

THE EFFECT OF E-STORYBOOKS IN DIFFERENT GROUP SIZES ON THE
STORY COMPREHENSION AND VOCABULARY ACQUISITION SKILLS

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ABSTRACT

THE EFFECT OF E-STORYBOOKS IN DIFFERENT GROUP SIZES ON THE STORY COMPREHENSION AND VOCABULARY ACQUISITION SKILLS

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This study aimed to investigate whether book format (e-book and printed book) and/or reading group size (small and large) in storybook reading activities in kindergarten classrooms had an effect on the story comprehension and vocabulary acquisition skills of 5-year-old preliterate children.

The sample of the study consisted of 146 preliterate children enrolled in three public kindergartens in Körfez/Kocaeli. The study was conducted in two phases. In the first phase, a printed storybook was read to children and their initial story comprehension skills were assessed. Afterwards, they were assigned to four experimental conditions according to their scores to create equivalent experimental groups: 1) Printed book, small group; 2) Printed book, large group; 3) E-book, small group; and 4) E-book, large group. In the second phase, three storybook reading interventions were conducted with each participant group, and after each book, story comprehension

skills and vocabulary acquisition skills were assessed using Narrative Comprehension Test (Paris & Paris, 2003) and the Target Word Test, respectively.

The results of the study revealed significant effects of book type, showing printed books contributed more to children's story comprehension and vocabulary acquisition skills than e-books, while no meaningful effects of group size or its interaction with book format were observed. That means, in both small and large group reading activities, printed storybooks contributed more to children's story comprehension and vocabulary acquisition skills compared to their electronic counterparts.

Keywords: Story Comprehension, Vocabulary Acquisition, E-book, Printed book, Early Literacy

ÖZ

ELEKTRONİK HİKAYE KİTAPLARININ FARKLI GRUP BÜYÜKLÜKLERİNDE HİKAYE ANLAMA VE KELİME EDİNİMİ BECERİLERİNE YÖNELİK ETKİSİ

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Bu çalışmanın temel amacı, anaokulu sınıflarında gerçekleştirilen hikâye kitabı okuma etkinliklerinde kitap formatının (e-kitap ve basılı kitap) ve okuma grubu büyüklüğünün (küçük ve büyük grup) 5 yaşında ve henüz okuryazar olmayan çocukların hikâye anlama ve kelime edinimi becerileri üzerinde bir etkisinin olup olmadığını anlamaktır.

Araştırmanın çalışma grubunu Kocaeli'nin Körfez ilçesinde bulunan üç devlet anaokuluna kayıtlı 146 okuryazar olmayan çocuk oluşturmaktadır. Çalışma iki aşamada gerçekleştirilmiştir. İlk aşamada çocuklarla birlikte basılı bir hikâye kitabı okunmuş ve çalışma öncesindeki hikâye anlama becerileri değerlendirilmiştir. Bu değerlendirme sonucuna göre katılımcılar 1) Basılı kitap okuma, küçük grup; 2) Basılı kitap okuma, büyük grup; 3) E-kitap okuma, küçük grup ve 4) E-kitap okuma, büyük grup olmak üzere dört deneysel koşula atanarak eşdeğer gruplar oluşturulmuştur. Çalışmanın ikinci aşamasında, her katılımcı grubuyla üç öykü kitabı okuma müdahalesi gerçekleştirilmiş ve her kitap sonrasında hikâye anlama becerileri

Anlatıyı Anlama Testi (Paris ve Paris, 2003), kelime edinme becerileri ise Hedef Kelime Testi kullanılarak deęerlendirilmiřtir.

Çalıřma sonuçlarına gre çocukların hikye anlama ve kelime edinimi becerilerinin her biri iin kitap formatının basılı kitaplar lehine anlamlı bir etkisinin olduęu gzlemlenirken, grup byklęnn veya bu iki faktr arasındaki etkileřimin bir etkisi bulunamamıřtır. Bu hem kk hem de byk gruplarda basılı kitapların elektronik kitaplara kıyasla çocukların hikye anlama ve kelime edinme becerilerine daha fazla katkıda bulunduęu anlamına gelebilir.

Anahtar Szckler: Hikye Anlama, Kelime Edinimi, E-kitap, Basılı kitap, Erken Okuryazarlık

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&

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LIST OF ABBREVIATIONS

- AoA:** Age of Acquisition
BOUN: Boğaziçi University
B_TYPE: Book Type
CLC: Child Literature Corpus
CLT: Cognitive Load Theory
CTML: Cognitive Theory of Multimedia Learning
DCT: Dual Coding Theory
DVI: Direct Vocabulary Acquisition
ESC: Explicit Story Comprehension
GRP_SIZE: Group Size
ISC: Implicit Story Comprehension
ISBN: The International Standard Book Number
IVA: Incidental Vocabulary Acquisition
METU: Middle East Technical University
MoNE: Ministry of National Education
NCT: Narrative Comprehension Task
Pre-K: Pre-Kindergarten
RQ: Research Question
RRM: Reading Rope Model
SVR: Simple View of Reading
ToM: Theory of Mind
TRT: Turkish Radio Television Cooperation
TURKSTAT: Turkish Statistical Institute
TWT: Target Word Test

CHAPTER 1

INTRODUCTION

The act of reading, which happens with the coordination of physical and mental elements, is beyond simple decoding. On the contrary, it is a complex process involving understanding, evaluation, and analysis (Kaya & Kardaş, 2020). Since it is one of the most dependable ways of acquiring information, it protects individuals from acquiring incorrect beliefs and ignorance (İşeri & Ünal, 2010). Therefore, reading can be considered one of the fundamental skills of members of modern society, and a value that creates the base for academic achievement (Hernandez, 2011). This significant skill is evaluated under the concept of "literacy," together with writing skill in the literature (Frankel et al., 2016). As an umbrella term, literacy covers a continuum of learning, and it enables people in a society to obtain their goals, to extend their potential and knowledge, and to entirely participate in their own community (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2004; 2023). Therefore, it is important to create a robust foundation for these skills from an early age (Dickinson & Tabors, 2001; Snow et al., 1998).

In the Turkish national education system, literacy education starts in the first grade, when formal education starts (Education Information Network in the European Community [EURYDICE], 2021; Ministry of National Education [MoNE], 2018), and no literacy education is provided in any preschool or kindergarten setting. According to the Turkish national education system (MoNE, 2013), the aim of early childhood education is not to teach children to read and write, but to provide them with the necessary pre-skills to learn to read and write quickly in primary school. Considering this, supporting early literacy skills, regarded as precursors to literacy, is one of the main aims of Turkish early childhood education (MoNE, 2013), and is fundamental for building robust reading and writing skills in the future. A

considerable number of studies in the literature also emphasize the significant relationship between early literacy skills, developed through early childhood years, and primary school reading skills (Bishop, 2003; Grigorakis et al., 2022; Lepola et al., 2016; Utchell, 2016). According to the findings of these studies, early literacy skills of preliterate children contribute to their reading achievement in later years by creating a robust base. Due to this important relationship, precursors of future reading skills, like reading comprehension, have drawn the attention of researchers for many decades, who have identified a variety of precursors since then (Kim & Petscher, 2011; Munger & Blachman, 2013; Oakhill & Cain, 2012; Silvén et al., 2007; Storch & Whitehurst, 2002; Utchell et al., 2016). Two of the most important precursors of reading comprehension can be listed as young children's *story comprehension skills* and *vocabulary knowledge* (Catts et al., 2015; Oakhill & Cain, 2012).

Story comprehension, which is also referred to as *listening comprehension* or *narrative comprehension* in the literature, is defined as the ability to understand the semantic and syntactic structures of verbal language (Isbell et al., 2004; Lonigan et al., 2008). It is divided into two different sub-categories as “*explicit story comprehension*” and “*implicit story comprehension*” (Paris & Paris, 2003). While explicit story comprehension skills cover surface comprehension skills like depicting characters, problems, events and the setting of the story, implicit story comprehension skills mainly relate to deeper story comprehension skills such as making inferences about the feelings and thoughts of the protagonists, causal relations, predictions, and theme (Paris & Paris, 2003). The level of both explicit and implicit story comprehension skills of young children may vary depending on the child's age, practice, and exposure to literacy activities. One of the most common literacy activities implemented in preschool and kindergarten classrooms is storybook reading sessions. Storybooks that are read in these sessions consist of a plot, protagonists, and interactions between these protagonists (Sarı & Altun, 2018), and in simple terms, story comprehension can be defined as the ability to understand both these interactions and the plot, and to draw inferences. However, when this skill is examined in more detail, it can be said that story comprehension skills are a product of various sub-skills. These sub-skills can be listed as the ability to find the

main idea in the story, determining the cause-and-effect relationships between events, sequencing events in the plot correctly, finding connections in the text and relating these connections with one's own interpretation, and lastly, summarizing the events in the story (Morrow, 1985; Paris & Paris, 2003; Sipe, 2008; Stein, 1978). Development of these sub-skills allows an individual to understand the narrative, or text, in a deeper way, and therefore is significantly important for future reading comprehension skills (Skarakis-Doyle & Dempsey, 2008).

This relationship between story comprehension and reading comprehension is explained by Kendeou and others (2005) via “A new developmental/instructional model”. According to this model, basic language skills, word decoding skills, and story (narrative) comprehension skills are at the center of a successful reading comprehension process. Basically, the model emphasizes that if the reader has not developed robust story comprehension skills, s/he cannot understand the meaning of the text (Kendeou et al., 2005). The findings of other studies in the literature also support this relationship (Babayiğit et al., 2021; Catts et al., 1999; Catts et al., 2015; Griffin et al., 2004; Isbell et al., 2004; Kendeou et al., 2005; Kendeou et al., 2008; Kendeou et al., 2009; van Kraayenoord & Paris, 1996; Lervåg et al., 2017; Wise et al., 2007). The common findings of these studies suggest that the level of children’s story comprehension skills in the early childhood period is a great predictor of the level of reading comprehension skills in the following years. These findings are also theoretically supported by the Simple View of Reading (SVR) model, proposed by Gough & Tunmer (1986). The SVR model suggests that future reading comprehension skills can be predicted by early linguistic comprehension (in that case, *story comprehension*) and word decoding skills. If one of these skills is not sufficiently developed, a successful reading process and/or reading comprehension cannot occur (Dreyer & Katz, 1992).

In addition, vocabulary acquisition skills of young children should also be taken into account while investigating story comprehension skills because early literacy skills, which are prerequisites of formal literacy activities, are interconnected with one another. Metaphorically, if reading and writing are a whole puzzle, each early literacy skill can be considered as a unique piece of the puzzle, which must be

connected with other pieces. Even if one piece is missing, it affects the integrity of the whole puzzle. Vocabulary knowledge, which can be broadly defined as all the words that children understand, know the meaning of, and can use appropriately (Akyol & Temur, 2007), and story comprehension skills allow readers to derive meaning from text by supporting each other during the reading process (Lepola et al., 2016). A significant number of studies emphasize the relationship between story comprehension skills and vocabulary knowledge of young children (Clarke et al., 2010; Hirsch, 2003; Kim, 2015, 2016; Lepola et al., 2016; Lervåg & Aukrust, 2010; Protopapas et al., 2013; Senechal et al., 2006). The findings of these studies commonly illustrate that rich vocabulary knowledge helps preliterate children comprehend stories because consistent inferences cannot be made without understanding each word appearing in the text or narration (Hirsch, 2003; Lepola et al., 2016). Therefore, vocabulary knowledge is essential for the story comprehension and reading comprehension of preschool and kindergarten-age children (Florit et al., 2014; Ouellette, 2006; Torppa et al., 2007). Since story comprehension skills and vocabulary acquisition skills are highly interrelated with each other, they were investigated together in the present study.

These early skills are gained during the early childhood period, which is described as a “window of opportunity” (Gabbard, 1998). To support and facilitate young children while developing these skills, different techniques and strategies can be implemented during this period. For example, during preschool and kindergarten years, children acquire words very rapidly (Houston-Price et al., 2005), and acquisition can occur in many different ways in kindergarten settings. Specifically, storytelling and book-reading activities offer rich opportunities to acquire new words in kindergarten settings incidentally (Adams, 1990; Allor & Mccathren, 2004; Bus et al., 1995; Christ & Chiu, 2018; Lonigan, 1994; Mol & Bus, 2011; Ninio & Bruner, 1978; Penno et al., 2002; Robbins & Ehri, 1994; Scarborough & Dobrich, 1994). A meta-analytic study conducted by Mol and Bus (2011) illustrated that children who were exposed to storybook reading activities in early years of their life develop richer vocabulary knowledge and literacy skills compared to their peers who were not. The contribution and features of storybook reading activities can vary depending on factors like the settings where the activity was conducted, the interests of the

children, or the story presentation techniques used such as flannel boards, puppet shows, or *electronic books*, which is a relatively novel technique that emerged from technological developments.

Technological developments in the last decades have affected the book industry and have led to the emergence of more diverse book formats including CD-ROM Books, animated books, tablet-based books, iPad books, multimedia books, and digital-based books. All of these formats can be gathered under the relatively new term, *electronic book* (or *e-book*). Specifically, the 21st century has been labeled as the era of technology since digital technology became integrated with all aspects of human life during this period (Raja & Nagasubramani, 2018). Especially for the last two decades, students from Pre-K to college constitute generations who have grown up with digital technologies. These new generations think and process information differently from their ancestors and previous generations (Prensky, 2001) due to their rich technological experiences from extremely early ages (Aktas-Arnas, 2005; Holloway et al., 2013; Altun, 2017; Marsh, 2010). Therefore, the nature of education should be renewed to accommodate the interests and skills of young children in order to provide meaningful education (Prensky, 2001). On that point, e-books can be an efficient alternative for new generations due to their interactive multimedia learning features.

Most of the e-books developed for children are digitalized versions of picture books that were published in printed format. However, integrated multimedia features of e-books such as sound effects, music, vocalization of the text by a narrator, and animations differentiate them from their printed counterparts (de Jong & Bus, 2003, Labbo & Kuhn, 2000). These variations might cause a difference in the contribution of e-books and printed books to children's early literacy skills. For example, Dual Coding Theory (DCT) (Paivio, 2008) suggests that learning can occur via two available channels within the cognitive system: *visual* and *verbal* channels. According to DCT, learning occurs better when information is presented through both channels simultaneously, rather than only one channel. Although both printed picture books and e-books provide both visual and verbal stimuli, additional multimedia features added on e-books (e.g., visual animations, motion pictures and

sound effects) have a potential to increase the effect of visuals on story comprehension compared to printed books (Takacs & Bus, 2018), it can be hypothesised that e-books have a potential to promote story comprehension skills more compared to their printed counterparts.

Despite the large number of studies on the comparison between printed and electronic books regarding their contributions to the early literacy skills of children, the conclusions of earlier work are contradictive. While many studies in the literature suggest that e-books significantly contribute to, and are important for children's language and literacy development (Chera & Wood, 2003; Flewitt, et al., 2014; de Jong & Bus, 2003; Korat et al., 2017; Korat & Shamir, 2012; Korat et al., 2014; Labbo & Kuhn, 2000; Roque-Teodoro et al., 2017; Segal-Drori et al., 2010; Bus et al., 2015), other studies suggest that there is no significant difference between printed books and e-books regarding their contribution to language and literacy development (de Jong & Bus, 2004; Şimşek, 2017). Moreover, some studies even report the harmful-effects of e-books, suggesting that printed books contribute more than e-books to the language and literacy development of children (Jeong, 2012; Karemaker et al., 2017; Krcmar & Cingel, 2014; Richter & Courage, 2017). That means, despite significant number of research investigating the relationship between e-books and the development of early literacy skills, there is no consensus on the efficacy of electronic books in promoting young children's future literacy skills, such as reading comprehension, which was also pointed out in Altun (2018a).

There may be various reasons for the conflicting conclusions found in earlier work; therefore, it is important to conduct more research that compares the contribution of e-books and printed books to early literacy skills by considering different factors. For example, some studies in the literature have illustrated that the efficacy of an intervention, or the strength of learning, can be affected by the group size in which the interventions are carried out (Dickinson, 1995; Morrow & Smith, 1990; Phillips & Twardosz, 2003; Vaughn et al., 2009). These studies have generally concluded that as the number of people in groups decreases, the efficiency and quality of education increases. Despite this, there is only one study investigating the

relationship between e-book reading interventions and group size, to the best of my knowledge (i.e., Aydın, 2019).

Aydın (2019) investigated the level of 5-6-year-old kindergarteners' story comprehension skills in digital book and traditional book formats by considering two group size conditions: the one-to-one reading condition and the reading as a group condition. However, as Morrow and Smith (1990) suggest, although one-to-one reading activities may yield benefits, they are not feasible in school settings because of the time limitation and teacher/student ratio. Due to that reason, it is also important to conduct a study which systematically compares small group and large group reading activities in terms of their contribution to story comprehension skills. Thus, this study aims to contribute to the literature by filling this gap through examining and comparing the efficacy of e-books and printed books on children's story comprehension and vocabulary acquisition skills in the context of two different group sizes: small group and large group.

1.1. Significance of the Study

Digital technology is no longer simply a tool for new generations, who are born into technology, but it has become an integral part of their life. This situation has led to changes in the needs and interests of new generations compared to previous ones (Prensky, 2001). These members of the new generations not only have an interest in digital technology, but they also need digital technology to learn in some instances. Therefore, education should be open to innovations supporting learners during the learning process. The importance of these innovations regarding technology integration in education is also emphasized by many important institutions and organizations. For example, the International Reading Association (2009) emphasized that teachers who teach literacy are responsible for infusing the technology into their curriculum. Further, the National Association for the Education of Young Children [NAEYC] (2012) highlights the significance of technology integration into educational activities. They emphasized that technology integration, which includes the use of e-books during activities, should be associated with educational objectives and goals. For this reason, a vast number of studies have been conducted especially over the last two decades to investigate the use of technology in

education and to guide educators (Antonietti et al., 2022; Baytak et al., 2011; Jhurre, 2005; Njiku et al., 2019; Tondeur et al., 2017; Tosuntaş et al., 2019). When the results of these studies are examined, it can be seen that the use of technology has the potential to contribute to the learning process. However, teachers do not prefer to use electronic books in their lessons and activities in Türkiye, due to their low self-confidence about technology use and the belief that electronic books will not be as beneficial as their printed counterparts (Duran & Ertuğrul, 2012; Sarıkaya, 2018; Yıldırım et al., 2017). Therefore, it is important to investigate this issue deeper to alleviate the concerns of teachers and improve the quality of education.

The significance of this study, conducted to provide more detailed information on the use of electronic books in kindergarten environments, is presented under three main headings: its importance in terms of scientific literature, its importance in practice within kindergarten settings, and its importance in supporting the future reading skills of Turkish students.

Firstly, when the related literature is examined, it is evident that there is a considerable amount of research on early literacy practices and how electronic books influence young children's early literacy skills (Altun, 2018a; Korat & Falk, 2019; Lawrence, 2018; Kirişçigil-Doğan, 2012; Kocaman-Karaoğlu, 2016; Korat et al., 2017; Korat & Segal-Drori, 2016; Korat et al., 2022; Lopez-Escribano et al., 2021; Reich, et al., 2019; Rowe & Miller, 2016; Sarı, 2018; Sezgin & Ulus, 2017; Smeets & Bus, 2015; Şimşek, 2017; Yüksel, 2011). However, as mentioned earlier there is no consensus among these studies regarding the effectiveness of e-books in supporting young children's early literacy skills, which was also pointed out in Altun (2018a). Inconsistency in the findings of previous studies creates uncertainty as to which book format contributes more to children's early literacy skills. The conflicting results in the literature may be caused by variation in the size of study groups investigated in previous studies, considering that group size is a factor that can affect the quality and efficacy of educational activities (Aydın, 2019; Dickinson, 1995; Morrow & Smith 1990; Phillips & Twardosz, 2003; Vaughn et al., 2009). This situation creates a gap in the literature regarding whether activity group sizes have an effect on the contribution of electronic and printed book reading activities to young children's

early literacy skills. A careful comparison between e-books and printed books in various group sizes is significant as it can potentially explain the conflicting results of previous studies. Considering this, the present study contributes to the literature by revealing whether the inconsistency in the findings of previous studies is due to the different sizes of intervention groups used in those studies.

Secondly, children's interests can be used by teachers to enhance the effectiveness of the educational process. As a matter of fact, the Ministry of National Education also emphasizes the importance of this situation in the national preschool education program. According to the basic principles of Turkish early childhood education, education should be designed by considering children's needs and interests (MoNE, 2013). When the Turkish Statistical Institute's (TURKSTAT) statistics (2021) are examined, it is seen that Turkish children's interests tend toward using digital technologies, and that they reduce the time they spend on various activities in order to spend more time in front of the screen (e.g., smart phones, tablets), especially in recent years. According to these statistics, 35.9% of Turkish children between the ages of 6-15 prefer to read fewer books, 33.5% of them prefer to study less, 27.7% of them prefer to spend less time with their families, 25.4% of them prefer to meet their friends to play face-to-face games less, and 17.2% of them prefer to sleep less in order to spend time with devices like TVs, tablets, or smart phones. That means today's children have an irresistible desire and interest in spending time in front of the screen, which is generally considered as an unfavorable and harmful situation. Similarly, when the academic literature is examined, it is seen that children's interest in technology is also generally associated with negative concepts like technology addiction (Ertemel & Aydın, 2018; Gökel, 2020; Mustafaoğlu et al., 2018). However, young children's interest and desire in digital technologies can be used as a tool to facilitate their learning and development. To achieve this, educational researchers should investigate how digital technologies can be used positively to facilitate the learning process. For example, as mentioned earlier, e-books, thanks to their multimedia features, can be an efficient alternative to printed books by leveraging young children's interests in digital technologies to increase their interest in reading activities and develop their skills. However, little is known about how we can use e-books in a good way to support young children's early literacy skills (Skibbe et al.,

2017). On this point, this study contributes to the literature as it has the potential to reveal in which group size electronic book reading activities are more beneficial and if group size impacts their efficiency. Thus, the findings can guide teachers on which book format to use in different group sizes while designing storybook reading activities in line with the curriculum, allowing them to prepare their activities in the most beneficial way for young children.

Lastly, international comparative tests are important resources that can be informative about the success of the education system of a country and the general achievements of its students (Egelund, 2008). Türkiye participates in some of these international tests such as the *Programme for International Student Assessment, [PISA]*, and *Progress in International Reading Literacy Study, [PIRLS]*. The results of these tests show that the reading scores of Turkish students are below average, indicating that Turkish students have some difficulties in fully comprehending the text they read (MoNE, 2019). It is thought that foundations of reading comprehension skills are established with story comprehension skills at kindergarten ages (Lepola et al., 2016). Thus, this study is important to help increase the future reading success of young children and accordingly, their success in international exams. It investigates which book format and group size can better support story comprehension and vocabulary acquisition skills, which are considered to be the precursors of reading comprehension. The findings can be used by teachers while designing storybook reading activities to better support the story comprehension skills of preschool children, which can over time increase the success of Turkish students on important international tests like PISA or PIRLS, and accordingly Türkiye's international placement.

1.2.Purpose of the Study

This study has three main goals. The first goal of the study is to understand whether explicit story comprehension skills are affected by book format, group size, and their interaction. The second goal is to analyze the impact of these factors on implicit story comprehension skills, and the third is to examine their effect on vocabulary acquisition skills. In addition, it is also important to understand which book format

better supports story comprehension and vocabulary acquisition skills in which group size.

The following research questions were prepared in accordance with these main purposes.

Research Questions

RQ1: Is there any significant difference in ESC scores of kindergarteners in terms of book format and group size?

RQ2: Is there any significant difference in ISC scores of kindergarteners in terms of book format and group size?

RQ3: Is there any significant difference in TWT scores of kindergarteners in terms of book format and group size?

1.3. Definitions of Important Terms

To ensure standardization and aid reader comprehension, the definitions of some important terms are provided below.

Preschoolers – Preschool children: In this study, preschoolers are identified as children who are between 4-5 years old and who are enrolled in a public or private kindergarten.

Story comprehension: The ability to understand the narrative and make inferences as a result of it. It involves word knowledge, cognitive processes, and sharing feelings and ideas (Bruner, 1986).

Explicit story comprehension: A set of skills which is related to identifying story elements like problems, solutions, protagonists, settings, etc. (Paris & Paris, 2003).

Implicit story comprehension: A set of skills that helps the reader/listener to understand the story in a deeper way. It covers making inferences about the thoughts

and feelings of the protagonists, theme, predictions, and causal relations (Paris & Paris, 2003).

E-book: A media format containing text, pictures, animations, and sounds, which is prepared using various software, hardware, and protocols published electronically (Akyüz & Akbaytürk, 2006).

Vocabulary acquisition: In this study, the term vocabulary acquisition is defined as the process of learning the meaning of a word and being able to identify it in a context.

Word-choard: All the words that an individual understands, knows the meaning of and can use appropriately (Akyol & Temur, 2007).

CHAPTER 2

LITERATURE REVIEW

This chapter contains a review of related literature regarding the theoretical and empirical bases of the current study to present its cornerstones. It has three main subheadings: i) early literacy skills, ii) the effect of storybook reading activities in the early childhood period on preliterate children's early literacy skills, and iii) the effect of group sizes on educational activities, and learning. Under the first subheading, early literacy skills are briefly described, and two of them, *word knowledge and story comprehension*, are discussed in detail by explaining the theoretical framework and previously conducted research. Under the second subheading, the effects of storybooks on young children's early literacy skills are discussed by giving information about different formats of books, *printed books* and *e-books*, relevant theoretical framework, and the findings of related research. Under the final subheading, the effects of activity group sizes on the educational process and learning are discussed, with a particular focus on the effects of group size on early literacy education and research related to this subject.

2.1. Early Literacy Skills

Literacy development can be described as a lifelong process that begins early in life. Children at every age possess some literacy skills, although these early skills are not developed enough in the early stages of childhood to read and write conventionally (Baumann et al., 2000; Morris & Slavin, 2003; Teale, 1986). Early literacy refers to attitudes, knowledge, and skills regarding literacy, which a child should acquire before the process of formal reading and writing (Ghoting & Martin-Diaz, 2006; Morrow, 2014; Sulzby & Teale, 1991; Whitehurst & Lonigan, 1998). This term can be used interchangeably with emergent literacy. These early skills help school-age

children to develop robust literacy skills in later years. Moreover, a considerable amount of research in the literature has emphasized that children who do not acquire early literacy skills in the preschool and kindergarten periods, often struggle to catch up with their peers who developed stronger early literacy skills (Bingham & Patton-Terry, 2013; Alexander & Entwisle, 1988; Juel, 1988; National Early Literacy Panel [NELP], 2008; Nelson, 2005). Early literacy skills comprise different sub-skills. Although these skills are classified under different terms, the most common classifications can be listed as the following (Arafat et al., 2017; Aarnoutse et al., 2005; Casey & Howe, 2002; Kargin et al., 2021; Neuman & Dickenson, 2001):

Print awareness: In general, *print awareness* can be defined as children's awareness that writing has a form and function, and that written language carries a message like verbal language (Adams, 1990; Pullen & Justice, 2003).

Letter knowledge: Basically, *letter knowledge* is the ability of a child to know that letters have names and they correspond to a sound/phoneme systematically in the verbal language (Cabell et al., 2011).

Phonological awareness: In the literature, *phonological awareness* is defined as a sophisticated skill that includes being aware of words and syllables, being aware of sounds in syllables and words, and manipulating sounds (Adams, 2017).

Word knowledge (vocabulary acquisition skill): *Word knowledge* can simply be defined as all words that an individual understands, knows the meaning of, and can use appropriately (Akyol & Temur, 2007; Luckner & Cooke, 2010). Construction of this knowledge occurs thanks to vocabulary acquisition skills.

