



# Achieving Education for Sustainable Development (ESD) in Early Childhood Education Through Critical Reflection in Transformative Learning

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### Abstract

The central role of education in creating a more sustainable future has been already recognized by educators and policy-makers alike. This chapter argues that this can only be truly achieved through the efforts of teachers in implementing an “education of a different kind,” a general educational shift that seeks to encompass a converging transformation of the priorities and mindsets of education professionals. In this regard, the professional preparation of teachers, as the leading actors in shaping children’s learning processes, and their continuous professional development are vital considerations for Education for Sustainable Development (ESD) to be successfully achieved. Linking transformative learning and ESD has emerged as a distinct and useful pedagogy because they both support the process of critically examining habits of mind, then revising these habits and acting upon the revised point of view. This study aims to describe and evaluate the potential of transformative learning in innovating mainstream education toward sustainability by focusing on the role of critical reflection in a capacity building research project realized in Turkey. The data was gathered from 24 early childhood educators using a mixed-method research design involving learning diaries, a learning activities survey, and follow-up interviews. This chapter identified content, context, and application method of the in-service training as factors that have contributed to the reflective practices of the participants. In addition, presenting the implications regarding the individual differences in how learners engage in critical reflection practices, this research offers a framework for a content- and process-based approach derived from Mezirow’s conception of critical reflection.

### Keywords

Transformative learning · Education for sustainable development · Early childhood education · Critical reflection · In-service teacher training

## Introduction and Background

In 1992, jointly written by the Union of Concerned Scientists and more than 1700 independent scientists, among them the majority of living Nobel laureates, “World Scientists’ Warning to Humanity” cautioned that “a great change in our stewardship of the Earth and the life on it is required, if vast human misery is to be avoided” (Union of Concerned Scientists, 1992). On the 25th anniversary of their appeal, a second warning has been given to humanity, clearly stating that humanity has failed to achieve adequate progress in responding to the environmental challenges, and worryingly, most of them are deteriorating in a severe manner (Ripple et al., 2017). Commonly referred to as wicked problems, which cannot be explained in a single definition, the current challenges in the planet earth, such as diminishing biodiversity, poverty, depletion of resources, food shortages, inequity, and chronic nutrition deficiency, are submerged under the conflicts of interest among multiple stakeholders. The shared features of these issues can be considered as “highly complex and systemic, ambiguous and contested, and urgent and existential” (Wals, 2015, p. 4).

The Global Action Programme (GAP) on Education for Sustainable Development (ESD) was formed to give a tangible response to the urgent need for an overhaul of our living styles, which is sensitive to and respectful of the scarcity of our planet’s resources while improving our collective well-being (UNESCO, 2017a). In line with that, the current 2030 Agenda for Sustainable Development (UN, 2015) precisely echoes this vision which stresses the importance of appropriate educational action. Seventeen Sustainable Development Goals (SDGs), which are at the core of the 2030 Agenda, spread transformational and comprehensive SDGs aimed to achieve a maintainable, peaceful, prosperous, and equal life for everybody in the world both now and in the future. To make this adjustment, totally novel abilities, morals, and behaviors that result in more practicable social orders are needed. Therefore, in order to address this critical need, an alteration in the framework of education is strongly recommended (UNESCO, 2017b). As a matter of fact, education is not only characterized as an objective in itself but also a means to achieve the SDGs. Thus, education is not simply seen as a fundamental part of sustainable development, but rather as an indispensable enabler in the process.

On the other hand, it has been discussed whether ESD is the solution to the challenges our planet faces or it is part of the problem (Balsiger et al., 2017). According to some critics, as utilitarian and neoliberal discourses on education and sustainability became dominant in the process, the prevailing growth paradigms reduce the natural world to a secondary role, which is only to be of use to human beings (e.g., Huckle & Wals, 2015). Approaching the issue from a different perspective, experts working in the field of ESD draw attention to the need for new pathways in teaching and learning to overcome current obstacles and continue to foster ESD (Tilbury, 2011). It has been argued that due to its capacity to engage learners to acquire a new set of skills and encourage them to undertake activities in a sustainable manner in complex circumstances, ESD advances the ideas of the integrity of nature, economic reasonability, and a fair society for present and forthcoming generations:

What ESD requires is a shift from teaching to learning. It asks for an action-oriented, transformative pedagogy, which supports self-directed learning, participation and collaboration, problem-orientation, inter- and transdisciplinarity and the linking of formal and informal learning. Only such pedagogical approaches make possible the development of the key competencies needed for promoting sustainable development. (UNESCO, 2017b, p. 7)

This concept is based on the premise that instead of only conformative and reformative learning, transformative learning is needed as well (Sterling & Thomas, 2006). This has been a challenge for those implementing educational policy at all levels because even the new, reformist and innovative education attempts have not escaped from repeating the failures of the old programs and result in seeking remedies to the problems of today in yesterday's solutions (Sterling, 2001; Thornton, Peltier, & Perreault, 2004).

Thus, as demonstrated by a number of research studies over the last three decades, education that is designed to raise awareness about environmental issues does not have a major effect on behaviors (Orr, 2004). Moreover, the notion that increasing education levels would inevitably translate into awareness to address the challenges of local to global concepts of an unsustainable lifestyle and economy has been rejected. This is supported by Sauter and Frohlich (2013), who pointed out that largest ecological footprints are left on Earth by people with highest education levels who live in the most developed economies (WWF, 2018). There are two different perspectives from which to shed light on this situation. First, it has been argued that among the factors which are effective in determining the outcomes of schooling, the economic, social, and political structures of the respective societies figure as predominantly as the educational curricula (Kubow & Fossum, 2007). After all, teaching is considered as a political act emerged as a result of cultural, racial, economic, and political tensions (Freire, 1998). Second, due to the intertwined nature of the social, economic, and ecological aspects, issues concerning education for sustainable development have gained a multifaceted character. This complexity necessitates a new approach in order to develop requisite learning experiences "of a different kind" (Schumacher, written 1974, published 1997). Consequently, any discussion concerning the priorities of educational provisions and reform should take place upon a research base and current thinking about sound educational practice (Rickinson, 2006).

## **Teachers as Supporters of Social Change**

Incorporating various aspects of sustainability into education necessitates educators to start thinking critically and creatively about the structuring (and possible restructuring) of didactic arrangements. This specific circumstance is underscored because the mediating effect of every teacher is most likely the most indispensable component of a student's leaning toward sustainability in formal settings (Wals, 2006). Accordingly, the preparation and continuous professional development of teachers as the leading actors in shaping children's learning processes across

differences of perspectives, goals, and practice are vital concerns in the attainment of ESD goals (Hanushek, Rivkin, & Kaim, 2005; Pramling Samuelsson & Park, 2017).

Woodrow and Caruana (2017) argue that given the increasingly diverse student population, increasing the level of critical consciousness of preservice teachers (Freire, 1997) has become an indispensable step in preparing them for their roles as change agents. In their task to cultivate teachers as change agents, teacher educators must enhance preservice teachers' awareness of overbearing circumstances and inequalities based on structural categories of difference and foster their ability to take a critical stance toward systems of power which is dismissive of individual's and community's rights (Ladson-Billings, 1998). Indeed, "informed by the critical theory tradition, reflection becomes critical when it's focused on teachers understanding power and hegemony" (Brookfield, 2017, p. 9). This is supported by numerous well-documented and recurrent challenges to the development of preservice teachers' critical consciousness (Woodrow & Caruana, 2017). One deduction from those challenges is that when their notions of self, society, and their interaction is challenged, preservice teachers often exhibit resistance toward critical education practices (e.g., Gay & Kirkland, 2003; Johnson, 2006). Being uninformed about the political nature of education, many teachers are uncertain about becoming involved in the wider context that affects their working environment, which eventually have an influence on their students' learning conditions (Picower, 2013). Any process of reflection on social conditions is hindered by this resistance, which in return impedes the teacher educators' ability to train teachers as change agents, while "educators who demonstrate critical consciousness have the ability and will to theorize and politicize their experiences" (Nieto & McDonough, 2011, p. 366).

Thus, in order to accomplish "learning experience of a different kind," it is necessary to rethink the content of education and the competencies of teachers. In the same vein, an essential requisite is the overhaul of the thinking of how to improve the abilities of the teachers. As Sterling (2010, p. 19) argues, "where there is a call for re-examination of assumptions and values, critical thinking and new creativity, the concept of transformative learning is coming more to the fore." He considers that the main objective of adult educators is to guide learners to transformation, which embodies growing and maturing intellectually and as a result changing as a person through critical reflection on their assumptions, beliefs, and values. Indeed, "transformative learning refers to processes that result in significant and irreversible changes in the way a person experiences, conceptualizes, and interacts with the world" (Hoggan, 2016, p. 71). In this context, Freire (1985) argued that teachers should consistently approach their profession from a critical stand point and ask themselves for whom and on whose behalf they are working. Teachers who accept the role of a transformative intellectual regard students as critical agents, who engage in inquiry about how knowledge is generated and disseminated, make use of intellectual exchange, and make knowledge meaningful, critical, and emancipatory (McLaren, 2003). However, teachers involved in traditional educational programs are not expected to approach the system in which they work from an analytical point of view, and thus they are not encouraged to comprehend their potential role in a

political and market-driven system. One of the reasons which are considered to cause this situation is the problematic design of higher education.

