddia eder. Bunlar (a) çocukların medyadan beslenen bir dünyada başarılı olmaları için ihtiyaç duydukları “sorgulama alışkanlıkları”nı ve “ifade becerileri”ni edinmesini destekleyen etkili MO planlarını ve öğretim yöntemlerini inşa etmek, (b) biz eğitimcilerin bizi çevreleyen medya, kültürümüzü de etkilediği için neden medyayı hayatlarımıza sağlıklı ve üretken biçimlerde dâhil etmemiz gerektiğini kavramak, (c) çocukların bütün medyanın yaratıldığı kavramını anlamaları için onlara fırsatlar sağlamak, (d) çocuklara, çocukların inşa ettiği ve tükettiği medyayla ilgili karar vermede ve yansıtma sürecine aktif katılımları aracılığıyla eleştirel düşünmeyi öğretmek ve (e) çocukları medyayla ilgili biz eğitimcilerin ve çocukların kullandığı ve inşa ettiği soruları sorgulamayı öğrenmeye, onlara soruların nasıl sorulup cevapların nasıl bulunacağını modelleme yoluyla teşvik etmek. Öte yandan, Kellner ve Share (2007) EMO'nı yükseltmenin “medya kodlarını ve düzenlerini analiz etme; klişeleri, baskın değerleri ve ideolojileri eleştirme becerileri ve medya metinleri tarafından üretilen çoklu anlam ve mesajları yorumlama yetenekleri” , medyanın (film ya da video gibi) nasıl olumlu bir şekilde kullanılabilirliği, çeşitli tipte içerikleri (çok kültürlü kavrama ve eğitim gibi) (s.4) öğretme üzerine becerilerin geliştirilmesini içerdiğini savunur. Bu çeşit bir eğitim,

SKE gibi dönüştürücü bir eğitime dayanan önemli bir eğitim bilimi yaklaşımı öneriyor olarak görülebilir (Davies, 2015; Tilbury & Wortman, 2004).

Eğitimde MO müdahalesi kullanmak yeni bir durum değildir. Alkol tüketimi (Hindmarsh, Jones & Kervin, 2015), vücut algısı (Diedrichs, Atkinson, Steer, Garbett, Rumsey & Halliwell, 2015), yeme bozuklukları (Wilksch, 2015), haberler (kamu spotu) (Vraga & Tully, 2016), bilgisayar oyunu oynama ve internet kullanımı davranışları (Walther, Hanewinkel & Morgenstern, 2014), sosyal medyanın öğrencilerin yeme bozuklukları üzerine etkisi (McLean, Wertheim, Masters, Paxton, 2017) ve cinsel sağlık eğitimi (Scull, Malik & Kupersmidt, 2014; Scull, Kupersmidt, Malik & Keefe, 2017) ile ilgili MO müdahalelerinden yararlanılarak birçok araştırma yapılmıştır. Bu çalışmalarda, yukarıda bahsedildiği gibi farklı konularda üniversite, lise ve ilkokul öğrencilerinin bilgilerini, görüşlerini, tavır ve davranışlarını, eleştirel düşünme becerilerini etkilemek için çeşitli müdahalelerde bulunulmuştur. Ancak, EMO ve SKE hakkındaki kaynakları incelemek gösterir ki erken çocukluk dönemi bağlamında EMO aracılığıyla SKE'yı yürütmenin etkisini ne uluslararası ne de ulusal seviyede keşfeden hiçbir çalışma yoktur. Dahası, Türkiye'de, medya okuryazarlığı ile ilgili çalışmalar medyanın da çocukların hayatında daha fazla yer ve zaman almaya başlamasına ve en azından bir ya da daha fazla araç/ medya ve/veya medya araçlarının günlük hayatlarındaki önemli şeylerden biri olmasına rağmen (MEB, 2013; RTUK, 2015) "Radyo Televizyon Üst Kurulu" nun (RTÜK) desteğiyle ancak 2004'te başlamıştır (Altun, 2014). Altun'un, 2004'ten günümüze yapılan çalışmaları analiz eden araştırmasının ışığında, erken çocukluk dönemi eğitimi ve medya okuryazarlığı, ve öğretmenler ve medya okur yazarlığıyla ilgili az sayıda çalışmanın olduğu ve disiplinler arası çalışmaların medya okuryazarlığıyla ilgili olduğu açıktır. Benzer bir şekilde, Toran (2017) Türkiye'de 2007'den 2017'ye SKE' ye odaklanan bir araştırmayı analiz eden bir çalışma yaptı. Türkiye'de SKE eğitimini geliştirmek için SKE programlarının öğretmenler üzerindeki etkisini tanımlayan araştırma ve projeleri gerçekleştirmenin gerekli olduğunu buldu. Türkiye'de erken çocukluk dönemi alanında öğretmen eğitiminde medya okuryazarlığıyla ilgili birkaç çalışma üstlenilmiş olmasına rağmen EMO yoluyla SKE hakkında OÖ öğretmenlerini hedefleyen özel bir çalışma yoktur ve özellikle de aynı alanda Bağlaşık Mesleki Gelişim Modeli'nin (ICMPG) bakış açısından hiçbir çalışma yoktur. (Clarke & Hollingsworth, 2002; Hollingsworth, 1999).



Bu nedenle mevcut çalışma, erken çocukluk dönemi öğretmenlerinin var olan SKE farkındalığının, EMO seviyelerinin ve mesleki gelişim eğitimi (MGE) yoluyla kazanılan EMO becerilerinden SKE durumlarını sınıf müfredatlarına dâhil etmede nasıl faydalandıklarının incelenmesiyle ilgili araştırma kaynaklarına bir katkı sağlamaktadır. Özellikle, bu çalışma öğretmenlerin 7Rlerin OMEP sistemini eleştirel medya okuryazarlığının gelişimiyle bağlantılı bir şekilde SK hakkında öğrenmeye dayanak olarak nasıl kullandığına bakmıştır. Özetle mevcut çalışma, ICMPG'nin araştırmacının hâlihazırda sınıflarda bulunan dört erken çocukluk dönemi öğretmenin profesyonel gelişim eğitimi boyuncaki müdahalesine dayandırdığı dört durum çalışması aracılığıyla toplanan verinin incelenmesinden elde edilen bulgular ve tartışma üzerinden gelişti. Özellikle, çalışmanın odağı EMO seviyelerini SKE bağlamında (küresel ısınma) geliştirmektir. Eğitimin, bu erken çocukluk dönemi eğitimcilerinin sınıflarında EMO yoluyla SKE uygulamalarına (alan uygulaması) etkileri ve onların SKE ve EMO seviyelerinin farkındalıkları (kişisel alan) ve öğretme stratejileri, kaynak kullanımı vs. gibi göze çarpan sonuçlar (alan sonuçları) incelendi ve ICMPG modeli yoluyla tartışıldı.