Story comprehension: In the literature, *story comprehension* can be described as the ability to understand the narrative and make inferences (Bruner, 1986).

There are some studies in the literature that reveal that children's reading achievement in their primary school years is highly related to their early literacy

skills acquired in early childhood (Bishop, 2003; Lepola et al., 2016; Utchell et al., 2016). For example, Bishop (2003) studied with 103 kindergarteners over a period of two years to understand whether early reading skills predict primary school reading achievement or not. As a first step, in the kindergarten period, participants were tested to understand their level on some early literacy skills such as phonological awareness, letter knowledge, phonological memory, and rapid automatized naming, and as second step their reading achievement was tested by considering some different measures including passage comprehension, fluency, and phonemic decoding at the end of the first grade. After the assessment process, they analyzed the data and found that early literacy skills, particularly phonological awareness and letter knowledge, significantly contributed to the primary school reading achievement of young children.

Similarly, Utchell et al., (2016) aimed to understand whether early literacy skills of young children could predict future reading achievement, which was evaluated seven years later. In total, 130 young children aged 3, 5 and 7 participated in all steps of the study. The research findings illustrated that early literacy skills are moderately and significantly related to reading achievement evaluated 7 years later in the 3rd, 5th, and 7th grades.

In the same year, Lepola et al., (2016) also conducted a five-year-longitudinal study to understand whether early literacy skills have an effect on the prediction of third-grade reading comprehension. 90 young children participated in the study. Children's early literacy skills, including vocabulary knowledge, story comprehension, inference-making and task orientation were assessed in both the preschool and kindergarten periods, and additionally, their reading fluency and reading comprehension skills were tested in the 3rd grade. The findings suggested that the early literacy skills of kindergarteners uniquely contributed to their reading comprehension when they were third graders.

When the findings of the aforementioned research are examined, it can be emphasized that early literacy skills, which are precursors to future literacy achievement, should be developed during the early years to increase in literacy

achievement during the school years. Because this study focuses on the *word knowledge/vocabulary acquisition* and story comprehension skills of young children, these two specific skills are explained in detail in the following subsections.

2.1.1. Word Knowledge / Vocabulary Acquisition Skill

As mentioned above, word knowledge is all of the words a child can understand and use appropriately, and it creates the basis of language and literacy skills (Hirsch, 2003; Kalaycı & Diken, 2021). The word knowledge of an individual has importance for the effective use of language, a healthy communication process (Güneş, 2013), and developing comprehension skills (Lervåg & Aukrust, 2010). This skill, which is one of the most important early literacy skills, is divided into two subcategories, receptive vocabulary and expressive vocabulary (Kargın et al., 2015). While receptive vocabulary consists of words that an individual knows the meaning of, even if they cannot express it, expressive vocabulary consists of words that an individual not only knows the meaning of, but can also vocalize and use in speaking or writing (Martin & Brownell, 2010; Nation, 2005; Senechal, 1997). Creating both receptive and expressive vocabulary knowledge is important to acquire knowledge and understand verbal and written language. The vocabulary development process begins early in life and continues throughout life.

Children generally produce their first words somewhere between the first 10 - 15 months of their life. Their first words generally appear in the context of the labeling process, imitation, and participating in daily routines (Pan & Uccelli, 2008). The first words of children typically serve a social purpose; for example, a child's first words can be, "bye-bye" (Ninio & Snow, 1996). In their second year of life, young children begin to learn approximately one word per week, and then one word per day (Pan & Ucceli, 2008). Throughout the first five years, which intersects with the preschool and kindergarten years, their word learning rate intensely accelerates and children start to learn approximately one word every two waking hours (Tomasello, 2003; Fenson et al., 1994). Because word knowledge is considerably related to other literacy skills like reading comprehension and story comprehension, which are essential for academic and daily life, a large number of studies illustrate the

importance of early word knowledge for the story comprehension and reading comprehension process (Florit et al., 2013; Lervåg & Aukrust, 2010; Protopapas et al., 2013; Senechal et al., 2006).

For example, Florit and others (2013), conducted a longitudinal study with 152 kindergarteners ranging in age from 4 - 5 years old to identify semantic interpretation skills like vocabulary knowledge and inferential skills, which may be longitudinally related to story comprehension. Researchers administered two reading activities, and then they assessed participants' story comprehension skills in two different times about 7 - 8 months apart from each other. During the process, stories were read aloud to each child, and then they were asked 10 questions about the story to assess their comprehension. In addition to story comprehension, the vocabulary knowledge and inferential knowledge of children were assessed by using standardized tests. The results showed that both word knowledge and inferential skills of children are highly related with children's later story comprehension skills.

Similarly, Senechal and others (2006), aimed to understand whether early vocabulary knowledge of young children can predict their story comprehension skills concurrently and longitudinally. To understand it, they reanalyzed archival data of the study conducted by Senechal and LeFevre (2002). Similar to the findings of Florit and others (2014), their results showed that young children's early vocabulary knowledge predicts their story comprehension skills.

In another study, Silva and Cain (2014) had two aims: 1) determining how verbal memory and lower-level comprehension skills, *receptive vocabulary and grammar*, facilitate higher-level comprehension skills, *inference making, and story comprehension*; 2) revealing the predictive power of these skills on later reading comprehension, which was assessed one year later. A total of 82 46-year-olds participated in the study. Researchers tested participants to understand their initial performance on verbal memory, lower-level comprehension skills, and higher-level comprehension skills, and they also tested the same participants' reading comprehension skills one year later. A wordless picture book and modified version of Paris & Paris's (2003) Narrative Comprehension Task were used by the

researchers for the assessment of children's story comprehension. The findings showed that word knowledge was a significant predictor of story comprehension. Moreover, they found that inference making skills, story comprehension, and grammar knowledge also contribute to children's reading comprehension, which was assessed one year later. Thus, the contribution of vocabulary knowledge to reading comprehension skills in the following years was demonstrated, albeit indirectly.

As previously mentioned, young children rapidly acquire vocabulary, especially in their preschool and kindergarten years (Tomasello, 2003; Fenson et al., 1994). This process has engaged the attention of researchers across a variety of disciplines (McLeod & McDade, 2011). Some researchers have argued that this rapid acquisition process cannot only be attributed to direct instruction, where a child is directly taught vocabulary items (Cain et al., 2003; Justice, 2002; Lenhart et al., 2018). Based on the findings of earlier studies, it can be said that children acquire vocabulary in two different manners; incidental vocabulary acquisition (IVA) and direct vocabulary instruction (DVI). These two types of vocabulary instruction manners are detailed in the following sections.

2.1.1.1. Incidental Vocabulary Acquisition (IVA) (Indirect Vocabulary Instruction)

During incidental vocabulary acquisition, children learn vocabulary without effort, acquisition occurs *incidentally* thanks to their experiences (Saffran et al., 1997). Throughout IVA, the acquisition of a new word occurs via naturalistic learning opportunities in school, at home, or in any kind of places (Coyne et al., 2018). Children are exposed to a new vocabulary item in its natural context and they infer its meaning with the help of contextual information. Despite its naturalistic and incidental features, it is the responsibility of teachers and parents to provide these opportunities for children to acquire words incidentally and to support the development of young children (Kalaycı & Diken, 2021). When a teacher consciously creates a vocabulary-rich environment in their classroom, they automatically create an opportunity for children to acquire new words (Saffran et al., 1997). Researchers emphasized that there are a variety of ways to create this rich environment by exposing children to new words (Dickinson & Tabors, 2001). For

instance, during daily conversations, teachers or parents may use new words whose meanings are not known by children. Children may infer the meaning of these words from the overall content of the conversation and acquire these words incidentally. In addition to daily conversations, storybook reading activities can also contribute to incidental vocabulary acquisition. Storybook reading activities which are conducted between an adult, who has more experience in language use, and young children provide language-rich experiences for language development and word learning (Bus et al., 1995; van Kleeck et al., 2003; McLeod & McDade, 2011; Whitehurst et al., 1998). There is significant amount of research highlighting the contributive effects of incidental vocabulary acquisition via storybook reading activities. As a common point, previous research found that during storybook reading activities, children can acquire the meanings of new words through incidental exposure (Elley, 1989; Nicholson & Whyte, 1992; Senechal & Cornell, 1993; Robbins & Ehri, 1994).

For instance, Senechal and Cornell (1993) aimed to understand whether preschool children can learn the meaning of new words from a single reading of a storybook. Their study featured 160 children in total, 80 4-year-olds and 80 5-year-olds. The story used in the study included 10 target words which were not known by children in this age group. Before the experimental process, children were pre-tested to assess their knowledge about the target words. After the reading sessions, they were post-tested twice. While the first post-test was implemented immediately after the reading sessions, the second post-test was implemented one week later. Researchers found that in both age groups, children were able to recognize the meaning of the words in both post-tests even though there were some differences in achievement between age groups. These findings may be a sign for the occurrence of incidental vocabulary acquisition through story reading activities.

Robbins and Ehri (1994) worked with 33 English-speaking non-reader kindergarteners. During the study, each child participated to the process individually. A storybook which contained 11 target words was read by the experimenter twice, 2 and 4 days apart. Then, a post-test was implemented to measure children's knowledge of the meanings of 22 words which were unfamiliar to them before the study. While half of these words appeared in the story, the others were not mentioned

by the experimenter. The results showed that children recognized significantly more of the words that appeared in the story than the words that did not. Therefore, the findings of the study confirm that storybook reading activities contribute modestly to the incidental vocabulary growth of young children.

Some researchers have also investigated whether different types of indirect vocabulary instruction have varying effects on children's word acquisition. For example, Christ and Chiu (2018) conducted a study to understand which kind of indirect instruction facilitates more target word acquisition. They studied 56 kindergarteners during the study process to do this comparison among three incidental exposure conditions: 1) read-aloud; 2) teacher conversation; and 3) both read aloud and teacher conversation. While participants were pre-tested to understand their knowledge about the target words before the intervention, at the end of the intervention process, a post-test was also implemented to understand the effect of the interventions. The findings of the study revealed that children's word knowledge improved most when target words were presented via a combination of teacher conversations and read aloud readings at the same time.

Additionally, Greene-Brabham and Lynch-Brown (2002) asserted that the way the reader reads the story books aloud can be a factor that affects the impact of incidental vocabulary learning and the level of comprehension of young children. 117 1st graders and 129 3rd graders composed the study group of the research. Preservice teachers were trained and guided for the three different read aloud techniques over a two-week period: 1) just-reading; 2) interactional reading; 3) performance reading. Participants were randomly assigned to their conditions. While children in the "just-reading" group only listened to the story and were discouraged to ask questions and make comments about the book they heard, children in the "performance reading" group were exposed to questions and comments, which included specific targeted concepts and words about the story before listening to the story. After the story reading, the participants in this group answered questions about the story and had discussions together. Although almost the same steps were followed in the interactional reading group and the performance-reading group, in the interactional reading group, readers encouraged children more to talk and discuss about the story,

target words, and concepts before, during, and after the reading process. Participants were pre-tested before the intervention, and post-tested after the intervention. Findings revealed that the interactional reading style facilitated vocabulary acquisition more, compared to other styles. On the other hand, the differences in comprehension scores were statistically significant for only one book. Therefore, although this study did not reveal significant effects of reading style of the reader on the comprehension skills of young children, it showed that the reading style of the reader is a factor that affects the incidental vocabulary acquisition of young learners.

2.1.1.2. Direct (Intentional) Vocabulary Instruction (DVI)

As the name suggests, in direct or intentional vocabulary instruction, the target word is taught directly to the learner. It can be done in many different ways including describing the word by mentioning the synonym of it (Kalaycı & Diken, 2021). For example, when the target word is “courageous”, the teacher can describe this word by using its synonym “brave”, and explain that the two words have the same meaning. Although a significant number of studies emphasized that most of the vocabulary of a person is acquired via incidental vocabulary acquisition (Lenhart et al., 2017; National Reading Panel, 2000), direct vocabulary teaching is also important to develop vocabulary knowledge, particularly in some contexts. For example, especially children who are at risk of learning disabilities, or other kinds of special needs which affects learning, or with relatively lower word knowledge are less likely to learn new words incidentally during story listening activities compared to their normally-developed peers (Coyne et al., 2004; Coyne et al., 2007; Nicholson & Whyte, 1992; Senechal et al., 1995). However, direct vocabulary instruction is not only beneficial for children with special needs; it has a huge significance for children with expected development who constitute the study group of this research. There are a considerable number of studies which show the contribution of direct vocabulary instruction on normally developed children’s word knowledge (Coyne et al., 2009; Coyne et al., 2010; Maynard et al., 2010; Penno et al., 2002).

Penno and others (2002), worked with 47 young children (with a mean age of 6 years, 6 months) to investigate the effects of storybook reading activities on young children’s vocabulary growth. Participants were randomly assigned into two storybook reading conditions: the control condition (incidental vocabulary

acquisition without instruction) or the intervention condition (storybook reading with an explanation of target words). In both conditions, stories were read three times. In the intervention condition, participants received an explanation of the target words included in the story. These explanations consisted of 1) giving a simpler synonym of the word; 2) explaining the meaning of the word by acting or role-playing; and 3) pointing to the illustration in the book which visually explains the meaning of the word. Before the experimental process, all participants were pre-tested to evaluate their internal vocabulary knowledge about the story. After interventions, all participants were post-tested. The results indicated that children in the intervention condition could describe more target words compared with others who did not receive explanations about the target words.

Similar to Penno and others (2002), Maynard and others (2010), studied 224 first-grade children to compare three types of vocabulary instruction. Participants were randomly assigned to the three conditions: 1) rich vocabulary instruction; 2) basic vocabulary instruction; and 3) incidental/no instruction. All participants listened to a storybook three times and interventions were implemented in large groups for one week. 12 words, which were important to understand the story and were unlikely to be known by children in this age group, were selected as target words. In basic vocabulary instruction groups, researchers provided the simple definition of the target word to children after they read the sentence which included the word. Then, they reread the sentence by replacing the target word with its definition. Children in the rich vocabulary instruction groups were exposed to post-reading activities related to the target words, in addition to the standard instructions; while children in the incidental groups did not receive any additional instruction and only listened to the story. The findings of the study showed that children in the rich vocabulary instruction group acquired more words compared to the basic instruction and incidental groups.

As emphasized in both studies, direct vocabulary instruction may contribute more to children's vocabulary learning process, however, as it was mentioned earlier, most of the vocabulary were acquired through incidental acquisition. Storybook reading activities can be applied in early childhood environments for not only the purpose of teaching vocabulary but also to support a wide variety of fields such as mathematics

education (Russo & Russo, 2018; Wilburne et al., 2007; Wilburne et al., 2011), science education (Moser, 1994), and movement education (Gabbei & Clemmens, 2005) as well. In other words, the purpose of every storybook reading activity may not be to teach vocabulary directly. Even if these activities do not directly aim to teach vocabulary, incidental vocabulary learning may still occur in the process. Considering all of these factors, since it was assumed by the researcher that incidental vocabulary learning occurs more frequently in schools, the story-reading activities in this study will be based on the incidental vocabulary acquisition method.

2.1.2. Story Comprehension

Story comprehension skill, also called understanding the narrative or listening comprehension by some researchers, refers to the ability to understand the narrative and draw inferences from it (Bruner, 1986). It is a holistic skill constituted by a group of interrelated skills (van den Broek et al., 2005; Oakhill et al., 2003; Paris & Paris, 2003), these skills can be listed as: finding the main idea of the story, determining the cause-and-effect relationship between the events, sequencing the plot of the story correctly, finding the links in the story and relating these links to one's own interpretation, and summarizing the events in the story (Morrow, 1985; Sari, 2018; Stein, 1978). As with any other skill, these skills take place within a certain developmental process.

2.1.2.1. Story Comprehension and Developmental Process

McNamara & Magliano, (2009) describe story comprehension as a process that occurs on three general levels. The first level involves a basic understanding of explicit structures of the story, including some specific details and sequence of the events. The second level includes the conclusions and interpretation of the knowledge and information which are given in the story. The third level of story comprehension includes making criticisms and evaluations about the story including thoughts, predictions, and feelings (McNamara & Magliano, 2009). Story comprehension is also divided into two different forms, “*explicit story comprehension – ESC*” and “*implicit story comprehension – ISC*” in the literature (Paris & Paris, 2003). While explicit story comprehension skills describe story

elements including characters, initiating events of the story, settings, problems, and solutions, implicit story comprehension skills include theme, predictions about the story, causal relations, feelings, and thoughts of the protagonists (Paris & Paris, 2003). On that point, it can be said that, while explicit story comprehension skills can be classified as first-level story comprehension skills, implicit story comprehension skills can be classified as second and third-level story comprehension skills according to the classification of McNamara and Magliano (2009). As in all developmental domains, explicit and implicit story comprehension skills are developed by age (van den Broek et al., 2005; Dempsey & Skarakis-Doyle 2017; Paris & Paris, 2003).

Dempsey and Skarakis-Doyle (2017) conducted a study to explore how preliterate children understand a story which contains a competing goal structure. 58 children from three different age groups (2.5-3 years as toddlers; 3-4 years as early preschoolers; and 4-5 years as late preschoolers) participated to the study. Their explicit story comprehension was tested through story retelling. Children were expected to supply 10 story elements which were classified as explicit story content. While children in the early and late preschoolers age groups could supply more than half of the elements, younger ones, who could supply an average of two explicit story elements, received significantly lower scores. This result may give a clue about the age-related developmental feature of explicit story comprehension. Similarly, Paris and Paris (2003) found that children between the ages of 4-8 years could understand the explicit features of the story (such as characters, setting, and problem) better than implicit features (such as feelings and theme). They also examined whether there were any effects of age on implicit story comprehension, and revealed that implicit story comprehension increased significantly with age (Paris & Paris, 2003). The findings of the studies conducted by Dempsey and Skarakis-Doyle (2017) on ESC, and Paris and Paris (2003) on ISC give clues about the age-related developmental procedure of both story comprehension skills.

Since story comprehension skills include many different dimensions, like word knowledge and cognitive processes (Bruner, 1986), a variety of factors might possibly affect the development of story comprehension, including the level of

language development, environmental factors (e.g., experiences of children), and cognitive development. As it was discussed earlier, a remarkable amount of research emphasizes that the word knowledge of children, which is a part of language development, affects their level of story comprehension with a positive correlation (Clarke et al., 2010; Kim, 2015; 2016; Lervåg & Aukrust, 2010; Protopapas et al., 2013; Ouellette et al., 2006). Possessing a rich vocabulary knowledge helps preliterate children to comprehend the story (Lepola et al., 2016), because without understanding each word of the narrative or the text, consistent inferences cannot be made. Since the development of vocabulary knowledge occurs gradually with age and experience, it can be said that the development of story comprehension also progresses in parallel with this process.

With age, children gain more experiences and create accumulation about the world. Children make use of these life experiences and accumulations while establishing connections between the events of stories and comprehending these events (van den Broek et al., 2005). *The construction-integration model*, which is one of the theoretical models proposed for story comprehension skills, emphasizes the critical role of the individual's background knowledge during the comprehension process (Kintsch, 1998; Kintsch & Van Dijk, 1978). As the name implies, the model consists of two phases. In the construction phase, individuals first form basic propositions/hypotheses based on the words and sentences in the written material they listen to. Then, when they come to the integration stage, they make sense of the propositions they have obtained during the story listening process by integrating them with their background knowledge and experiences (Kintsch, 1998). Under these two phases, there are three basic mental processes which are in a hierarchy with each other in the process of story comprehension: 1) surface-code; 2) text-base; and 3) situation model. While the *surface-code* represents sentences and words in the text, the *text-base* is the process in which propositions are created based on the information obtained from the surface-codes, and *the situation model* is the process in which these propositions are integrated and compared with past experience and background knowledge to comprehend the story (Kintsch, 1988; Jeon, 2007). Since young children's life experiences and accumulations are relatively limited compared to older children, their narrative comprehension skills are also relatively lower.

Moreover, children's cognitive skills also develop as their age increases, consequently improving their story comprehension skills. For example, the ability to identify relations between abstract events develops at a later age than the ability to identify relations between concrete events. So, while very young children can understand the connections between concrete events only, older children can identify relations and connections between abstract events as well (van den Broek, Rapp & Kendeou, 2005). As a part of cognitive development, it is thought that children begin to understand the intentions and thoughts underlying the behavior of the characters in the story as part of a developmental process. Astington (1990) argues that children's storytelling cannot be evaluated until the age of four, since the cognitive skills required to understand the mental states in the story have not yet developed sufficiently. It is only possible for children to associate the feelings and thoughts of the characters with the plot when their ability to understand and express mental states has sufficiently developed (Pelletier & Astington, 2004). Children before the age of four do not have a full understanding of the referential and evaluative contents, which constitutes the implicit content of the stories (Pelletier & Astington, 2004 as cited in Sari & Altun, 2018). The ability to understand the mental state, which is examined under cognitive development, is associated with "Theory of Mind (ToM) Skills" in many studies (Charman et al., 2000; Grazzani et al., 2018; Kim, 2020; Kim et al., 2021; Milligan et al., 2007; Sari & Altun, 2018). Theory of Mind Skills are defined as the ability to understand the feelings, intentions and desires of others (Milligan et al., 2007; Wellman & Liu, 2004); and they develop with age (Wellman & Liu, 2004). For example, while children have a basic understanding of emotion, perception, desire, and intention by two years of age (Wellman, 2002), they have very little or no understanding of knowledge and belief. They experience some difficulty in understanding people that may differ in beliefs and ideas (Wimmer & Perner, 1983). By the age of 4-5 children develop more adult-like understanding about these issues (Harris, 2006). This cognitive development process of young children's Theory of Mind Skills may play a role in their story comprehension skills.

Sari and Altun (2018) investigated the relationship between Theory of Mind Skills and story comprehension skills of children who are of kindergarten age. A total of 138 5-year-old children, 67 girls and 66 boys, participated in the study. During the

process, researchers read two different story books to children, assessing their story comprehension and Theory of Mind skills. The research findings showed that there is a moderately positive relationship between story comprehension skills and Theory of Mind skills which develops with age.

In summary, story comprehension is a skill that develops with the influence of many age-related factors such as cognitive development and experience, and it is also related with the later reading skills of children. Therefore, by considering these developmental issues, 5-year-old kindergarteners who will begin formal reading and writing education in next semester composed the study group of the present study.

2.1.2.2.Importance of Story Comprehension for Future Reading Skills

As it was mentioned in detail in the introductory chapter of this study, there is a strong relationship between story comprehension skills and future reading skills. Reading is a complex cognitive process that requires an individual to use many sub-skills that surround each other (Duke & Pearson, 2008; Scarborough, 2009; Stauffer, 1969, as cited in Altun et al, 2016). One of these skills is story comprehension. Children's story comprehension is one of the early literacy skills which are considered as prerequisites for reading comprehension (Alatlı, 2021). Because pre-readers cannot read on their own, their comprehension skills are basically termed *story comprehension* in their early years of life (Tompkins et al., 2013). A considerable number of research studies illustrate the strong relationship between story comprehension and later reading comprehension (Babayiğit et al., 2021; Catts et al., 1999; Catts et al., 2015; Kendou et al., 2009).

Kendeou and others (2009) examined the development of oral language skills, including story comprehension skills and decoding skills of children from preschool to early elementary school to understand whether there is a relationship between these skills and future reading comprehension skills. As a first step, researchers tested children's oral language and decoding skills at the ages of 4 and 6, and they implemented the same test two years later with the same children. Their findings illustrated that both oral language skills (*such as story comprehension and vocabulary*) and decoding skills (*such as letter identification, word identification,*

and phonological awareness), which developed considerably early in life, contribute to children's reading comprehension skills in early elementary school.

Similarly, Catts and others (1999) examined the possible contributions of oral language skills (such as *story comprehension, receptive and expressive word knowledge* and *grammar knowledge*), and phonological processing skills on reading. 604 children were divided into two different groups as poor readers and good readers on the basis of their second-grade reading performance. Then, researchers compared these two groups according to their previously assessed kindergarten performance in terms of their phonological processing skills and oral language skills. They found that, about 70% of poor readers' oral language skills, which included story comprehension skills were also poor. That means, there may be a relationship between children's story comprehension achievement assessed in kindergarten and their reading achievement assessed in 2nd grade.

Similarly, Catts and others (2015), conducted a longitudinal study to understand whether skills that are early predictors of word recognition skills (*phonological awareness, letter knowledge, and rapid naming*) and oral language skills (*story comprehension, vocabulary*) at the beginning of the kindergarten year could predict reading comprehension skills at the end of the third-grade year. In addition to assessments implemented in kindergarten and third grade, participants were also assessed at the end of second grade with this assessment serving as a mediator. The findings of the research revealed that the precursors of word reading and language comprehension skills, including story comprehension, successfully predicted reading comprehension skills in both mediated and non-mediated models.

Babayiğit and others (2021) also conducted a 9-year longitudinal study to clarify the effects of early linguistic comprehension and narrative skills possessed in younger ages on later reading skills assessed at the ages of 10 and 14. A total of 716 children participated in the study, with their linguistic comprehension and narrative skills assessed at age 5, and as a second step, their word reading and reading comprehension skills were assessed five years later, at the age of 10. Finally, the reading achievement scores of these participants were gathered through national

curriculum test results, at the age of 14. The findings of this study illustrated that the linguistic comprehension and narrative skills of children assessed at the age of 5 made a unique contribution to children's later reading achievement and reading comprehension scores.

Similarly, Kargın, Güldenöğlü, and Ergül (2017) examined whether the listening comprehension skills of kindergarteners could predict their reading comprehension performance in the first grade. 52 kindergarteners participated in the study which tested their listening comprehension skills when they were in kindergarten and their reading comprehension performance was tested at the end of first grade. Findings concluded that 25% of children's first grade reading comprehension performance was explained by the story comprehension skills they gained in the early years of their life.

Lervåg et al., (2017) conducted a longitudinal study to understand factors which affect reading comprehension, with one of the factors they examined being story comprehension. 198 young children participated in the study and they were tested on different occasions over a period of five years. Their findings suggested that interaction between story comprehension and word decoding skills explained almost all (96%) variation in early reading comprehension skills; moreover, early story comprehension skills were a predictor of not only early reading comprehension skills but also later growth of reading comprehension skills.

There are three important theoretical models that support these research results: *Simple View of Reading Model*, *Scarborough's Reading Rope Model*, and *A New Developmental/Instructional Model*. These theoretical frameworks are explained separately in the following sub-headings.

2.1.2.2.1. Simple View of Reading Model (SVR Model)

The simple view of reading (SVR) model, which is a model of the process of how to learn reading, (Dombey, 2009) was proposed by Gough and Tunmer in 1986. Unlike what the name suggests, this model accepts the complexity of reading activity, and

defines itself as a simplified representation of this complex phenomenon (Hoover & Gough, 1990). SVR asserts that reading comprehension skills can be predicted by linguistic comprehension (listening comprehension) skills and decoding, which is also defined as word recognition (Dreyer & Katz, 1992). According to SVR, decoding and listening comprehension are both significant to become a successful reader, although neither of them are sufficient separately. Therefore, in this model, the relationship between decoding, listening comprehension, and reading comprehension can be formulated as the following:

$R = D \times L$, rather than $R = D + L$, where Reading comprehension (R) is the product of Listening comprehension (L) and Decoding (D). In this formula, each variable can take a value between the ranges of 0 (inability) to 1 (perfection) (Gough & Tunmer, 1986). That means that if one of multiplier/multiplicand equals zero, then reading comprehension, *the product*, also equals zero (Dreyer & Katz, 1992) (see figure 2.1). Metaphorically, if even one of the two main columns supporting a structure, *in this case linguistic comprehension and decoding skills*, is not solid, the structure that is reading comprehension, cannot stand (see figure 2.2).