## **Transformative Sustainability Learning in Higher Education**

Cranton and King (2003) affirmed that in its least complex shape, higher education (HE) today might, at best, create no more than dutiful citizens who are prepared to work within society's institutions, accepted occupations, and organizations. There is little indication that HE is accomplishing more than essentially fortifying patterns that enable students to assimilate new experiences into what Belenky and Stanton (2000, p. 71) alluded to as inherited "mental maps," which are conditioned frames of reference through which people channel their apparent learning experiences. Habermas (1984) referred to this kind of learning as instrumental learning in the sense that its main objective is to equip learners with information and skills. Mezirow (2000) advocated that instrumental learning supports a society's "cultural canon, socioeconomic structures, ideologies, and beliefs about self [that] often conspire to foster conformity, and impede development of a sense of responsible agency" (p. 8). At the point when students are reduced to mere replicators, they adopt inherited mental maps, which might be questionable in terms of exploring the present elements of postmodern life (Glisczinski, 2007). New models of interdisciplinary education stimulate student cooperation in moving toward transformative, experiential, and collaborative learning (Cranton, 1996). Unfortunately, collaborative models are troublesome (but not unachievable) to create within current academic frameworks that underscore singular evaluating and other competitive models of accomplishment (Moore, 2005). One of the reasons for this lack of incorporation of these models is that HE sector has been energized by an internationally hegemonic neoliberal ideology (Sterling, 2017). According to Sterling, the paradigm created by this ideology renders obsolete the older (and more educationally defensible), liberal, holistic, and humanistic philosophies regarding the nature and purpose of education. Moreover, in spite of the prevailing academic freedoms in instruction and research, only a limited number of professors engage in alternative models for teaching and learning in their classrooms or accentuate social change as an outcome of their classes (Halupa, 2017; Moore, 2005). Consequently, learners who pass through HE exit as individuals with only instrumental knowledge, joining the ranks of those with a higher level of education but who place a heavier ecological burden on our planet.

Still, the potential of the HE should not be underestimated as it has the capacity to develop a new conscientiousness, understanding, perception and transformation as a result of stimulating proactive thinking, integrating variety of perspectives and promoting dialogue (Daloz, 1999). Belenky and Stanton (2000) underscored that "not only would participation and reflective dialogue support [students'] development as individuals, it could also support the development of a more inclusive, just, and democratic society" (p. 74). A tremendous potential exists for colleges to be pioneers in scrutinizing the present state of affairs, testing paradigms and straightforwardly honing better approaches for living, thinking, teaching, and learning

(Moore, 2005). Yet, voices for change are becoming more unyielding. For instance, Escrigas (2016) called upon to universities, to “learn to read reality,” and “understand the wider impacts of their actions and the costs of what they are not doing at a time when societal transition is urgently needed” (p. 3). In the same vein, it is argued that one of the vital issues facing the sector is the kind of role HE will play in creating the leaders of tomorrow and fostering graduates duly prepared to act in future scenarios (Blake, Sterling, & Goodson, 2013). The starting point of such approaches is the contention that students should be outfitted with the essential knowledge, aptitudes, qualities, and states of mind to manage intricate and ambiguous sustainability issues in society (Lambrechts & Van Petegem, 2016). One of the other gains of this process is the growing appeals for the greater alignment of HE to the issues and possibilities that sustainable development offers. In accordance with this idea, there is a development in colleges worldwide to advance strategies and processes for creating more sustainable campuses. This development was started with various worldwide international declarations and commitments made by colleges around the world (Wright, 2002).

This chapter supports the idea that there is a need for a significant readjustment in the way pre-service teachers are taught and learn within HE (Dawe, Jucker, & Martin, 2005), which requires the academics to consider pedagogy through alternative perspectives (Sterling, 2004). Explicitly linking education for sustainability and transformative learning, not only because they encompass socioeconomic and political analysis, has come to the fore as a distinct and useful pedagogy, a cultural politic of schooling, learning, and teaching (McLaren, 2003). Indeed, many scholars described a meaningful connection between transformative and sustainability learning (i.e., Harmin, Barrett, & Hoessler, 2017; Sterling, 2010). The anticipated outcomes of transformative learning which often follows some variation of ten different stages are nurturing individuals who are more comprehensive in their perceptions of the world, prepared to distinguish progressively its different angles, open to different perspectives, ready to incorporate varying dimensions of their encounters into significant and all-encompassing relationships, and willing to trade thoughts with others and to gain assistance from others (Mezirow, 2000).

## **Transformative Sustainability Learning in Early Childhood Education**

This chapter agrees with the view that “wisdom was not at the top of the graduate-school mountain, but there in the sandpile at Sunday School” (Fulghum, 1986, p. 6). To address the wicked sustainability problems, arguably the most effective way is to engage with the young children at an early stage (Pramling Samuelsson, 2011; Siraj-Blatchford, Mogharreban, & Park, 2016) with the purpose of cultivating them as change-makers and models of sustainable behavior with the ability of thinking critically in an enhanced educational paradigm (Davis & Elliott, 2014). As demonstrated in recent research, the significance of “start early” has been highlighted in early childhood education for sustainability (ECEfS) (Boyd, Hirst, & Siraj-Blatchford, 2017), and other endeavors to further develop young children’s

sustainability-related skills raised significant interest in making the case of sustainable living. As corroborated by recent studies on young learners, this new generation seems to possess the potential to make a difference in terms of more sustainable living (Bonnett, 2002). However, in spite of the growing interest in the field in recent years (Hedefalk, Almqvist, & Östman, 2015; Somerville & Williams, 2015), currently there is only scarce information on early childhood education for sustainable development (Siraj-Blatchford, Smith, & Pramling Samuelsson, 2010). Research in this area does not have sufficient involvement of preschool children as participants of a sustainable society (Boldermo & Ødegaard, 2019; Davis, 2009; EPSD, 2010; Pramling Samuelsson, 2016).

As one of the main actors in giving direction to the learning processes of young children, the professional preparation of teachers and their continuous professional development are crucial contemplations for education for sustainability to be effectively achieved (Ärlemalm-Hagsér & Sandberg, 2011). A literature review undertaken by the authors of this chapter revealed the significant inadequacy in terms of papers which detail pre-service and in-service teacher education that adopted a sustainability-related transformative learning experience for ECE teachers. This was not a surprising result because this process requires a reconsideration of long-held frames of reference and altering them. Consequently, it is foreseen that new actions need to be undertaken (Barlas, 2001) as a way to critically reflect on social and political issues that may challenge a teacher's deterministic form of existence (Freire, 1970). This chapter supports the opinion that the contrasts between priorities of the neoliberal education policies and transformative sustainability have been hindering the development of transformative sustainability learning in field of teacher education.

## **Critical Reflection for Transformative Sustainable Learning**

Critical reflection is considered as vital to foster transformative learning (Kreber, 2012). Being a reasoning process aiming to make meaning from an experience, it basically hangs a question mark on the validity of a long-taken-for-granted meaning perspective based on a presumption about oneself (Mezirow, 1990). The transformation of the meaning perspectives of an individual or group can be realized through critically reflective assessment, which Mezirow termed as epistemic, sociocultural, and psychic distortions of knowledge (Mezirow, 2000). "It describes the process by which people learn to recognize how uncritically accepted and unjust dominant ideologies are embedded in everyday situations and practices" (Mezirow, 2000, p. 128). Mezirow (1991, 2000) makes a distinction between three types of reflection: content reflection, where the data content is viewed as more profoundly for its accuracy; process reflection, where the systems that created the data are subjected to scrutiny; and premise reflection, which is reflection on basic premises, convictions, and assumptions. Despite its importance in bringing about transformative learning, critical reflection is rarely deconstructed in depth when used in the research concerning fostering transformative learning (Taylor, 2017), and there is scarce



information regarding the implementation of critical reflection and transformative learning in the teaching of sustainability (Brunnquell, Brunstein, & Jaime, 2015). To address this need, empirical research is presented with a view to examining the interaction of critical reflection with transformative sustainability learning experience created for in-service ECE teachers in Turkey.

Coupled with investigating the contributions and effects of critical reflection on participants' perspective transformation, the study addresses the following key questions:

1. How do Turkish ECE teachers transform their role as teachers through a transformative sustainability learning in-service program?
  - a. What are the participants' levels of reflection in terms of the provided in-service training?
  - b. What are the participants' levels of reflection revealed by data collection instruments?
2. What are the features and the themes of the participants' reflection processes?
  - a. What are the features and themes related to content reflection?
  - b. What are the features and themes related to process reflection?
  - c. What are the features and themes related to premise reflection?

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## The Study

This study is a part of transformative sustainable learning experience research project (Feriver, Teksöz, Olgan, & Reid, 2016) realized with the participation of 24 Turkish early childhood educators in Turkey. In this project, it was aimed to assess the in-service transformative sustainability learning experience which was constructed in accordance with Mezirow's ten-stage transformative learning approach to offer a viable framework that would encourage early childhood teachers to develop a "learning experience of a different kind" in the context of ESD. The data was gathered through a mixed-method research design using learning diaries, a learning activities survey, and follow-up interviews. The findings revealed the range of transformations that were seen as possible in the teachers' perspectives during and after the training workshops. One of the influential factors in facilitating perspective transformation was the content, context, and sequencing of the training which allowed continuous critical reflection among the participants. For this reason, the present study examined the interaction of critical reflection with the transformative learning experiences which the participants underwent. While so doing, this study not only focused on individuals but tried to achieve a greater understanding concerning cultural difference and at the same time emphasizing "the individual within his or her socio-cultural context" (Taylor, 2007, p. 185) on the basis that in this respect there is room for theoretical development.

## Method

The current study utilized a mixed-methods approach for the data collection and analysis within a sequential transformative design framework (Creswell, 2014). The data collection occurred in two phases: first, qualitative data was collected on a daily basis via Learning Diaries (LDs) throughout the training program. Then, at the end of the program quantitative and qualitative data was gathered via a Learning Activities Survey (LAS) and Interview Form (IF). The transformative sustainability learning in-service training program consisted of 21 sessions, lasting 28 h in total, spread over 7 consecutive days. The results from both methods of data collection were combined during the interpretation phase at the end of the study.