Böylelikle, mevcut çalışma öğretmeye ve öğrenmeye karşı bütüncül bir yaklaşımın öğretmenin SKE ve EMO ile ilgili profesyonel değişiminin ve/veya gelişiminin nasıl gerçekleşebileceğini tanımlamak için nasıl kullanılabileceğini örneklendirdi. Çalışmayı yürütmede, çoklu veri toplama araçları kullanıldı. Bunlar hatırlatma seansları içeren görüşmeleri, mülakatları, öğretmenlerin günlük ve aylık planlarını ve alan notlarını içeriyordu. Ayrıca, erken çocukluk dönemi öğretmenlerinde eğitimin etkileri de onların görüşleri ve sınıflardaki uygulamaları aracılığıyla incelendi. Çalışmanın bulguları aynı zamanda mevcut araştırmanın özellikle SKE bağlamında MGE temelli EMO'nin erken çocukluk dönemi eğitimcilerinin sınıflarında EMO aracılığıyla ilgili SKE uygulamaları üzerine etkisiyle alakalı olarak daha güçlü ve daha zayıf yönlerine ışık tutmaya hizmet etmektedir. Bu çalışmanın sonucunda diğer araştırmacıların erken çocukluk dönemi bağlamında SKE ve EMO'yu kapsayan bir dizi programın ve hizmet içi eğitimin etkisini inceleyerek çalışmalar gerçekleştirebileceği bulunmuştur.

Önceki araştırmanın ışığında ve 7Rler aracılığıyla uygulandığı gibi OMEP'in eğitimde süreklilik prensipleriyle aynı çizgide olarak, mevcut çalışmanın amacı erken çocukluk dönemi öğretmenlerinin SKE farkındalıklarına, EMO seviyelerine, EMO yoluyla SKE odaklı uygulamalarına ve özel olarak tasarlanmış mesleki gelişim

eđitiminden (MGE) sonraki uygulamalarından elde ettikleri sonuçlara nitel araştırma yöntemi uygulamaktı. Öğretmenlerin MGE'den önce ve sonra SKE farkındalığını ve SKE'nin EMO yoluyla uygulamalarını incelemek için, ilgili kaynaklar soruşturuldu ve SKE uygulamalarının kapsamıyla ilgili kriterler (zayıftan güçlüye) ve EMO seviyeleri (temel – ileri) tanımlandı ve Ek E'te sunuldu.

OÖ öğretmenlerinin MGE'den önce ve sonraki EMO seviyelerini resmetmek için, Avrupa Komisyonu Genel Bilgi Topluluđu ve Medya, ve Hobbs'un Temel Dijital ve Medya Okuryazarlığı Becerileri (2010)'nde tanımlanan kriterler kullanıldı. Bu kriterlere göre, daha sonra, öğretmenlerin eleştirel medya okuryazarlığı seviyeleri temel, orta ya da ileri olarak sınıflandırıldı. (Bknz. Ek E)

Aşağıdaki ana ve alt araştırma soruları çalışmanın geneline rehberlik etti:

1) Sürdürülebilir Kalkınma için Eğitim (SKE) uygulamalarının kişisel alan, uygulama alanı, ve sonuçlar alanı bakımından etkililiğini geliştirmeyi hedefleyen mesleki gelişim eğitiminin sonucunda, erken çocukluk dönemi öğretmenlerinin eleştirel medya okuryazarlığı (EMO) seviyeleri ne dereceye kadar değişmiştir?

1-a) Erken çocukluk dönemi öğretmenlerinin SKE farkındalıkları mesleki gelişim eğitiminden önce ve sonra nasıl değişmiştir?

1-b) Erken çocukluk dönemi öğretmenlerinin EMO seviyesinin mesleki gelişim eğitiminden önce ve sonraki seviyesi nedir? (kişisel alan)

1-c) Erken çocukluk dönemi öğretmenlerinin erken çocukluk dönemi öğrenme çevrelerinde EMO yoluyla SKE uygulamalarında mesleki gelişim eğitiminden sonra ne gibi değişimler olmuştur? (uygulama alanı)

1-d) Erken çocukluk dönemi öğretmenlerinin erken çocukluk dönemi öğrenme çevrelerinde EMO yoluyla SKE uygulamalarından elde ettikleri sonuçlarda mesleki gelişim eğitiminden sonra ne gibi değişimler olmuştur? (sonuçlar alanı)

## YÖNTEM

Bu hedefleri gerçekleştirmek ve araştırma sorularına cevap vermek için, öncelikle, erken çocukluk dönemi öğrenme ortamlarında SKE ve EMO ile ilgili mevcut durum durum çalışması temelli bir yaklaşım kullanılarak öğretmenlerin ve çocukların ihtiyaçlarının tespiti yoluyla belirlendi. İhtiyaçlar ışığında, araştırmacı tarafından MGE geliştirildi ve sonra katılımcıların SKE farkındalığını ve EMO seviyelerini, ve çocuklarla sınıflarında öğrenme aktiviteleri yürütürken medyayı SKE'ye dahil etmedeki eğitim bilimi becerilerini desteklemek için yürütüldü. MGE'den sonra, her bir katılımcı kendi aktivite planlanımı ve/veya SKE projesini planladı ve uyguladı. Bu süreci incelemek için, Clarke ve Hollingsworth (2000) tarafından, planlanıldığı gibi örnek olay temelli bir yaklaşım kullanıldı. Öğretmenlerin bu müdahale sonucu mesleki gelişimini tanımlamak için Clarke ve Hollingsworth'ün "Bağlaşık Mesleki Gelişim Modeli" kullanıldı. Sonuçta bu çalışma erken çocukluk dönemi eğitimcilerinin mesleki değişim ve/veya gelişiminde MGE'nin etkisini belgeledi. MGE; SKE ve EMO ile ilgili konuları, bu konuların nasıl dâhil edilebileceğini (içerik) ve eğitimcilerin sınıflarında aktivitelerini/ projelerini uygularken hangi öğretim yöntemlerinin kullanılabileceğini (eğitim bilimleri) kapsadı. MGE'den sonra – bir dönem sürdü (her bir öğretmen için 5 oturum) – bu sefer bireysel ve devam eden destek her bir öğretmen için yüz yüze iletişimle, e-maile ya da telefonla sağlandı. Böyle uzun bir süreç, araştırmacının hem öğretmenlerin ve öğrencilerin öğrenme ihtiyaçlarının hem de en uygun desteğin farkında olabileceği anlamına geldi. Ayrıca araştırmacı birden fazla her bir öğretmenin mesleki değişim ve/veya gelişimini gözlemleme fırsatına sahip oldu. Çalışmanın genel tasarımı ana hatlarıyla beş farklı aşamadan oluşmaktadır.

Aşama-1'de, ihtiyaç tespiti erken çocukluk dönemi ortamlarında uygulanan SKE ve EMO ile ilgili aktivitelerin/planların var olan durumunu tanımlamak için gerçekleştirildi. Bunun için çeşitli veri toplama araçları, hatırlatma seansları içeren görüşmeler ve mülakat tasarlandı; ve öğretmenlerin günlük ve aylık planları ve alan notları SKE, EMO ve Bağlaşık Mesleki Gelişim Modeli hakkındaki ilgili kaynaklar ışığında kullanıldı. Veri, durum çalışması bağlamında toplandı. İkincisinde, toplanılan

veri analiz edildi ve ihtiyaç tespitine dayanarak SKE, EMO ve Baęlaşık Mesleki Gelişim Modeli'ne odaklanan çalışmalar ışığında MGE kuruldu.