The Simple View of Reading

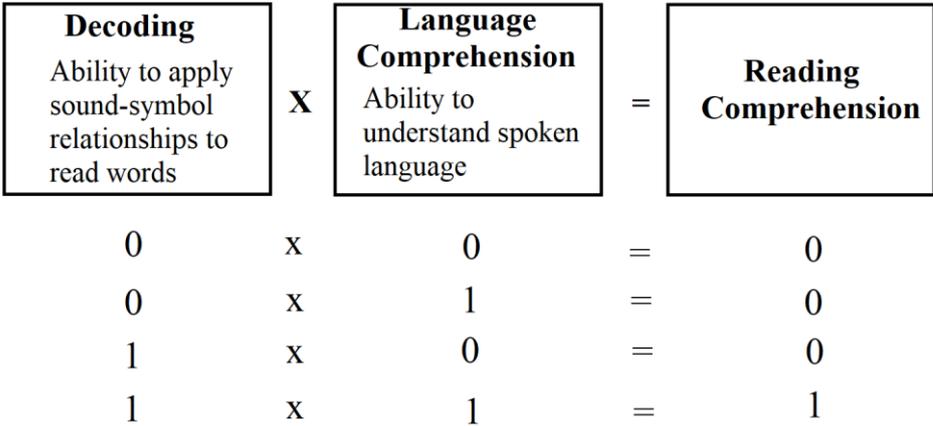


Figure 2.1 Basic Formula of the SVR Model Adapted from Gough and Tunmer (1986).

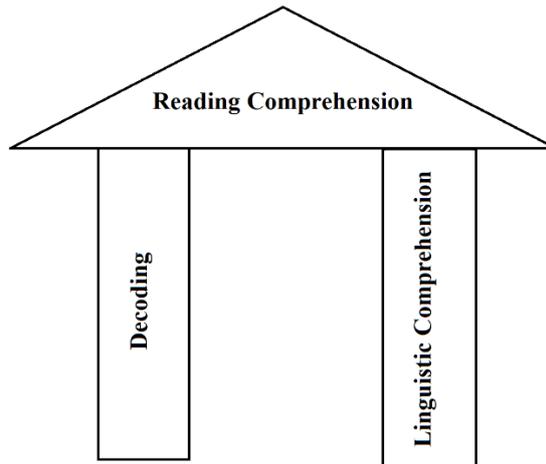


Figure 2.2 A graphic representation of the Simple View of Reading (Kim, 2020, pp.15).

It is also possible to see the influence of the Simple View of Reading model on education. For example, the SVR model creates the theoretical framework of reading instructions in England (Department of Education, 2010; Rose, 2006; Stuart, 2003 as cited in Ripol-Salceda et al., 2014), and it was commonly taken into account while designing the educational systems of some countries such as the United States, France, Ireland, and Australia (Concannon-Gibney & Murphy, 2010; Davis, 2006; Ministère Éducation Nationale Enseignement Supérieur Recherche, 2006; Observatoire National de la Lecture, 1998, 2007; Wilkinson et al., 2000 as cited in Ripol-Salceda et al., 2014).

This model is important for the present study because SVR is an effective model which clearly emphasizes the significance of story comprehension skills for future reading comprehension.

2.1.2.2.2. Scarborough's Reading Rope Model

The Simple View of Reading theory was expanded to the *Reading Rope Model (RRM)* by Scarborough (2001) to explain the reading process and the skills used in this process. The *Reading Rope* divides the SVR model's two categories (decoding and linguistic comprehension) into many intertwined fibers (Jones & Christensen,

2023). According to this model, reading skill consists of many tightly twisted sub-skills. While the whole of the rope represents reading, the intertwined fibers of the rope represent the skills that must be possessed for reading to occur (Scarborough, 2009). Each fiber should be continuous and tightly twisted with each other to constitute a strong rope. Therefore, since each fiber symbolizes the sub skills of reading, all skills must be acquired and developed to become a good reader (Jones & Christensen, 2023). Although the rope consists of many fibers, this model unites these fibers into two main strings, *Word reading* (in some sources it also may be labeled as word recognition) and *Language comprehension*. Word reading is defined as the ability to correctly vocalizing words by analyzing written language. This includes letter-sound knowledge, accurate word decoding, and automaticity in decoding which are considered to be the fibers of the word reading string (Scarborough, 2009). The language comprehension string of this model can be associated with story comprehension because when the “sub-fibers” of it are examined, it can be seen that they are also necessary sub-skills of story comprehension. The language comprehension string consists of 5 fibers: 1) Activating word meanings; 2) Understanding sentences; 3) Making inferences; 4) Comprehension monitoring; and 5) Understanding the text structure (Scarborough, 2001). According to Scarborough (2009), an individual becomes a competent and fluent reader when these two main strands interact with each other.

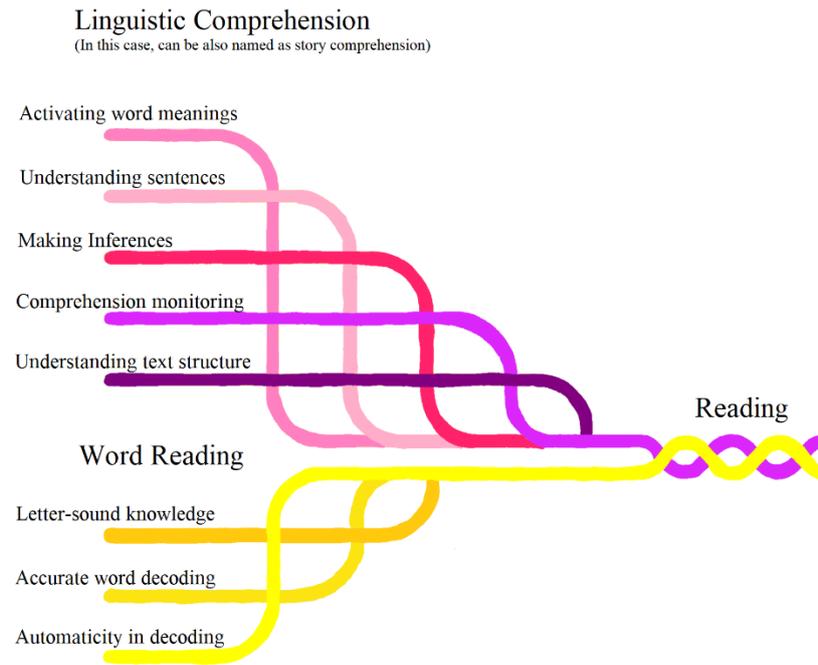


Figure 2.3 Scarborough's Reading Rope Model (Scarborough, 2001)

Since the “language comprehension” string of this model can be associated with story comprehension, it can be concluded that story comprehension is a prerequisite of reading. This model also creates a theoretical framework for this study, because it clearly illustrates the importance of the comprehension process to become a good reader.

2.1.2.2.3. A New Developmental Model

The relationship between story comprehension and reading comprehension is explained by Kendeou et al., (2005) via “A new developmental/instructional model” (Figure 2.4.). According to this model, basic language skills, decoding skills, and narrative comprehension skills are at the center of the successful reading comprehension process. The model emphasizes that, with limited story comprehension skills, the reading process is stuck at the step of decoding, and the reader cannot reach meaning (Kargin et al., 2021). For example, an individual whose story comprehension skills are not sufficiently developed, but whose basic language skills and decoding skills are developed, may vocalize the written symbols or letters

by decoding, but may not be able to decipher meaning from the text and may not be able to obtain information. This model is not similar with other traditional instructional models which assume that the comprehension skills of early readers develop only after basic language skills are acquired. In this new model, comprehension skills and basic language skills develop concurrently and they contribute differently to children’s reading and reading comprehension skills (Kendou et al., 2005).

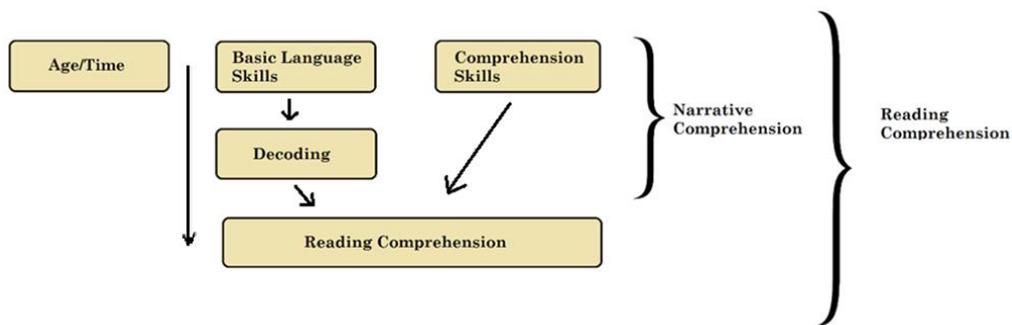


Figure 2.4 *A New Developmental Instructional Model*

The model emphasizes that prior to beginning formal reading and writing activities, which start in the first grade in the Turkish educational system, possible future reading comprehension difficulties may be detected by controlling the level of narrative comprehension. If an individual has an unsatisfactory level of narrative comprehension skills, some intervention can be implemented to support this skill in order to eliminate possible future reading difficulties (Kendeou, 2005).

2.2. The Effect of Early Childhood Storybook Reading Activities on Early Literacy Skills

There are many activities carried out to support and develop children's literacy skills in the early childhood period. One of the most common activities, which can be easily applied both in schools and at home, is storybook reading. Research shows that reading with an adult in the preschool period improves children’s language and early literacy skills, and it positively affects reading success at the primary school

level (Buchorn-Stoll; 2002; Bus et al., 1995; Grolig, 2020; Karweit & Wasik, 1996; Massey, 2013; Sénéchal & LeFevre, 2001). Children's storybooks can be divided into two groups, electronic books (e-books) and printed books, in terms of their structural features. There is some research in the literature which illustrates the possible different impacts of e-books and printed books on children's language and literacy development (Chiong et al., 2012; Critelli, 2011; Korat & Or, 2010; Korat, et al., 2013; Noel, 2013; Parish-Morris et al., 2013; 2019; Reich et al., 2019 Sapaşaglam et al., (2020); Segal-Drori et al., 2010; Shamir et al., 2012; Smeets & Bus, 2014; Stine, 1993). Therefore, it is important to investigate these two formants in more detail.

2.2.1. Printed Storybooks and Electronic Books (E-Books)

Children's picture storybooks have existed since 1658, when the first storybook, *Orbis Sensualium Pictus [Visible World in Pictures]*, specifically written for children by John Amon Comenius was printed (Ersan, 2014; Hahn, 2015; Sari, 2006). Because the history of printed versions of storybooks can be traced to the 17th century, they are also named "traditional storybooks" in the literature (Jones & Brown, 2011; Krcmar & Cingel, 2014; Lauricella et al., 2014; Moody & Justice, 2010; Wells, 2012). With rapid enhancements in technology, printed books are being transferred to digital media at an increasing rate today (Sari, 2018). E-books, which are more technologically advanced versions of printed storybooks delivered through electronic devices, can be referred to by various names in the literature such as tablet-based e-book, book apps, digital picture books, multimedia books, CD-ROM books, and iPad Books.

The first example of an electronic books is thought to be "Just Grandma and Me" by Mayer (1983). The printed version of the book was published in 1983, and its CD-ROM version was released in 1992 (Sari, 2018). After this epochal innovation, e-books became fractionally more popular, especially among children of the new generation who mingle with a variety of technological tools, from smartphones to tablets. As a result of this integration, they have been exposed to digital literacy from the early years of their lives (Bers et al., 2014; Korat & Segal-Drori, 2016; Marsh et

al., 2005; Parette et al., 2010). They experience not only printed picture books, but also electronic books in daily life (Altun, 2017; 2018a; Rideout, 2011).

Although most of the electronic books are digital versions of printed books which mostly have the same text and illustrations (Segal-Drori et al., 2010), they are separate from printed books due to their multimedia features like animations, music, vocalization of the story by a narrator, and sound effects (de Jong & Bus, 2003, Labbo & Kuhn, 2000). Because of these multimedia features, they may contribute distinctively to various domains of children's literacy development and learning. There is a large amount of research in the literature that emphasizes this issue (Altun, 2018a; Chiong et al., 2012; Ihmeideh, 2014; de Jong & Bus, 2004; Krmar & Cingel, 2014; Korat & Or, 2010; Korat et al., 2013; Reich et al., 2019; Sapasağlam et al., 2020; Sarı, 2018; Şimşek, 2017). Despite the large amount of existing scholarship on the relationship between e-books and early literacy skill development, there is no consensus on the efficacy of electronic books in promoting young children's future literacy skills. While some studies conclude that electronic books contribute more to the language and literacy development of young children than printed books (Altun, 2018a; Ihmeideh, 2014; Korat & Or, 2010; Rvachew et al., 2017; Sarı, 2018), others support the idea that printed books are more effective (Chiong et al., 2012; Krmar & Cingel, 2014; Reich et al., 2019; Sapasağlam et al., 2020; Şimşek, 2017), while some conclude that both book formats contribute equally to the learning and development of young children (de Jong & Bus, 2004; Korat & Shamir, 2007; Korat et al., 2013).

2.2.1.1. Studies Suggesting That Reading Printed Storybooks Is More Contributive in Terms of Language and Literacy Development of Young Children:

Reich and others (2019) compared e-book reading activities and printed book reading activities in terms of their effects on preschoolers' story comprehension, vocabulary, and engagement skills. 200 preschoolers, whose ages were between 3-5 years old, participated in the study. Researchers randomly assigned these children into two groups, 1) the e-book reading intervention condition; and 2) the printed book reading intervention condition. During the printed book intervention, a researcher read a printed book, while in the e-book reading intervention, the auto-narration feature of

tablet-based e-book was used. Storybook reading activities were implemented individually with children and they were video-recorded. After the reading sessions, post-tests, includes a bunch of questions to help researchers understand children's skills and knowledge about story comprehension and vocabulary, were implemented with the children. Video-recordings were then coded to assess their engagement skills. The findings illustrated that, children in the printed book reading group had slightly higher post-test scores compared to those in the e-book group. That means that the printed storybook reading activities contributed more to the 3-5-year-old children's story comprehension, vocabulary, and engagement skills.

Chiong and others (2012) investigated the possible differences between two types of e-books (enhanced and basic), and printed books in terms of parent-child interaction and children's story comprehension skills. 32 3-6-year-old children and their parents participated in the study. They found that while parents and children in the printed book and basic e-book reading groups showed a similar rate of content-related conversations, parents and children in the enhanced e-book reading groups showed fewer content-related conversations. In addition, regarding their story comprehension skills, it can be said that children and parents who read enhanced e-books remembered significantly fewer narrative details about the story when they were compared to the children and parents who read printed versions of the same book.

Similar to Chiong and others (2012), Krcmar and Cingel (2014) also compared parent-child reading interactions and the comprehension skills of young children in terms of iPad book (e-book) and traditional book (printed book) formats. 70 parents and their 24-60-month-old children participated in the research. Parents read two books to their child, one in the traditional printed format, and the other in the electronic book format which was read by software on the iPad. At the end of the process, children's post-test scores were compared across the two formats. The results revealed that parents talked more about the book format and environment rather than the story and elements of the story with the electronic book, whereas parents talked more about content and made evaluations about with the printed book. This means that e-books, including their multimedia features, which are used as tools to support early literacy skills, can get ahead of the story. Due to this problem, the

process of supporting early literacy skills can be interrupted. In conjunction, the study also revealed that children comprehended more in traditional book reading activities than e-book reading.

Sapasağlam and others (2020) conducted a study to answer an important question “Do either traditional methods or digital applications affect children's level of recalling more positively?” (Sapasağlam et al., 2020, p.123). To find an answer to this question, they worked with 20 children who were randomly assigned to the experiment and control groups. Five different printed books and their e-book formats were used in the study. The researchers used five questions about the elements of the story to test how much children could recall from the books they were read. While four of these questions tested explicit information from the story (such as the name of the book, characters of the book, events that took place in the story, and features of the main character), one question tested implicit information, the theme, of the story. The results showed that children in the printed picture book group had a greater level of recall compared to their peers. This implied that printed books were more efficient than their electronic counterparts, leading to higher levels of recall of the book’s content.

Another study conducted by Şimşek (2017) aimed to understand the effects of different book reading techniques on the language development of children who were 48-66-month-old. 56 kindergarteners from three different kindergarten classes constituted the study group of the research. The researcher randomly assigned these three classes to the experimental groups: 1) traditional reading; 2) dialogic reading; 3) electronic book reading. Before the experimental process, the researcher implemented a pre-test to see the participants' initial level of language development and a post-test was implemented for the participants after the experimental process. The results suggested that there was a statistically significant increase in the receptive, expressive, and total language development scores of the children who participated in reading activities with the dialogic reading method. While there was no significant difference between the language development pre-test and post-test scores in the e-book application group; the receptive language development of the

children in the group who read the book with the traditional method showed a positive increase.

2.2.1.2. Studies Suggesting that There Is No Difference Between Electronic Storybooks and Printed Books in Terms of Their Contribution to Early Language and Literacy Development of Young Children:

de Jong and Bus (2004) examined the efficacy of e-books in fostering young children's story comprehension skills. They compared the effects of children's independent e-book story reading activities and printed storybook activities which were led by adults in terms of children's story comprehension scores. 18 4-5-year-old Dutch preliterate kindergarteners composed the study group. Three different storybooks written by the same author were read individually to children during the interventions: *I'll Make You Well Again, Said the Bear*; *Big Party for Tiger*; and *Tiger and Bear in Traffic* (Janosch, 1986; 1990; 1991). Participants were pre-tested before the interventions and they were post-tested after the interventions to understand their level of story comprehension. The findings of the research suggested that preliterate children got the same benefit from e-books as with the adult-led printed story reading sessions.

Similarly, Korat and Shamir (2007) compared the effects of printed storybook reading activities led by an adult and auto-narrated e-book reading activities on children's emergent literacy skills. They also compared the effect of two socioeconomic status groups on children: low socioeconomic status (LSES) and middle socioeconomic status (MSES). 128 5-6-year-old kindergarteners, 64 from LSES and 64 from MSES, participated in the study. Researchers randomly assigned these participants into three groups: 1) Children who listened to e-books individually; 2) children who listened to the same book read by an adult; 3) children who received a regular kindergarten program. Children in the intervention groups were exposed to three book reading sessions. Before the intervention process, children were pre-tested to measure their vocabulary, phonological awareness, and word recognition skills and children took the same post-test after the interventions for comparison. Children in both intervention groups and both SES groups showed similar levels of story comprehension and their vocabulary scores improved compared to children in the

control group, which did not receive any interventions. In both the LSES and MSES groups, phonological awareness and word recognition skills of children did not show an improvement in either reading intervention.

Another similar study was conducted by Korat and others (2013). Researchers worked with preschoolers and their mothers to investigate to what extent educational e-book and printed book reading activities with adult support can promote low socioeconomic status (LSES) preschool children's word comprehension and phonological awareness skills. 90 preschoolers and their mothers who belonged to the LSES group were assigned to three different groups such as 1) e-book reading; 2) printed book reading; 3) the regular kindergarten literacy program as a control group. Mothers in the intervention groups were guided about how they could read books to their child. Five storybook reading sessions occurred within a period of 2 weeks. Children in both intervention groups showed significantly more development in word comprehension and phonological awareness skills compared to the control group. Mothers who worked with their children by using e-books supported their children more during the activity process, but this did not affect the children's language performance. That means that both printed storybooks and e-books affected children's phonological awareness and word comprehension skills in the same way.

In addition to these studies, there are also some studies which assert e-books outperformed printed books in terms of their contributions to vocabulary acquisition skills, although both formats do not affect young children's story comprehension skills differently:

For instance, O'Toole and Kannass (2018) examined how 4-year-old children's story comprehension and word learning skills were affected by the story presentation format and narration source. 100 young children were randomly assigned to four conditions: 1) a printed book read aloud by a live adult; 2) a printed book narrated by an audio device; 3) an e-book read aloud by a live adult; and 4) an e-book narrated by an audio device. Researchers created their own wordless picture books in both formats to use in the study. The storybook included pseudo words as target words. Researchers created these pseudo words by considering the consonant-vowel-

consonant pattern to reduce nonsense word learning bias. According to the study results, although children in the audio narrated e-book group learned more words, the story comprehension skills of children did not reveal any difference between groups. That means the narration source may also be a factor affecting the efficacy of book format.

Similar to O'Toole and Kannas (2018), Savva et al., (2021) also reached similar results in their meta-analytic study. They aimed to understand the efficacy of electronic books to promote young children's language and literacy skills compared to more traditional books by analyzing 29 studies. The analysis indicated that while there was a moderate positive effect for vocabulary learning in favor of the e-book reading groups, there was no significant differences between the e-book groups and the printed book groups in terms of story comprehension skills.

In the same way with others, Zhou and Yadav (2017) compared the efficacy of e-book reading activities and printed book reading activities on preschoolers' vocabulary learning, story comprehension, and reading engagement skills. 72 preschoolers participated in the study and they were randomly assigned to one of four following conditions: 1) multimedia-based (e-book) story reading; 2) multimedia-based story reading with questioning; 3) printed book story reading; and 4) printed book story reading with questioning. During the experimental process, a storybook was read individually to each child twice. Before the beginning of the reading sessions, researchers pre-tested the participants to understand their knowledge about target words and their general word-hoard before the intervention. At the end of the second reading session, participants took the target vocabulary test and story comprehension test as post-tests. The results illustrated that while the children who participated in the multimedia-based story reading intervention outperformed the others in terms of vocabulary learning and reading engagement skills, there were no significant difference between any of the conditions in terms of story comprehension skills among young children.

2.2.1.3. Studies Suggesting That Reading Electronic Storybooks Is More Contributive in Terms of Language and Literacy Development of Young Children:

Ihmeideh (2014) investigated the effects of electronic book reading on preschool children's emergent literacy skills, compared to printed book reading. 92 children participated in the study and three storybooks were used during the experimental process. To achieve the objectives of the study, pre-tests and post-tests were implemented on print awareness, alphabetic knowledge, vocabulary and phonological awareness skills. The results revealed that the children in the experimental group outperformed the control group. Additionally, the results showed child gender had a significant effect; female children were significantly better than male children in terms of overall emergent literacy skills.

Rvachew and others (2017) compared e-book shared reading activities and paper book shared reading activities in terms of their effect on children's emergent literacy skills. 28 kindergarteners participated in the study for two weeks. In the first week, all children and researchers read a paper book three times, while in the second week, all participants and researchers read an e-book three times. At the end of each week, children were tested to understand their emergent literacy skills. The results revealed that children's emergent literacy test scores after reading e-books were higher than their scores after reading the paper book.

Korat and Or (2010) focused on mother-child interactions during e-book reading and printed book reading sessions. In their study they also compared the effects of educational and commercial types of e-books. 48 kindergarten children and their mothers were randomly assigned to four groups: 1) Just Grandma and Me (printed book); 2) Just Grandma and Me (electronic commercial book); 3) The Tractor in the Sandbox (printed book); 4) The Tractor in the Sandbox (electronic-educational book). Their findings suggested that e-book reading activities provided more child-initiated discourse and more opportunities to respond to the mother's questions and interactions when compared to the printed book reading activities. When the discourses which took place during the printed book reading activities are examined, it can be said that they showed more expanding talk compared to discourse during e-

book reading activities. In addition, they found that children who took the educational e-book reading intervention performed better at word meaning retrieval, compared to the children who took the commercial e-book reading intervention.

Altun (2018a) investigated whether multimedia features of e-books hinder or support explicit and implicit story comprehension skills of preliterate preschool children in small group reading activities. 72 5-year-old children participated in the study which was conducted in two phases. In the first phase, a printed storybook was read to children and their story comprehension skills were assessed by the researcher using Narrative Comprehension Task questions developed by Paris and Paris (2003) to understand their initial story comprehension. Then, the researcher assigned these participants to two groups by considering their initial story comprehension scores, creating equal groups: 1) the experimental group who took the e-book reading intervention; and 2) the comparison group who took the reading intervention with the printed format of the same books. Two different storybooks and their electronic versions were used during the experimental process. After reading sessions, children retold the story individually and answered Narrative Comprehension Task questions (Paris & Paris, 2003). The findings showed that 1) children who took the e-book intervention showed higher performance in both explicit and implicit story comprehension assessments compared to the comparison group; 2) the explicit story comprehension scores were higher than the implicit story comprehension scores in both groups; 3) children in the intervention group could recall more story elements, and their retellings were longer. Based on these results, Altun (2018a) concluded that e-books are more contributive to early literacy development than their printed counterparts.

Furthermore, Sarı (2018) aimed to determine which multimedia features added to e-books support the vocabulary acquisition and story comprehension skills of 4-6-year-old children in her master's thesis. 99 kindergarteners were assigned to five different groups: 1) e-books with static illustrations without any background music or sound; 2) e-books with static illustrations with music and background sounds; 3) e-books with animated illustrations without any music or background sound; 4) e-books with animated illustrations with music and background sounds; 5) the control group, who

were exposed to printed books. In the pre-evaluation process of the research, Peabody Picture Vocabulary Tests (Dunn & Dunn, 1959) were used to determine the language development levels of the children, and Theory of Mind Tests (Wellman & Liu, 2004) were used to evaluate their performance in cognitive skills. At the end of the study, as a post-test, children's vocabulary acquisition, story comprehension and sentence repetition skills were measured by tests developed by the researcher. They found that children who were exposed to any kind of e-book showed greater performance on vocabulary acquisition and story comprehension skills when compared to the children of the control group. These findings imply that e-books are more beneficiary for vocabulary acquisition and development of story comprehension skills compared to printed books, regardless of the set of multimedia features they have.

As described in this and the previous subheadings, the findings of previous studies in the literature diverge enormously. While some studies suggest that printed books are more beneficial than their electronic counterparts in the process of vocabulary acquisition and development of early literacy skills, some others suggest the opposite. In addition, some studies suggest that there is no meaningful difference between the printed and electronic books regarding how beneficiary they are in these processes.

Although the findings of research in the literature are not consistent, there are theoretical motivations for why e-books, which have a variety of interactive multimedia features, could be better alternatives to printed books in the process of vocabulary acquisition and early story comprehension development. In the following subheadings, two theories in the literature that can be considered as theoretical frameworks for this idea, namely Dual Coding Theory by Paivio (1971) and Cognitive Theory of Multimedia Learning by Mayer (2001) and the idea of multimodal literacy are discussed and described.

2.2.1.4. Dual Coding Theory (DCT)

Dual Coding Theory (DCT), which was hypothesized by Allan Paivio in 1971, asserts that learning occurs better when the information is presented at the same time

via both visual and verbal channels, rather than by only one channel (Schnotz, 2005). According to DCT, the information obtained through senses is encoded by verbal and non-verbal systems. During the process, language-related perceptions obtained from sensory experiences are coded into the verbal system, while non-linguistic perceptions are coded into the non-verbal system (Sadoski & Paivio, 2013). It is assumed that these two systems are composed of internal representational units, named logogens and imagens, which are activated when a person manipulates, recognizes, or just thinks about words or things (Paivio, 2006). While verbal units (logogens) are generally defined as linguistic representations, verbal language coding, mental language, and inner voice, non-verbal units (imagens) are defined as non-verbal representations, non-verbal language coding, and mental imagery (Sadoski & Paivio, 2013). Logogens and imagens are also divided into classes which symbolize lower level sensory-motor forms such as the visual, auditory, haptic, gustatory, and olfactory (Paivio, 1986). Table 2.1. shows the classification of mental representations created through the senses to clarify the system.