The three forms of critical reflection presented by Mezirow were taken into account in the design of the content of the in-service training, the way the content was delivered and the type of data collection instruments, and in each of these three basic elements, the participants were provided with opportunities for critical reflection.

## Facilitators of Critical Reflection

### Content of the Training as a Facilitator of Critical Reflection

The teachers' training program was constructed utilizing Mezirow's ten-stage transformative learning approach (Table 1). The activities were in the following five main sections: (1) the state of the planet and our impact on it; (2) root cause analysis of the dominant paradigms, practices, and power relationships; (3) cradle-to-cradle thinking (McDonough & Braungart, 2002), understanding sustainability, its integration into early childhood education; (4) creation of early childhood ESD projects to be applied in the participants' educational contexts; and (5) the integration of sustainability into one's life.

In this study, at every stage of the implemented training program, efforts were made to provide the participants with opportunities for critical reflection. At the various stages of the study, opportunities were provided for content reflection through examination of the content and description of the problem, both at the system level and that of the individual. For the process reflection, this was undertaken by focusing on new approaches capable of facilitating the solution of the issue being addressed, and for the premise reflection, by taking a critical view of one's own distorted presuppositions, whether epistemic, sociocultural, or psychic. The relations between the content of the training and critical reflection opportunities and Mezirow's three forms of critical reflection are given in tabulated form in [Appendix 1](#).

### Application Method of the Training as a Facilitator of Critical Reflection

To present an example of "learning of a different kind," the training program aimed to provide the participants with a different experience from the teacher-centered,

**Table 1** Content of the in-service training corresponding to Mezirow's stages of transformative learning

Perspective transformation stages	Training content
Stage 1 and 2. Disorienting dilemma and self-examination	<p><b>Nine dots:</b> Encouraging thinking outside the box</p> <p><b>Data discussion:</b> Undertaking an analysis of the factual data regarding the planet, reaching a conclusion regarding the state of the planet</p> <p><b>Ecological footprint:</b> Providing a tool for participants to understand their own impact on the unsustainable situation of the planet</p>
Stage 3. A critical assessment of epistemic, sociocultural, or psychic assumptions	<p><b>Stations of cause:</b> Undertaking a root-cause analysis of unsustainability</p> <p><b>Commercials:</b> Deciding whether needs are born out of necessity or merely taken-for-granted assumptions</p> <p><b>Reading assignment-technology prisons in China:</b> Reflecting on the basic assumptions on production processes</p> <p><b>Circles:</b> Perceiving interaction among society, economy, and ecology</p> <p><b>Story of stuff/video film:</b> Discovering the facts behind the current system</p> <p><b>Trading game:</b> Understanding how economic activity in society has come to dominate the other components of the system</p>
Stage 4. Recognition of one's own and others' discontent and sharing of transformation	Recognizing the discontent of others during the sharing of the process of transformation throughout the training
Stage 5. Exploration of new roles, relationships and actions	<p><b>Life of a chair and an apple tree:</b> Discussing the production patterns of simple materials, we use in our daily lives with the production patterns in nature</p> <p><b>Cradle-to-cradle thinking/Reading assignment:</b> Discovering the details of cradle-to-cradle thinking and its application to real life situations</p>
Stage 6. Planning a course of action	<b>We are building sustainable schools:</b> Discussing sustainable school models
Stage 7. Acquisition of knowledge and skills for implementing one's own plans	<p><b>Ecological intelligence/Reading assignment:</b> Learning about the new concept of 'ecological intelligence' developed by David Goleman</p> <p><b>Characteristics of a sustainable lesson plan:</b> Deciding on components and characteristics of a sustainable lesson plan by creating rubrics</p> <p><b>Who told us that we cannot fly a plane?:</b> Constructing our own descriptions of 'sustainability'</p> <p><b>Sustainability eyeglasses:</b> Making relations between sustainability and the preschool learning outcomes prepared by the Ministry of National Education</p>

*(continued)*

**Table 1** (continued)

Perspective transformation stages	Training content
Stage 8 and 9. Provisional testing of new roles and building competence and self-confidence in new roles and relationships	<p><b>Micro-teaching:</b> Reflecting and applying what has been learnt by presenting a lesson concerning the context of sustainability</p> <p><b>Traffic lights:</b> Creating preschool sustainability projects and discussing their applicability</p>
Stage 10. Reintegration into the new perspective	Expectation that participants will move to stage 10 as a result of the seven-day-training process

instrumental learning-oriented in-service training that is widely practiced in Turkey. The majority of in-service training sessions organized in Turkey take place in a conference-room setting; the participants are passive listeners and interact with one another only during short intervals. Thus, the design of the content of the teacher training in this study included various opportunities for all the participants to actively interact with one another in different ways. This was achieved by seating the participants in small groups facing each other. During every session, the participants were called on to interact with one another, engage in deliberations about various aspects, produce various outputs as a result of these discussions, and share these outputs with all the other participants.

Starting with the first activity, the participants played a variety of games to make it easier for them to get to know one another and share their feelings and thoughts. This activity was conducted to overcome personal barriers and facilitate a collaborative learning experience and communicative learning, because “feelings of trust, solidarity, security and empathy are essential preconditions for free full participation in discourse” (Mezirow, 2000, p. 12). It was also considered that playing games might ignite the child-like curiosity of the participants and create suitable grounds for them to question the frames of reference acquired from their early childhood years.

The training took place in a state-run preschool located in Sakarya in the northwest of Turkey. The different classrooms and the playground of the preschool in which the training took place were used for various purposes throughout the duration of the training. For example, on the sixth day of the training, in which the participants’ capacities for sustainability were expected to develop, the activity took place in the indoor courtyard. The participants were given pieces of colored paper and were asked to create their own definitions of sustainability, considering what they had acquired from the training, and to write their definitions on the pieces of paper. The pieces of paper were then folded to make airplanes, and these planes were freely launched into the air. As they fell, each participant picked up one of the planes and assessed the sustainability definition that had been written on it, and added his or her comments to the piece of paper. Then the pieces of paper were converted back into planes and launched them again. Once again, each participant opened one of the paper planes that fell near to him or her and added his or her own views and appraisals to the exchange of information that had begun. After this game had been played for a while longer, the activity ended with the paper planes being displayed on the wall of the indoor courtyard.

Factual evidence was presented in order to reinforce the topics under discussion, to ensure instrumental learning among the participants, and develop their skills. Opportunities were provided for all the participants to confront their own frames of reference and assess their own roles in the development of these frames of reference. All these strategies are considered to achieve the goals of creating an atmosphere of social and intellectual freedom and fostering greater autonomy in terms of reflecting.

### **Context of the Training as a Facilitator of Critical Reflection**

The training took place at a time of year when the state preschools were on holiday and the teachers had to take part in in-service training. All the participants were preschool teachers, since it was assumed that (1) teachers of similar professional backgrounds would have similar frames of references, (2) this similarity would facilitate critical reflection on the common frames of reference, and (3) the quality of communication between the participants would be higher as a result of their common profession, and it would be easier for them to empathize with one another. Moreover, the trainer conducting the sessions was also a trained preschool teacher because it was thought that working with a trainer from their own discipline would ensure a quality professional relationship. The other primary elements of the context of the training were the trainer and the participants.

### **The Trainer**

As shown in the previously published article (Feriver et al., 2016), both the IF and the LD revealed that the trainer was considered one of the main contributors to any perspective transformation. Therefore, it was regarded as meaningful to provide brief information about the trainer as a part of the context of the training. Most of the content of the training activities was holistically designed by the first author (“the trainer”). The trainer is a Turkish citizen and has previously held positions such as senior trainer and project manager in a variety of educational projects supported by international and national funding programs. During these assignments, she gained extensive experience in educational materials, lesson planning, and curriculum development for trainers, teachers, and children. She was the project manager of the Green Pack Project, which was awarded “Good Practice in Education for Sustainable Development in the UNECE Region” by UNESCO. Developed as part of the Green Pack Project with teachers of different subjects Turkey-wide, the trainer implemented the content from the project in the first half of the training content used in this study. For this study, together with the role of training content implementer, she also adopted the roles of co-learner and provocateur in line with the framework of the reformist perspective offered by Cranton (1994).

### **The Participants**

Twenty-four early childhood educators volunteered for the study; they all worked in various public schools in the town of Sakarya in northwestern Turkey. Most of the teachers (95.8%) involved in the study were female. All the participants had a

university degree and were familiar with the idea and ideals of reflective practice, but they had neither formal nor extensive ESD experience in their teacher education or subsequent professional development. Almost 50% of them were between 20 and 29 years old and almost all of them (95.8%) were less than 40 years old. Seven participants had teaching experience of between one and 4 years, 11 participants had between 5 and 9 years of teaching experience, and 5 participants had teaching experience of 10 and more years. Finally, almost all of the participants had participated in in-service training in the last 18 months.

## Data Collection Instruments

The following instruments were used for data collection: LAS, LD, and IF. The LAS and IF used in this study were composed of items structured and sequenced in accordance with King's (2009) recommendations. LD was constructed according to the reflective model created by Rolfe, Freshwater, and Jasper (2001).

**Learning Diaries** According to Taylor, “the strength of using journals is they have the potential to both capture and foster reflection” (2017, p. 83). The participants were encouraged to use their diaries as a space to document their thinking about the workshop issues, ask and explore critical questions, consider the integration of theory with practice and vice versa, and promote reflexive professional development. In addition to enhancing participants’ learning through the process of writing and thinking, the participants completed their LD at the end of each workshop day, responding to four open-ended questions constructed on Rolfe et al.’s (2001) simple three-step reflective model (what, so what, now what). The four questions generated on this model were: What did I do today?, What did I learn today? (what); What were the issues that kept my mind busy today? (so what); and How can I use this experience? (now what). To ensure a private space and confidentiality in the course of critical reflection, the participants chose a pseudonym on the first day of the training and continued to use this pseudonym in LD which they completed every day and LAS which they completed at the end of the program. This made it possible to monitor the transformative journey of each of the participants at the individual level.