MGE' ye son şeklini vermek için, uzmanların görüşleri alındı. Aşama-3'te MGE hizmet içi seminerleri döneminde<sup>8</sup> uygulandı. Bu eğitim sırasında, öğretmenler tartışma ve sözlü görüş bildirimlerinin yanı sıra yazılı görüş bildirimleri de yaptı; ve, resmi olmayan diyaloglara dâhil oldu. Dahası, MGE sırasında çalışma kâğıtları aracılığıyla medya analizi yaptılar, ve MGE sonunda kendi posterlerini oluşturdular. Bunu değerlendirme araçlarını belirlerken, SKE, EMO ve Baęlaşık Mesleki Gelişim Modeli hakkındaki ilgili kaynaklardan yararlandı. Dördüncü aşamada, öğretmenler MGE'den kazandıkları tecrübelerine dayanarak kendi aktivitelerini/planlarını tasarladı ve uyguladı. Öğretmenlerin kendi sınıflarında EMO yoluyla SKE uygulamalarını nasıl gerçekleştirdiğini belirlemek için aynı veri toplama araçları (Aşama-1'deki) kullanıldı. Son aşamada, aşama-1'de ve aşama-4'te toplanılan veriler SKE, EMO, ve Baęlaşık Mesleki Gelişim Modeli üzerine kaynak taraması ışığında analiz edildi. Her bir öğretmenin mesleki değişimini ve/veya gelişimini tanımlarken, durum çalışması yaklaşımdan yararlandı.

### **Katılımcılar**

Bu çalışmada, araştırma katılımcıları olmaları için 13 öğretmene başvuruldu. Yedi öğretmen araştırmacı tarafından incelenmek için rıza gösterdi. Final analizine de dört öğretmenden toplanılan veri dâhil edildi. Katılımcılar, Türkiye'deki anasınıflarındaki bütün erken çocukluk dönemi öğretmenleri, amaca yönelik örnekleme türlerinden biri olan elverişli örnekleme yoluyla seçildi (Merriam, 2009). Elverişli örnekleme yöntemi konuma, mekânın mevcudiyetine ve muhataplara göre seçildi. Ayrıca araştırmacı, katılımcıların birinden aynı okuldan bu çalışmada katılımcı olabileceğini düşündüğü başka birine yönlendirme yapmasını isteme yoluyla okul öncesi B'deki katılımcılara ulaştı.

Çalışmanın katılımcıları Ankara'nın Yenimahalle Bölgesindeki iki bağımsız okul öncesi devlet okulundan dört erken çocukluk dönemi öğretmendi. Bütün katılımcılar kadındı ve yaşları 27'den 42'ye çeşitlilik gösteriyordu. Hepsi 4 yıllık bir

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<sup>8</sup> Türkiye'de Haziran'ın sonunda (akademik yıl bittikten sonra) ve Eylül'ün başında (akademik yıl başlamadan önce) iki seminer dönemi vardır. Bu dönemler en fazla on günü kapsar. MGE, Eylül 2016'da gerçekleştirilmiştir.

üniversite programının erken çocukluk dönemi eğitimi bölümünden mezun olmuştu. Öğretmenlik tecrübeleri 5 ila 20 yıl arasında değişiyordu. Duru ve Saniye Öğretmenler öğleden sonraları Okul Öncesi-A'da çalışırken, mevcut çalışmada katılımcı olan Umay ve Lale Öğretmenler sabahları Okul Öncesi-B'de çalışıyordu.

### **Mesleki Gelişim Eğitimi**

Bu çalışma için mesleki gelişim eğitimi (MGE) ADDIE yaklaşımı (Analiz et, Tasarla, Geliştir, Uygula ve Değerlendir) ışığında (Branch, 2009) inşa edildi. Bu yaklaşımda “Analiz et, Tasarla, Geliştir, Uygula ve Değerlendir” olmak üzere beş aşama vardır. Analiz aşaması için, bir dönemlik (2016-2017 akademik yılı bahar dönemi) farklı kaynaklardan (mülakat, hatırlatma seansları içeren görüşmeler, belgeler ve alan notları gibi) veriler toplanılarak ihtiyaç tespiti yapıldı. Bu aşamada veri analizinden sonra, öğretmenlerin SKE hakkında ne bildiklerini ve EMO seviyelerinin ne olduğunu ve sınıflarında EMO yoluyla SKE'yi nasıl uyguladıklarını ortaya çıkarıldı; diğer bir deyişle, onların öğretme ve öğrenme gereksinimlerini belirlendi. Böylece, öğretmenlerin mesleki gelişimi hakkındaki kaynak taramasına ve mevcut çalışmanın analiz aşamasından elde edilen bulgulara dayalı olarak, öğretmenin mesleki değişim ve/veya gelişimini iletirmek için MGE geliştirme belirlendi. Bütün bu yönler dikkate alınarak, özel eğitim için öğretim hedefleri geliştirildi ve eğitimin sonunda ulaşılan öğrenme hedefleri ve SKE ve EMO ile ilgili aktivitelerin düzenlenmesi hakkında öğretim analizleri de geliştirildi.

İkinci aşama olan tasarım aşamasında, analiz adımında ulaşılan sonuçlar öğrenme hedeflerini belirleme, öğretme yöntemi (eğitimde kullanılan öğretme yöntem ve stratejileri) oluşturma ve kaynakları (internet, yazılı medya, dijital medya, çalışma kağıtları vb.) belirleme gibi görevler olarak gerçekleştirildi. Bu aşamanın sonunda, ölçülebilir hedefler, öğretme yöntemi ve özelleştirme modeli (aktivitelerin teorik ve uygulamalı yanlarının sırasını belirleme) geliştirildi.

Üçüncü aşama olan geliştirme aşamasında, araştırmacı ilgili kaynakları ve eğitimi inceledi ve eğitim program taslağını oluşturmak için danışmanıyla ve diğer uzmanlarla birlikte çalıştı.

Dördüncü aşama olan uygulama aşamasında, sınıfta MGE gerçekleştirildi. Bu aşamaya özgü sonuçlar öğretmenlerin ürünleriydi (notlar, posterler, hikâyeler vb.).

Son aşama olan değerlendirme aşamasında, bu süreç değerlendirme (eğitimi yaratırken ve aşamalar arasında uzman görüşlerini almak gibi) ve/veya sonuç değerlendirme (veri uygulama gerçekleştirildikten sonra toplanır – MGE’den sonra veri gibi) olarak yapılabilir. Bu aşamanın sonunda, MGE sonlandırıldı ve tüm ADDIE sürecinde toplanılan bütün veriler analiz edildi ve raporlandı. (Detaylı bilgi için Bölüm IV’e bakınız.)