Table 2.1. *The Classification of mental representations (Sadoski & Paivio, 2013, pp. 888)*

Mental Representations (Codes)		
Sense Modality	Verbal (logogens)	Nonverbal (imagens)
Visual	Visual language (Writing)	Visual objects
Auditory	Auditory language (Speech)	Environmental sounds
Haptic	Braille, handwriting	“Feel” of objects
Gustatory	-	Taste memories
Olfactory	-	Smell memories

Empty cells indicate the absence of verbal representations in these modalities.

The information gathered through senses is coded according to the classification of mental representations. For example, in such a structure, since the auditory or written form of the word, *parrot*, belongs to the language, it will be coded to the verbal system, *logogens*; while the physical image and warble of the parrot will be coded to the non-verbal system, *imagens* (Aldağ & Sezgin, 2003).

In DCT, this information gathering, and coding process occurs in three steps,

- 1) *Representational Processing*: The initial activation of logogens and imagens. The stimulus may activate logogens, imagens, or both, according to the characteristics of it (Sadoski & Paivio, 2013).
- 2) *Associative Processing*: The process in which transactions and connections between the units within each system take place. In this process, logogens may activate logogens, and imagens may activate imagens. For example, an image of “dog” evokes the image of “cat” (Aldağ & Sezgin, 2003).
- 3) *Referential Processing*: The functional connection between units. On this process, logogens and imagens may activate one another. For example, the word “stadium” may evoke others like “cheers”, “crowd”, “victory” etc. (Sadoski & Paivio, 2013).

Figure 2.5. below shows these processes in detail

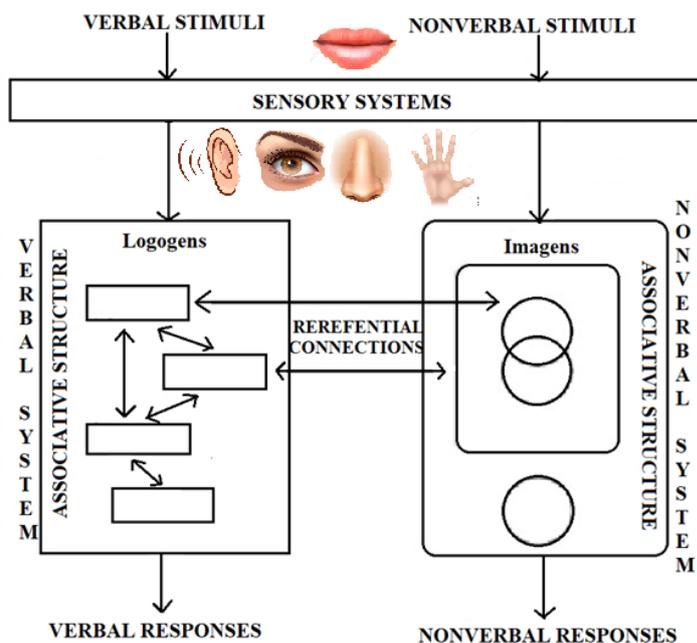


Figure 2.5 *General Model of Dual Coding Theory (Sadoski, Paivio, 2013, pp. 893)*

In general, according to DCT, learning occurs easier thanks to the collaboration of verbal and non-verbal systems during the information gathering process. Basically, it can be said that Dual Coding Theory is based on mental representations: if mental

representations are not activated and do not collaborate with each other, understanding does not occur. As the relationships and connections between mental representations increase, the meaning that is derived gets richer. Regarding this, it can be concluded that e-books have the potential to be an efficient tool to develop early literacy skills thanks to their multimedia features. While combining two channels simultaneously, nonverbal information (animations or pictures) support children in understanding verbal information (the narrative), and this collaboration facilitates story comprehension (Korat et al., 2022). Although printed storybooks written for young children also include visuals, additional multimedia features like the motion pictures, and sound effects included in e-books may increase the effect of multimedia learning (Takacs & Bus, 2018).

In conjunction with DCT, the Cognitive Theory of Multimedia Learning (2001), should be reviewed to understand the potential effects of e-books on word acquisition and story comprehension skills.

2.2.1.5. Cognitive Theory of Multimedia Learning (CTML)

Cognitive theory of multimedia learning (CTML) was proposed by Mayer (2001), and it is based generally on Dual Coding Theory and other cognitive theories such as Model of Working Memory (Baddeley, 1986), Cognitive Load Theory (Sweller, 1988), and Generative Theory (Wittrock, 1974). Substantially, it shares some fundamental principles with DCT. For example, as previously mentioned under the related title, the most important argument of DCT is that it divides the stimuli and information coming from the outside into two cognitive systems and encodes this information as verbal and visual information. This verbal and non-verbal coding process also accounts for multimedia learning (Sarı, 2018). As in DCT, in the Cognitive Theory of Multi Model Learning, there are two different channels in human memory, verbal/auditory and visual/pictorial channels. Similarly, multimedia can also be divided into two forms, *words* and *pictures* (Mayer, 2014). Words include printed words (the prints you are now reading) or spoken words (word in a narration that you can hear); pictures involve static graphics – such as illustrations or photos – or dynamic graphics – such as animation or video clips (Mayer, 2014). Learning occurs better when the information is obtained from both of these channels

(Low & Sweller, 2014). In short, this theory can be basically described as learning through pictures and words. The process of forming the representation of information coming from visual and verbal forms in the human brain has been the focus of Mayer's studies. According to Mayer (2001), there are three assumptions about how learning takes place in multimedia: i) people have two separate channels, visual and auditory, ii) these channels have a limited capacity, iii) due to limited capacity, learning takes place by effectively *selecting*, *organizing*, and *integrating* information coming from visual and auditory means. Thus, consistent with the theories on which it is based, CTML focuses on three important cognitive functions in the information-processing process: *selecting information*, *organizing information*, and *integrating information* (Mayer, 2001). Figure 2.6. illustrates the whole process by emphasizing these three cognitive functions.

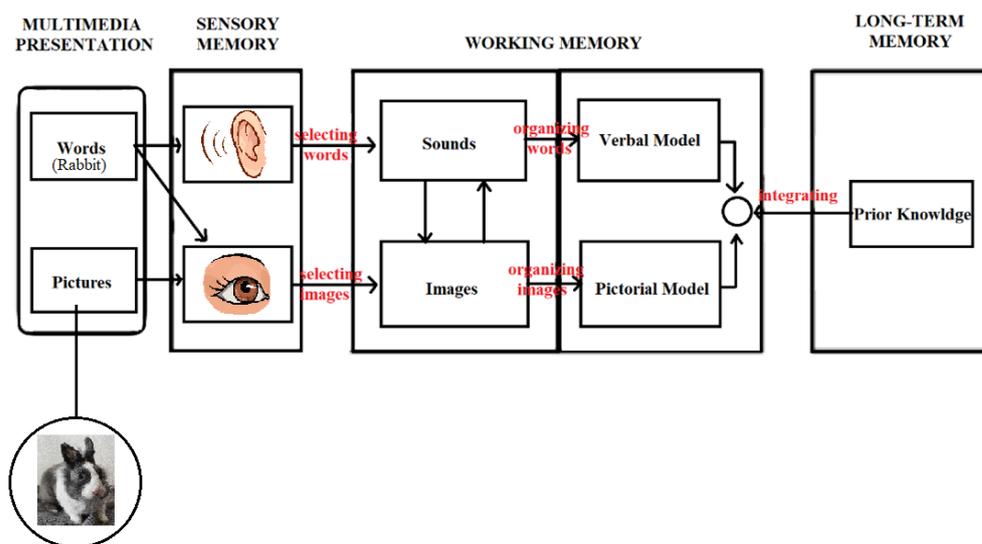


Figure 2.6 Cognitive theory of multimedia learning (Mayer, 2014, pp. 37).

Selection occurs when the learner gives attention to the images and words presented. This process includes bringing some materials from outside to the working memory via sensory memory. The *organization process* involves creating structural relations among the materials brought to working memory. *Integration* involves establishing some connections between the materials which were brought during the process and prior knowledge existing in the long-term memory. In this process, prior knowledge

in the long-term memory is activated and brought into the working memory (Mayer, 2014).

Mayer grounded all of these processes on seven principles: 1) *Multimedia principle*; 2) *Spatial contiguity principle*; 3) *Temporal contiguity principle*; 4) *Coherence principle*; 5) *Modality principle*; 6) *Redundancy principle* and 7) *Individual difference principle*, respectively (Mayer, 2001).

- 1) *Multimedia principle*: Gathering information from both visual and verbal channels is more effective than gathering it only from verbal channels. By this way, learners learn more easily because the use of more than one channel in the construction of knowledge increases learning (Mayer, 2001).
- 2) *Spatial contiguity principle*: Learners learn better when corresponding words are physically close to one another (She et al., 2009).
- 3) *Temporal contiguity principle*: Learners can learn better when words and pictures which correspond with each other are presented simultaneously rather than successively. For example, in an e-book, animations and corresponding narratives are presented at the same time and by this way listeners/readers may establish a connection (She et al., 2009).
- 4) *Coherence principle*: People learn better when words, sounds or pictures which are not related with the content are excluded (She et al., 2009).
- 5) *Modality principle*: While transferring information with animations, supporting the animation with oral expressions is more effective for learning than written expression. Stated more clearly, people learn better when animations are presented with narration (visual + auditory) rather than on screen text (visual + visual) (Sarı, 2018).
- 6) *Redundancy principle*: People learn better with animation with narration rather than animation with narration and on-screen text. Redundancy of stimuli negatively affects learning (She et al., 2009).
- 7) *Individual differences principle*: Multimedia learning has a greater impact on people in low-knowledge levels than in high knowledge; it is also more effective on people who are visually oriented than non-visual oriented (She et al., 2009).

The present study dominantly relies on CTML because of the principles on which the theory is based. When the seven principals detailed above are evaluated from the e-book perspective, it may be inferred that all of these principles support the idea that e-books can contribute more to vocabulary acquisition and development of story comprehension skills compared to printed books due to their multimedia features like animations, narration vocalization etc.

2.2.1.6. Multimodal Literacy, Printed books, and E-books

Literacy is multimodal for young children (Taylor & Leung, 2019). That means, they learn via different kinds of modalities such as music, visual images, and gestures (Mills & Unsworth, 2017). Dual Coding Theory and Cognitive Theory of Multimedia Learning discussed above also based on the idea of multimedia literacy: children learn better when their learning is supported by different modes. In this case, it can be said that children's printed picture books have a multimodal feature as they support the story they convey with illustrations, however e-books have more potential to support multimedia literacy thanks to their richer multimodal features, such as animations (motion pictures), and sounds, which were simultaneously appear during the reading/listening process (Serafini, 2015). While the modes used in printed books can be classified into three main categories: 1) textual elements, *like written language*; 2) visual elements, *like illustrations and graphs*; 3) design features, *like graphic design features, margins and typography*, the range of modes expands to more detailed levels like moving images and sound effects when these books are converted to digital medium (Serafini, 2015). Because of this expansion and richer modalities provided to children during the e-book reading sessions, they may acquire more knowledge. Although many studies, provided earlier, emphasize the superiority of electronic storybooks and their multimodal features (rich modes) compared to traditional printed books, some studies also emphasized the existence of some undermining multimodal features of e-books (Takacs et al., 2015).

Takacs, Swart, and Bus (2015) conducted a meta-analysis study comparing the effects of e-books enriched with multimedia features and traditional printed books on the early literacy skills of young children. In this meta-analytical study, 43 different studies were brought together and the effects of multimedia features in e-books on

2,147 children were discussed. In the study, the effects of different multimedia features were examined separately. The findings illustrated that while multimedia features such as animation and music contribute to the development of language and early literacy skills, especially for children who do not have enough stimuli to support language development in the home environment and come from disadvantaged conditions; some other interactive elements such as games and hotspots resulted in electronic books undermining their learning.

Similarly, a literature review study was also conducted by Bus, Takacs and Kegel (2015). They aimed to understand the positive and negative effects of e-books with multimedia features on the learning process. For this purpose, studies investigating the effects of multimedia elements added to electronic books on children's early literacy skills were brought together and analyzed. Findings of the study drew similar conclusion with the meta-analysis study of Takacs and others (2015) although multimedia features of e-books facilitate children's learning and development, some of them, namely *hotspots and games*, negatively affect the story comprehension of children. Since the involvement of hotspots and games during the storybook reading activities necessitates the use of task-switching and multi-tasking skills, which caused cognitive load.

These findings can be also related to John Sweller's Cognitive Load Theory (CLT) which asserts that instruction should minimize the cognitive load in working memory to make schema acquisition possible (Culatta, 2005). CLT is mainly based on George Miller's Information Processing Theory emphasizes the limited capacity of working memory that can process and contain a limited number of information at the same time (Miller, 1956). Based on these findings and the theoretical background, it can be said that some multimedia features, like e-book hotspots, may distract young children from following the storyline and undermine story comprehension (Leu 2000; Rideout 2014). Due to that reason, in the present study, while e-book reading process was supported with narration, music, and story-related animations; games and hotspots that activate some animations which are irrelevant to the story in e-books were not used.

2.3. The Effects of Activity Group Sizes on Educational Process and Learning

There are many different factors which affect the quality and efficiency of educational activities such as physical environment and materials, teacher and related personnel qualifications, number of children in the classroom, number of children per teacher, teacher and child interactions, the quality of the educational program, quality of communication, family education and participation (Karademir & Akman, 2021). In the literature there are some studies which illustrate the possible effects of activity group sizes on the efficacy of activity and education (Aydın, 2019; Dickinson, 1995; Morrow & Smith 1990; Phillips & Twardosz, 2003; Vaughn et al., 2009). According to the research conducted by Öğütülmüş and Özdemir (1995), when the number of students in a class decreases, students tend to show more creativity, participation, and they communicate more with the other members of the class. Some studies in the literature emphasize that this impact may be also seen in literacy activities in early childhood settings (Aydın, 2019; Cassidy & Vukelich 1977; Morrow & Smith, 1990; Woodruff, 2000; Yan & Lin, 2005). When the literature is examined, it is remarkable that the studies conducted in the last ten years examining the effect of group size are few. For this reason, it is thought that a current study in this field will contribute to the literature.

One of the biggest projects that aimed to understand the effect of group size on achievement of students is the STAR Project (Student-Teacher Achievement Ratio) which was a large-scale randomized experiment conducted in Tennessee, United States, between 1985 and 1989 (Milesi & Gamoran, 2006). 11,571 students and 79 schools participated in the study conducted under the STAR Project (Chetty et al., 2011). In each school, children who recently started kindergarten were randomly assigned to one of three conditions: 1) a small class (13-17 children); 2) a regular class (22-25 children); 3) a regular class (22-25 children) with a full-time teacher aid. The participants attended educational activities for four years, then they returned to their own regular-classroom. STAR results illustrated that mathematics and reading success of participants in small classes increased significantly compared to participants in both types of regular classes (with or without a teacher aid) (Finn &

Achilles, 1999). Although the advantages of small-sized groups existed across the board, they were larger in kindergarten and first grade, but were not as advantageous in the second and third grades (Finn & Achilles, 1999; Grissmer, 1999). Although the smallest group of this project included 13-17 children, which could also be considered a large group, this might give clues about the negative relationship between the efficiency of reading activities and number of children in an activity group. There are also various studies in the literature that compared relatively small (three children in a group) and large groups.

Yan and Lin (2005) investigated the effects of class size and length of a school day on kindergarten student's success at math, reading, and general knowledge at the end of the school year. The data in their research was drawn from a database named the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K). The sample of the study consists of 15,575 children. Findings revealed that while a positive relationship was found between small class size and children's reading and math achievements, no relationship was demonstrated between small class size and the general knowledge of children. That means, small class size contributes more to the reading and math achievement of kindergarteners compared to larger ones.

In their study, Morrow & Smith (1990) investigated the effect of group size on interactive storybook reading. They investigated children's verbal interactions and their story comprehension skills during storybook reading activity in various group sizes: i) one to one, ii) small group (three children per group), and iii) whole group (15+ children). To evaluate children's story comprehension skills, researchers constructed eight story structure questions and eight traditional comprehension questions. Story structure questions concerned various aspects of the setting (identifying time, place, and the protagonists), the plot (sequencing the episodes of the books in a proper order), the theme and resolution. On the other hand, traditional comprehension questions covered inferential information (information which is implied but not explicitly stated in the story), literal information (information which is explicitly stated in the story), and critical ideas (solving the problem existing in the story). The findings revealed that children who attended the storybook reading activities in a small group performed significantly better than children who attended

the activities individually or in a larger group. In addition, children who were in the small group or who attended the activities individually generated more questions and comments during the storybook reading, when compared to children in the larger group.

Cassidy and Vukelich (1977) aimed to understand whether group size affected kindergarteners' story comprehension skills or not. 120 kindergarteners were divided into four different groups: 1) children who received listening comprehension instructions in large group (15 children in a group); 2) children who received listening comprehension instruction in small groups (7-8 children in a group); 3) children who received listening comprehension instruction individually; and 4) the control group, where children who did not receive any kind of instruction. Before the instructions, children were pre-tested to assess their initial story comprehension. The instructional program lasted 10 sessions, and a story was read in each session and post-tests were implemented after the readings. The findings of the research revealed that group size significantly affected children's performance, and children in individual settings showed more success in story comprehension tests compared to others.

Phillips and Twardosz (2003) conducted a study with 15 2-year-old children to determine whether reducing group size affects children's verbal participation and engagement during storybook reading activities. The results of this experimental study showed that there is an increase in the verbal participation of 2-year-old children during storybook reading sessions when their activity groups include fewer children.

Like other researchers, Woodruff (2000) aimed to investigate the influence of factors such as the number of story exposures, pre-kindergarten experiences of children, and instruction group size on children's story comprehension and receptive vocabulary skills in their doctoral dissertation. The sample of the study consisted of 74 young children. Before and after the intervention process, the Durrell Listening Comprehension Test was implemented to test children's story comprehension and the Peabody Picture Vocabulary Test was implemented to test their level of

vocabulary knowledge. Results of the study showed that, 1) pre-kindergarten experiences significantly influence both story comprehension and receptive vocabulary; 2) kindergarteners with multiple exposures to a story and with larger instructional groups had significantly higher scores on receptive vocabulary tests.

Aydın (2019) investigated the level of 5-6-year-old kindergarteners' story comprehension skills in digital book and traditional book formats by considering two group size conditions: the one-to-one reading condition and the reading as a group condition. The study group consisted of 50 60-72-month-old kindergarten students, where two digital and two traditional books were used in the intervention process. All participants were exposed to all conditions: 1) Traditional book reading as a group; 2) Traditional book reading with individuals; 3) Digital book reading as a group; 4) Digital book reading with individuals. The process was carried out by reading a different storybook in each condition. The findings of the study revealed that children who were exposed to digital book reading activities received higher scores on story comprehension questions compared to the traditional book reading group. In addition, while children who participated in group reading activities were more successful in the traditional book reading condition, there was no significant difference between the two group sizes in digital book reading conditions regarding children's story comprehension scores.

Although many research findings emphasized the influence of group size on literacy activities, the findings of Neuman and Kaefer's (2013) study drew a different conclusion. They conducted an experimental study to understand how supplementary vocabulary instruction implemented in both whole-group and small-group settings affected the word knowledge and conceptual development of preschoolers who belonged to low-socio-economic groups. 108 4-year-old preschool children participated in the study for eight weeks. Researchers pre-tested all participants prior to the intervention to understand their initial word knowledge and conceptual-categorical knowledge, and they post-tested them after the intervention to see the possible effects of interventions. The findings revealed that children significantly developed their word knowledge and conceptual-categorical knowledge regardless of

the group size. So, they concluded that the group size did not have a significant effect on the effectiveness of reading activities carried out in preschool classes.

In summary, although some studies have found that group size may not be a factor affecting the effectiveness of the educational process, the majority of studies reveal that group size has an effect on the educational process and learning. However, according to Morrow and Smith (1990), although one-to-one story readings yield benefits to children, they are not practical in school settings. Compared to individual story reading activities, small group reading activities are more feasible in school environments. Considering the provision, "the number of children in a class should not be less than 10 or more than 20, but the number of children can be increased if there is demand and the school's facilities are sufficient" in the Turkish Regulation on Pre-School Education and Primary Education Institutions of the Ministry of National Education, (MoNE, 2014, pp.1), the idea that one-to-one reading activities are not feasible in early childhood settings can be supported. Therefore, comparing small group reading activities and large group reading activities can contribute more to the functioning of early childhood education. Due to that reason, the current study focuses on the comparison of small group and large group reading activities.

CHAPTER 3

METHODOLOGY

In this chapter, the procedures and methods of the current study are explained in detail. Firstly, the design of the study is introduced. Secondly, a description of the instruments, participants, population and data collection procedures are provided. Finally, the data analysis, assumptions and limitations of the study are given.

3.1. Design of the Study

This study mainly aims to understand which book format, *electronic book* or *printed book*, better supports the story comprehension and vocabulary acquisition skills of 60-72-month-old preliterate children in two different reading group sizes, *small group* and *large group*.

In order to achieve this aim and investigate the research questions, current study uses *factorial experimental design*, one of the quantitative research designs. Factorial design represents a type of between group design in which the researcher deals with two or more categorical, independent variables which have two or more levels (Vogt, 2005 as cited in Creswell, 2012). It gives an opportunity to examine the interaction or combination of independent variables to understand better the experiment results. The purpose of this design is to analyze the simultaneous and independent effects of two or more independent variables on dependent variables (Creswell, 2012). In the present study, the story presentation format (two levels: *e-book* or *printed book*) and the size of intervention groups (two levels: *small group*, and *large group*) were determined as the two independent factors.

Since the current study has two independent factors with two levels each, the design was labeled a *two-by-two factorial design*. It is also shown as “ 2×2 ” to indicate the

levels included in each independent variable (Creswell, 2012). In total, four different main groups were compared in this study, these are: 1) small groups who were exposed to e-book reading intervention 2) large groups who received e-book intervention 3) small groups who took printed book intervention 4) large groups that took printed book intervention (see Figure 3.1)

		Size of Reading Groups	
		Small Groups	Large Groups
Storybook Presentation Format	E-book Intervention	36 participants in total, in small groups of 4-5 participants	36 participants in total, in large groups of 11-13 participants
	Printed Book Intervention	37 participants in total, in small groups of 4-5 participants	37 participants in total, in large groups of 11-13 participants

Figure 3.1 2x2 Design of current study

3.2. Population and Sample

The population of this study consists of all preliterate kindergarteners in Kocaeli within the expected level of development, who are between 60-72 months, and speak Turkish as their native language. The reason why participants were selected from individuals with expected levels of development is to ensure that the results of the study are not affected by variation in developmental levels that can be seen in children as well as to increase its generalizability. Since the specified age group is the oldest age group in pre-school, it can be considered as the last age group before formal literacy education. Considering all of these factors, this age group, in which early literacy skills gain importance, was determined as a suitable age group for the sample.

According to the statistics of the Ministry of National Education (2021), there are approximately 780 kindergartens in Kocaeli. Since it is difficult to reach all kindergarteners in Kocaeli, the Körfez district was determined as an accessible population for this study. The cluster random sampling method was used for sample selection. Sometimes, it may not be possible to select samples of individuals because of administrative or other restrictions, especially in school-based studies (Fraenkel et al., 2011). For example, it was not possible for the researcher to form research groups by randomly selecting individuals from all 5-year-old children who enrolled in different kindergartens in the accessible population. In this case, educational researchers randomly select schools (as clusters) that already exist in the population to create their sample (Fraenkel et al., 2011). As there are about 15 kindergartens in the Körfez district, the researcher had to consider some criteria while selecting kindergartens, regarding the nature of the study or particular study features. For example, since the researcher needed a classroom to administer the interventions and tests, the selected schools had to have an extra classroom, which would be available for the researcher. By considering practical issues like this, the researcher selected three public kindergartens in the Körfez district. The participant pool was restricted to kindergarteners that are enrolled in public kindergartens. Excluding private kindergartens was necessary for two reasons. Firstly, in the Turkish national early childhood education system, teaching how to read and write is not a part of the curriculum, so it is taught neither in preschool settings nor in kindergartens (MoNE, 2013). Although public kindergartens obey this curriculum strictly, some private kindergartens and preschools modify this curriculum according to their own institutional values and aims, and some private kindergartens start teaching reading and writing during preschool years. This means that some of their 5-year-olds may already be at the literacy level. Limiting the study to public kindergartens only avoids possible situations like this, and ensures that there is no variation among the participants of the study due to curriculums used at their schools. Secondly, the Ministry of National Education requires all teachers who work in public kindergartens to hold a university degree majoring in early childhood education, which is not a requirement for some private kindergartens. Considering that the quality and knowledge of teachers may affect the classroom implementation in

kindergartens, the educational level of the teachers should be standardized for this study. To provide this standardization, public schools were preferred.

A total of 250 parent consent forms were distributed to parents. 212 of these parents (84.8 %) confirmed their consent for participation, signing the consent form, while 16 parents (6.4%) did not give permission for their children to attend the study. A total of 66 (26.4%) were excluded from the study for not being eligible to participate for various reasons. At the end of the process, 146 5-year-old kindergarteners composed the study group of the present study. The detailed information about the rates of the forms is illustrated in Table 3.1.

Table 3.1 *Information about the Response Rate of Forms*

	<i>F</i>	<i>%</i>
<i>Distributed</i>	<i>250</i>	<i>100</i>
Responders	212	84.8
Non-responders	38	15.2
<i>Total of Excluded Forms</i>	<i>66</i>	<i>26,4</i>
Did not give permission for their child to participate the study	16	6.4
Children had difficulties which prevented participation in the study (any kind of special needs)	20	8
Children who were diagnosed during the process	1	0.4
Children transferred to the other schools during the process	2	0.8
Children who did not want to participate in the study	3	1.2
Children younger than 60 months	4	1.6
Parents gave permission or returned the forms at the end of the first phase	1	0.4
Children who did not attend the school regularly	19	7.6
<i>Total Eligible Forms</i>	<i>146</i>	<i>58.4</i>

In addition, the distribution of the number of participants in the groups is given in detail in Table 3.2.

Table 3.2 *The distribution of the number of participants in the groups.*

	Small group	Large group
E-book	Total of 36 participants	Total of 36 participants
Printed book	Total of 37 participants	Total of 37 participants

3.3. Instruments

In the present study, a variety of assessment tools and storybooks were used to collect data during the process. The *Narrative Comprehension Task*, developed to assess preliterate children’s story comprehension skills by Paris and Paris (2003), was used to evaluate the narrative comprehension skills of participants, while a *Target Word Test* which was specifically developed for this study was used to assess their word acquisition skills.

During the intervention process, three e-books which are included on the “TRT Çocuk Kitaplık” mobile application and their printed versions were used. Before the intervention process started, one printed storybook was used to assess children’s initial story comprehension level, and identical experimental groups were created based on this assessment.

These instruments are described in detail under the following subheadings.

3.3.1. Storybooks

To collect data, three different storybooks were used in both printed and e-book formats. In 2021, the Turkish Radio and Television Cooperation (TRT) developed a mobile application named, “TRT Çocuk Kitaplık” (*TRT Children’s Library*) which contains e-book versions of some printed books for preschoolers, kindergarteners, and primary schoolers. These books were classified under five different categories according to their content, which were “From life” (*hayatın içinden*), “Curious scholar” (*Meraklı bilgin*), “Our fairy tales” (*Bizim masallar*), “Fairy tale of nature” (*Doğanın masalı*), and “Our heroes” (*Bizim kahramanlar*). Table 3.3 describes these categories in more detail.

Table 3.3 Details about the categories under the “TRT Çocuk Kitaplık” mobile application.