**Learning Activities Survey** This instrument was designed to produce quantitative data focused on three dimensions associated with the learning activities. The first dimension utilized Mezirow’s ten stages of perspective transformation and assisted in documenting the participants’ experiences through a checklist. The second dimension solicited views of what might have caused perspective transformation experiences, in relation to the impact of training activities, the influence of other people or the support received, and the changes that occurred in the person’s life. Lastly, the third dimension generated information on the demographic characteristics of the sample. The current study reports the results of the analysis of the sections of this instrument which are related to critical reflection.

**Interview Form** The interview protocol was developed to extend the scope and depth of themes of the survey. The excerpts from the IF were also used to corroborate and/or elaborate data collected through LD and LAS. IF comprised two dimensions. The first dimension of IF was related to Mezirow's ten stages of perspective transformation, while the second explored attributions in perspective transformation.

## Data Collection Procedure

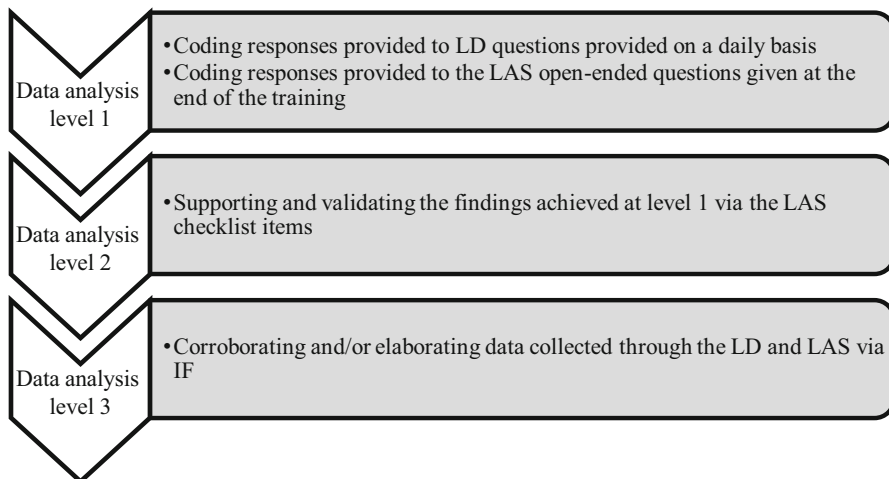
Data collection through LD took place throughout the workshop period, while for the other instruments (LAS and IF), the data were collected after the completion of the workshop and training activities, at the end of the seventh day. The LD was completed at the end of each day of training, at the training venue, within a period of about 15 min during which the trainer left the participants alone. The completed LDs were then submitted to the trainer, who reviewed the forms regarding the content and context of the training from the point of view of the participants. Where necessary, she made adjustments to the content of the training on the basis of what the participants had written. The LDs were photocopied and the originals were returned to the participants the next day. LAS was completed at the training venue in a 15-minute period after the training had ended. Finally, interviews in Turkish lasting approximately 15–20 min were conducted by the trainer at the training venue. The interviews were conducted with six participants who volunteered immediately after the initial analysis of the LAS data to explore and contextualize the findings from the survey. The purpose of each interview was explained to the participant before the interview was conducted. Each interview session was audiotaped with the permission of the participant and transcribed.

## Data Analysis

The data in this study was gathered and analyzed in Turkish. Subsequently, for reporting purposes, the interview texts and the codes were translated into English. Extracts from the participants (and the reporting of the study) were scrutinized by a native speaker with translation background to determine whether they were accurate in terms of reflecting the true meaning of a word/phrase. The study used qualitative and quantitative data analysis techniques formulated in three consecutive levels as described in Fig. 1.

### Data Analysis Level 1

In the first step of the qualitative analysis, the framework of critical reflection in Mezirow's theory of perspective transformation was used for systematic coding, coupled with an open coding phase, based on established grounded theory techniques (Strauss & Corbin, 1998). The examination of data was undertaken on the



**Fig. 1** The data analysis procedure of the study

basis of the responses to each question posed in LD completed at the end of each training day and the answers to the two open-ended questions posed in LAS.

In the design and implementation of the training content since the Mezirowian adult education approach was exhibited in measuring critical reflection, it was decided to conduct the analysis in the framework of Mezirow's levels of reflection approach. The LD completed by the participants at the end of each training day and their responses to the two open-ended questions in LAS were analyzed by adapting the coding schema developed by Wallman, Lindblad, Hall, Lundmark, and Ring (2008) based on Kember et al.'s (1999) categorization scheme used for assessing learners' levels of reflection in reflective journals. As opposed to the seven categories used by Kember et al. (1999), Wallman et al. (2008) utilized a modified categorizing scheme based on Mezirow's six original levels of reflection. In the present study, the researchers returned to the theory as suggested by Taylor and Snyder (2012) and revised the descriptions of the levels based on the theory, content of the intervention, and the data gathered from the field. The analysis units were the responses provided to the open-ended questions in LAS and each of the questions in LD. Since the participants were asked four questions in LD, there were generally four codes for each LD. However, there were also some exceptions; sometimes it was considered appropriate to assign two codes to some responses, and there were situations in which some participants did not answer all the questions in LD; thus, less than four codings were allocated. As shown in Table 3, a high proportion of the participants completed five and six LD, but there were also participants who completed fewer LD. The original version of the coding scheme demonstrated that it had good inter-rater reliability, feasibility, and responsiveness. In the present study, care was taken over inter-rater reliability. The first and second authors of the study coded the data separately according to the coding scheme provided in Appendix 2, and the results were compared. The total frequency of the codes was 598, of which



the authors agreed on 475 (79%). The discrepancies were discussed and the coding scheme was revised again. After the final version of the coding scheme was developed, the first and the third authors coded 25% of the data to check for inter-rater reliability. This time inter-rater reliability was calculated as 91%. The different interpretations were further discussed until there was 100% agreement.

### **Data Analysis Level 2**

One of the most common criticisms in the field of critical reflection assessment is that assessments are undertaken utilizing a single data source. In this context, the researchers paid attention to the importance of further validation. In the present study, efforts were made to validate the measurements undertaken by the researchers concerning the participants' reflective diaries based on the definitions they made using the checklists provided in the first part of LAS. For this purpose, the individual was identified as the unit of analysis and basic descriptive statistics were utilized. Inferences were drawn about the nature of the reflective practices of the participants by observing their individual reflective experiences in conjunction with their individual transformative experiences.

### **Data Analysis Level 3**

The responses of six participants to the IF were used to enhance understanding of the role of critical reflection on perspective transformation. As was the case for the other two data analysis instruments, the interviews were primarily intended to support reflective experience, as well as provide an in-depth insight into the data collected through LD and LAS. In addition, appropriate extracts from the participant interviews were presented to further illustrate the critical reflection experiences of the participants.

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## **Findings**

### **Assessing the Levels of the Participants' Reflection and Non-reflection**

Table 2 summarizes the participants' levels of reflection on their participation in the in-service training. Table 3 demonstrates the distribution of the codes according to the individual participants. Six different codes were assigned to the responses of the participants under the two categories of non-reflection and reflection. Table 2 shows that all the participants engaged in reflective practices, albeit at different levels (levels 4, 5, and 6). Of the total 598 codings under the non-reflection and reflection categories, 333 were non-reflective and 265 were classified as reflective practices. The distribution of the codes in the non-reflective category showed that the participants frequently displayed habitual actions, giving straightforward descriptions of the experiences provided to them. The average number of habitual actions per

**Table 2** Distribution of the codes

		Frequency	Percentage	Number of participants engaged	Average per participant
	<b>Codes</b>				
<i>Category: Non-reflective</i>	Habitual action	208	34.8	24	8.66
	Thoughtful action	82	13.7	24	3.42
	Introspection	43	7.2	16	2.69
<i>Category: Reflective</i>	Content reflection	90	15.1	24	3.75
	Process reflection	120	20.1	23	5.22
	Premise reflection	55	9.2	20	2.75

Note: The total number of the non-reflective codes was 333, constituting 56% of all the codes. The total number of the reflective codes was 265, constituting 44% of all the codes.

participant was 8.66. All the participants were also seen to engage in the practice of thoughtful action, noting the choices of action based on the acquired knowledge from the training without mentioning why a certain choice was made or why no interpretation of this choice was offered. This practice was recorded an average of 3.42 times per participant. The practice regarded as non-reflective in which the participants engaged the least was introspection. Seventeen participants engaged in introspection an average of 2.69 times; however, they referred to their feelings during the process without questioning or evaluating why they felt that way.

An examination of the distribution of reflective practices shows that process reflection was the commonest category. Apart from one teacher, all the participants engaged in process reflection an average of 5.22 times. It was observed that these participants were intensively focused on problem-solving strategies. During the analysis, the participants were frequently found to use expressions that provided evidence concerning the ways in which they handled certain experiences. The training was also seen to have encouraged all the participants to engage in content reflection. On average, the participants exhibited 3.75 times that they thought about their experience by either interpreting or questioning it. They evaluated the situation in question by examining their own roles on the focused issues. In terms of premise reflection, each of the 20 participants was recorded to have engaged in this practice on an average of 2.75 occasions. The responses of these participants included reflections on how they had become aware of their thoughts, beliefs, feelings, and actions as well as demonstrating that they had become more critical about these. They demonstrated that they had somehow pushed themselves in order to understand and evaluate their underlying assumptions by questioning the root causes of the issues.