Özetle, MGE Eylül 2016’daki bir hizmet içi eğitim dönemi boyunca beş günü kapsadı. Her bir oturum iki bölümden oluştu. İlk bölüm EMO ve SKE hakkında teorik bilgi içerirken, diğer bölüm bu teorik bilginin uygulamalı yanlarını kapsadı. Diğer bir deyişle, günlük eğitim iki iç içe geçmiş bölümden oluşuyordu. Bu oturumlar yetişkin öğrenme prensiplerini (Lieb, 1991), Hobbs’un temel dijital ve medya okuryazarlığı becerilerini (2010), Avrupa Komisyonu Beceri Seviyesini (Celot, 2009) ve UNESCO’nun (2012) ve OMEP’in (2011) çerçevelerini desteklemek için oluşturuldu. Toplamda beş oturum vardı ve her biri aşağı yukarı iki saatlik bir eğitimden oluşuyordu. Bu eğitim oturumları genel olarak SKE, çevre eğitimi, medya, medya türleri, medyanın içeriği, medya ve EMO’nin mesajı, çocukların medya okuryazarı bireyler olarak nasıl yetiştirileceği, medya ve SKE arasındaki 7Rler açısından ilişki, aktiviteler oluşturulurken ve yürütülürken EMO’nin SKE’ye nasıl dâhil edileceği kavramlarını kapsadı.

### **Veri Toplama Araçları**

Başlıca veriler; video veri kullanarak hatırlatma seansları içeren görüşmeleri ve öğretmenlerle yüzyüze görüşmeleri, öğretmen belgelerinden ve araştırmacının alan notlarından toplanılan destekleyici verileri, ve yazılı ve sözlü görüş bildirimlerini, ve katılımcıların MGE sırasında geliştirdiği eğitim ürünlerini içeren bir dizi nitel araştırma yöntemi aracılığıyla toplandı. Özetle, mevcut çalışmanın sonuçlarının, Denzin (1978) tarafından önerildiği gibi üçgenleştirme yöntemlerinden biri olan, iç geçerliliğini (güvenilirliğini) sağlamak için birçok bilgi kaynağı kullanıldı. Çalışmanın her bir aşamasında- MGE’den önce, MGE sırasında, ve MGE’den sonra - kullanılan veri toplama araçları aşağıdaki Tablo 3.10’da amaçlarının açıklamalarıyla birlikte özetlenmiştir.

Tablo 3.10 Veri Toplama Araçlarının Özeti

Veri Toplama ve Uygulama Yöntemi	Bilgi Toplama Araçları	Hedefler
<b>Aşama-I- MGE'den Önce</b>	Dökümantasyon (günlük ve aylık planlar)	Erken çocukluk dönemi öğrenme ortamlarındaki SKE ve EMO ile ilgili var olan durumu, öğretmenlerin EMO seviyelerini ve SKE hakkındaki bilgilerini ve farkındalıklarını, ve SKE ve EMO'yi eğitimden önce uygularken nasıl birleştireceklerini tanımlamayı desteklemek.
	Hatırlatma Seansları İçeren Görüşmeler	Erken çocukluk dönemi öğrenme ortamlarındaki SKE ve EMO ile ilgili mevcut durumu, öğretmenlerin EMO seviyelerini ve SKE hakkındaki bilgilerini ve farkındalıklarını, ve SKE ve EMO'yi eğitimden önce uygularken nasıl birleştireceklerini belirlemek.
	Alan Notları	Erken çocukluk dönemi öğrenme ortamlarındaki SKE ve EMO ile ilgili var olan durumu ve öğretmenlerin EMO seviyelerini ve SKE hakkındaki bilgilerini ve farkındalıklarını, ve SKE ve EMO'yi eğitimden önce uygularken nasıl birleştireceklerini tanımlamayı desteklemek.
	Mülakat	Erken çocukluk dönemi öğrenme çevrelerindeki SKE ve EMO ile ilgili mevcut durumu, öğretmenlerin EMO seviyelerini ve SKE hakkındaki bilgilerini ve farkındalıklarını ve SKE ve EMO'yi eğitimden önce uygularken nasıl birleştireceklerini belirlemek.
<b>Aşama-II- MGE</b>	Yazılı ve/veya Sözlü Görüş Bildirileri Çalıştaylar sırasında katılımcılar tarafından oluşturulan belgeler	Eğitimin katılımcıların mesleki gelişmesinde etkisini belirlemek
<b>Aşama-III- MGE'den Sonra</b>	Dökümantasyon (günlük ve aylık planlar)	Erken çocukluk dönemi öğrenme ortamlarındaki SKE ve EMO ile ilgili var olan durumu, öğretmenlerin EMO seviyelerini, ve SKE hakkındaki bilgilerini ve farkındalıklarını, ve SKE ve EMO'yi eğitimden sonra uygularken nasıl birleştireceklerini tanımlamayı desteklemek.
	Hatırlatma Seansları İçeren Görüşmeler	Erken çocukluk dönemi öğrenme çevrelerindeki SKE ve EMO ile ilgili mevcut durumu, öğretmenlerin EMO seviyelerini, ve SKE hakkındaki bilgilerini ve farkındalıklarını, ve SKE ve EMO'yi eğitimden sonra uygularken nasıl birleştireceklerini belirlemek.
	Alan Notları	Erken çocukluk dönemi öğrenme çevrelerindeki SKE ve EMO ile ilgili var olan durumu, öğretmenlerin EMO seviyelerini, ve SKE hakkındaki bilgilerini ve farkındalıklarını, ve SKE ve EMO'yi eğitimden sonra uygularken nasıl birleştireceklerini tanımlamayı desteklemek.
	Mülakat	Erken çocukluk dönemi öğrenme çevrelerindeki SKE ve EMO ile ilgili mevcut durumu, öğretmenlerin EMO seviyelerini, ve SKE hakkındaki bilgilerini ve farkındalıklarını, ve SKE ve EMO'yi eğitimden sonra uygularken nasıl birleştireceklerini belirlemek.

## BULGULAR VE TARTIŞMA

Ärlemalm-Hagsér and Sandberg (2011)'in katılımcıların azınlığının, 32 günlükbakım katılımcısının, SK ile ilgili derse katılmadan önce SK kavramını hiç duymadığını rapor etmesine rağmen, mevcut çalışmada MGE'den önce dört öğretmenden yalnızca biri SKE kavramını duymuştu ve hiçbiri onun önemli ayaklarının (çevresel, sosyal & kültürel ve ekonomik) ve ilgili konuların farkında değildi. Umay daha önce SKE kavramını duyduğunu belirtti ama SKE bileşenleri ve konuları hakkında doğayı temiz tutmak, ve geri dönüşümden başka herhangi bir açıklamada bulunamadı. Duru UNESCO'nun SKE tanımını okuduğunda, UNESCO'nun tanımındakine benzer aktiviteler uyguladığını saptadı. Saniye ve Lale SKE hakkında herhangi bir şey açıklamadı. Öğretmenlerin SKE ve SKE ile alakalı konular hakkındaki bilgisi genellikle çok düşük. Benzer sonuçlar birçok araştırmacı tarafından (Inoue, O'Gorman & Davis, 2016; Inoue, O'Gorman, Davis & Ji, 2017) farklı ülkelerde (Avustralya, Kore, ve Japonya) bulundu. Sadece Saniye UNESCO'nun ifadesiyle hemfikirdi ve bilginin ötesine geçmemiz gerektiğini yoksa değişmiş tavır ve davranışlara dönüştürülemeyeceğini söyledi.