Category	Content	Number of Books (Currently)
From Life	Books which discuss social values such as cooperation, respectfulness, and some situations children may face in their daily life are gathered under this category.	70
Curious Scholar	Books which discuss some scientific issues such as space, sea creatures, and books which answer some questions young children commonly ask like “What is the meaning of time?”, “Where does the Moon go at night?”, and books which introduce occupations are gathered under this category.	51
Our Fairy Tales	Books which discuss some traditional Turkish fairy tales (Such as the Fairy Tales of Nasreddin Hodja, Keloğlan) and other stories which shows parallelism with these fairy tales are gathered under this category.	44
Fairy Tales of Nature	Books which have animal protagonists and which discuss the natural life of animals are gathered under this category.	65
Our Heroes	Books whose protagonists are the same with the cartoons which are broadcasted on “TRT Çocuk” TV channel are gathered under this category. (such as <i>Rafadan Tayfa</i> , <i>Pırl</i> , <i>Kare Takımı</i>)	52
		Total: 282

The application currently has 282 e-story books with animations (motion pictures), background music, and narration vocalization. The animations included in these e-books were created by adding motions to pictures. Motion pictures draw children's attention to the significant point in the illustration and by this way facilitate simultaneous processing of verbal and visual information, and give opportunity to promote the integration of them (Takacs & Bus, 2016).

In addition to these multimedia features, the e-books in the application have also some extensions like games and quizzes which can be used at the end of the story. However, these extensions were not used during the storybook reading process of the present study since some studies in the literature report that these extensions may negatively affect the story comprehension of children, although some others like motion pictures and sound effects may support this skill (Bus et al., 2015; Takacs et al., 2015).

Three books were selected based on some criteria to provide standardization among books, age appropriateness, and to collect consistent data. Selection criteria are listed in the following lines, and details of selected storybooks are given in the following subsection.

- Printed versions of some e-books in the application are no longer commercially available; however, all picture books used in the research should have both the e-book and printed versions that can be purchased from bookstores.
- If books were translated into Turkish, the translation of both e-books and printed versions should be the same to avoid inconsistency in the results.
- The books should be appropriate for the age group.
- The stories should be selected which includes main story elements such as problem, outcome resolution, and initiating event.
- Since the participants should not have encountered the books used in the study previously, the books to be selected should not be popular in the market.

- The books should not contain any content that may be offensive to any group, religion, race, belief, gender, or sexual orientation. They should not include topics that may be sensitive to some individuals.
- The number of pages, the number of words per page, and the duration of reading of the books should be similar.

Detailed information about the storybooks used in the study is presented below.

3.3.1.1. Kırmızı Elma (The Red Apple) (Feridun Oral, 2021):

On a cold winter day, the rabbit, who is very hungry, comes out of its nest to look for something to eat. However, everything is under the snow. Then he sees a red apple on the branch of a distant tree, but it is too high for him to pick it up alone. Therefore, he goes to the shrewmouse, the fox, and finally the bear to ask for help. All friends come together and help each other to reach the red apple. At the end of the story, they manage to get the red apple and they eat it together. Then they fall asleep in the big bear's den.

Table 3.4. *Detailed information about the book “Kırmızı Elma”*

Kırmızı Elma (Red Apple)	
Original Name:	Kırmızı Elma
Author & Illustrator:	Feridun Oral
Publisher:	Yapı Kredi Yayınları
The International Standard Book Number (ISBN):	978 – 975 – 08 – 1354 – 2
Number of Pages:	28
Number of Words:	341
Number of Words Per Page (about):	12

3.3.1.2. Haydi Sevgi Örelim (Let’s Knit Love) (Dasuki & Rasuli, 2020)

The winter season has come. For this reason, everyone is at home to protect themselves from the cold, and they wear warm clothes. Only three friends are cold: Giraffe, Millipede and Octopus. They feel cold because they cannot find clothes that fit their body. While Giraffe cannot find a scarf to protect her long neck, Octopus

cannot find an eight-armed cardigan, and Millipede cannot find socks for her forty feet. Then, in order to solve this problem, they first go their friend Sheep to take wool, and then their friends Spider and Butterfly to ask for help to knit. With the help of their friends, Giraffe gets her long scarf, Octopus gets his eight-armed cardigan, and Centipede gets her forty socks, and no one gets cold anymore.

Table 3.5. *Detailed information about the book: “Haydi Sevgi Örelim”*

Haydi Sevgi Örelim (Let’s Knit Love)	
Original Name:	Heyya Nasnau Siyabe al Suuf
Author:	Lina Dasuki
Illustrator:	Parissa Rasuli
Translator:	Şeyma Asker
Publisher:	Çilek Kitaplar
The International Standard Book Number (ISBN):	978 – 625 – 438 – 241 – 3
Number of Pages:	23
Number of Words:	506
Number of Words Per Page (about):	22

3.3.1.3. Cemile Midilliye Biniyor (Cemile is Riding a Pony) (de Petigny & Delvaux, 2008):

Cemile and her parents visit a horse farm to make real Cemile’s biggest dream, which is riding a horse. They meet Ayça, who is a tutor, and some other children in there. Tutor Ayça helps Cemile to ride *Kestane*, the horse. Although Cemile is too afraid to ride Kestane at first, she gets used to it later. During the ride, Kestane stops to eat the delicious clovers, and Ayça shows her love to Kestane and makes her walk again. Cemile loves horseback riding and gets a promise from her parents to come back to the horse farm next week to ride Kestane again.

Table 3.6. *Detailed information about the book: “Cemile Midilliye Biniyor”*

Cemile Midilliye Biniyor (Cemile is Riding a Pony)	
Original Name:	Camille Fait Du Poney
Author:	Aline de Pétigny
Illustrator:	Nancy Delvaux
Translator:	Seda Darcan Çiftçi
Publisher:	Kaknüs Çocuk

Table 3.6. *Detailed information about the book: “Cemile Midilliye Biniyor”*
(Cont’d)

The International Standard Book Number (ISBN):	978 – 625 – 438 – 221 – 5
Number of Pages:	16
Number of Words:	585
Number of Words Per Page (about):	36

3.3.1.4. Luga (Hemmatirad, 2018):

Finally, winter ends and spring comes. With the spring, migratory birds, including Luga, start to turn back to the region. They will spend the Spring and Summer in there, and when the weather gets colder, they will migrate to warmer regions. Therefore, they build tiny and simple nests for themselves. However, Luga behaves arrogantly and builds a huge and ostentatious nest for himself, despite the warnings of all the birds. Even though the experienced bird says that even his nest will be destroyed due to the winter conditions, and he will need to migrate again, Luga does not care. Before long, the weather gets cold and all the birds begin to migrate to the warmer regions, but the Luga does not go. With the effect of heavy rain and storm, Luga's nest is destroyed and Luga regrets his actions and tries to catch up with the herd. Luga, who finally caught up with the herd, has learned his lesson, and he will build a simple and small nest where they will migrate.

Table 3.7. *Detailed information about the book: “Luga”*

Luga	
Original Name:	Luga
Author & Illustrator:	Reza Hemmatirad
Publisher:	Nar Çocuk
The International Standard Book Number (ISBN):	978 – 605 – 370 – 651 – 9
Number of Pages:	16
Number of Words:	492
Number of Words Per Page (about):	30

3.3.2. Assessment Tools

3.3.2.1. Narrative Comprehension Task (NCT) (Paris and Paris, 2003)

The Narrative Comprehension Task (NCT) was used to assess children's story comprehension skills both before the intervention process to understand children's initial story comprehension, and after each reading session to assess their story comprehension about the book presented as an intervention.

NCT was developed by Alison H. Paris and Scott G. Paris (2003) to measure young children's implicit and explicit story comprehension skills. As mentioned earlier, explicit story comprehension skills cover surface comprehension skills like depicting characters, problems, events and the setting of the story, and implicit story comprehension skills are mainly related with the deeper story comprehension skills such as making inferences about the feelings and thoughts of the protagonists of the story, causal relations, predictions, and theme (Paris & Paris, 2003). NCT consists of 10 questions. While five of the 10 questions are related to explicit story comprehension skills, five of them are related to implicit story comprehension. Each question aims to assess different aspects of comprehension skills. Details of NCT are presented in Table 3.8 below.

Table 3.8 *Information about the questions in NCT*

<i>Explicit Questions</i>	
Questions	The aspect of comprehension ability
Q1) Who are the characters in this story?	Characters
Q2) Where does the story happen?	Setting
Q3) Tell me what happens at this point in the story. Why is this an important part of the story?	Initiating Event
Q4) If you were telling this story, what would you say is going on now? Why did this happen?	Problem
Q5) What happened here? Why does this happen?	Outcome Resolution
<i>Implicit Questions</i>	
Question number	The aspect of comprehension ability
Q1) How does the ... feel in this part of the story? Why do you think s/he might feel that way?	Feelings

Table 3.8 *Information about the questions in NCT (Cont'd)*

Q2) Why might this have happened in this part of the story?	Causal Inference
Q3) Can you tell me what was being discussed here? Why do you think s/he might have said that?	Dialogue
Q4) This is the last picture of the story. What do you think happens next? Why do you think so?	Prediction
Q5) Considering the story we read, how did the rabbit manage to reach the apple? Who ate the apple in the end? What would you do if you were the rabbit? Why? (Especially this question should be modified according to the theme of the story.)	Theme

During the process of implementing NCT, in some questions the researcher draws the child's attention to the related page, asking questions, but in some others, the book remains closed. For example, while asking the fourth explicit question about the problem of the study, the researcher opens the relevant page of the book and addresses the following question to the child, "*If you were telling this story, what would you say is going on now? Why did this happen?*" (Paris & Paris, 2003, pp. 73). On the other hand, while asking the first explicit question about characters of the story, the book remains closed and the researcher addresses the following question to the child "*Who are the characters in this story?*" (Paris & Paris, 2003). Because of this feature of the Narrative Comprehension Task, the researcher defined the story elements (like problem, initiating event and dialogue which will be asked to children to identify), and relevant pages to adapt the narrative comprehension questions to each story used in this study. These adapted questions were submitted for approval to two faculty members who are experts in the field and have used these questions in their studies previously, and their approval was obtained. Each adapted version of NCT questions were tested to ensure rating consistency. A second trained-rater, who was blinded to the study, assessed a randomly selected 25% of the data (for each book) to check inter-rater reliability. A high level of consistency was found between the two raters:

Pearson Product-moment correlations between scores of two raters were 96% for ESC and 95% for ISC on *The Red Apple*, 96% for ESC and 95% for ISC on *Let's Knit Love*, 93% for ESC and 95% for ISC on *Cemile is Riding a Pony*, and 97% for ESC 99% for ISC on *Luga* (see Appendix E).

Narrative Comprehension Task questions were used in the present study for four main reasons. *Firstly*, although there are several research studies which investigate children's story comprehension skills, most of them only focused on explicit story comprehension because of the aim of the assessment tools they used. As Altun (2018a) and Dawes et al., (2019) emphasize, most assessment tools which are aiming to assess story comprehension skills focus on only explicit story comprehension skills, and do not assess implicit story comprehension skills. As mentioned before, unlike others, NCT aims to assess both explicit and implicit story comprehension. Because the set of story comprehension skills consist of both explicit and implicit comprehensions, NCT was preferred to collect the data for this study.

Secondly, as Tompkins, Guo and Justice (2012) also emphasized, Narrative Comprehension Task is one of the few assessment tools developed to understand the level of pre-readers' comprehension skills, which has information about the validity and reliability of the test. Paris and Paris (2003) evaluated their NCT with three different studies. Their findings illustrated that the task can be generalized across narratives because, according to analysis of these studies, there were positive inter-task correlations between different books, appropriate internal consistency ($\alpha = .69$ to $.79$), inter-rater reliability ($r = .97$), and concurrent and predictive validity (Paris & Paris, 2003). These features of NCT make it more reliable among other techniques that are used to assess the story comprehension skills of young children.

Thirdly, it can be said that NCT is a practical tool to collect efficient data from young children, who have limited attention spans. The questions in this test are easy to understand, and it does not take too much time, which lets 5-year-old children answer the questions without getting bored or distracted. Because NCT is a test which preschoolers can concentrate on easily, it can be described as a tool to collect consistent data easily.

Lastly, since the Narrative Comprehension Task was used in a considerable number of studies published in prestigious journals in national and international literature (Altun, 2018a; Davis et al., 2006; Lepola et al., 2012; Silva & Cain; 2015; 2017; Tompkins et al., 2013), it can be accepted as a reliability-proven instrument.

The features of NCT mentioned above makes it a feasible tool for the data collection process of the present research.

3.3.2.2.The Target Word Tests (TWT)

The target word test was developed to understand the word knowledge and vocabulary acquisition skills of young children after book reading interventions. It has three subtests (one for each book) which were developed specifically for each book used during the experimental process. From each book, nine different words that the children were not familiar with were selected to be used in the sub-tests. Data from two different databases were retrieved, “Age of acquisition (*AoA*) values of words in Turkish” (Göz, Tekcan & Erciyes, 2016) and “The list of frequent and early acquired words in Turkish (Acar, Zeyrek, Kurfalı & Bozşahin, 2016), and only the words that were not listed in either of these databases as “early acquired” were used in the current study. The use of two different databases decreases the margin of error, and increases the fidelity of the research. The details of the databases and lists are explained in the following subsections.

In addition to data from two different databases, three teachers working at public kindergartens were consulted about the books and the target words used in the study. The teachers were asked for opinions regarding whether they think the students in the target age group would be familiar with the target words that are used in the study, and their age appropriateness. Target words not approved by at least two of the teachers were removed from the list and were replaced with the following new words in line with the advice of the teachers.

- The word "Süzülmek" (Amble), chosen from the book "Let's knit Love", was replaced with the word "Önermek" (Suggest), which means "to propose something to solve a problem" upon the advice of the teachers.

Example sentence in the book: “Then she suggested going to their friend Spider to make scarves, socks, and cardigans out of these wools.” (Dasuki & Rasuli, 2020, pp. 13).

- The word “Görevli” (Attendent) chosen from the book named “Cemile is Riding a Pony” was replaced with “Midilli” (Pony), which means “a kind of horse with a smaller size than normal”, upon the advice of the teachers.

Example sentence from the book: “Would you like to take a pony ride, sweet girl?” (de Petigny & Delvaux, 2008, pp. 4).

- The word “Fısıldamak” (Whisper) in the same book has been replaced with the word “Usulca” meaning “Softly, slowly, quietly”.

Example sentence from the book: “The little pony started walking softly.” (de Petigny & Delvaux, 2008, pp. 13).

The table below shows the final list of target words that were selected from the books.

Table 3.9 Target Words List for Each Book

<i>Haydi Sevgi Örelim [Let's Knit Love] (Dasuki & Rasuli, 2020)</i>					
Words	English Translations	TDK Meanings (n.d.)	Dictionary (TDK,	Example from Books	Sentences
Yün	Wool	Hairs of sheep		Tr: “Koyun isteklerini duyunca onlara bol bol yün verdi.” Eng: “ <i>When the sheep heard their request, she gave them plenty of wool.</i> ”	
Önermek	Suggest	To propose something to solve a problem		Tr: “Sonra bu yünlerden kendilerine atkı, çorap ve hırka yapması için arkadaşları Örümcek’e gitmeyi önerdi. ”	

Table 3.9 Target Words List for Each Book (Cont'd)

				Eng: “Then she suggested going to their friend Spider to make scarves, socks, and cardigans out of these wools.”
Meşhur	Renowned	Famous, well-known		Tr: “ Meşhur örgü örme hızıyla başladı örmeye. Eng: “She started knitting with her renowned knitting speed.”
Hünerli	Talented Skillful	- One who has ingenuity		Tr: “Bize örgü işinde yardım etmesi için hünerli arkadaşımız kelebeğe gitmeye ne dersiniz?” Eng: “How about going to our talented friend, the butterfly, to help us with knitting?”
Zarif	Elegant	Beautiful, pleasant, alluring		Tr: “ Zarif parmaklarıyla arkadaşım Zürafa’ya uzun bir hırka ... öğretilir misin?” Eng: “Can you knit a long cardigan ... for my friend Giraffe with your elegant fingers?”
Örmek	Knit	To process or loom yarn, wool, wire, reed, etc.		Tr: “Örümcek için de kalan yünlerle bir şapka ördüler. ” Eng: “They knitted a hat for the spider with the remaining wool.”
Karşılama	Welcome (a person, news etc.)	(a reported positively or negatively	Finding something said, done or	Tr: “Kelebek de onları sevinçle karşıladi ” Eng: “The butterfly welcomed them with joy”
Etkilenmek	Be affected	To be affected by		Tr: “Boynum uzun olduğu için soğuktan çok etkileniyor. ” Eng: “Since my neck is long, it is very affected by the cold.”

Table 3.9 Target Words List for Each Book (Cont'd)

Onaylamak	Approve	To accept, approve, certify a situation by finding it correct and appropriate	Tr: “ Onaylayarak başımı salladı” Eng: “ <i>She approved and nodded her head.</i> ”
<i>Cemile Midilliye Biniyor [Cemile is Riding a Pony] (de Petigny & Delvaux, 2008)</i>			
Words	English Translation	Meaning	Example Sentence from Book
Çayır	Meadow	A flat and moist place with lush grass on it	Tr: “Ve annesine çayırda koşan midillileri gösterdi.” Eng: “ <i>And she showed his mother the ponies running in the meadow.</i> ”
Eyer	Saddle	Object for sitting, placed on the back of mounts	Tr: “Bak, şuradaki hanım midillilere eyer takıyor.” Eng: “ <i>Look, that lady over there is saddling the ponies.</i> ”
Binici	Rider (horseback rider)	An individual who rides horse	Tr: “Çok iyi bir binici olacağın her halinden belli, küçük kız.” Eng: “ <i>You’re obviously going to be a great rider, little girl.</i> ”
Nişane	White blaze	White hairs on a horse’s forehead.	Tr: “Burnundaki beyaz lekeye ‘ nişane ’ diyoruz, tatlım!” Eng: “ <i>We call that white spot on his nose ‘white-blaze’, honey!</i> ”
Kask	Helmet	Robust hood made of hardened synthetic materials to protect the head from impact	Tr: “Başına uygun bir kask bulmak gerekiyor Cemile, dedi Ayça abla.” Eng: “ <i>We need to find a suitable helmet for her head, Cemile, said sister Ayça.</i> ”
Okşamak	Fondle	Slowly moving your hand over something or tapping it as a sign of affection	Tr: “Sadece başını okşasam da olur aslında.” Eng: “ <i>It’s okay if I just fondle his head.</i> ”
Usulca	Softly, silently, slowly	Slowly, quietly	Tr: “Küçük midilli usulca yürümeye başladı.”

Table 3.9 Target Words List for Each Book (Cont'd)

			Eng: “ <i>The little pony started walking softly.</i> ”
Benimsemek	Embrace	To be attached to something, to someone, to warm up	Tr: “Zaten şimdiden benimsedi seni.” Eng: “ <i>He is already embraced you.</i> ”
Midilli	Pony	A kind of horse with a smaller size than normal	Tr: “ Midilli üstünde bir tur atmak ister misin, tatlı kız?” Eng: “ <i>Would you like to take a pony ride, sweet girl?</i> ”
Luga (Hemmatirad, 2018)			
Kalıcı	Permanent	Somebody or something which stays in a certain place for a while, opposite of temporary	Tr: “Buralarda kalıcı değilsin. Ne gerek vardı buna?” Eng: “ <i>You are not permanent here. What was the need for it?</i> ”
Geçici	Temporary	Lasting only for a limited period of time; not permanent	Tr: “Bu yüzden kendilerine minik sevimli ama geçici yuvalar yapacaklardı.” Eng: “ <i>So they would build themselves cute little but temporary nests.</i> ”
Göçmen	Migrator (bird)	Animal that goes to countries with a warm climate	Tr: “Baharla birlikte göçmen kuşlar da geri dönmeye başlamıştı.” Eng: “ <i>With the spring, migrators began to return.</i> ”
Göçebe	Migratory	Animal that changes country or place according to the seasons	Tr: “Yuvan çok güzel olmuş. Fakat sen göçebe bir kuşsun.” Eng: “ <i>Your nest is beautiful. But you are a migratory bird.</i> ”
Kuvvetli	Strong, powerful, formidable, heavy	Mighty, formidable, fierce	Tr: “Bu kadarı da yetmezmiş gibi kuvvetli bir yağmur da başladı.” Eng: “ <i>As if that wasn't enough, a heavy rain started as well.</i> ”

Table 3.9 Target Words List for Each Book (Cont'd)

Tecrübeli	Experienced	Person who has gained knowledge or skill over time	Tr: “ Tecrübeli kuşlardan biri ise Luga’ya kızgın kızgın bakmaya başladı.” Eng: “ <i>One of the experienced birds started to look at Luga angrily.</i> ”
Kibir	Conceit, arrogance	Self-conceit, arrogance	Tr: “Luga kibirle yuvasını anlatmaya başladı.” Eng: “ <i>Luga arrogantly began to describe his home.</i> ”
Ferah	Spacious	Ample, spacious, airy, bright, heartwarming place	Tr: “Bu yuvayı ben tasarladım. İki katlı, iki girişli, çatılı, süslü, ferah bir yuvam oldu.” Eng: “ <i>I designed this nest. I had a spacious, ornate nest with two entrances, two floor and roof.</i> ”
Ummak	Hope, anticipate	To want or expect something to happen	Tr: “ Umarız arkamızdan gelir.” Eng: “ <i>We hope he comes after us.</i> ”

The target word test is based on the word explanation technique. After the storybook reading activity, nine target words in the story are presented to the participant orally one by one. The researcher shows the relevant page to the participant, and then reads the sentence which includes the target word: “...**Tecrübeli** kuşlardan biri ise, Luga’ya kızgın kızgın bakmaya başladı.” *One of the experienced birds started to look at Luga angrily.* (Hemmatirad, 2018, p. 6). Then, reminds the child of the relevant part of the story and asks: “*This bird was really experienced! However, I do not know what experienced means! What is the meaning of experienced (tecrübeli)? Do you know it?*”. The question and answer process lasts until the meanings of all target words are asked. The responses of children are coded via the ordinal scale which ranges from 0 to 2. If a child gives a wrong answer or no answer, s/he will receive 0 point for this question. If a child explains the meaning of a different word which was derived from the same word root, s/he will receive 1 point for this

question. That means the child broadly knows the meaning of the word. Because Turkish is an agglutinative language, there are variety of words which are derived from same word root by using affixes. These words share the same root and have similar meanings (Carki, Geutner, & Schultz, 2000), constituting a word family (Pan & Ucceli, 2008) (e.g., kork - *fear* (verb), korkmak - *fear* (verb), korkunç - *fearful/scary* (adj), korku - *fear* (noun), Korkulu - *scary* (adj), korkusuz - *brave/fearless* (adj), korkusuzca - *fearlessly* (adv), korkmuş - *terrified* (adj), korkak - *coward* (adj), korkakça - *cowardly* (adv), etc.). Researchers assume that if a speaker is familiar with one of the words in a word family, they also know the others (Pan & Ucceli, 2008). Therefore, as an example, if a child explains the word “tecrübe” (experience) rather than “tecrübeli” (experienced), this child will receive 1 point. If a child explains the word in a suitable context, uses a synonym of the word, explains the meaning by using their experiences, gives relevant examples, or explains the correct meaning of it in accordance with the story content, s/he will receive 2 points for this answer. For example, if a child explains the word by their experiences: “*I could not tie my shoes, however my sister could tie her shoes on the first try, because she is more **experienced** than me. She is older.*” or s/he explains the word by saying a synonym, for example, “deneyimli” (*practiced*), s/he gets 2 points. That means, the lowest point a child can receive from a subtest is 0, while the highest point is 18. The test implementation process was audio-recorded to increase the fidelity of the assessment and a second trained-rater who was blinded in the study assessed a randomly selected 25% of the data (for each book) to check inter-reliability. Observations confirmed a high level of consistency between the two coders:

Pearson Product-moment correlations between the scores of the two coders were 91% for TWT on *Let's Knit Love*, 98% on *Cemile is Riding a Pony*, and 98% on *Luga* (see Appendix E).

3.3.2.2.1. “Age of Acquisition (AoA) Values of Words in Turkish” (Göz, Tekcan & Erciyes, 2016)

Göz, Erciyes and Tekcan (2016) conducted a study to report subjective age of acquisition norms of 600 words. “Age of Acquisition” is defined by the researchers

as the age which a word is learned by native speakers of a language, and it can be investigated with two different methods: “Objective” and “Subjective” measures. Objective measures cover some techniques which give opportunity to measure word knowledge of children in different ages objectively. For example, data collection through picture naming tasks or analyses of natural conversation with children can be considered as two of the techniques of objective measurement (Gilhooly & Gilhooly, 1980; Pérez & Navalón, 2005). On the other hand, subjective measures generally rely on retrospective judgments of adults about their word acquisition procedures (Alonso, Fernandez, & Díez, 2015; Cortese & Khanna, 2008; Marques, Fonseca, Morais, & Pinto, 2007). Research in the literature shows that objective and subjective measures of age of acquisition are highly correlated, which means both methods give similar results about the age of acquisition ratings (Morrison, Chappell, & Ellis, 1997; Pérez & Navalón, 2005). Because of that reason, Göz et al., (2016) conducted research by using the subjective measurement method to reveal AoA ratings of some Turkish words. In the literature, AoA ratings are conducted by using 5- or 7-point Likert scales (Balo et al., 2020), for example while “1” point corresponds to the range of ages 0-3, 5/7 points may correspond to 12+ (Alario & Ferrand, 1999; Bird et al., 2001; Blomberg & Öberg, 2015; Bonin et al., 2003; Gilhooly & Logie, 1980; Morrison et al., 1997; Raman et al., 2014; Sirois, Kremin, & Cohen, 2006; Tsaparina et al., 2011). In this case, a 7-point Likert scale was used by the researchers (Göz et al., 2016). Table 3.10 shows the range of ages which correspond to points on the Likert scale.

Table 3.10. *Age range and their correspondence with points on the Likert scale.*

<i>Age Range</i>	<i>Point</i>
2 – 3	1
3 – 4	2
4 – 5	3
5 – 6	4
7 – 9	5
10 – 11	6
12+	7

Therefore, in the present study, the words with a value of 4 or lower were not chosen as target words, since the participants were assumed to have already acquired these words.

3.3.2.2.2. “The List of Frequent and Early Acquired Words in Turkish (Acar, Zeyrek, Kurfalı & Bozşahin, 2016)”

The aim of Acar et al., (2016) was to build a Turkish psycholinguistic database which includes the age of acquisition (AoA), frequency, and imageability values for Turkish words in this study. To achieve this, the researchers used a corpus-based approach. They used two corpora to determine early and late acquired words by comparing word frequency information in both corpora. These are the *Child Literature Corpus (CLC)*, which includes 4,388,149 word-tokens driven from 535 children’s books and their frequency values, and the *BOUN Corpus* which covers 2,832,025 word-tokens and 11,349 word-types which represent adult language (Acar et al., 2016). Because the comparison analyses were implemented by using word frequency values of two distinct corpora, researchers needed a standardized measure in order to balance the differences between the sizes of the CLC and BOUN Corpus. The frequency of words was calculated by the frequency per million words (fpmw) measure; however, it did not yield a normal distribution. Because of this, Base-10 logarithm transformations were calculated for word frequencies of the CLC and BOUN Corpus to make meaningful inferences. At this point, words which were included in both corpuses were detected and it was seen that 8,844 words overlapped between these two corpuses. These words were separated into two categories: words that showed higher frequency in the CLC than the BOUN Corpus, and words that have lower frequency in the CLC than the BOUN Corpus. According to researchers, words that have a higher frequency in CLC than in the BOUN Corpus indicate *early acquired words*, while words that show lower frequency in CLC than the BOUN Corpus indicate *late acquired words* (Acar et al., 2016). The results of their study suggest that the log-transformed (10 base) frequency value in the margin of 50% (1.221, for CLC>BOUN) can be accepted as a division point for early acquired and late acquired words. That means, if the log-transformed frequency value of a word is

equal to or greater than 1.2, that word can be categorized as *early acquired*, and if it is equal to or less than 1.2, that word can be categorized as *late acquired*.