**Table 3** Distribution of the codes according to the individual participants

Participant	# of LDs completed	Habitual action	Thoughtful action	Introspection	Content reflection	Process reflection	Premise reflection
1	6	10	4	1	5	6	3
2	4	6	3	2	7	1	0
3	4	4	1	3	4	6	2
4	5	3	5	4	3	5	4
5	5	10	4	2	2	3	0
6	5	4	5	5	4	7	3
7	6	6	3	6	2	9	2
8	6	12	3	3	3	5	2
9	6	7	4	5	2	6	4
10	3	3	1	0	1	6	1
11	6	8	5	2	1	7	4
12	6	14	5	0	2	3	1
13	5	13	6	0	3	0	0
14	4	7	1	2	6	6	1
15	6	10	3	3	3	5	4
16	6	16	2	1	2	4	0
17	6	14	4	0	5	1	1
18	6	10	3	1	5	4	4
19	4	6	5	0	3	3	3
20	6	8	1	0	6	8	3
21	6	8	3	0	5	9	3
22	6	11	6	2	6	4	3
23	6	10	3	0	4	6	3
24	6	8	2	1	6	6	4

Note: This table includes the coding of the LAS open-ended items, which were completed by all the participants. The total number of the LDs completed was 129.

As demonstrated in Table 3, more than half of the participants completed six LDs, four participants five LDs, and the remaining five participants three or four LDs. Eight participants did not engage in introspection, which is categorized as a non-reflective practice. Only one participant did not provide evidence that could be labeled as process reflection. Four of the participants did not reach the premise reflection level.

### Participants' Levels of Reflection in Relation to the Data Collection Instruments

The distribution of reflective practices is detailed in Table 4 and categorized according to the six questions which the participants were asked. In their responses to the question in the LD, "What did I do today?," the participants were found to engage mainly in a simple description of the happenings (habitual action). While

**Table 4** Distribution of the codes according to the LD and LAS questions

	Non-reflective			Reflective		
	Habitual action	Thoughtful action	Introspection	Content reflection	Process reflection	Premise reflection
LD-what did I do today?	101	2	14	9	2	3
LD-what did I learn today?	64	6	4	18	32	14
LD-what were the issues that kept my mind busy today?	39	2	18	41	8	16
LD-how can I use this experience?	4	67	0	0	55	7
LAS-briefly describe what you experienced throughout the in-service training	0	5	5	9	14	9
LAS-thinking back to when you realized that your views or perspective had changed, what did attending this in-service training have to do with this experience of change?	0	0	2	13	9	6

*LD* learning diaries, *LAS* learning activities survey

doing so, it was noticed that some participants also engaged in introspection, referring to the emotions they had felt during the process. Similarly, a high proportion of the answers given to the question “What did I learn today?” were assessed as habitual action. This question can also be said to have prodded the participants to engage in content, process, and premise reflection. Content reflection practices were most commonly found in the answers to the question, “What were the issues that kept my mind busy today?” This was also the question that led the participants to engage in the most premise reflection and introspection. The question “How can I use this experience?” appeared to orient most of the participants toward the practices of thoughtful action and process reflection. Some participants were also observed to engage in premise reflection in response to this question.

While evidence of both non-reflective and reflective practices was encountered in the responses given to the questions in LD, the responses given to the questions posed in LAS mostly produced evidence of reflective practices. The first LAS question assessed for this study was: "Since you have been participating in this training, do you believe you have experienced a time when you realized that your values, beliefs, opinions or expectations had changed?" The participants who indicated the "Yes" option were directed to the following question: "Briefly describe what you experienced throughout the in-service training." Most frequently, the response to this question was assessed as process reflection. In the responses which the participants gave to this question, they were observed to mentally travel back to the past and make statements about the way they handled the experience in question. In response to this question, the participants were also observed to engage in premise reflection. In this connection, they were seen to state that they had gained new perspectives by discussing what they had acquired from the content of the training with other participants, broadened their horizons, came to adopt a different perspective, and were observed to comment on the importance of all this. Furthermore, the responses of the participants to the same question showed that they continued to question the situation and engage in examination and interpretation of the problem, i.e., content reflection.

The second LAS question assessed was "Thinking back to when you realized that your views or perspective had changed, what did attending this training have to do with the experience of change?" In their responses to this question, for the most part, the participants were observed to engage in content reflection, stating that they had started to think about things which they had never considered before, questioning their own roles in an unsustainable system, and indicating that they were part of the problem. With respect to the same question, the participants also remarked on the particular activities that had started the transformation within them; i.e., they engaged in process reflection. In this context, they mentioned the activity about the apple tree and the chair, the ecological footprint activity and the Story of Stuff video. Like the other LAS question, this question too made it possible for participants to engage in premise reflection, in which they made statements to the effect that the activity had held up a mirror to them, taken them on an internal journey and helped them to grasp issues in a more holistic way.

In the following stage of the study, an examination was conducted of the distribution of the codes by the day of training (Table 5) from which many conclusions were drawn. First, the findings revealed that the participants engaged more in reflective practices in their responses to the open-ended questions posed in LAS than when responding to the questions in LD. Second, the participants had engaged in introspection most intensively on the first day of the training but the amount of introspection declined steadily of the remaining days of training. The first day of training was also the day on which the participants engaged least in premise reflection practices. Third, while the degree of content reflection among the participants was similar on each of the first four days of training, it emerged that the evidence of this kind of reflection fell dramatically on the fifth day, and that it was completely absent on the sixth day. Finally, the highest incidence of premise

**Table 5** Distribution of the codes according to the days of the training

	Non-reflective			Reflective		
	Habitual action	Thoughtful action	Introspection	Content reflection	Process reflection	Premise reflection
First day (23 completed journals)	27	15	15	19	19	3
Second day (23 completed journals)	41	9	7	16	17	10
Third day (23 completed journals)	36	12	6	15	16	9
Fourth day (23 completed journals)	31	14	5	14	16	11
Fifth day (21 completed journals)	44	17	2	4	15	1
Sixth day (16 completed journals)	28	11	1	0	14	6
Seventh day (LAS 1 + LAS 2, each filled in by 24 participants)	0	5	7	22	23	15

The participants were asked four questions in LD for six days and two questions on the seventh day at the end of the training

reflection practices was registered on the second, third, fourth, and seventh days of the training, while the lowest incidence of premise reflection occurred on the first and fifth days.

### **Participant's Levels of Reflection and Their Transformative Journey**

The assessments made by the researchers of the reflective practices in which the participants engaged in their responses to the questions in LD and LAS were then compared with their responses to the items in the LAS checklist. All the participants put a cross by the item, "I had a training experience that caused me to question the way I normally act." This supports the findings obtained from the LD, which revealed that all of the participants engaged in reflective practices. The research, of which this study is a part, which explores the transformative experiences of the participants and the components of transformative learning that facilitate a perspective transformation, thus arrived at the conclusion that all the participants had gained a transformative experience, though not to the same extent. One of the factors that

may have affected this outcome was the “self-assessment throughout the training” item in the LAS checklist. Of the 24 participants, 19 selected this item. When the findings from the LAS checklist items were compared with the open-ended items in LD and LAS, a notable outcome was that the participants who did not engage in introspection in LD or in response to the open-ended questions in LAS did not mark the item, “After the training, I felt uncomfortable with traditional role expectations (values, habits, behavior patterns)” in the LAS checklist either. Another noteworthy finding from this comparison indicated that participants who did not select the item, “I had an experience that caused me to question my ideas about social roles,” were also those who engaged less in premise reflection. Of the 16 participants who engaged in introspection, 13 marked the item, “I began to think about the reaction and feedback from my new behavior.” No clear pattern was identified regarding the other checklist items. Accordingly, the conclusion reached was that the items on the LAS checklist only helped to validate the reflective practices of the participants to a limited extent.

## **Features of Reflective Practices**

The next level of analysis explored the features and themes of the participants’ reflection processes. The meanings attached to the participants’ content, process, and premise reflection during and at the end of the training were examined, identified, and described. The themes that emerged most repeatedly from LD and the open-ended items in LAS are described below with reference to the categories of reflection. In addition, the themes in question are supported by the data from the interviews.

### **Content Reflection Practices**

The topic on which the participants most frequently engaged in content reflection involved realizing that the social, political, and economic systems which people have established are unsustainable and understanding how these systems interact with one another. At the same time, this awareness formed the basis for the participants to question their own day-to-day decisions and their places within this system and shown in the following extracts from the participants’ LDs and interviews:

I was surprised that I had not thought of unjust behavior toward women and all disadvantaged sections of society as one of the reasons for unsustainability. I realize that in the bustle of everyday life, I had not undertaken this level of analysis. (LD, Participant 2)

I see that like everybody else I am not willing to live with less either. And when I run out of the things, I usually buy, I am simply hurrying to buy more too. (LD, Participant 20)

Calculating our own ecological footprints resulted in important changes in my perspective. I realized that my decisions support the unsustainable situation of the planet. I looked at myself in this activity. I evaluated my actions and saw that I was wrong. I started being aware of the impact of my actions on the planet. (IF, Participant 6)

The Trading Game showed me that money dominates everything and affects all the other components of the system in an ill-balanced way. We should stop and look at ourselves because we have forgotten what really matters. (IF, Participant 8)

The comments below are examples revealing how the participants realized they only had very limited knowledge about issues of vital importance both for themselves and for all living things.