MGE'den sonra, bütün öğretmenler SKE içeriğinin, onun önemli ayaklarının ve onunla ilgili konuların farkındaydı, ve onlar hakkında detaylı açıklama yapabiliyordu. Dahası, katılımcı öğretmenler SKE'nin, çocukların davranış ve tavırları asıl bu yıllarda geliştiği için, ilk yıllardan başlaması gerektiği görüşünü kazandı. Lasen, Skamp, ve Simoncini (2017) tarafından rapor edildiği gibi, böyle bir eğitim aracılığıyla, eğitimciler çevre dostu gelecek toplumların yükselmesine katkı sağlayabilir. Ärlemalm-Hagsér ve Sandberg (2011)'in tanımladığı gibi her öğretmen konuların farklı bir yönüne dikkat çekti.

Ayrıca, mülakat öncesi ve sonrasının analizi ışığında, MGE'den sonra, bütün öğretmenlerin EMO seviyesinde “erişim, analiz ve değerlendirme, yeniden oluşturma, yansıtma ve harekete (eyleme) geçme” becerileri açısından bir artış vardı. Üç



öğretmenin EMO seviyeleri “orta seviye”den “ileri seviyeye”, diğer öğretmeninki ise “başlangıçtan orta seviyeye” ve “ileri seviye”ye geçti. Analiz & değerlendirme, yeniden oluşturma, yansıtma ve harekete (eyleme) geçme becerilerinde fark edilebilir bir artış görüldü. Benzer şekilde, Alıcı ve Şahin (2016) de lisans seçmeli dersinden sonra erken çocukluk dönemi hizmet öncesi öğretmenlerinin MO becerileri ve seviyelerinde değişimler olduğunu buldu. Bu ders boyunca, katılımcılar MO’yu hedefleyen bir aktivite uygulama deneyimine sahip oldu. Bu deneyim erken çocukluk dönemi ortamlarında MO’yu nasıl gerçekleştirebilecekleri konusundaki görüşlerini etkiledi. Benzer sonuçlara ayrıca Alıcı ve Gökbulut (2017) tarafından da ulaşıldı. Erken çocukluk dönemi hizmet öncesi öğretmenlerinin MO becerileri ve seviyelerinin 21 saatlik bir drama oturumu sürecinden sonra değiştiğini rapor ettiler. Örneklendirmek gerekirse, mevcut çalışmada, aktiviteleri için medya seçerken, öğretmenler onları mesajların açıklığı ve görsellerin kalitesi gibi medya içerikleri açısından analiz etmeye başladı. Dahası, EMO aracılığıyla SKE’yi hedefleyen aktiviteleri ve/veya projeleri gerçekleştirirken EMO öğretim yöntemlerini kullanmaya başladılar. MGE’den sonra, medyanın gözetimi hakkındaki ahlaki konulara ve bireyler için EMO eğitimine daha fazla önem verdiler.

Öğretmenlerin EMO aracılığıyla SKE’yi hedefleyen uygulamalarına gelince, Duru ve Saniye öğretmenler Minik TEMA üyesi olan okul öncesi devlet kurumlarında çalışıyordu ve Minik TEMA aktivitelerini düzenli olarak uyguladılar. Bu nedenle, Kahrıman (2016) tarafından da Eko Okullarında çalışan bir öğretmen hakkında da bulunduğu gibi, MGE’den önce, günlük ve aylık planlarında çevre eğitimi (ÇE) hedefleyen aktivitelere çok daha fazla yer verdiler. Öte yandan, Umay ve Lale bir okul öncesi devlet kurumunda çalışıyordu ve Okul Öncesi Programının (2013) talimatlarına uyan aktiviteler gerçekleştirdiler. Bu yüzden, günlük ve aylık planlarında ÇE/SKE’ye odaklanan aktivitelerin sayısı Duru ve Saniye’ninkilerle kıyaslandığında düşüktü. Duru ve Saniye’nin Minik TEMA programını uygulamasına rağmen, programın aktiviteleri SKE’nin önemli ayaklarının hepsiyle, özellikle sosyal ve kültürel yönleriyle, ilgili değildi. Farklı ülkelerde (Avustralya, Kore, ve Japonya) birçok araştırmacı tarafından rapor edildiği gibi (Inoue, O’Gorman & Davis, 2016; Inoue, O’Gorman, Davis & Ji, 2017) çoğunlukla zayıf ila orta seviye sürdürülebilirlikte bir yaklaşım kullandılar. Dahası, bütün öğretmen uygulamalarının analizi, EMO’nin ve onun öğretim yöntemlerinin ve bu yöntemlerin nasıl uygulandığının farkında

olmadıklarını gösterdi. Sadece Duru bazı ilgili öğretim yöntemlerini kitap okuma sırasında kullandı. Ancak, çocukların analiz & değerlendirme becerilerini yükseltmek için özel sorular sormadı. Diğer bir deyişle, MGE'den önce, hiçbir öğretmen EMO aracılığıyla SKE aktivitelerini planlamadı ve uygulamadı.

MGE'den sonra, bütün öğretmenlerin aktivitelerinde SKE'nin tüm ayakları ve EMO konularıyla ilgili gelişme vardı. Bu gelişmiş durum öğretmenlerin SKE farklılıklarının ve EMO seviyelerinin artışıyla da desteklendi. Günlük ve aylık planlarının incelenmesi de gösterdi ki EMO aracılığıyla SKE aktivitelerinin sayısında kayda değer bir değişim vardı. Dahası, Funk (2013)'ün rapor ettiği gibi, eğitimciler çocukların eleştirel düşünme becerilerini desteklemek için EMO öğretim yöntemleri kullandı. Aynı zamanda, Rogow (2015)'in de tavsiye ettiği gibi, çocukları bireysel ve/veya grup olarak belirli SKE konuları hakkında kendi mesajlarını iletmeleri için kendi medya ürünlerini yaratmaya teşvik ettiler. Farklı medya tipleri kullanmaya ve SKE'ye odaklanarak medyayı nasıl seçip kullandıklarını araştırmaya başladılar. Duru ve Saniye dört ayrı aktivite (bağlantılı olmayan) yürütmeyi tercih ederken, Umay ve Lale özel bir SKE konusuna (örneğin; küresel ısınma ve geri dönüşüm) odaklanan projeleri tasarlayıp uygulamayı tercih etti. Duru dört Minik TEMA aktivitesinden birini gerçekleştirirken, Saniye iki Minik TEMA aktivitesi uyguladı. Minik TEMA aktivitelerini gerçekleştirirken, EMO öğretim yöntemlerini adapte etmek için bazı değişiklikler de yaptılar. Öğretmenlerin SKE ve EMO konularıyla ilgili uygulamalarında gelişme olmasına rağmen, özellikle SKE'nin sosyal & kültürel ve ekonomik yanlarına ve Türk Okul Öncesi Eğitim Programında EMO'ye (erişim, analiz ve değerlendirme, yeniden oluşturma becerileri açısından) (2013) ilham olan hiçbir hedef olmadığı için aktiviteleri için belirli hedefler ve göstergeler tanımlamadılar/seçmediler.