Table 3.11. *The margin values from quartile analyses on log 10 transformed frequencies on CLC & BOUN sub-corpus (Tolgay, 2015).*

	25%	50%	75%
CLC>BOUN	0.613	1.221	1.8377
BOUN>CLC	0.422	1.1814	1.9935

Although these findings were emphasized in the research, early and late acquired word lists were not shared by the researchers. Because of that, Elif Ahsen Acar who is the corresponding author of the article (Acar et al., 2016), was contacted to get access to the database. After accessing the whole database, the following steps were followed to obtain late and early acquired word lists by using *R Software* (R Core Team, 2013).

- 1) Words which were included in both corpuses were detected
- 2) Base-10 logarithm transformations were calculated for word frequencies of CLC and BOUN Corpus
- 3) Words whose frequency value is higher in CLC corpus than BOUN sub-corpus were listed
- 4) The frequency value in the 50% margin was calculated to see whether it corresponds to the value (1.22) on the article or not.
- 5) Because these values were consistent, words whose base-10 logarithm frequency values are below 1.22 were labeled as late acquired, and words whose base-10 logarithm frequency values are above or equal to 1.22 were labeled as early acquired words.
- 6) In total, there were 2540 late acquired words and 2557 early acquired words in the list.

The words which were selected for the target word test were not early acquired words (n=2557) on this list.

Checking the acquisition age of the target words in two separate databases, and also checking with teachers who were actively teaching at public kindergartens made it safe to assume that the children participating in reading interventions had not already acquired the target words that were used in the TWT tests.

3.4. Data Collection Procedures

The data were collected during the 2022-2023 fall and spring educational terms in public kindergartens in Kocaeli. After official permission was received from the Middle East Technical University Human Research Ethics Committee and the Ministry of National Education, the researcher contacted the school principals to explain the study and acquired consent to conduct research in their schools. Then, parent consent forms were sent to parents with the help of classroom teachers and the study was conducted only with the children whose parents gave permission. Detailed information about the study was written on the parent consent forms with contact information for the researcher. It was also emphasized that the study was on a voluntary basis and that children could stop participating in the study whenever they wanted. When the researcher went to school to deliver the parent consent forms, she also brought the teddy bear that she would use during the process with her. After she delivered the parent consent forms to classroom teachers, they gave the researcher an opportunity to introduce herself to the children. Firstly, the researcher asked the children whether they like reading storybooks or not, and almost all children gave a positive answer. Upon this, the researcher told the students, by pointing out the teddy bear she held, that she became very happy to hear it because they also read storybooks every day with “Ayu”, the teddy bear (see Appendix H). Then the researcher covered Ayu’s ears and whispered, “However, I need your help! When we read storybooks with Ayu, he asks lots of questions to me! *Müğe*, *what was the character of this story? Where were they? What were they doing? How did they feel?* I cannot answer Ayu’s questions by myself anymore; can you help me to answer them, please?” Then, almost all the children volunteered to help the researcher. The researcher thanked all the children for their approval and reminded them to give the consent forms to their parents and said she will come to their school with Ayu next week to read a storybook. In this way, the researcher became familiar with children and raised their curiosity and interest in the study. Before the reading

process began, the researcher asked the classroom teachers and parents whether they had read one of the storybooks that were planned to be used in the current study, and determined that the children participating in the study neither had read these books before, nor had they used the TRT Children's Library application.

About one week later, the researcher went to schools to begin data collection. The data was collected in two phases (see Table. 3.12). In the first phase, which can also be called the pre-intervention phase, a printed book named *Kırmızı Elma*, *The Red Apple*, was read to children in small groups of 4-5 participants, and Paris and Paris's (2003) story comprehension questions were asked to children to understand the level of their story comprehension skills before the experimental process. According to their pre-test scores, the researcher assigned participants to four conditions in order to create identical experiment groups. One-way ANOVA tests were conducted to see whether there was a difference between groups. According to the test results, which are presented in the "Data analysis" section of this chapter in detail, there were no significant differences between groups. That means all experimental groups were identical in terms of the story comprehension scores of participants. Therefore, the researcher started to collect data for the experimental process. In the second phase, printed or e-book versions of the books *Luga* (Hemmatirad, 2018), *Let's Knit Love* (Dasuki & Rasuli, 2020), and *Cemile is Riding a Pony* (de Petigny & Delvaux, 2008) were read with children according to their group allocation. For example, e-book formats of these books were used with a group of 4-5 children in the "e-book / small group" condition, while printed formats were read to 11-13 children in the "Printed book / large group" condition. The story reading and assessment sessions occurred in a separate classroom which included child-sized furniture (see Appendix I). Before the reading sessions, the researcher came to the classroom to arrange it for the activity. During the book listening processes, the children's chairs were positioned in a "U" shape, and the researcher sat on a chair in the opposite direction of them and read the printed storybook or showed the e-book to the children, using an Apple iPad Air 2 and a Piranha 7821 Bluetooth speaker to increase the volume. The "*Let's Knit Love*" storybook had some hotspots which activate animations that were not related to the story plot. These animations were not activated because of the potential for these hotspots to hinder comprehension (Bus et al., 2015; Takacs et al., 2015).

After reading activities, the researcher took the children back to their classes. Then she and Ayu invited them one by one "to answer Ayu's questions". While going back to the classroom where the assessment was held, the researcher said with an excited tone that she was very excited to answer Ayu's questions together, and almost all children stated that they were also very excited. During the assessment process, the child and the researcher sat facing each other on a child-sized chair and table, and the assessment process was audio-recorded. Since there is a possibility that children's knowledge about the story and story elements can be reinforced while the target vocabulary test is being applied, Paris and Paris's (2003) Narrative Comprehension Task was administered before the target word test in the assessment process. The implementation durations of the NCT and TWT varied according to individual differences of participants and features of the storybook, but, in general each of them lasted approximately 5-8 minutes. During the reading activities in all groups, the researcher did not provide any mediation to make the groups as comparable to each other as possible, and during the assessment process, the researcher did not engage children in any conversations. Children's spontaneous comments and questions were answered with short responses like "OK", "*let's talk about it after our activity.*", "*Yes, I like it, but we should answer Ayu's questions first.*" At the end of the assessment process, Ayu thanked and hugged the children and gave them a sticker that included the cover of the book. The same process was followed for all storybook reading and assessment sessions. During the data collection process children in all conditions were exposed to only one book in a week. In order to avoid the sequencing effect, the conditions were divided into subgroups and the books were read in different orders in these subgroups (see Table 3.12).

Table 3.12 *Information about distributed parent consent forms*

Phase I Pre intervention measures		Phase II Interventions and measures		
Printed version of The Red Apple was read to create identical groups		I. Reading Section	II. Reading Section	III. Reading Section
Kindergarteners n=146	Printed book reading / large group (n=37)	Participants who listened to printed books in large groups		
	a. Sub-Printed large group n=11	Printed book Sevgi Örelim Post-test	Haydi Printed book Midilliye biniyor Post-test	Cemile Printed book Luga Post-test
	b. Sub-Printed large group n=13	Printed book Midilliye biniyor Post-test	Cemile Printed book Luga Post-test	Haydi Sevgi Örelim Post-test
	c. Sub-Printed Large group n=13	Printed book Post-test	Luga Printed book Sevgi Örelim Post-test	Haydi Cemile Printed book Midilliye biniyor Post-test
	Printed book reading / small group (n=37)	Participants who listened to printed books in small groups		
	a. Sub-Printed small group n=12	Printed book Sevgi Örelim Post-test	Haydi Printed book Midilliye biniyor Post-test	Cemile Printed book Luga Post-test
	b. Sub-Printed small group n=12	Printed book Midilliye biniyor Post-test	Cemile Printed book Luga Post-test	Haydi Sevgi Örelim Post-test
	c. Sub-Printed small group n=13	Printed book Post-test	Luga Printed book Sevgi Örelim Post-test	Haydi Cemile Printed book Midilliye biniyor Post-test

Table 3.12. Information about distributed parent consent forms (Cont'd)

Electronic book reading / large group (n=36)		Participants who listened to e-books in large groups		
a. Sub-Electronic large group n=13	E-book Sevgi Örellim test	Haydi Post-biniyor	E-book Midilliye Post-test	Cemile biniyor E-book Luga Post-test
b. Sub-Electronic large group n=12	E-book Midilliye Post-test	Cemile biniyor	E-book test	Luga Post-Örellim test Haydi Sevgi
c. Sub-Electronic large group n=11	E-book test	Luga Post-	E-book Sevgi Örellim test	Haydi Post-Midilliye biniyor Post-Cemile
Electronic book reading / small group (n=36)		Participants who listened to e-books in small groups		
a. Sub-Electronic Small group n=10	E-book Sevgi Örellim test	Haydi Post-	E-book Midilliye Post-test	Cemile biniyor E-book Luga Post-test
b. Sub-Electronic Small group n=11	E-book Midilliye Post-test	Cemile biniyor	E-book test	Luga Post-Örellim test Haydi Sevgi
c. Sub-Electronic Small group n=15	E-book test	Luga Post-	E-book Sevgi Örellim test	Haydi Post-Cemile Midilliye biniyor Post-test

3.5. Data Analysis

The data of the study were analyzed through IBM SPSS 26. Preliminary analyses were conducted to investigate normality, outliers, missing values, skewness, and the kurtosis values of variables. For the first phase of the study, one-way between group Analysis of Variance (One-way ANOVA) was conducted to ensure identical experimental conditions in terms of children's internal story comprehension.

Before presenting the results of the analysis, descriptive statistics for conditions of the study are presented in the Table 3.13.

Table 3.13. *Descriptive statistics for conditions of the study (Phase I)*

		Conditions							
		Printed book small group (n = 37)		Printed book large group (n = 37)		E-book small group (n = 36)		E-book large group (n = 36)	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Explicit	Story Comprehension	5,49	1,660	5,95	1,63	5,56	1,403	5,56	1,362
Implicit	Story Comprehension	4,68	1,582	4,70	1,631	4,22	1,726	4,75	1,645

As can be seen in Table 3.13, the study had four conditions. To increase the internal validity, all conditions were balanced in terms of participants' explicit and implicit story comprehension scores. When the mean scores of implicit and explicit story comprehensions in the table are examined, it was seen that all mean scores were very close to each other in all conditions. Before the analysis, one-way ANOVA assumptions were checked and it was seen that none of them were violated. The results illustrated that there was no statistically significant difference between experimental conditions in terms of explicit story comprehension scores [$F(3, 142) = .693, p > .05$], and implicit story comprehension scores [$F(3, 142) = .804, p > .05$] (see table 3.14.).

Table 3.14. *One-way ANOVA results for explicit and implicit story comprehension scores of The Red Apple*

	<i>SS</i>	<i>df</i>	<i>M²</i>	<i>F</i>	<i>P</i>
Explicit Story Comprehension					
Between Groups	4.847	3	1.616	.698	.555
Within Groups	328.913	142	2.316		
Total	333.760	145			
Implicit Story Comprehension					
Between Groups	6.532	3	2.177	.804	.494
Within Groups	384.810	142	2.710		
Total	391.342	145			

For the second phase of the study, a series of two-way between group Analysis of Variance (Two-way ANOVA) was conducted to find answers to the research questions. Two-way ANOVA gives a researcher an opportunity to not only examine the main effect for each independent variable, but also understand the possible interaction effect between these variables on a dependent variable (Pallant, 2016). Before each analysis, assumptions were checked also by using IBM SPSS 26, and it is seen that none of the assumptions were violated.

3.6. Assumptions and Limitations

This study has some assumptions. The first assumption is that, considering the related databases and teacher-expert opinions, it was assumed that the selected words in the "Target Word Test" were not known by children in the relevant age group.

Secondly, during the implementation process, it was assumed that the children in the experimental and control groups were equally affected by uncontrollable external factors.

In addition to these assumptions, the present study also has some limitations. The first limitation was that the present research is limited to 60-72 months old children in public kindergartens affiliated with the Kocaeli Province, Körfez District National Education Directorate.

Secondly, the present study is limited to the data which were collected by using storybooks named "Luga", "Cemile is Riding a Pony", and "Let's Knit Love".

Lastly, although the experimental groups were balanced according to the initial story comprehension of the participants, individual differences such as motivation and attitude towards reading may affect the story reading process.

Considering these assumptions and limitations, the results of the current study may not be representative of populations at larger scales, which may be affected by some factors that do not apply to the participants of the current study.

In the following section, the internal and external validity of this study is given in detail.

3.7. Internal and External Validity of the Study

The possible internal and external validity threats on the present study and the way to eliminate these threats are discussed in this section of the study.

Internal validity is the degree to which the observed changes in the dependent variable can be explained by the independent variable (Büyüköztürk et al., 2016). If a study lacks internal validity, its findings may not reflect the truth. Therefore, it is important to eliminate internal validity threats as much as possible while conducting a study.

Experimental group differences could be a potential internal threat to the present study. To eliminate this threat, the researcher conducted the study in two phases. In the first phase, a printed book was read with children and a story comprehension pre-test was implemented to assign participants to conditions to create identical experimental groups. In addition, the researcher studiously selected the target words of the study. When choosing the target words, the researcher considered two different databases to ensure that the selected words are unlikely to be known by the children of the specified age group. At the end of the selection, these words were

presented to public kindergarten teachers for their opinions. By considering all these processes, it can be said that the participants across experimental conditions were identical not only in terms of story comprehension skills, but also their knowledge of the words in the present study.

Implementing a pre-test for the target vocabulary test could pose a threat to the internal consistency of the study as it could affect the post-test scores. Children who have been exposed to the target words in the pre-test could learn the meanings of these words independently of the intervention in the process, and this could prevent the changes observed in the dependent variables from being explained by the independent variable. The fact that the researcher chose words in the target vocabulary test from words that children in this age group do not know eliminated the need for pre-testing, and accordingly, this threat to internal validity was also eliminated.

The location could also be threat for internal consistency. The data collection environment may affect participants' performance during the process. To reduce this potential threat, the data were collected in similar environments which included child-sized tables and chairs.

The characteristics of the data collector like gender, experience, communication skills, and attitude might also affect the processes of intervention and data collection. Therefore, to reduce this potential internal threat, the storybook reading activities and implementation of tests were conducted by the same researcher in all experimental conditions/groups.

CHAPTER 4

RESULTS

This chapter provides the results of the current study with regard to the research questions. Firstly, the descriptive information of the data is presented; secondly, the assumption checking procedures are explained for two-way ANOVA analysis. Lastly, a series of two-way ANOVA analysis results are presented.

4.1. Descriptive Statistics

Before presenting the results of the two-way ANOVA analysis, descriptive statistics are presented in Table 4.1. to provide information about the main characteristics of the data set.

Table 4.1. *Descriptive statistics for conditions of the study*

		Conditions							
		Printed book small group (n = 37)		Printed book large group (n = 37)		E-book small group (n = 36)		E-book large group (n = 36)	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Total Story Comprehension	Explicit	16.08	3.954	15.57	4.025	11.78	3.758	11.42	4.494
Total Story Comprehension	Implicit	15.14	4.590	14.03	5.470	11.00	4.951	12.03	5.390
Total Word Test	Target	20.05	7.412	20.24	6.495	17.17	7.327	18.11	8.501

As Table 4.1. illustrates, while the mean scores of total explicit story comprehension were 16.08 for the printed book small group; 15.57 for the printed book large group;

11.78 for the e-book small group; and 11.42 for the e-book large group; the mean scores of total implicit story comprehension were 15.14 for the printed book small groups; 14.03 for the printed book large group; 12.03 for the e-book large group; and 11.00 for the e-book small group, and the means of the total target word test were 20.24 for the printed book large group; 20.05 for the printed book small group; 18.11 for the e-book large group and 17.7 for the e-book small group, respectively.

In each dependent variable, while the mean scores of the same book types seem close to each other, there were differences in the mean scores for different book types. In relation to this, it was seen that the mean scores of different group sizes were at a similar level. However, a series of two-way ANOVA analyses were performed to see if these interpretations were statistically significant.

In the following section, information about assumption tests for the two-way ANOVA analysis is presented.

4.2. Assumptions for the Two-way ANOVA Analysis

Prior to conducting three sets of two-way ANOVA analyses, the assumptions were checked. Level of measurement, independence of observations, normal distribution, and homogeneity of variance are the assumptions of two-way ANOVA analysis (Pallant, 2016).

4.2.1. Level of Measurement

To conduct two-way ANOVA analysis, a researcher should deal with one continuous dependent variable, and two categorical independent variables consisting of two or more levels (Pallant, 2016). Since the researcher dealt with one continuous dependent variable in each research question, and two categorical independent variables consisting of two levels, there was no violation for level of measurement assumption.

4.2.2. Independence of Observations

Each measurement or observation that creates the data must be independent of the others; meaning it cannot be affected by another measurement or observation (Pallant, 2016).

In the present study, there was no relationship between the subjects in each condition and the data from one subject did not influence the data from another; therefore, the independence of observations assumption was met.

4.2.3. Normal Distribution

To check the normality assumptions, researcher examined the similarity of mean and 5% trimmed mean scores, skewness and kurtosis values, shapes of histograms, Q-Q plots, detrended Q-Q plots, boxplots for outliers, and the results of Kolmogorov-Smirnov statistics for each dependent variable (Pallant, 2016). According to these examinations, no violation of the normality assumption was found (see Appendix G).

4.2.4. Homogeneity of Variance

When conducting a two-way ANOVA analysis, it is assumed that the populations from which the samples are drawn have equal variances. That means the variances of scores for each of the groups is similar (Pallant, 2016). To test this assumption, the results of Levene's test for equality of variances, which is given as a part of a two-way ANOVA test, were checked. To meet the homogeneity of variance assumption, the *P* value should be higher than .05. (Pallant, 2016). Because in all analyses, the *P* value was higher than .05 (see Table 4.2.), the present study did not violate this assumption.

Table 4.2. *Levene's Test of Equality of Error Variances for All Dependent Variables*

		<i>Levene</i>			
		<i>Statistic</i>	<i>df1</i>	<i>df2</i>	<i>P</i>
Total ESC of All Books	Based on Mean	.811	3	142	,490
	Based on Median	.734	3	142	,533

Table 4.2. *Levene's Test of Equality of Error Variances for All Dependent Variables (Cont'd)*

	Based on Median and with adjusted df	.734	3	136,745	,533
	Based on trimmed mean	.803	3	142	,494
Total ISC of All Books	Based on Mean	.484	3	142	,694
	Based on Median	.485	3	142	,693
	Based on Median and with adjusted df	.485	3	134,342	,693
	Based on trimmed mean	.481	3	142	,696
Total TWT All Books	Based on Mean	.897	3	142	,445
	Based on Median	.777	3	142	,509
	Based on Median and with adjusted df	.777	3	135,144	,509
	Based on trimmed mean	.875	3	142	,456

Since all assumptions were met, there was no obstacle to conducting a two-way ANOVA analysis. The following section presents the inferential statistics of the present study.

4.3. Inferential Statistics

In this section, the research questions are examined by conducting a series of two-way ANOVA analyses.

4.3.1. The Difference in Kindergartener's ESC Scores in terms of Book Format and Group Size

RQ1: Is there any significant difference in ESC scores of kindergarteners in terms of book format and group size?

H₀: There is no significant difference in ESC scores of kindergarteners in terms of book format.

H₁: There is a significant difference in ESC scores of kindergarteners in terms of book format.

H₀: There is no significant difference in ESC scores of kindergarteners in terms of group size.

H₁: There is a significant difference in ESC scores of kindergarteners in terms of group size.

H₀: There is no interaction effect between book format and group size.

H₁: There is an interaction effect between book format and group size.

A two-way between-groups analysis of variance (ANOVA) was conducted to explore differences in explicit story comprehension scores (ESC) of young children in regard to book format and group size. Book format was divided into two categories, electronic book (e-book) and printed book. Group size was categorized into two groups, small and large. The interaction effect was not statistically significant, $F(1, 142) = .013, p > .05$. Similarly, there was no statistically significant main effect of group size, $F(1, 142) = .422, p > .05$. On the other hand, there was a statistically significant main effect for book type, $F(1, 142) = 39.45, p < .05$ with a large effect size ($\eta_p^2 = .21$). As shown in Figure 4.13. and Table 4.3. below, both small and large groups had higher explicit story comprehension scores in the printed book condition.

On that point, it can be said that while we failed to reject the second and third null hypothesis, we might reject the first null hypothesis.

Table 4.3. *Two-way ANOVA results for explicit story comprehension*

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	659.300 ^a	3	219.767	13.298	.000	.219
Intercept	27440.704	1	27440.704	1660.373	.000	.921
B_TYPE	652.074	1	652.074	39.455	.000	.217
GRP_SIZE	6.979	1	6.979	.422	.517	.003
B_TYPE * GRP_SIZE	.212	1	.212	.013	.910	.000
Error	2346.810	142	16.527			
Total	30568.000	146				
Corrected Total	3006.110	145				

a. R Squared = .219 (Adjusted R Squared = .203)

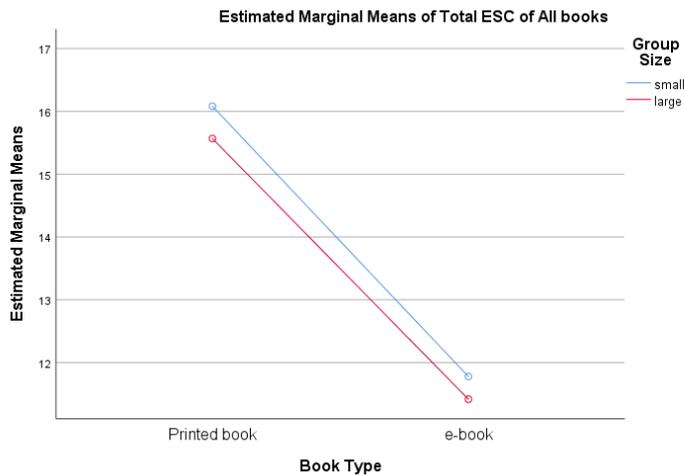


Figure 4.1 *Small and large groups' explicit story comprehension scores by book type.*

4.3.2. The Difference in Kindergartener's ISC Scores in terms of Book Format and Group Size

RQ2: Is there any significant difference in ISC scores of kindergarteners in terms of book format and group size?

H₀: There is no significant difference in ISC scores of kindergarteners in terms of book format.

H₁: There is a significant difference in ISC scores of kindergarteners in terms of book format.

H₀: There is no significant difference in ISC scores of kindergarteners in terms of group size.

H₁: There is a significant difference in ISC scores of kindergarteners in terms of group size.

H₀: There is no interaction effect between book format and group size.

H₁: There is an interaction effect between book format and group size.

A two-way between-groups analysis of variance (ANOVA) was conducted to explore differences in implicit story comprehension scores (ISC) of young children in regard to book format and group size. Book format was divided into two categories, electronic book (e-book) and printed book. Group size was categorized into two groups, small and large. The interaction effect was not statistically significant, $F(1, 142) = 1.59, p > .05$. Similarly, there was no statistically significant main effect of group size, $F(1, 142) = .002, p > .05$. Unlike others, there was a statistically significant main effect for book type, $F(1, 142) = 13.13, p < .05$ with a medium effect size ($\eta_p^2 = .085$). As shown in Figure 4.14. and Table 4.4. below, both small and large groups had higher explicit story comprehension scores in the printed book condition.

On that point, it can be said that while we failed to reject second and third null hypothesis, we might reject the first null hypothesis.

Table 4.4. *Two-way ANOVA results for implicit story comprehension*

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	385.046 ^a	3	128.349	4.912	.003	.094
Intercept	24849.918	1	24849.918	951.060	.000	.870
B_TYPE	343.315	1	343.315	13.139	.000	.085
GRP_SIZE	.059	1	.059	.002	.962	.000
B_TYPE * GRP_SIZE	41.621	1	41.621	1.593	.209	.011
Error	3710.270	142	26.129			
Total	29030.000	146				
Corrected Total	4095.315	145				

a. R Squared = .094 (Adjusted R Squared = .075)

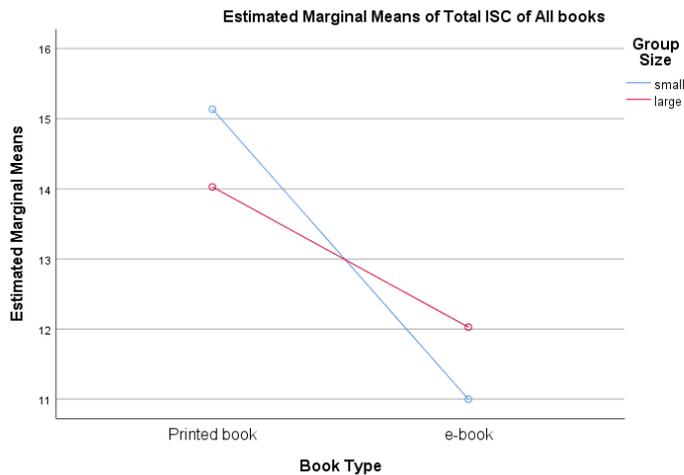


Figure 4.2 *Small and large groups' implicit story comprehension scores by book type.*

4.3.3. The Difference in Kindergartener's TWT Scores in terms of Book Format and Group Size

RQ3: Is there any significant difference in TWT scores of kindergarteners in terms of book format and group size?

H₀: There is no significant difference in TWT scores of kindergarteners in terms of book format.

H₁: There is a significant difference in TWT scores of kindergarteners in terms of book format.

H₀: There is no significant difference in TWT scores of kindergarteners in terms of group size.

H₁: There is a significant difference in TWT scores of kindergarteners in terms of group size.

H₀: There is no interaction effect between book format and group size.

H₁: There is an interaction effect between book format and group size.

A two-way between-groups analysis of variance (ANOVA) was conducted to explore the differences in Target Word Test scores (TWT) of young children in regard to book format and group size. Book format was divided into two categories, electronic book (e-book) and printed book. Group size was categorized into two groups, small and large. The interaction effect was not statistically significant, $F(1, 142) = .093, p > .05$. Similarly, there was no statistically significant main effect of group size, $F(1, 142) = .211, p > .05$. There was a statistically significant main effect for book type, $F(1, 142) = .412, p < .05$ with a small effect size ($\eta_p^2 = .028$). As shown in Figure 4.15. and Table 4.5. below, both small and large groups had higher target word test scores in the printed book condition.

On that point, it can be said that, while we failed to reject the second and third null hypothesis, we might reject the first null hypothesis.