What I saw in the Story of Stuff video really shocked me. I was very upset to learn that in today's world, even mother's milk is full of chemicals that are harmful for the baby. Perhaps it would be better not to bring children into this world. (LD, Participant 15)

I read the reading assignment [Technology Prisons in China] and I was horrified. This is a humanitarian crisis – mass killing. The technological devices we all use are costing people their lives. I was not aware of these issues. (IF, Participant 4)

### **Process Reflection Practices**

When engaging in process reflection, the structure of education was found to be the theme on which the participants commented most frequently. This finding is supported by the fact that 18 participants selected the item “unconventional structure of the training” when completing the checklist in LAS of factors that might influence them having had a transformative experience. Within this theme, the sub-theme that emerged most frequently concerned play as shown in these extracts.

The games we played were both very entertaining and very thought-provoking. Thanks to the games, we integrated with each other very quickly and very effectively and entered into constructive discussions. (LD, Participant 6)

The games made me want to get away from the usual ways of thinking. (LD, Participant 21)

The games are also understood to have helped to keep the participants involved in the process after the intensive feelings they began to experience in the early days of the training.

After what I saw, I became even more pessimistic. I think every era creates its own kind of person. I don't have much faith that the people of our era can solve these deep-rooted problems that they have created. On the other hand, I'm learning things here that I had never



heard about before, and I'm enjoying myself very much. Every day I come to the training sessions very eager and excited. (LD, Participant 9)

The second most prominent sub-theme with respect to the unconventional structure of the training relates to the personal relationships developed both with the trainer and between the participants. IF and LD revealed that the democratic and playful structure of the training removed the personal barriers among the participants and facilitated collaborative learning, which helped the participants to develop a multi-perspective approach.

During the sustainability airplanes activity, I saw how the same subject could lead to different kinds of conclusions when considered by different people. At the same time, I noticed that the group discussions enriched the available options. (LD, Participant 24)

I noticed that by treating life and events as multi-dimensional, and looking at them from many different angles, and sometimes thinking outside the box, more productive results can be generated. (LAS open-ended item, Participant 21)

The other theme of process reflection that occurred in LD in all the participants and supported by the interviews was that they discovered the potential of teachers to be agents of change, both as teachers and as individuals, and they were making plans to fulfill this role:

I realized that there are a lot of things that I can do as a preschool teacher. I can make a big difference with small interventions. I have started to carry out research to broaden and deepen my knowledge of these issues. I will continue looking for resources throughout the summer holiday. When school starts, I am going to start integrating sustainability into the curriculum on the one hand and put these issues onto the agenda of parents through their family education on the other. (LD, Participant 14)

If it hadn't been for this training, I would have remained an individual inside my own shell. As an individual on my own, I wouldn't have been able to do anything. But the training has encouraged me now. Every day, after the training, I have told my flat mate about what I have learned and what we discussed. Soon I will be meeting up with my family and I am going to discuss these things with them too. I can't wait for the schools to open. I want to work with the children and carry out projects with the other teachers in my own preschool straight away, before my enthusiasm wanes. (IF, Participant 7)

### **Premise Reflection Practices**

The conclusion has been reached that the participants who engaged in premise reflection in their LD revealed in their responses to the open-ended questions in LAS that their assumptions, values, thoughts, and beliefs are actually determined to a large extent by the political, social, and economic contexts in which they live:

Thanks to this training, I have confronted bitter truths. It turns out I am just one of the cogs in this rotten order centering on economics. I realize that I have been trundling along in the imaginary world that they serve up for us. How helpless I was. (LAS open-ended item, Participant 15)

Thus, the participants also realized how little they knew about the forces that direct the global society they form part of. Moreover, they recognized that their actions were enacted solely on a surface-level basis, composed of commonly accepted beliefs, or sometimes even distorted facts, but they had become critical of this situation:

To be honest, I hadn't been able to go into these things in so much detail. As I went more deeply into the issues that we dealt with, I gained a better understanding of the extent of the mistakes I am making. I realized that I think and question very little. (LAS open-ended item, Participant 6)

As a result of this awareness, the participants indicated that they had made plans to change their priorities, and they felt more enabled and empowered in this respect because they had become more aware of the external influences acting on them:

I have become aware that the things I describe as obstacles are actually my own obstacles. This training has made me redefine my role as a teacher in this society. As a teacher, I now believe that my duty to leave a sustainable future to our children and to raise them to be able to build a sustainable future is more important than all my other duties. (LD, Participant 21)

We, teachers, are the engines of the education system. We are the role models for our students. If we want to affect our students' lives to improve them, we have to change our mindset to reach our 'inner selves'. (LD, Participant 12)

The training as a whole made a lot of difference in terms of how I look at myself and my profession. All the activities complemented each other and guided us throughout the process. At the beginning, I was terrified, now I am hopeful and full of energy that I can change my conventional point of view. (IF, Participant 4)

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## **Discussion and Implications for Education, Practice, and Research**

This study presents a framework for critical reflection that teacher educators can employ to support and analyze ECE teachers' reflection practices by paying attention to the individual transformative learning experiences of teachers created by the content and the process for critical reflection opportunities within a capacity building course. The objectives in this research were to assess the levels of reflection and breadth, concentrating on the elements of the reflective process and depth of the understanding of the reflective discourse. Toward the goal of assessing the levels of

reflection of participants, the coding pattern created by Wallman et al. (2008) based on the work of Kember et al. (1999) was marginally overhauled by integrating the emphasis of the social change in transformative learning that was initially based on a political, social, and ideological critique (Kreber, 2012). Furthermore, the meanings of the codes were expanded by including the extracts from the participants in the study. As a result of this adaptation, the anticipated outcome was achieved based on Mezirow's six steps model which was developed for the purpose of reflective discourse within the transformative learning process.

## Critical Reflection and Individual Differences

The findings of the study indicated that critical reflection is an individualistic process. The participants in this study were given the same training content and they were all provided with the same critical reflection opportunities. However, considerable differences were recorded in terms of the critical reflection processes in which each participant engaged. In parallel with this outcome, Mann, Gordon, and MacLeod (2009), in the review of 29 different studies conducted about reflective practice in the framework of health professional education, came to the conclusion that the tendency and ability to reflect appears to differ among individuals. It is considered that there may be many reasons for that situation and the leading reasons are elaborated here. The first cause of the individual differences in reflective practices is thought to be personality. By nature, some participants may be more inclined to engage in critical reflection; thus, they may have a pattern of a particular kind of critical reflection. Similarly, in our study, there were findings in some participants' data referring to feelings during the process but did not question or evaluate the reasons for those feelings, this was seen in the data from eight participants. Another example revealed that despite same conditions being provided, four participants did not perform premise reflection. This pattern shows that as in the process of transformative learning, the process of critical reflection also varies among people.

One of the reasons for detected individual differences could be the resistance exhibited by some of the teachers who participated in the training to critical educational practices (Gay & Kirkland, 2003; Johnson, 2006) and ideological implications derived from this approach (Neumann, 2013). As Neumann (2013) explained, some of the participants might "continue to follow, and thus tacitly endorse, the common script not just in reaction to institutional pressures, but also from an emotional desire to fit into mainstream notions about teachers" (p. 140).

Another explanation that sheds light on the relationship between critical reflection and individual differences could be the reasoning presented by Cranton (1994), who extended the variety of the way individuals engaged in transformative learning by focusing on Jung's (1971) model of psychological types. According to this approach, people with an extraverted attitude prefer to engage in interaction with others, events, situations, and information, while introverted types have a tendency toward indirect stimulation from the world which consists of an inner set of processes. Jung (1971) also referred to the preferences in making judgments, using

logic (thinking) and using values (feeling). He described the reality of senses and intuition as two ways of perceiving claiming that every person has attitudes, preferences, and perceptions that differ and work together in various ways. In relation to individuals' reaction to transformative learning, Cranton (1994) explained that feeling types had the tendency toward making changes in their values and their perspectives through value-based judgments whereas thinking types were not necessarily the most likely to revise their meaning perspectives through focusing on their feelings. To collaborate this explanation, the responses given by the participants to the questions posed in LDs can be cited as examples. Among the answers to the first question of LD, "What did I do today," for which a rather simplistic description could suffice, some participants preferred to engage in reflective practices at different levels, while other participants voiced their concerns which can be categorized as introspection. As argued by Mälkki (2010) based on the work of Mezirow (1981, 1991, 2000, 2009), far from being an easy process, reflection is an arduous process which can be painful for some people. The reflective abilities of the participants in the current study may be affected by internal factors, such as emotional maturity (Mezirow, 2000), metacognitive abilities (Mälkki, 2010), and the capacity for critical thinking (Bourner, 2003).

Another reason for the individual differences could be that while probably being reflective in their work and possessing the ability to engage in reflective thinking, some participants might not be able to formulate this process in a written form. This is supported by Kreber (2005) who referring to instructors of science wrote that "it is possible that they really engage in reflection but do not know how to show it" (p. 352). In the current study, it is also likely that some participants may hesitate in writing down what they thought no matter the level of their reflection. As demonstrated by Grant, Kinnersley, Metcalf, Pill, and Houston (2006), some learners were less motivated as a result of the non-alignment between the written approach to assessment and the learners' favored learning style. Similarly, in relation to the motivational approach, it was shown that the perceived importance of reflection can successfully predict the time and effort a person is willing to invest, meaning that those who do not expect a positive return are unlikely to reflect profoundly and critically (Sandars, 2009). These determinations, as corroborated by the findings of this research, could provide some of the answers to why some participants completed less LDs than others. From this perspective, it can be argued that it is necessary to offer participants, in addition to writing, varied different mediums, through which they can refer to their own learning styles and also duly express themselves (Lundgren & Poell, 2016; Taylor, 2017).