Günlük planlar ve/veya aktivitelerin uygulanma sürecinden sonra, gelecek eylemleri (aktivite ve/veya proje planları) ve uygulama bilgileri (Korthagen & Vasalos, 2009; Witterholt, Goedhart, Suhre & Streun, 2012) için bir sonuç(lar) çıkarabilirler. Bu nedenle, sırasıyla, “konu seçimi”, “öğretme yöntemleri”, “kaynak kullanımı” ve “değerlendirme yöntemleri”nin gelişmesi takip eden kısımda sunulmuştur.

Öğretmenlerin “konu seçimi”yle ilgili aktiviteleri SKE’nin önemli ayaklarıyla alakalı olarak analiz edildiğinde, MGE’den önce genellikle sadece çevresel yanına odaklanırlarken şimdi bütün öğretmenler için konuların seçiminde gelişme olduğunun farkına varıldı. MGE’den sonra Duru, Saniye ve Umay Öğretmenler konuları SKE’nin bütün önemli ayaklarını kapsayacak şekilde seçtiler. Lale SKE’nin iki önemli ayağını kapsayan bir proje konusu seçti. Dahası, bütün öğretmenler çocukların SKE konuları hakkındaki bilgisindeki ve SKE’ye yönelik tavır ve davranışlarının farkındalığındaki gelişim/değişim hakkında gözlemlerini paylaştı. Ayrıca Duru, Saniye ve Umay; Kahrıman (2016) tarafından da rapor edildiği gibi, çevre dostu vatandaşlar yetiştirmek için SKE’nin erken yaşlarda başlaması gerektiğini savundu. Diğer yandan, Lale eğer öğrenme çevreleri çocukların ihtiyaçlarına ve ilgilerine dayanarak tasarlanırsa bir öğretmen olarak amaçlarınıza ve göstergelerinize kolaylıkla ve verimli bir şekilde ulaşabileceğinizi vurguladı. Dahası, bütün öğretmenler SKE ve önemli ayakları hakkında değişen uygulamalarından elde edilen sonuçları ışığında detaylı bir açıklama yaptı.

Ayrıca, MGE’den önce ve sonraki “öğretme yöntemlerinin” kıyaslaması çok önemli bir değişim olduğunu gösterdi. Örneğin, MGE’den sonra, bütün öğretmenler EMO öğretim yöntemleri kullanmaya başladı. Aynı zamanda çocukları onlara farklı tip sorular sorarak farklı SKE konuları hakkındaki medya mesajlarını analiz etme ve değerlendirme konusunda cesaretlendirdiler. Bunun yanısıra, MGE’den sonra, öğretim yöntemleri olarak soru sorma, beyin fırtınası ve tartışmayı kullandılar. MGE’den sonra, Duru yaratıcı drama ve model/kukla kullanmadan yararlanırken; Saniye grup çalışması, rol yapma ve örnek olay kullanmaya başvurdu. Umay grup çalışması ve etkileşimli kitap okumayı kullanırken; Lale alan ziyaretleri, yaratıcı drama, rol yapma, grup çalışması ve hikâye anlatmadan yararlandı. Hepsi bu öğretim yöntemlerini kullanma nedeni olarak, NAMLE (2007), 21’inci Yüzyıl Yetenekleri için Partnerlik (2010) ve Rogow (2015) tarafından da önerildiği gibi, öğrenme sürecine çocukların aktif katılımını sağlamayı gösterdi. Buna ek olarak, çocukların bu yöntemler aracılığıyla öğrenme sürecini içselleştirdiklerini garanti ettiler. Aynı zamanda Funk (2013) tarafından da açıklandığı gibi çocukların eleştirel düşünme becerilerini desteklemek için farklı medya türleri, sorgulama, beyin fırtınası ve tartışma hakkında farklı sorular sorduklarını; ve SKE konularında farkındalıklarını genişlettiklerini rapor ettiler.

MGE'den önce ve sonra "kaynak kullanımı" incelendiğinde, açıkça bir değişim olduğu görüldü. Örneğin, MGE'den sonra, öğretmenler MGE'den önce kullanmadıkları farklı çeşitte medyaları (posterler, broşürler, gönüllü hizmet duyuruları, animasyon vb.) kullanmaya başladı. Bütün öğretmenlerin ifadeleri gösterdi ki onların EMO seviyelerinde bir gelişme vardı ve çocukların EMO'sını, SKE konularıyla ilgili farkındalık, tavır ve davranışlarını nasıl destekleyeceklerinin farkındaydılar ve bu konuda bilgiliydiler.

Neden MGE'den sonra bu kaynakları kullanmayı tercih ettikleri hususunda aydınlatıcı açıklamalar yaptılar. Ancak, MGE'den önce medyayı genellikle çocukların dikkatini bir konuya çekmek ve öğrendikleri şeyi görselleştirmek için kullanıyorlardı. Benzer sonuçlar Altun (2013) tarafından da elde edildi. Bu nitel çalışmada, 55 öğretmenle (erken çocukluk dönemi, ilkokul, Türkçe, Sosyal Bilgiler, Fen Bilgisi, Matematik vb.) çalıştı. Öğretmenlerin 70%'i medyadan "(a) dersleri zenginleştirmek için, (b) kalıcı öğrenmeyi sağlamak için, (c) öğrencilerin dikkatini çekmek için, (d) genel bilgileri geliştirmek için, (e) bilgiye ulaşmayı kolaylaştıran öğretim aracını kullanmak için" faydalandıklarını belirtti.

Dahası, MGE'den önceki ve sonraki "değerlendirme yöntemleri"nin kıyaslaması kaydadeğer bir değişim olduğunu gösterdi. Örneğin, MGE'den sonra, öğretmenler çocukların SKE mesajları hakkında yaratıcı becerilerini teşvik etmek için değerlendirme yöntemi olarak "poster oluşturma"dan, "broşür oluşturma"dan, "kendi ürününü tasarlama"dan, "slogan bulma"dan, "bir kitap hazırlama"dan ve "kavram haritası hazırlama"dan yararlanmaya başladılar.

## **Çıkarımlar ve Öneriler**

### **Eğitim politikası ve uygulaması için çıkarımlar**

Bütün bu sonuçlar, öğretmenler "eğitim sistemlerinde ilkeleri uygulamaya koymada lokomotif" oldukları için SKE ve EMO hakkındaki eğitim eksikliğine dikkat çekmiştir. Eğer SKE ve EMO hakkındaki ilkelerin farkında olmazlarsa, çocukların SKE konularına yönelik beceri, tavır ve davranış farkındalıklarında, ve EMO becerilerinde ve seviyelerinde değişimi teşvik edecek eğitimi destekleyemezler. Diğer bir deyişle, öğretmenler çevre dostu ve medya okuryazarı vatandaşlar ortaya çıkaramazlar. Bjömelloo, Chapman, Hopkins & Rickinson (2008)'ın ifade ettiği gibi,