Table 4.5. *Two-way ANOVA results for vocabulary acquisition (TWT)*

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	246.584 ^a	3	82.195	1.476	.224	.030
Intercept	52108.497	1	52108.497	936.011	.000	.868
B_TYPE	229.866	1	229.866	4.129	.044	.028
GRP_SIZE	11.725	1	11.725	.211	.647	.001
B_TYPE * GRP_SIZE	5.204	1	5.204	.093	.760	.001
Error	7905.258	142	55.671			
Total	60365.000	146				
Corrected Total	8151.842	145				

a. R Squared = .030 (Adjusted R Squared = .010)

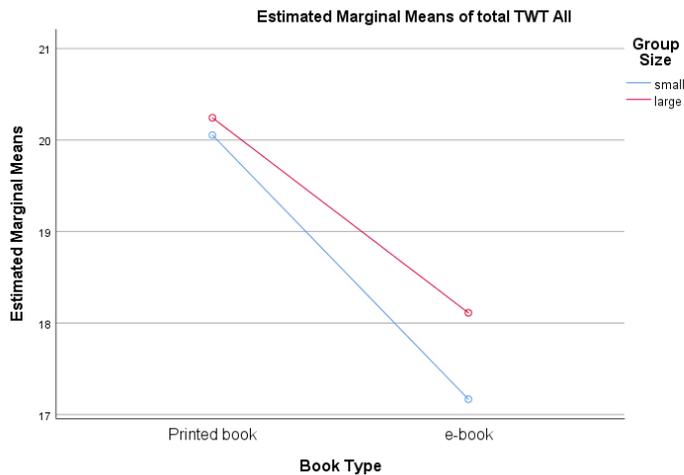


Figure 4.3 *Small and large groups' target word test scores by book type.*

4.4. The Summary of the Results

The results of the study illustrated that although book format had an effect on children's explicit comprehension, implicit comprehension, and word learning skills, group size or interaction of book type and group size did not have an effect on any of these skills. By considering these results, it can be said that in both small and large groups, printed books contributed more to children's implicit and explicit story comprehension and vocabulary acquisition skills compared to electronic books.

CHAPTER 5

DISCUSSION

In this chapter, the findings of the study are discussed in light of the literature. The present study illustrated similar findings regarding the effects of *group size* and *book format* on 5-year-old kindergarteners' explicit story comprehension, implicit story comprehension, and vocabulary acquisition skills. The results showed that although book format had an effect in favor of the printed book format in all of the three early literacy skills, neither group size nor the interaction of book type and group size had any effects.

Therefore, while discussing the results in the first section of this chapter, findings about book format are discussed, while in the second section, findings about group size are discussed. Furthermore, the implications and recommendations are presented.

5.1. The Effect of Book Format on Kindergarteners' Vocabulary Acquisition, Explicit and Implicit Story Comprehension Skills

One aim of the present study was to understand whether book format affected the three early literacy skills of kindergarteners: vocabulary acquisition, explicit story comprehension, and implicit story comprehension.

The results revealed that children in the printed book conditions outperformed the children in the e-book conditions in all assessed early literacy skills. As mentioned in earlier chapters, there is no consensus among researchers about the effects of e-books on children's early literacy skills. Therefore, although the results of the present study are consistent with some of previous studies in the literature (Chiong et al., 2012; de

Jong & Bus,2002; Krcmar & Cingel, 2014; Reich et.al., 2019; Sapağlam et al., 2020.), they diverge from others (Altun, 2018a; Ihmeideh, 2014; Rvachew et al., 2017; Sari, 2018).

Parallel to the present study, Reich and others (2019), compared preschoolers' story comprehension, vocabulary and engagement skills based on the book format they were exposed to. They reported that preschoolers who were exposed to printed book reading outperformed those who were exposed to e-book reading in terms of story comprehension, vocabulary and engagement skills. Similarly, Chiong and others (2012) investigated the different effects of book format on young children's story comprehension skills. They illustrated that children comprehend the story better when they are exposed to printed book reading activities.

There are three possible main reasons why printed book reading activities better support young children's story comprehension and vocabulary acquisition skills over e-book reading activities. These possible reasons are presented in the following paragraphs.

Firstly, the researcher in the current study used the auto-narration feature in the electronic book reading sessions, while she read the story aloud in the printed book reading sessions. In the reading activities with both book types, the researcher did not interact with the children by asking questions, answering, or chatting, they only read stories (for printed books) and showed the iPad (for e-books). Although no mediation was provided during the reading activities, it cannot be ignored that there might inadvertently be some interaction between children and the researcher since the children heard the story from her voice and saw possible unintentional gestures of the reader. This situation may have led to drawing a conclusion in favor of printed books when comparing reading activities conducted with e-books and printed books. According to Vygotsky (1986), learning takes place in a social order and children's interaction with a more knowledgeable individual supports their learning process. Humans are social creatures by nature, and much of their learning involves the knowledge and skills they acquire by interacting with others around them (Engler,

2013). For this reason, unlike electronic book reading activities, this spontaneous interaction between the researcher and children possibly occurred during printed book reading activities, and may have positively affected the children's story comprehension and vocabulary acquisition skills. Previous studies also emphasized the positive effect of these possible interactions that occur naturally during the printed book reading activities (Chiong et al., 2012; Kozminsky & Asher-Sadon, 2013; Krmar & Cingel, 2014; Reich et al., 2019).

Secondly, it is thought that children's attitudes toward technology and their technology habits may have also affected the results. Recent studies revealed that young children spend a significant part of their time at home in front of the screen (Can-Yaşar et al., 2012; Livingstone et al., 2014; Neumann & Neumann, 2017; Plowman & Stevenson, 2012; Rideout, 2014, TURKSTAT, 2021), and during this time children mostly prefer to play games, and watch various entertainment videos on video-sharing sites (Altun, 2019; Bulut, 2018; Ceyhan & Ceyhan, 2011; Chiong & Schuler, 2010; Güngör et al., 2020) On that point, children who have such experience with fun apps or interactive games, may tend to associate tablet computers with toys and fun rather than learning. Because of this association, during screen time children may expect to play games rather than listening stories and this unfulfilled expectation hinders their motivation to participate in the reading activities. On a different point, this result may also be explained by the "Amount of Invested Mental Effort Theory (AIME)" of Solomon (1981). According to AIME, individuals tend to put greater effort when they try to process complex, ambiguous stimuli which they cannot account for easily these stimuli by using their existing mental schema. In other words, people tend to put in less mental effort when they encountered a situation that they find easy (Rieh et al., 2012). Therefore, children may put less mental effort into e-book reading activities because screen time meant "game time" to them. This situation may have led them to acquire less information and accordingly comprehend the story less in e-book reading sessions compared to printed book reading activities. Therefore, children in the printed book conditions may have outperformed those in the e-book conditions.

Lastly, some multimedia features of e-books may play different roles in contributing to the development of early literacy skills by young children, and research in the literature draw different conclusions about this point. For example, well-designed e-books generally include multimedia features such as motion pictures (animations), camera techniques, music, and sound effects to support the story being told (Zucker et al., 2009). The e-books used in the present study also had some animations (motion pictures) and soft background music. Although some studies illustrated the positive contributions made by background music to children's early literacy skills (Bus et al., 2015; Takacs et al., 2015), others emphasized that it may hinder story comprehension and vocabulary acquisition (Lehmann & Seufert, 2017; Sarı, 2019; Smeets et al., 2014). Sarı (2019) indicated that the background music and sound effect features of e-books do not support children's story comprehension and vocabulary acquisition skills, and on the contrary, they have negative effects on these skills. In the current study, the reason why children who participated in printed book reading activities performed better than children who participated in electronic book reading activities may be the simultaneous presence of story narration and background music in electronic books. This situation may have negatively affected children understanding the story and acquiring new words by creating a cognitive load on their working memory. As it was explained in detail in the literature review chapter, according to Paivio's Dual Coding Theory and Mayer's Cognitive Theory of Multimodal Learning, learning occurs better when the information is gathered through both verbal and non-verbal channels (Mayer, 2001; Paivio, 2006; Sadoski & Paivio, 2013; Schnotz, 2005). Using different channels makes learning more permanent and alleviates the overload that can occur on a channel. However, music and sound effects in electronic books use the same channel as storytelling, and this may cause cognitive load on the non-verbal (auditory) channel (Kirschner, 2002). As a result of this cognitive load, it may not be possible for children to match verbal and non-verbal information. This situation might prevent children from acquiring new words and comprehending the story, and may have caused electronic books to be less effective in developing these skills than printed books in the present study.

According to the statistical results of the current study, although printed books were more effective than electronic books, this does not mean that electronic books do not contribute to the development of children's early literacy skills. For this reason, it should not be forgotten that although printed books were more effective in this study, electronic books can be also a good alternative for young generations to develop early literacy skills and acquire knowledge.

5.2. The Effect of Group Size on Kindergarteners' Vocabulary Acquisition, Explicit and Implicit Story Comprehension Skills

Another aim of the present study was to understand whether group size affects kindergarteners' development of three early literacy skills: vocabulary acquisition; explicit story comprehension; and implicit story comprehension.

The findings of the present study revealed that group size had no effect on explicit story comprehension, implicit story comprehension, or vocabulary acquisition skills of 5-year-old kindergarten students. This result is consistent with the results reported by Neuman and Kaefer (2013) who investigated whether group size has an effect on word knowledge. Their results indicated that the word knowledge of children improved significantly regardless of the group size in which they participated in reading activities. Therefore, it was concluded that the group size did not have a significant effect on the development of children's word knowledge.

Although the findings of the present study regarding the effects of group size on children's story comprehension and vocabulary acquisition skills are consistent with the findings of some studies, they conflict with the findings of others (Morrow & Smith, 1990; Phillips & Twardosz, 2003). For example, Morrow and Smith (1990) found that children in small reading groups performed better in story comprehension assessments compared to children in large group. However, when the studies which reveal significant differences between group sizes were examined, it is seen that these differences were mostly associated with the peer interaction that occurred in the group during the intervention process (Morrow & Smith, 1990; Phillips & Twardosz, 2003). However, in the present study, the children were not allowed to

interact with one another or have conversations during the activity process, which limited interaction among students during the reading activities. If the effects of group size are due to peer interaction during reading activities, the limited interaction among the students in the current study might have blocked any positive influence of group size. Therefore, in this study, it may be concluded that group size has no effect on reading activities with young children in both book formats.

Future studies may develop a similar study by using a shared reading technique which gives more opportunities for peer and adult-child interaction to investigate if the results differ.

5.3. Implications

The present study revealed significant findings regarding the efficacy of e-book and printed book reading activities by comparing them and by also considering reading group size. Through these findings, some educational implications for teachers and e-book developers are discussed in the following paragraphs.

The literature emphasized that to become efficient readers, precursors of reading skills should be developed in early years (Bishop, 2003; Catts et al., 1999; Morris et al., 2003; Utchell et al., 2016). Story comprehension and word acquisition skills are accepted as two precursors of future reading comprehension skills (Oakhill & Cain, 2012; Catts et al., 2015). Facilitating the development of these skills should be the aim of an early childhood education teacher. It is illustrated in the literature that reading storybooks regularly with young children not only helps them to understand the features of their mother tongue, but also to develop vocabulary and comprehension skills, as well as spending quality time together (Mol & Bus, 2011). Therefore, regularly conducting storybook reading activities with children can be an option for the teachers to facilitate their students' skills. However, when choosing reading materials for these activities, teachers should carefully choose materials that are suitable for the skills they want to support and the objectives they want to achieve. For example, the results of the current study revealed that printed book reading activities have more potential to facilitate young children's story

comprehension and vocabulary acquisition skills compared to their electronic counterparts. Therefore, early childhood education teachers may prefer to read printed books rather than e-books when they conduct an activity that has objectives to support story comprehension or vocabulary acquisition skills. However, it should also be noted that although the findings of this study emphasized the superiority of printed books to supporting these skills compared to their electronic counterparts, it was not concluded that e-books were ineffective in supporting the development of young children's story comprehension and word acquisition skills. As aforementioned, novelty of the activity may also impact children's interests and the quality of the learning process (Reich et al., 2019). Therefore, the occasional use of e-books in reading activities might cause e-books to be perceived as novel mediums by children and can be beneficial by supporting their learning processes. However, there are important issues that teachers should pay attention to when they use the electronic book format as an alternative. This study concluded that the background music added to electronic books might have created a cognitive load since it was processed in the same channel as the story narration, and accordingly, the story comprehension and vocabulary acquisition skills of children in electronic book reading conditions might have been negatively affected. Therefore, while conducting e-book reading activities, teachers should choose an e-book which does not include background music or make sure that the background music in the selected book is at least low-pitched and soft-toned which do not avert the story narration, and/or distract children's attention.

Basically, a story includes some main elements like characters, setting, initiating event, problem, outcome resolution and theme. According to Paris and Paris (2003), children's ability to understand the connection between these elements is an indicator of their level of story comprehension skills. Therefore, storybooks which include these main elements can be more beneficial to support the development of story comprehension skills of young children.

Since the current study concluded that the simultaneous existence of background music and story narration may create cognitive load and hinder the story

comprehension and vocabulary acquisition skills of young children, e-book developers should consider this effect while developing new e-books. They should be aware of the fact that multimedia feature added to the electronic books in order to make the content richer and more attractive do not always support the development of children.

Furthermore, since this study concluded that group size has no effect on story comprehension and vocabulary acquisition skills, teachers with a large class size should not despair that reading activities will not be beneficial in their classrooms. They should be aware of the importance of reading activities regardless of the number of children they teach.

5.4. Limitations and Recommendations

The present study comprises three specific limitations that should be considered during the interpretation of findings. First, the present study is limited to 5-year-old kindergarteners who were enrolled in public schools in Kocaeli, Körfez. Therefore, future studies may utilize larger samples from different districts of Türkiye to increase the generalizability of the study findings.

Secondly, the present study is limited to the data collected through the storybooks “Luga,” “Cemile is Riding a Pony,” and “Let’s Knit Love”. Future studies may use different books to see if the results change.

Thirdly, since it is thought that different multimedia features added on e-books may differently affect the story comprehension and vocabulary acquisition skills of young children (Bus et al., 2015; Sari, 2019; Takacs et al., 2015), further studies may also investigate the effect of different multimedia features of e-books on young children’s early literacy skills during the e-story reading activities conducted in different group sizes.

Fourthly, in this study, the whole process was carried out by the researcher, but the level of teachers' Technological Pedagogical Content Knowledge (TPACK) and the

educational practices developed accordingly may also be a factor affecting the learning process. Future research may examine the effects of teachers' TPACK levels and teaching skills (classroom management, book reading, etc.) on e-book and printed book reading activities conducted in different group sizes.

Fifthly, because it is believed that children's habits of technology usage and their attitudes towards technology may affect their performance during the e-book reading activities, future studies may also consider the level of children's attitude towards screens while comparing the efficacy of printed book reading activities and e-book reading activities

Finally, although the experimental groups were balanced by considering children's initial story comprehension scores, children's individual differences such as their attitudes toward reading, motivations, temperaments, home literacy environments and technology experiences may affect the storybook reading activity process. Future studies may control these factors.

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APPENDICES

APPENDIX A: PARENTAL APPROVAL FORM

Veli Onam Formu

Sayın Veli;

Çocuğunuzun katılacağı bu çalışma, “Grup Büyüklüğü ve Elektronik Hikaye Kitabı Okuma: Farklı Grup Büyüklüklerinde Uygulanan E-Kitap Okuma Etkinliklerinin Hikaye Anlama ve Kelime Edinimi Becerileri Açısından Kıyaslanması” adıyla, Ekim 2022 Ocak 2022 tarihleri arasında yapılacak bir araştırma uygulamasıdır.

Araştırmanın Hedefi: Araştırmamızın amacı elektronik hikaye kitapları (e-kitap) ve basılı hikaye kitapları ile yapılan okuma etkinliklerinin henüz okur-yazar olmayan çocukların *hikayeyi anlama ve kelime edinimi* becerilerine olan etkisini karşılaştırmaktır. Aynı zamanda okuma etkinliklerinin uygulandığı gruptaki kişi sayısında görülen çeşitliliğin bu becerilere olan etkisinin incelenmesi amaçlanmaktadır.

Araştırma Uygulaması: Çocuğunuzun süreç boyunca yaş gruplarına uygun olarak seçilen hikaye kitapları ile gerçekleştirilecek okuma etkinliklerine katılması ve sonrasında da uzmanlar tarafından geliştirilen “Anlatıyı Anlama Testi” ni ve araştırmacı tarafından geliştirilen “Hedef Kelime Testi” ni cevaplandırması beklenmektedir. *Anlatıyı anlama testi* toplamda 10 adet sorudan oluşmaktadır. Bu sorular hikayenin çocuk tarafından ne düzeyde anlaşıldığını ölçmeye yönelik sorulardır. (Örnek: “*Tavşan ve kır faresi neden tilkiyi görünce sevindiler ve ondan yardım istediler?*” ve “*Hikâyenin bu kısmında tavşan nasıl hissediyor? Sence neden öyle hissediyor olabilir?*”). *Hedef kelime testi* ise çocuğunuzun okunan hikaye kitabından seçilen 9 adet kelimenin anlamını etkinlik sonunda öğrenip öğrenmediğini ölçmeye yarayan bir araçtır. Çocuklara kitap okuma etkinliklerinden sonra okulda bulunan başka bir sınıfta bu testler bireysel olarak uygulanacaktır. Testlerin bireysel olarak uygulanmasının amacı dikkat dağınıklıklarını engellemektir. Yukarıda da belirtildiği gibi bu testler sadece okunan hikayeye yönelik sorulardan oluşmaktadır. Soru-cevap sırasında araştırmamızın güvenilirliğini artırmak amacı ile araştırmacı tarafından ses kaydı alınacaktır. Bu ses kayıtları hiçbir şekilde 3. bir şahıs tarafından dinlenmeyecek, paylaşılmayacaktır.

Araştırma T.C. Milli Eğitim Bakanlığı’nın ve okul yönetiminin de izni ile gerçekleştirilmektedir. Araştırma uygulamasına katılım tamamen gönüllülük esasına dayalı olmaktadır. Çocuğunuz çalışmaya katılıp katılmamakta özgürdür. Araştırma çocuğunuz için herhangi bir istenmeyen etki ya da risk taşımamaktadır. Çocuğunuzun katılımı **tamamen sizin isteğinize bağlıdır**, reddedebilir ya da herhangi bir aşamasında ayrılabilirsiniz. Araştırmaya katılmama veya araştırmadan ayrılma durumunda öğrencilerin akademik başarıları, okul ve öğretmenleriyle olan ilişkileri etkilemeyecektir.

Çalışmada öğrencilerden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplar tamamen gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir.

Uygulamalar, genel olarak kişisel rahatsızlık verecek sorular ve durumlar içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden çocuğunuz kendisini rahatsız hissederse cevaplama işini yarıda bırakıp çıkmakta özgürdür. Bu durumda rahatsızlığın giderilmesi için gereken yardım sağlanacaktır. Çocuğunuz çalışmaya katıldıktan sonra istediği an vazgeçebilir. Böyle bir durumda veri toplama aracını uygulayan kişiye, çalışmayı

APPENDIX A: PARENTAL APPROVAL FORM (CONT'D)

tamamlamayacağını söylemesi yeterli olacaktır. Çalışmaya katılmamak ya da katıldıktan sonra vazgeçmek çocuğunuza hiçbir sorumluluk getirmeyecektir.

Onay vermeden önce sormak istediğiniz herhangi bir konu varsa sormaktan çekinmeyiniz. Çalışma bittikten sonra bizlere telefon veya e-posta ile ulaşarak soru sorabilir, sonuçlar hakkında bilgi isteyebilirsiniz.

Saygılarımızla,

Araştırmacı : Müge ONGUR

İletişim bilgileri :

*Velisi bulunduğum sınıfı numaralı öğrencisi
.....'in yukarıda açıklanan araştırmaya katılmasına izin
veriyorum. (Lütfen formu imzaladıktan sonra çocuğunuzla okula geri gönderiniz*).*

.../.../.....

İsim-Soyisim İmza:

Veli Adı-Soyadı :

Telefon Numarası :

APPEXDIX B: NARRATIVE COMPREHENSION QUESTIONS FOR EACH BOOK

Anlatıyı Anlama Testi *Narrative Comprehension Task, NCT* (Paris & Paris, 2003)

Kırmızı Elma (Oral, 2021)

Açık Hikâyeyi Anlama Becerisini Değerlendirmek İçin Sorulan Sorular

- 1) [Kitap kapalı konumda, karakterler ile ilgili soru]
Bu hikâyedeki karakterler kimlerdi?
[Book closed, "characters"]
Who are the characters in this story? (Replacement words: people, animals),
- 2) [Kitap kapalı konumda, ortam ile ilgili soru]
Hikâye nerede geçiyordu?
[Book closed, "setting"]
Where does the story happen? (Replacement words: setting, take place)
- 3) [Sayfa 3 – 4 açık, Tetikleyici olay]
Hikâyenin bu kısmında ne oluyordu bana anlatır mısın? Hikâyenin bu kısmı neden önemli?
[p. 3 - 4, initiating event]
Tell me what happens at this point in the story. Why is this an important part of the story?
- 4) [Sayfa 5 - 6 açık, problem, sorun ile ilgili soru]
Eğer bu hikâyeyi bana anlattıysan şu anda, kitabın burasında ne olduğunu söyledin? Neden bu gerçekleşti?
[p. 5 - 6, problem]
If you were telling this story, what would you say is going on now? Why did this happen?
- 5) [Sayfa 15- 16 açık, Sorunun Çözümü]
Burada ne oldu? Neden böyle bir şey yaptılar?
[p. 15 - 16, outcome resolution]
What happened here? Why does this happen?

Örtük Hikâyeyi Anlama Becerilerini Değerlendirmek İçin Sorulan Sorular

- 1) [Sayfa 5- 6 açık, Duygular ile ilgili soru]
Hikâyenin bu kısmında tavşan nasıl hissediyor? Sence neden öyle hissediyor olabilir?
[p. 5-6, feelings]
Tell me what the rabbit are feeling in this picture. Why do you think so?

- 2) [Sayfa 11 - 12 açık, Nedensel Çıkarım]
Tavşan ve kır faresi neden tilki görünce sevindiler ve ondan yardım istediler?
[p. 11 - 12, causal inference]
Why did the rabbit and the shrew rejoice when they saw the chubby fox and asked him for help?
- 3) [Sayfa 19 - 20 açık, Diyalog ile ilgili soru]
Burada ne konuşuluyordu bana söyleyebilir misin? Tavşan neden böyle demiş olabilir?
[p. 19 – 20, dialogue]
Can you tell me what was being discussed here? Why did the rabbit say that?
- 4) [Sayfa 27 - 28 açık, tahmine yönelik soru]
Bu hikâyenin son resmi. Sence sonrasında ne olmuş olabilir? Neden böyle düşünüyorsun?
[p. 27 - 28, prediction]
This is the last picture of the story. What do you think happens next? Why do you think so?
- 5) [Kitap kapalı, Tema ile ilgili soru]
Okuduğumuz hikâyeyi düşününce tavşan elmaya ulaşmayı nasıl başardı? En sonunda elmayı kim yedi? Sen tavşanın yerinde olsan ne yapardın? Neden?
[Book closed, theme]
Considering the story we read, how did the rabbit manage to reach the apple? Who ate the apple in the end? What would you do if you were the rabbit? Why?

Luga (Hemmatirad, 2018)

Açık Hikâyeyi Anlama Becerisini Değerlendirmek İçin Sorulan Sorular

- 1) [Kitap kapalı konumda, karakterler ile ilgili soru]
Bu hikâyedeki karakterler kimlerdi?
[Book closed, “characters”]
Who are the characters in this story? (Replacement words: people, animals)
- 2) [Kitap kapalı konumda, ortam ile ilgili soru]
Hikâye nerede geçiyordu?
[Book closed, “setting”]
Where does the story happen? (Replacement words: setting, take place)
- 3) [Sayfa 5 açık, Tetikleyici olay]
Hikâyenin bu kısmında ne oluyordu bana anlatır mısın? Hikâyenin bu kısmı neden önemli?
[p. 5, initiating event]
Tell me what happens at this point in the story. Why is this an important part of the story?

- 4) [Sayfa 13 - 14 açık, problem, sorun ile ilgili soru]
Eğer bu hikâyeyi bana anlattırsan şu anda, kitabın burasında ne olduğunu söyledin? Neden bu gerçekleşti?
[p. 13 - 14, problem]
If you were telling this story, what would you say is going on now? Why did this happen?
- 5) [Sayfa 15 - 16 açık, Sorunun Çözümü]
Burada ne oldu? Neden böyle bir şey yaptılar?
[p. 15 - 16, outcome resolution]
What happened here? Why did they do such a thing?

Örtük Hikâyeyi Anlama Becerilerini Değerlendirmek İçin Sorulan Sorular

- 1) [Sayfa 7 açık, Duygular ile ilgili soru]
Hikâyenin bu kısımda tecrübeli kuş nasıl hissediyor? Sence neden öyle hissediyor olabilir?
[p. 7, feelings]
How does the experienced bird feel in this part of the story? Why do you think she might feel that way?
- 2) [Sayfa 3 - 4 açık, Nedensel Çıkarım]
Kuşlar neden sade yuvalar yapmayı tercih ediyorlardı?
[p. 3 - 4, causal inference]
Why did the birds prefer to build plain nests?
- 3) [Sayfa 7 - 8 açık, Diyalog ile ilgili soru]
Burada ne konuşuluyordu bana söyleyebilir misin? Tecrübeli kuş Luga'ya ne dedi? Neden böyle demiş olabilir?
[p. 7 - 8, dialogue]
Can you tell me what was being discussed here? What did the experienced bird say to Luga? Why could she have said that?
- 4) [Sayfa 15 – 16 açık, tahmine yönelik soru]
Bu hikâyenin son resmi. Sence sonrasında ne olmuş olabilir? Neden böyle düşünüyorsun?
[p. 15 - 16, prediction]
This is the last picture of the story. What do you think happens next? Why do you think so?
- 5) [Kitap kapalı, Tema ile ilgili soru]
Okuduğumuz hikâyeyi düşününce Tecrübeli kuş Luga'yı daha sade bir yuva yapması konusunda uyarınca Luga ne yapmıştı? Sence bu doğru bir davranış mı? Luga senin arkadaşın olsa sen ne yapmalarını önerirdin? Neden?
[Book closed, theme]
Considering the story we have read, can you tell me what did Luga do when experienced bird warn him to build a plain nest? Do you think it is

*appropriate? If Luga was your friend, what would you advise him to do?
Why?*

Cemile Midilliye Biniyor (de Petigny & Delvaux, 2008)

Açık Hikâneyi Anlama Becerisini Değerlendirmek İçin Sorulan Sorular

- 1) [Kitap kapalı konumda, karakterler ile ilgili soru]
Bu hikâyedeki karakterler kimlerdi?
[Book closed, "characters"]
Who are the characters in this story? (Replacement words: people, animals),
- 2) [Kitap kapalı konumda, ortam ile ilgili soru]
Hikâye nerede geçiyordu?
[Book closed, "setting"]
Where does the story happen? (Replacement words: setting, take place)
- 3) [Sayfa 2 açık, tetikleyici olay]
Hikâyenin bu kısmında ne oluyordu bana anlatır mısın? Hikâyenin bu kısmı neden önemli?
[p. 12, initiating event]
Tell me what happens at this point in the story. Why is this an important part of the story?
- 4) [Sayfa 13 açık, problem, sorun ile ilgili soru]
Eğer bu hikâneyi bana anlattıysan şu anda, kitabın burasında ne olduğunu söyledin? Neden bu gerçekleşti?
[p. 13, problem]
If you were telling this story, what would you say is going on now? Why did this happen?
- 5) [Sayfa 14 açık, Sorunun Çözümü]
Kestane'yi nasıl yürümeye ikna ettiler? Neden öyle yaptılar?
[p. 14, outcome resolution]
How did they convince Kestane to walk? Why did they do that?

Örtük Hikâneyi Anlama Becerilerini Değerlendirmek İçin Sorulan Sorular

- 1) [Sayfa 2 açık, Duygular ile ilgili soru]
Sence Cemile burada hangi duyguyu hissediyor? Neden?
[p. 2, feelings]
What emotion do you think Cemile feels here? Why?
- 2) [Sayfa 9 açık, Nedensel Çıkarım]
Cemile neden Kestane'ye ilk bindiğinde korkmuş olabilir?
[p. 9, causal inference]

Why might Cemile be scared when she first got on Kestane?