It is important to acknowledge the potential of social desirability bias that might derive from the confluent relationship between the trainer and the participants that emerged throughout the training. Although while collecting data, special care was taken to keep the participants' identities anonymous in order to address that bias, it is thought that this aim might not be fully met in the interviews. Once more, this has demonstrated the importance of triangulation of data sources in terms of validating the findings. In creating this triangulation, rather than depending solely on the details derived from the reflecting person, utilizing other methods such as making

observations to lessen assessors' dependency on a person's interpretative description (Koole et al., 2011) can bring about insightful outcomes.

## **Content for the Critical Reflection**

The current research offered a framework for a specific content for reflection to be considered critical. The participants in this study were exposed to a learning experience which is distinctly different from their previous practices. When looking at the distribution of the reflective and non-reflective practices according to the day of the training and comparing them with the content of the training as reflective opportunities provided within the session, it seems that together with the training content, the questions asked by the trainer which aimed to provoke reflection had very noticeable impact on the reflective processes of the participants.

This study occupies a distinct position in relation to many other reflection studies in terms of its emphasis on the content of the transformative experience. For example, as demonstrated by a review which focused on 11 research articles in higher education across a range of disciplines, only two of the 11 studies indicated a higher percentage of students being reflective (Dymont & O'Connell, 2011). In these studies, the content concerning which students perform reflection was not questioned, whereas, as mentioned in the beginning of this study, the main objective of contemporary higher education is to equip learners with information and skills; in other words, to develop instrumental learning. Moreover, learners in HE are only provided with communicative learning opportunities in a limited fashion. In such conventional learning environments where instrumental learning is the most important goal, it is no surprise that a high level of reflection fails to occur.

In this study, it was recorded that the participants performed considerably more intense premise reflection on the second, third, and fourth days, on which the situation of the planet earth was discussed from various angles in the education content which was prepared with the objective of instrumental, communicative, and emancipatory learning. It was during these days when, on an individual basis, participants were given intensive premise reflection opportunities, in which they could scrutinize the impact of the socioeconomic and political systems on individuals by uncovering hegemonic assumptions (Brookfield, 2017), undertake a root-cause analysis, and enter into a rigorous process of self-questioning. Thus, when abundant opportunities were provided, the participants performed more premise reflection. Also, during these days, a significantly higher number of provoking questions were posed to participants in comparison with the other days. Therefore, it can be argued that when designing interventional studies, it is advisable to consider the kind of reflection opportunities that should be provided to obtain better results. As mentioned previously, the sequence of the content of the education was designed in accordance with Mezirow's transformative learning stages. Thus, given the parallels of the content of the education and Mezirow's transformative learning components, it is thought that there may be a relation or correlation between the disorienting dilemma; self-examination; critical assessment of epistemic,

sociocultural, or psychic assumptions; and exploration of new roles, relationships, actions, and premise reflection. This determination, however, requires further validation since, currently, there seems to be more research available in the form of disorienting dilemmas (Mälkki, 2012) or critical incidents (Cope & Watts, 2000).

## Process for the Critical Reflection

In this study, it is argued that rather than focusing solely on the content that may improve teachers' reflective practices, teacher educators should also concentrate on the process of this specific challenge. The findings of this study concerning the process of critical reflection indicate that certain types of questions posed to participants in written forms directed them toward certain kinds of critical reflection practices. Furthermore, it was found that the participants were more engaged in critical reflection in their responses to the questions asked on the last day of the training, when their views on the entire process were sought. Apparently, during the process of completing LD, the content was too controversial for some of the participants to consciously reflect-in-action (as the incident happens) (e.g., Eraut, 1994).

In the current study, the utilization of the three-step reflective model of Rolfe et al. (2001) produced positive, albeit limited results. The questions which helped participants to take a critical approach to what they learnt as opposed to questions asking what they had done produced better results in terms of critical reflection. Thus, it is thought that by means of questions concerning what they had learnt, some form of mental time-travel opportunities was made available which helped them to remember the reflective moments. Furthermore, this process could also help participants to engage their metacognitive skills. In response to the question of "What were the issues that kept my mind busy today?" the participants engaged intensively in content reflection. The question of "How could I use this experience" led the participants to become involved in process reflection. Based on the reflective writing of the participants, it was seen that the questions in LD led to findings that showed the role of emotions on critical reflection, and transformative learning occurred in a limited manner. It can be argued that in addition to "What did I do today" and "What did I learn today," the question of "How did I feel today" could also produce more findings related to the affective side of critical thinking. Also, it is considered that adding "why" to the questions in the three-step model of Rolfe et al. (2001) could help learners to undertake a higher level of critical reflection. Nevertheless, it is advisable to take into account the risk that some participants may be alienated from the process if their limits are tested by this level of critical reflection.

Taking all the above-mentioned factors into consideration, directing questions to the participants which can help them see the bigger picture at the end of their transformative learning experiences; formulating questions in a way that assists participants in viewing the process as a whole; asking them what they learnt in the process, what kept their minds busy, and how they feel during the process; and finally complementing this process with "why" questions in order to show them how to put into practice what they learnt can facilitate learners to engage in high-quality critical reflection experiences.

The context and application method of the training presents significant insights in the framework of process of the critical reflection. As argued by Taylor (2017), when investigating transformative learning, there is an emphasis on the individual which often overshadows the important details about the context. As revealed in this study, elements embedded in the context of the training could have motivated some participants to move in the direction of engaging in critical reflection. This professional development study conducted with Turkish early childhood teachers is a very fitting example for less-controlled, less-formalized, non-judgmental, and stimulating adult education which offers different opportunities for reflection. It was concluded that as with transformative learning, critical reflection should also be realized with free will as suggested by Mezirow (2000). As explained, in this study, the participants were given considerable freedom in completing LD and LAS. Accordingly, reflection practices which are performed using free will and pseudonyms might offer participants a sense of freedom to write more deeply and critically without the fear of judgment (Dyment & O'Connell, 2011). Hence, as demonstrated in the findings, during those 6 days, a significant portion of the participants completed their LD responding to all the questions and answered all the open-ended items in LAS.

While reflection was generally considered as an entirely singular process, ideas are moving toward conceptualizing it as a process facilitated by social collaboration interaction (Li, Paterniti, Co, & West, 2010). Also, within this study, it was observed that social interaction played a prominent role in participants' process reflections (Brookfield, 2006) and playfulness was one of the factors which facilitated this. This playfulness created such a supportive atmosphere that participants were able to more easily overcome the obstacles when faced with experiences that were "unexpected, unfamiliar, surprising, and perhaps even disturbing" (Kreber, 2012, p. 330). As manifested in play in child development theories, play can also be utilized for adults as a tool to help deal with negative feelings, due to its ability to create a private world that can be shared with others, but remains separate from the real world and ordinary time and space (Tanis, 2012). In this context, it is considered that play has the potential to bring about abundant opportunities. Hence, taking advantage of such possibilities, how to include play/playfulness in adult learning should be further explored, including conducting independent studies about the potential of play/playfulness to add new capacity in terms of critical reflection and transformative learning.

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## Conclusion

This study presented a way of encouraging early childhood teachers to engage in critical practice toward transformative learning to offer them insights into more sophisticated understanding regarding the teaching profession to compensate for the current deficiencies in higher education institutions (HEI). A professional development opportunity to transform teachers' way of learning was created so that the participants could become transformative intellectuals acting as change agents, question how knowledge is produced and distributed, utilize dialogue, and make knowledge meaningful, critical, and emancipatory. Based on the research questions,

the study aimed to provide a content and process understanding of critical reflection as an important tool for teacher educators with the objective of stimulating transformative learning. In doing so, new possibilities were explored as to how to support the teachers who had been educated within HEI as “technicians rigidly and obediently following a prescribed curriculum” (Liu, 2015, p. 136) to achieve an awareness to look beyond the micro classroom environment of their teaching to a broader context of education, schooling, and society. As demonstrated in this study, transformative learning intensively supported with critical reflection practices, in a framework of sustainability, may provide educators and teachers with opportunities to critique and change their conventional approaches to ECE teaching and learning.

A central argument in this study is that as a result of their overall experiences throughout the training process, the participants were significantly more inclined to undertake critical reflection. The unconventional training content, unconventional application methodology, and the social and intellectual atmosphere created during the training encouraged the participants to engage in critical reflection. This process was supported with the utilization of the data collection instruments which furthered the opportunities for critical reflection.

In countries, such as Turkey, which are at an early stage in ESD and cannot provide sufficient exposure opportunities during the existing teacher education program, supplementary in-service training such as demonstrated in this study can be offered. However, this might not be sufficient; therefore, concurring with the foremost limitation of the study, namely the time and space needed to develop ESD practice, it is recommended that there is an implementation of broader transformative learning experiences and/or system-wide strategies rather than one-off attempts or interventions. The findings of this study showed that such actions will be instrumental in enhancing the competence and bolstering the self-confidence of early childhood teachers in transformative learning, and perspective transformation geared toward sustainability.