eğitimcilerin desteği olmazsa, okul sistemleri toplumlarda SKE girişimleriyle ilgili değişime öncülük edemez. Bu yüzden, eğitim sistemi onları cesaretlendirmeli ve yönlendirmelidir. Dahası, hizmet öncesi ve hizmet içi eğitime daha fazla önem vermeden öğretmenlerin EMO'yu bir gereksinim olarak görmesi ve çocukların “erişim, analiz etme, değerlendirme, ve medya ve popüler kültürle iletişim kurma” becerilerine sahibi olması beklenemez (Flores-Koulish, Deal, Losinger, McCarthy & Rosebrugh, 2011). Başka bir deyişle, SKE'yi ve EMO'yu hedefleyen hizmet öncesi ve hizmetiçi öğretmen eğitimi planlanmalı ve verimli bir şekilde gerçekleştirilmelidir. Özellikle hizmet öncesi eğitimi için, SKE ve EMO ile alakalı zorunlu ve/veya seçmeli dersler üniversitelerin eğitim fakültelerine tanıtılabilir. Eğer mümkünse, öğretmen adayları SKE ile bu onların sürdürülebilirlikle ilgili bilgi, kavrama, beceri ve değerlerinin gelişmesinde daha faydalı olacağı için daha ilk yıllarında tanıştırılabilir (Evans, Stevenson, Lasen, Ferreria, & Davis, 2017). Ayrıca, uzun dönem hizmet içi eğitimi tasarlanmalı ve uygulanmalıdır. Bu eğitim boyunca, öğretmenler daha aktif olmalı ve verimli aktiviteler planlamak ve uygulamak için eğitimci(lerin)den devam eden destek almalıdır. Aynı zamanda, uygulamaları hakkındaki tecrübelerini paylaşmak ve diğer katılımcılarla iş birliği yapmak için öğretmen ağları yaratmaya ve bu ağlara katılmaya da teşvik edilebilirler (Inoue, O’Gorman, & Davis, 2016). Öğretmenler böyle eğitimlere katılmaları konusunda güçlü bir şekilde desteklenmelidirler. Bunun için hükümet, öğretmen eğitimi, SKE ve EMO üzerinde çalışan akademisyenlerin desteğiyle uzun dönem politikalar yapmalıdır.

Dahası, öğretmenlerden birinin de tavsiye ettiği gibi, Türk Milli Müfredatı, hiçbir hedef ve gösterge çocukların, özellikle sosyal & kültürel (insan hakları, cinsiyet eşitliği) ve ekonomik (kaynakların paylaşılması) yönlerinde SKE farkındalığını desteklemediği için yeniden gözden geçirilmeli, ve aynı zamanda EMO konularını, özellikle analiz etme & değerlendirme becerilerini, de içermesi için yeniden yazılmalıdır. Müfredat incelenirse, SKE'nin sosyal & kültürel ve ekonomik yanlarını ve Bölüm II'de açıklandığı üzere EMO becerilerini hedefleyen göstergeler hakkında hiçbir spesifik açıklama olmadığı görülür. Bu noktada, müfredat bu öneriler ışığında, çevre dostu ve medya okuryazarlığı olan çocuklar yetiştirmeye katkı sağlamak amacıyla gözden geçirilebilir. Dahası, SKE uygulamasının, daha sistematik ve çok yönlü yapısından dolayı türdeş alanlı olması gerektiği için EMO ve SKE, ve SKE'nin nasıl diğer konulara dahil edileceği hakkında spesifik aktiviteler içeren bir

kitapçık/öğretmen kaynak kitabı da hazırlanmalıdır (Evans, et.al, 2017). Bunun yanı sıra, hükümet OÖE'deki okulları sürdürülebilir gelişim için yenilenmiş müfredata dayanan kendi yıllık planlarını yapmalarını ve gerçekleştirmelerini desteklemek için bir eğitim politikası kuralmalıdır. Bu planlar uzmanların ve akademisyenlerin desteğiyle hazırlanmalıdır ve planların uygulanma sürecini takip etmelidirler. Bu şekilde, okulların planlarının güçlü yanlarının yanı sıra zayıf yanlarını da görme, değerlendirme ve gelecek için gözden geçirme şansları olabilir. Böylelikle bu planlar var olan eğitim programına etkili bir şekilde dahil edilebilir.

Ek olarak, mevcut çalışmada, öğretmenler mesajları, görselleri ve sesleri açısından küçük çocukların yaşına ve gelişim seviyesine uygun SKE konularıyla (cinsiyet eşitliği, gürültü kirliliği, atık yağ ve piller, küresel ısınma) alakalı medya kaynaklarının (sesli & görüntülü, dijital ve yazılı) eksikliğine dikkat çekti. Bu durumda, medya üreticileri erken çocukluk dönemindeki çocuklara uygun daha fazla medya yaratma konusunda eğitimcilerle işbirliği yapılması ve onların tavsiye ve önerilerine önem verilmesi yoluyla cesaretlendirilmelidir.

Son ama bir o kadar da önemli olarak, mevcut çalışma aynı zamanda çocukların SKE konularına yönelik farkındalıklarında, becerilerinde, tavırlarında ve davranışlarında bile değişiklikler olduğunu, ve öğretmenlerinin MGE'ye katılımının sonucu olarak EMO beceri ve seviyelerinde de değişim olduğunu gösterdi. Öğretmenlerin gözlemleri, çocukların ürünleri, ve alan araştırması notları da bu sonuçları destekledi. Diğer bir deyişle, eğer öğretmenler SKE ve EMO ile ilgili belirli bir sonuca ulaşmak için aktiviteleri nasıl gerçekleştireceklerini bilirlerse ve eğer uzmanlar onları yeni fikirler ve öğretim yolları tecrübe etme konusunda cesaretlendirirse, eğitimciler gelecek için sadece kendi hayatlarını değil aynı zamanda çocukların hayatlarını da olumlu bir şekilde değiştirebilir. Çevresel ve sürerlilik anlamında sorumlu, ve medya okuryazarı olan geleceğin vatandaşlarını yetiştirmeye katkı sağlayabilirler. Başka bir deyişle, değişim/gelişim küçük adımlarla gerçekleşir, ancak, bunlar hep beraber sürerliliği olan geleceğin büyük resmini etkileyebilir.

### **MGE verimliliğini artırmak için öneriler**

Bu tezin tartışma kısmında bahsedildiği gibi, mevcut çalışmada, hem öğretmenlerin hem de araştırmacının kısıtlı zamanlarından dolayı tek seferde 10

saatlik bir MGE gerçekleştirildi. Türkiye’de, iki seminer dönemi (Haziran’ın sonunda ve Eylül’ün başında) vardır, ve bu dönemler en fazla on günü kapsar. Ancak, zaman zaman, günlerin sayısı düzenlemelerden ve tatillerden dolayı azalabilir. Bu MGE, çalışmanın gerçekleştirildiği zaman seminer dönemine sadece yedi gün ayrıldığı için beş günde uygulanmak zorunda kaldı. Genel anlamda, eğer MGE daha geniş bir zaman çerçevesinde uygulanabilseydi daha ideal olurdu. Dahası, MGE’nin süre ve içeriği genişletilebilirdi, ve o zaman bir dönemde iki hafta olarak uygulanabilirdi. Bu süre esnasında, öğretmenler MGE boyunca görevleri için detaylı bir araştırma gerçekleştirebilirdi. Mesleki gelişmelerini desteklemek için iletişim ağı toplantıları ve tartışma grupları da düzenlenebilirdi.

Sonraki muhtemel araştırmalarla ilgili olarak, bu çalışma Ankara’da iki farklı okul öncesi devlet kurumundan dört erken çocukluk dönemi öğretmeniyle tamamlandı. Bu çalışma her bölgenin öğretmenleri, çocukları ve okul potansiyeli hususunda kendine özgü özellikleri olduğu için Türkiye’nin diğer bölgelerindeki başka öğretmenlerle tekrar edilebilir. Bu şekilde, MGE’nin diğer öğretmenler ve böylelikle de çocuklar üzerindeki etkisi eleştirel bir şekilde incelenebilir.

Bunun yanı sıra, bu çalışma tez araştırması olarak planlanmış ve uygulanmıştır. Araştırmacı herhangi bir ulusal ya da uluslararası STK’dan, Milli Eğitim Bakanlığı Öğretmen Eğitimi ve Gelişimi Genel İdaresinden ya da diğer devlet kurumlarından (TÜBİTAK gibi) veya uluslararası kuruluşlardan destek almamıştır. Bu nedenle, bu çalışmanın kapsamı sadece üniversiteleri değil devlete ait olan ve olmayan kuruluşları ve UNESCO gibi organları da içeren diğer kuruluşların desteğiyle ulus çapında öğretmen eğitimini kapsayacak şekilde genişletilebilir. Ayrıca, bu çalışma uluslararası uzmanların ve Türkiye dışındaki kuruluşların da dahil olmasıyla kültürlerarası bir araştırma olarak tekrar tasarlanabilir.

### **Gelecek çalışmalar için öneriler**

Mevcut araştırmanın bulgularına ve araştırmacı tecrübelerine dayanarak, bazı kısa dönem ve uzun dönem eylem planları ve ilgili gelecek çalışmalar, ortaya çıkacak yeni araştırmacılar için önerilebilir.

Mevcut çalışma erken çocukluk dönemi öğretmenlerinin SKE ile ilgili ifadeleri ve uygulamaları arasında bir tutarsızlık olduğunu belirledi. Araştırmacılar bunun

sebebinin ne olduğunu soruşturabildiler. SKE ve önemli ayakları bakımından mesleki gelişimle ilgili var olan eğitimi, programları, seminerleri ve çalıştayları inceleyebilirler. Bu mesleki gelişmelerin zayıf ve güçlü yanlarını belirlemek için, araştırmacılar bu programlara katılan eğitimcilerden ve nitel araştırma yöntemleri aracılığıyla uygulamalarından derinlemesine veri toplayabilir. Bu çalışmaların sonucu olarak, var olan hizmet içi eğitim güçlendirilebilir. Diğer bir deyişle, kısa dönem eylem planı için, erken çocukluk dönemi öğretmenlerinin SKE uygulamaları etkili mesleki gelişmeyle artırılabilir.

Uzun dönem eylem planına gelinirse, dikkat hizmet öncesi eğitime çekilir. Türkiye’de, SKE’yi hedefleyen derslerin sayısı düşüktür ve bu dersler her üniversitede yaygın değildir. Bu durumda, araştırmacılar Türk erken çocukluk dönemi hizmet öncesi öğretmen eğitimini SKE ve önemli ayakları bakımından; SKE’ye derslerde yer verilip verilmediğini, ya da zorunlu ve/veya seçmeli ders(ler)in olup olmadığını, ve teorik ve uygulamalı açılardan nasıl gerçekleştirildiği üzerine bir ders olup olmadığını, ya da bu ders(ler)in SKE’nin çok yönlü boyutlarını kapsayacak şekilde inşa edilip edilmediğini belirlemek için analiz edebilirler. Ayrıca, hizmet öncesi öğretmenler için yeni bir ders tasarlanabilir, ve öğretmenlerin SKE farkındalıklarını ve okul tecrübeleri sırasında SKE uygulamalarını desteklemek için uygulamaya konulabilir. Dahası, hizmet öncesi gelişim de uzun süreli araştırma yoluyla mezuniyetlerinden sonraki uygulamalarında da gözlemlenebilir. Çalışmaların sonuçlarına dayanarak, ders(ler) yenilenebilir. SKE’nin hizmet öncesi ve hizmet içi eğitimdeki eksikliğine etkili çözümler gerçekleştirmek için, hem kısa dönem hem de uzun dönem eylem planları eş zamanlı olarak işletilmelidir.

EMO için, bu konu bu günlerde çalışılmaya başlanmıştır. Bu yüzden, erken çocukluk dönemi öğretmenleri bu kavram hakkında herhangi bir fikre sahip değildir. Bu nedenle, ilk adım olarak, araştırmacılar çoğunlukla hizmet öncesi ve hizmet içi öğretmen eğitimine odaklanabilirler. EMO odaklı derslerin ve/veya eğitimlerin etkili özellikleri hakkında bir araştırma yapabilirler.

Sonuç olarak, SKE ve EMO hakkında daha fazla araştırma yaparak, biz, uzmanlar, SKE konuları ve EMO becerileriyle alakalı daha nitelikli erken çocukluk dönemi öğretmenleri geliştirmeyi sağlayabiliriz.



## APPENDIX I

### TEZ İZİN FORMU / THESIS PERMISSION FORM

#### ENSTİTÜ / INSTITUTE

Fen Bilimleri Enstitüsü / Graduate School of Natural and Applied Sciences

Sosyal Bilimler Enstitüsü / Graduate School of Social Sciences

Uygulamalı Matematik Enstitüsü / Graduate School of Applied Mathematics

Enformatik Enstitüsü / Graduate School of Informatics

Deniz Bilimleri Enstitüsü / Graduate School of Marine Sciences

#### YAZARIN / AUTHOR

Soyadı / Surname : ALICI

Adı / Name : ŞULE

Bölümü / Department : Early Childhood Education

**TEZİN ADI / TITLE OF THE THESIS (İngilizce / English) : INVESTIGATING THE IMPACT OF PROFESSIONAL DEVELOPMENT ON TURKISH EARLY CHILDHOOD TEACHERS' PROFESSIONAL GROWTH ABOUT EDUCATION FOR SUSTAINABLE DEVELOPMENT THROUGH CRITICAL MEDIA LITERACY**

**TEZİN TÜRÜ / DEGREE: Yüksek Lisans / Master**  **Dktora / PhD**

1. **Tezin tamamı dünya çapında erişime açılacaktır. / Release the entire work immediately for access worldwide.**

2. **Tez iki yıl süreyle erişime kapalı olacaktır.** / Secure the entire work for patent and/or proprietary purposes for a period of **two year.** \*

3. **Tez altı ay süreyle erişime kapalı olacaktır.** / Secure the entire work for period of **six months.** \*

*\* Enstitü Yönetim Kurulu Kararının basılı kopyası tezle birlikte kütüphaneye teslim edilecektir.*

*A copy of the Decision of the Institute Administrative Committee will be delivered to the library together with the printed thesis.*

**Yazarın imzası / Signature** .....

**Tarih / Date**

.....