## Appendix 1: Critical Reflection Opportunities in the Training in Relation to Mezirow’s Three Forms of Critical Reflection

Timing of the sessions	Training content and critical reflection opportunities (the questions posed by the trainer to the participants throughout the sessions)	Mezirow’s three forms of critical reflection
<b>First day</b>	<b>Nine dots:</b> You were instructed to join up nine dots using four straight lines without lifting your pen from the paper. None of you were able to complete the task, because you did not consider the possibility that you could draw lines which extended beyond the box formed by the nine dots. Yet you were not given any instruction to the effect that you could not go outside this box. Now let’s think about what other examples of this exist in our everyday life. What might such situations stem from?	Content reflection Premise reflection

(continued)



Timing of the sessions	Training content and critical reflection opportunities (the questions posed by the trainer to the participants throughout the sessions)	Mezirow's three forms of critical reflection
	<b>Data discussion:</b> Based on the factual data provided, what can you say about the state of life on our planet? What other examples can you give from your own experience that support or contradict this information?	Content reflection
Second day	<b>Ecological footprint:</b> What do you think about the situation that has emerged? Is knowing this important for you? Why? What do you think about your own ecological footprint? What made you think like that? What did this process lead you to think about your own choices?	Content reflection Premise reflection
	<b>Stations of cause:</b> Among the causes of unsustainability, which ones did you find most and least important? How did you select these causes? Are the experiences you have had about the causes of unsustainability in line with your previous assumptions? If so, in what ways do they match? If not, in what ways do they clash? Do you feel any need to review your previous assumptions at this point?	Content reflection Premise reflection
	<b>Commercials:</b> How do you construct your values? How are your consumption habits formed? Commercials create the impression that consumption brings happiness. What do you think about this?	Content reflection Premise reflection
Third day	<b>Life of a chair and an apple tree:</b> What are the similarities and differences between these two life cycles? When you look at them as a whole, how do these two systems operate? What kind of inferences can you make about your own daily lives on this basis?	Content reflection Premise reflection
	<b>Cradle-to-cradle thinking:</b> What do you think about this model? What might be the reasons why we people do not put this model into practice? What would have to be done for this model to become a part of our lives?	Process reflection
	<b>Story of stuff/video film:</b> What kinds of cause-and-effect relationships did you observe in what you watched? What kind of place do you think these relationships occupy in our daily lives? Was there any moment when you felt surprised, sad, happy, or disappointed? Did you become aware of any connection between what you were watching and your own lives? Was there any moment that made you question your own situation? Can you tell more about it? What do you think about the impact of social and economic norms? After watching this film, did you feel any need to reconsider the way you have come to look on the global system?	Content reflection Process reflection Premise reflection
Fourth day	<b>Trading game:</b> This activity is a version of the production patterns that exist today turned into a game. By playing the game, the participants were	Content reflection Process reflection Premise reflection

*(continued)*

Timing of the sessions	Training content and critical reflection opportunities (the questions posed by the trainer to the participants throughout the sessions)	Mezirow's three forms of critical reflection
	<p>given the chance to experience the way in which competition and the desire to gain increases in the level of production, the dominant role of money in this process, and the uneven distribution of resources. Later, the game was used to demonstrate that there is an underlying economic basis to human-made systems, and lead the participants to think about the difference between needs and wants, about sustainable production and about the various elements of social justice. At the end of the game, the following questions were asked: How did you feel during the game? How did you get on with one another? What kind of relationship did you have with the banker? Did the groups act in accordance with the economy or did they direct the economy in line with their own needs? Is this situation true to life? In your view, how much production was sufficient? Did the groups treat each another fairly? Was money more important? Or was the important thing always to have more?</p>	
	<p><b>Circles:</b> What kinds of relationship do you think there are between these three components? What is your thinking based on? What kind of a cause-and-effect relationship can you establish between the three components?</p>	Content reflection
<b>Fifth day</b>	<p><b>We are building sustainable schools:</b> What do you think about the sustainable school models that have been generated? Within these models, what do you think could be put into practice and what do you think could not be put into practice? Why do you think like that? What could be done to make these models more workable?</p>	Process reflection Premise reflection
	<p><b>Characteristics of a sustainable lesson plan:</b> After all this process, what do you think would be the salient characteristics of a lesson plan developed within the framework of sustainability? Based on these plans, do you think you could develop and implement sustainable lesson plans for your own students? What would help you to do this?</p>	Process reflection
<b>Sixth day</b>	<p><b>Who told us that we cannot fly planes?:</b> When you consider your definitions of sustainability and the discussions of these definitions, do you observe anything that you had not noticed before? What kind of inferences did you draw from this activity? At the end of the day, has there been any change in your original definition of sustainability? What factors might have influenced this?</p>	Content reflection Process reflection Premise reflection
	<p><b>Sustainability eyeglasses:</b> What kind of connection can be made between the ECE curriculum and sustainability? Did you notice this connection before? If not, what might have led to this awareness?</p>	Content reflection Process reflection

(continued)

Timing of the sessions	Training content and critical reflection opportunities (the questions posed by the trainer to the participants throughout the sessions)	Mezirow’s three forms of critical reflection
<b>Seventh day</b>	<b>Micro-teaching and traffic lights:</b> Do you believe that these lesson plans and sustainable education projects can be put into practice? What sort of obstacles might you face in this respect? What can you do to overcome these obstacles?	Process reflection

**Appendix 2: The Categorization Scheme (Wallman et al., 2008) Used for the Analysis of Learning Diaries and Learning Activities Open-Ended Questions**

6. Premise reflection	Reflective
5. Process reflection	
4. Content reflection	
3. Introspection	Non-reflective
2. Thoughtful action	
1. Habitual action	

**Non-reflection**

- Habitual action.** Habitual action is an unconscious act that takes place without thought and can be performed at the same time as another act. A description of an act performed without thought or having to focus could be, for example, driving a car. A description of the course of events can be categorized as habitual action. For example: “I started to learn names of the other participants. We discussed the relationship among human-money-tree, we made drawings about that. We played the trading game which replicates the competition among countries. We used stations technique to evaluate the past three days of the training.”
- Thoughtful action.** Thoughtful action draws upon existing knowledge with no critical appraisal. The starting point lies in the previously existing knowledge, and choices between different alternatives regarding how to perform the task are made either unconsciously or not at all. Why a certain choice is made is not questioned and no interpretation is made. No thought is given to the consequences of this particular choice. An example of this is a description of the participant how she/he is going to use the experience she/he gained from the training “Due to what I’ve learned from this training, I have decided to cut back on my consumption, buy something only if I need it, be more conscious about my consumption habits.”
- Introspection.** Introspection refers to thoughts about oneself, one’s own thoughts or feelings about performing a task. There is no comparison between the actual

task and/or one's previous experiences, nor are there any thoughts as to why these feelings occur or what they might lead to. An example of this is a description of how it feels to learn something, or how the participant feels when she/he faced the critical facts about the planet "Frankly, I became very pessimistic. I always keep my hope alive. But I am so pessimistic that I am thinking of myself as someone who harbors a faint hope wishing that a single candle could illuminate the entire room" or how she participants felt about the involvement of other participants "During the activities today, I saw that there is no difficulty which could not be overcome by friendship and solidarity. I really appreciated the stations technique."

## Reflection

*The definition of reflection as it is used below is that a situation is identified in relation to an actual experience. This problem must somehow be analyzed in order for the task to be executable. Previous knowledge is used in the specific situation and is questioned and criticized when necessary.*

4. **Content reflection.** Content reflection pertains to what one perceives, thinks, or feels, or how one acts when undertaking a task. There should be a questioning or an interpretation of a behavior in order to be categorized as reflection, otherwise it is most often categorized as "2. Thoughtful action." While engaging in content reflection, the person consciously thinks about the problem, his/her role on the examined problem and what she/he needs to do to solve the actual problem. This is similar to asking, "What is happening here? What is the problem?" (Cranton, 2006, p. 34). She/he does not, however, reflect upon why the action taken works or how his/her own behavior developed. What effect the thought, feeling, or act may have should be discussed. For example, "During the course of this training I realized that I started to think about the issues that had never crossed my mind before. I never imagined what a large ecological footprint I have. It never occurred to me that I had such an ecological impact on the planet."
5. **Process reflection.** Process reflection refers to how one performs the functions of perceiving, thinking, feeling, or acting, and to an assessment of the efficacy of the performance. There should be a proposal for, or an interpretation of, problem solving for a categorization as process reflection. For example, the participant explains his/her ideas on how to integrate sustainability issues into his/her curriculum and she/he further thinks how this change might work out. In comparison with content reflection, there is more focus on problem-solving strategies: "It is asking questions of the form, how did this come to be?" (Cranton, 2006, p. 34). Reflection of process can also contain reflection of the person's feelings and actions, as well as what she/he has been doing to handle the experience. For example, "I got involved in deep discussions with my colleagues which in itself was a new experience for me. The setting of the training enabled us to acknowledge and respect diverse perspectives. Consequently, I realized that my own

perspective has also been broadened. I believe that thanks to my enhanced ability of approaching a subject from various angles, my workshops with the parents would produce results of better quality.”

One’s thoughts and beliefs about how the thought, feeling, or act has an effect should be discussed in addition to how others apprehend the act. For example, “I was terrified when I read the reading assignment about the technological prisons in China. I read it to my husband, then also to my neighbor. This piece of news had such an impact on me that I believed that we should disseminate it to as many people as possible.”

6. **Premise reflection (Theoretical reflection).** Premise reflection relates to why one apprehends, thinks, feels, or acts the way one does and the consequences of that existing knowledge sets the framework for how a person acts in different situations. This should include an analysis of the whole situation/problem, including the root-causes by incorporating the answers to the “what,” “how,” and “why” questions. The political, cultural, and social contextual factors should be considered so that they can be included in a deeper understanding or reinterpretation of the problem. If the participant explains that she/he will consider alternative methods such as changing his/her behavior patterns, she/he should also justify and interpret this new choice of action. While doing that becoming aware of the answers to “*Why is this important to me? Why do I care about this in the first place?*” (Cranton, 2006, p. 34) questions by examining deeply held assumptions about how an individual makes meaning of his or her self and the world is also critical as in the following example “When I reviewed over the issues we discussed during the training, I noticed that we are in fact in a vicious circle, a global exploitation setup. Nothing is what it seems. What have we turned into? On top of that, I was also one of those who has been feeding into this vicious circle and exploitation setup. As a matter of fact, we have a very good example to look at. Nature offers us all the answers we are looking for. I am thinking of simplifying and deepening my perspective and life style.”

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