- 3) [Sayfa 14 açık, Diyalog ile ilgili soru]
Burada ne konuşuluyordu bana söyleyebilir misin? Neden böyle denmiş olabilir?
[p. 14, dialogue]
Can you tell me what was being discussed here?
- 4) [Sayfa 16 açık, tahmine yönelik soru]
Bu hikâyenin son resmi, hikayemiz burada bitiyor. Sence sonrasında ne olmuş olabilir? Neden böyle düşünüyorsun?
[p. 21 – 22, prediction]
This is the last picture of the story, our story ends here. What do you think might have happened next? Why do you think that?
- 5) [Kitap kapalı, Tema ile ilgili soru]
Okuduğumuz hikâneyi düşününce, Kestaneyi yürümeye nasıl ikna etmişlerdi? Sen olsan nasıl ikna etmeye çalışırdın? Neden?
[Book closed, theme]
Considering the story we read, how did they convince Kestane to walk? What would you do to persuade her?

Haydi Sevgi Örelim (Dasuki & Rasuli, 2020)

Açık Hikâneyi Anlama Becerisini Değerlendirmek İçin Sorulan Sorular

- 1) [Kitap kapalı konumda, karakterler ile ilgili soru]
Bu hikâyedeki karakterler kimlerdi?
[Book closed, “characters”]
Who are the characters in this story? (Replacement words: people, animals)
- 2) [Kitap kapalı konumda, ortam ile ilgili soru]
Hikâye nerede geçiyordu? Nerelere gidiyorlardı?
[Book closed, “setting”]
Where does the story happen? Where did they go? (Replacement words: setting, take place)
- 3) [Sayfa 1 - 2 açık, tetikleyici olay]
Hikâyenin bu kısmında ne oluyordu bana anlatır mısın? Hikâyenin bu kısmı neden önemli?
[p.1 - 2, initiating event]
Tell me what happens at this point in the story. Why is this an important part of the story?

- 4) [Kapak sayfası açık, problem, sorun ile ilgili soru]
Hikayemizin en başında, hatırlarsan eğer Zürafa, Ahtapot ve Kırkayak çok üşüyordu. Hatta onlar diğer hayvanlardan bile çok üşüyorlardı, neden?
[Cover page, problem]
At the very beginning of our story, if you remember, Zürafa, Ahtapot and Kırkayak were very cold. They were even colder than other animals, why?
- 5) [Sayfa 17-18 açık, Sorunun Çözümü]
Burada ne yapıyorlardı? Neden böyle bir şey yaptılar?
[p. 17-18, outcome resolution]
What were they doing here? Why did they do such a thing?

Örtük Hikâeyi Anlama Becerilerini Değerlendirmek İçin Sorulan Sorular

- 1) [Sayfa 22 açık, Duygular ile ilgili soru]
Hikâyenin bu kısmında karakterlerin nasıl hissettiğini bana söyleyebilir misin? Sence neden öyle hissediyorlar?
[p. 22, feelings]
Can you tell me how the characters feel in this part of the story? Why do you think they feel that way?
- 2) [Sayfa 8 açık, Nedensel Çıkarım]
Hatırlarsan, Zürafa, Kırkayak ve Ahtapot Koyun'un evine gitmişlerdi. Onlar neden Koyun'un evine gittiler?
[p.8, causal inference]
If you remember, Zürafa, Kırkayak and Ahtapot went to Koyun's house. Why did they go to the Koyun's house?
- 3) [Sayfa 6 açık, Diyalog ile ilgili soru]
Burada hayvanlar kendi aralarında bir şeyler konuşuyorlardı. Ne konuşuyorlardı bana söyleyebilir misin?
[p. 6, dialogue]
Here the animals were talking. Can you tell me what they were talking about?
- 4) [Sayfa 21 – 22 açık, tahmine yönelik soru]
Bu hikâyenin son resmi. Sence sonrasında ne olmuş olabilir? Neden böyle düşünüyorsun?
[p. 21 – 22, prediction]
This is the last picture of the story. What do you think happens next? Why do you think so?
- 5) [Kitap kapalı, Tema ile ilgili soru]
Okuduğumuz hikâeyi düşününce Zürafa, Ahtapot ve Kırkayak çok üşüyordu. Hatta diğer hayvanlardan bile daha çok üşüyorlardı, çünkü üstlerinde kış mevsimine uygun kıyafetleri yoktu. Bu durumu çözmek için

ne yapmışlardı? Onlar senin arkadaşın olsa sen ne yapmalarını önerirdin? Neden?

[Book closed, theme]

Thinking about the story we read, Zürafa, Ahtapot and Kırkayak was very cold. They were even colder than the other animals, because they did not have clothes suitable for the winter season. What did they do to solve this problem? If they were your friends, what would you suggest they do? Why?

ANLATIYI ANLAMA TESTİ (NCT) PUANLANDIRMA ŞEMASI (Paris & Paris, 2003)

Açık Hikâyeyi Anlama Becerisini Değerlendirmeye Yönelik Sorular

Karakterler

- **2 puan** = Çocuk hikâyede geçen tüm karakterleri saymaktadır.
- **1 puan** = Çocuk hikâyedeki en az 2 karakteri saymaktadır. (Eğer hikâyede sadece 2 ya da 1 adet karakter var ise çocuk tam puan (2) almaktadır.)
- **0 puan** = Çocuk bir ya da daha az karakter sayabilmektedir, ya da cevabı soru ile tutarsızdır. (Eğer hikâyede sadece 1 adet karakter var ise çocuk ve çocuk bu karakteri söyleyebildiyse tam puan (2) almaktadır.)

Hikâyenin Geçtiği Mekan(lar)

- **2 puan** = Çocuk hikâyenin geçtiği birden fazla mekanı (varsa) belirtmektedir.
- **1 puan** = Çocuk hikâyenin geçtiği bir mekanı belirtmektedir (Eğer hikâyede sadece bir mekanda geçiyorsa çocuk tam puan (2) almaktadır).
- **0 puan** = Çocuk hikâyede olmayan bir mekânı belirtmektedir ya da cevabı soru ile tutarsızdır.

Tetikleyici Olay

- **2 puan** = Çocuk tetikleyici olayı belirtmekte ve hikâyenin diğer unsurları ile ilişkilendirmektedir. (örnek: problem durumu)
- **1 puan** = Çocuk tetikleyici olayı tanımlamaktadır.
- **0 puan** = Çocuğun verdiği cevap tetikleyici olayı tanımlamamaktadır ya da soru ile tutarsızdır.

Problem

- **2 puan** = Çocuk problem belirtmekte ve hikâyenin diğer unsurları ile ilişkilendirmektedir (örnek: tetikleyici olay, çözüm vb.)
- **1 puan** = Çocuk problemi tanımlamaktadır.
- **0 puan** = Çocuğun verdiği cevap problem tanımlamamaktadır ya da soru ile tutarsızdır.

Çözüm

- **2 puan** = Çocuk çözümü tanımlamakta ve hikâyenin diğer unsurları ile ilişkilendirmektedir (örnek: problem, tetikleyici olay vb.)
- **1 puan** = Çocuk çözümü tanımlamaktadır.

- **0 puan** = Çocuğun verdiği cevap çözümü tanımlamamaktadır ya da soru ile tutarsızdır.

Örtük Hikâyeyi Anlama Becerisini Değerlendirmeye Yönelik Sorular

Duygular

- **2 puan** = Çocuk karakterin duygularını uygun bir biçimde tanımlamakta ve bu duyguları önceki sayfalarda geçen olaylar ya da durumlar ile ilişkilendirmektedir.
- **1 puan** = Çocuk karakterlerin duygularını uygun bir biçimde tanımlamaktadır. (Örnek: sadece mutlu denmesi gibi)
- **0 puan** = Çocuğun verdiği cevap karakterin duygu durumunu belirtmemektedir ya da soru ile tutarsızdır.

Nedensel Çıkarım

- **2 puan** = Çocuk durumun/olayın/davranışın sebebini açıklamakta ve farklı sayfalardaki olaylarla ilişkilendirmektedir.
- **1 puan** = Çocuk durumun/olayın/davranışın sebebini açıklamaktadır.
- **0 puan** = Çocuk durumun/olayın/davranışın sebebini açıklayamamaktadır ya da cevap soru ile tutarsızdır.

Diyalog

- **2 puan** = Çocuk ilgili diyalogu anlatmaktadır ve bu diyalogu hikâyenin diğer kısımları ile ilişkilendirebilmektedir.
- **1 puan** = Çocuk ilgili diyalogu anlatabilmektedir.
- **0 puan** = Çocuk ilgili diyalogu tanımlayamamaktadır ya da verdiği cevap soru ile tutarsızdır.

Tahmin

- **2 puan** = Çocuk hikâyede geçen olaylar ile ilişkilendirerek bir tahmin yapmaktadır.
- **1 puan** = Çocuk sadece hikâyenin son resmine bakarak bir tahmin yapmaktadır.
- **0 puan** = Çocuk hikâye ile ilişkilendirilebilecek bir tahmin yapmamaktadır.

Tema

- **2 puan** = Çocuk soruyu birden fazla olayı bağlayarak cevap vermektedir ve hikâyenin temasına uygun yanıtlar vermektedir.
- **1 puan** = Çocuk hikâyenin temasına uygun yanıt vermektedir.
- **0 puan** = Çocuk hikâyenin temasına uygun yanıtlar vermemektedir.

Orijinal Çalışma:

Paris, A., H., & Paris, S., G. (2003). Assessing narrative comprehension in young children. *Reading Research Quarterly*, 38(1), 36–76.

APPENDIX C: TARGET WORD TEST QUESTIONS FOR EACH BOOK

HEDEF KELİME TESTİ

Hedef Kelime Testi a) Haydi Sevgi Örelim (Dasuki & Rasuli, 2020):

1) **Yün**

TDK Tanımı: “Koyun tüyü (Kılı)”

Soru: “Hatırlıyor musun, kitabın burasında (ilgili sayfa gösterilir) şöyle yazıyordu ‘... Üç arkadaş, düşündü taşındı. Kendilerine çözüm yolu aradı. Sonunda yün almak için arkadaşları Koyun’a gitme kararı aldı. Koyun, onları sevinçle karşıladı. İstediklerini duyunca onlara bol bol yün verdi.’? Ben yün kelimesinin anlamını bilmiyorum, yün ne demek olabilir?”

2) **Önermek**

TDK Tanımı: “Bir sorunu çözmek üzere bir şey öne sürmek, teklif etmek”

Soru: “Kitabın bu kısmında (ilgili sayfa gösterilir) şöyle yazıyordu ‘Yünler kurduktan sonra Kırkayak yünleri harika renklere boyadı. Sonra bu yünlerden kendilerine atkı, çorap ve hırka örmesi için arkadaşları Örimcek’e gitmeyi önerdi.’? ‘Önermek’ ne demektir?”

3) **Örmek**

TDK Tanımı: “İplik, yün, tel, saz vb.ni birbirine dolayarak veya geçirerek işlemek veya tezgâhta dokumak”

Soru: “Kitabın bu kısmında (ilgili sayfa gösterilir) şöyle yazıyordu ‘Ahtapot ve Zürafa, bu öneriyi kabul etti. Hep beraber Örimcek’in evine doğru yola çıktılar. Örimcek onları sevgiyle karşıladı. Zürafa, Kırkayak ve Ahtapot’a yardım etmeyi kabul etti. Meşhur örgü örme hızıyla başladı örmeye.’? Örmek ne demek olabilir?”

4) **Meşhur**

TDK Tanımı: “Ünlü, tanınmış, herkesçe bilinen, angın”

Soru: Örmek ile ilgili sorunun ardından şu sorulur: “Peki ‘meşhur’ ne demektir?”

5) **Hünerli**

TDK Tanımı: “Hüneri olan (kimse)”

Soru: “Hatırlıyor musun, kitabın burasında (ilgili sayfa gösterilir) şöyle yazıyordu ‘Sonra Örimcek, ‘Bize örgü işinde yardı etmesi için hünerli arkadaşımız Kelebek’e gitmeye ne dersiniz?’ diye sordu.’? ‘Hünerli’ ne demek olabilir?”

6) **Zarif**

TDK Tanımı: “Güzel, hoş, albenili”

Soru: “Hatırladın mı, burada (ilgili sayfa gösterilir) Kırkayak şöyle diyordu ‘*Lütfen Kelebek, lütfen bizi kurtar! Zarif parmaklarınla arkadaşım Zürafa’ya uzun bir atkı, arkadaşım Ahtapot’a sekiz kollu bir hırka ve benim için de kırk tane çorap örebilir misin?*’? Kelebek’in zarif parmakları varmış! Peki ya ‘zarif’ ne demektir biliyor musun?”

7) **Onaylamak**

TDK Tanımı: “Yapılan bir işi doğru ve yerinde bularak kabul etmek, tasdik etmek, tasdiklemek”

Soru: ‘Zarif’ ile ilgili sorunun ardından araştırmacı şöyle söyler: “Kırkayak Kelebek’e böyle sorduktan sonra ne oluyordu hatırlıyor musun? Şöyle yazıyordu: ‘*Kelebek ona gülümsedi. Onaylayarak başını salladı. ‘Tabii ki sevgili arkadaşlarım! Büyük bir zevkle!’ ‘Onaylamak’ ne anlama gelir?’*”

8) **Karşılama**

TDK Tanımı: “Dışarıdan gelen bir kimseye karşılayıcı olarak çıkmak, istikbal etmek”

Soru: “Hatırladın mı hep birlikte Kelebek’e gidiyorlardı, kitabın burasında (ilgili sayfa gösterilir) şöyle yazıyordu ‘*Hep birlikte Kelebek’in evine koşular. Kelebek onları sevinçle karşıladı.*’. ‘Karşılama’ ne demek olabilir?”

9) **Etkilenmek**

TDK Tanımı: “Etkiye uğramak, müteessir olmak”

Soru: “Hatırlıyor musun Kırkayak ve Zürafa burada (ilgili sayfa gösterilir) konuşuyorlardı ne kadar üşüdüklerinden bahsediyorlardı, kitapta şöyle yazıyordu ‘*Kırkayak içini çekerek, ‘Ah arkadaşım, sorma! Çok aradım ama sadece bir çift çorap bulabildim. Soğuktan titriyorum!’ dedi. Zürafa ona hak verdi. ‘Ben de öyle! Boynum uzun olduğu için soğuktan çok etkileniyor. Ama boynuma sarabilecek uzun bir atkı bulamıyorum’ dedi.*’ Zürafa boynum çok etkileniyor dedi, peki ama ‘etkilenmek’ ne demek?”

Hedef Kelime Testi b) Cemile Midilliye Biniyor (Cemile is riding pony) (de Petigny & Delvaux, 2008):

1) **Midilli**

TDK Tanımı: “Normalden daha küçük boyda bir tür at.”

Soru: “Hatırlıyor musun, Cemile annesine çiftlikteki hayvanları göstererek midilliye binmek istediğini söylüyordu ve burada (ilgili sayfa gösterilir) ‘*Ben, şu kahverengi midilliye binebilir miyim?*’ diye soruyordu. ‘Midilli’ ne olabilir?”

2) **Çayır**

TDK Tanımı: “Üzerinde gür ot biten düz ve nemli yer”

Soru: “Hatırlıyor musun Cemile ve ailesi at çiftliğine gittiğinde Cemile ve annesi atlara bakıyorlardı ve konuşuyorlardı. Kitapta şöyle yazıyordu (ilgili sayfa gösterilir) “*Bak anne!*” dedi Cemile at çiftliğinde. *Ve annesine, çayırda koşan midillileri gösterdi.*”. ‘Çayır’ ne anlama gelir?”

3) Eyer

TDK Tanımı: “Binek hayvanlarının sırtına konulan, oturmaya yarayan nesne”

Soru: Çayır ile ilgili sorunun ardından: “Hatırlıyor musun Cemile çayırda koşan midillileri gösterdikten sonra şöyle diyordu “*Ne kadar da küçükler! Ben, şu kahverengi midilliye binebilir miyim?*” ‘Tabii binebilirsin kızım’ dedi annesi. ‘*Bak şuradaki hanım midillilere eyer takıyor. Hadi gidip ona soralım.*’? Peki ya ‘eyer’ ne demektir?”

4) Binici

TDK Tanımı: “Ata binen kimse”

Soru: “Cemile Ayça abla ile tanıştığında Ayça abla ona şöyle demişti (ilgili sayfa gösterilir) “*Çok iyi bir binici olacağın her halinden belli, küçük kız.*” Peki ya ‘binici’ ne demektir?”

5) Nişane

TDK Tanımı: “Atın alın bölgesinde bulunan beyaz kıllar”

Soru: “Ayça abla Cemile’ye hangi ata binmek istediğini soruyordu, hatırladın mı? Aralarında şöyle bir konuşma geçiyordu (ilgili sayfa gösterilir) “*Söyle bakalım Cemile, hangi midilliye binmek istiyorsun?*” Cemile de ona şöyle demişti ‘*Burnunda beyaz leke olan kahverengi midilliye binmek istiyorum*’ Ayça abla da ona şöyle yanıt vermişti, ‘*Ah! Kestane’yi mi diyorsun? Burnundaki beyaz lekeye nişane diyoruz tatlım!*’ Ben Nişane kelimesinin anlamını bilmiyorum. Nişane ne demektir?”

6) Kask

TDK Tanımı: “Başı darbelerden korumak için sertleştirilmiş sentetik maddelerden yapılmış sağlam başlık”

Soru: “Hatırlıyor musun kitabın burasında (ilgili sayfa gösterilir) şu yazıyordu “*Başına uygun bir kask bulmak gerekiyor Cemile*’ dedi Ayça abla. *Cemile’nin başına yusyuvrak, siyah bir kask takıp denedi.*” Kask ne demektir?”

7) Okşamak

TDK Tanımı: “Sevgi, şefkat belirtisi olarak elini bir şeyin üzerinde yavaş yavaş gezdirmek veya ona hafifçe vurmak”

Soru: “Hatırladın mı, Ayça abla Kestane’yi Cemile’nin yanına getirmişti? Kitapta şöyle yazıyordu (ilgili sayfa gösterilir) “*Ayy, çok yüksekmış*’ dedi Cemile. *Biraz ürkmüş görünüyordu. ‘Şeyy binmesem mi acaba? Sadece başını okşasam da olur aslında?’* Ben okşamak kelimesinin anlamını bilmiyorum, bana ne demek olduğunu söyler misin?”

8) Benimsemek

TDK Tanımı: “Bir şeye, birine bağlanmak, ısınmak”

Soru: “Kitabın bu kısmında (ilgili sayfa gösterilir) Ayça abla Cemile’ye ‘*Merak etme, zamanla sen de Kestane’yle sevgi diliyle anlaşmaya başlarsın. Zaten şimdiden benimsedi seni.*’ diyordu. ‘Benimsemek’ ne demektir?”

9) Usulca

TDK Tanımı: “Yavaşça”

Soru: “Kestane yoncaları yemek için durmuştu hatırladın mı? Ayça abla da yanlarına gelmişti. Kitabın o kısmında şöyle yazıyordu (ilgili sayfa gösterilir): ‘*Yoncalar gerçekten çok lezzetliydi. Ayça abla hemen yanlarına geldi. Kestane’nin boynunu okşayıp “hadi oğlum” diye fısıldadı. Küçük midilli, usulca yürümeye başladı.*’ Ben ‘usulca’ ne demektir bilmiyorum. Bana ne demek olduğunu söyler misin?”

Hedef Kelime Testi c) Luga (Hemmatirad, 2018):

1) Göçmen

TDK Tanımı: “Sıcak iklimli ülkelere giden (hayvan)”

Soru: “Kitabın bu sayfasında şöyle yazıyordu (ilgili sayfa gösterilir) ‘*Baharla birlikte göçmen kuşlar da geri dönmeye başlamıştı.*’, hatırlıyor musun? Peki ‘göçmen’ ne anlama gelir?”

2) Geçici

TDK Tanımı: “Kısa ve belli bir süre için olan, muvakkat, palyatif, kalıcı karşıtı”

Soru: “Kitapta şöyle yazıyordu (ilgili sayfa gösterilir) ‘*Kuşlar baharı ve yazı burada geçirecek, sonbaharda havalar soğumaya başlayınca da yeniden sıcak ülkelere gideceklerdi. Bu yüzden kendilerine minik, sevimli ama geçici yuvalar yapacaklardı.*’. Ben geçici kelimesinin anlamını bilmiyorum. ‘Geçici’ ne anlama gelir?”

3) Tecrübeli

TDK Tanımı: “Tecrübesi olan, görmüş geçirmiş”

Soru: “Kitabın burasında şöyle yazıyordu (ilgili sayfa gösterilir) ‘*Tecrübeli kuşlardan biri ise, Luga’ya kızgın kızgın bakmaya başladı.*’ Tecrübeli ne anlama gelir? Bana söyler misin?”

4) Kibir

TDK Tanımı: “Kendini beğenme, başkalarından üstün tutma, büyülenme, benlik, gurur”

Soru: “Luga bu sayfada yuvasını anlatıyordu, hatırlıyor musun? Kitapta şöyle yazıyordu: ‘*Luga, göğsünü şişirdi. Kibirle yuvasını anlatmaya başladı.*’. Kibir ne demek ben bilmiyorum. Sen bana söyle, kibir ne anlama gelir?”

5) **Ferah**

TDK Tanımı: “Geniş, havadar, aydınlık, iç açıcı (yer)”

Soru: “Luga yuvasını kitapta şöyle anlatıyordu ‘*Bu yuvayı ben tasarladım. İki katlı, iki girişli, çatılı, süslü, kocaman, ferah bir yuvam oldu. İşte ben burada yaşayacağım.*’ Ferah ne demektir?”

6) **Göçebe**

TDK Tanımı: “Mevsimplere göre ülke veya yer değiştiren (hayvan)”

Soru: “Luga yuvasını anlattıktan sonra tecrübeli kuş ona şöyle diyordu (ilgili sayfa gösterilir): ‘*Tasarımına diyeceğim yok Lugacığım. Yuvan çok güzel olmuş. Fakat sen göçebe bir kuşsun. Buralarda kalıcı değilsin. Ne gerek vardı buna?*’. Bana söyle, göçebe ne anlama gelir?”

7) **Kalıcı**

TDK Tanımı: “Bir süre için belli bir yerde kalan, konuk, gidici karşıtı”

Soru: ‘Göçebe’ kelimesine yönelik sorunun ardından araştırmacı şöyle söyler: “Tecrübeli kuş Luga’ya ‘*Sen göçebe bir kuşsun. Buralarda kalıcı değilsin Ne gerek vardı buna?*’ diye soruyordu. ‘Kalıcı’ ne anlama gelir?”

8) **Ummak**

TDK Tanımı: “Bir şeyin olmasını istemek, beklemek”

Soru: “Burada Luga hariç bütün kuşlar yola çıkmışlardı, hatırladın mı? Kitapta şöyle yazıyordu: “... *Tecrübeli olanlar üzülerek ‘keşke daha sade bir yuva yapsaydı. O zaman hem daha az yorulur hem de şimdi yuvasından ayrılmak ona bu kadar zor gelmezdi. Umarız bir an önce arkamızdan gelir’ diyorlardı...*’ ‘Ummak’ ne demektir?”

9) **Kuvvetli**

TDK Tanımı: “Gücü çok olan, şiddetli, zorlu.”

Soru: Kitabın burasında şöyle yazıyordu (ilgili sayfa gösterilir): ‘*Eyvah, artık yuvasız kalmıştı. Çok üşüyordu... Bu kadarı yetmezmiş gibi kuvvetli bir yağmur da başladı.*’ ‘Kuvvetli’ ne demektir?”

DEĞERLENDİRME ŞEMASI

Hedef kelime testinde her bir kelime için çocuklar 0 ile 2 arasında bir puan almaktadırlar. Her bir alt test için bir çocuğun alabileceği en düşük puan 0 en yüksek puan ise 18’dir. Hedef kelime testinde toplamda alınabilecek puan ise 18*3’ten 54’tür.

- **0 puan** = Eğer çocuk kelimenin anlamını yanlış söylerse ya da cevap vermezse **0 puan alır.**
- **1 puan** = Eğer çocuk aynı kelime kökünden türemiş farklı bir kelimenin anlamını açıklarsa bu soru için **1 puan alır.**
- **2 puan** = Eğer çocuk kelimenin anlamını kendi tecrübeleri ile destekleyerek anlatırsa (örneğin tecrübeli kelimesini tanımlarken “ben ayakkabımı bağlayamamıştım ama ablam bağlayabilmişti çünkü o daha önceden de

bağlamıştı” demesi), hikâye ile ilişkilendirerek tanımlarsa (örneğin “Haydi Sevgi Örelim” isimli kitapta geçen “etkilenmek” kelimesini “Zürafa’nın boynu çok etkileniyormuş yani soğuktan dolayı çok üşüyormuş” demesi), ya da sözlük tanımı yaparsa **2 tam puan alır.**

APPENDIX D: EXAMPLES FOR THE VISUALS OF SAME SCENE IN PRINTED AND ELECTRONIC BOOK

1. Let's Knit Love (Haydi Sevgi Örelim) (Dasuki, Rasuli, 2020)

Copyright © 2020, Abbas Hasen Muvazini, All rights of this book published under the original name "Heyya Nasnau Siyabe al Suuf" belong to "Hayat Yayıncılık İletişim Yapım Eğitim Hizmetleri ve Tic. Ltd. Şti."



Figure A.1 Spider is knitting (Printed version)



Figure A.2 Spider is knitting (E-book version)



Figure A.3 Giraffe and Centipede travelling to Octopus's house (Printed version)



Figure A.4 Giraffe and Centipede travelling to Octopus's house (E-book version)



Figure A.5 Giraffe, Octopus, and Centipede are travelling to Sheep's house (Printed version)



Figure A.6 Giraffe, Octopus, and Centipede are travelling to Sheep's house (E-book version).

2. Luga (Hemmatirad, 2018)

Copyright © 2018, All rights of this book (in Turkish) belong to “Nar Yayınları Ltd. Şti.”

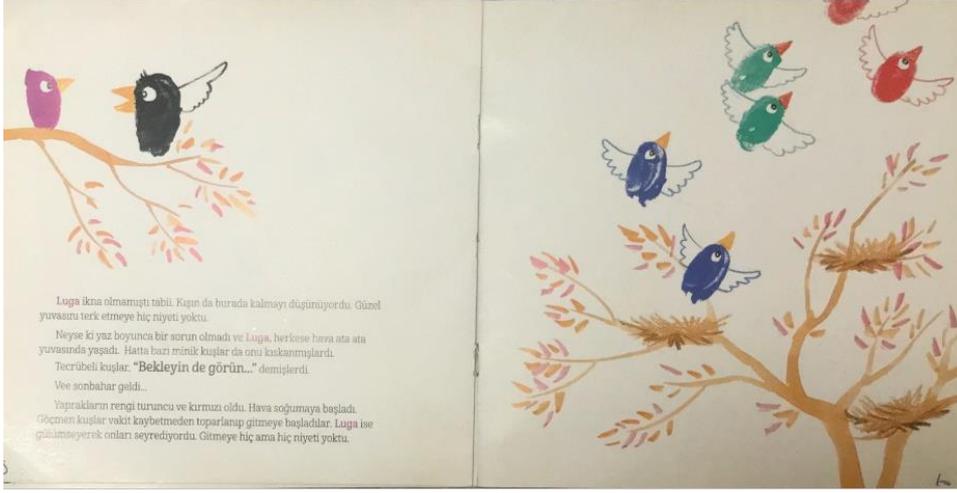


Figure A.7 Migratory birds are migrating (Printed version)



Figure A.8 Migratory birds are migrating (E-book version)



Figure A.9 Luga trying to keep up with his friends (Printed version)



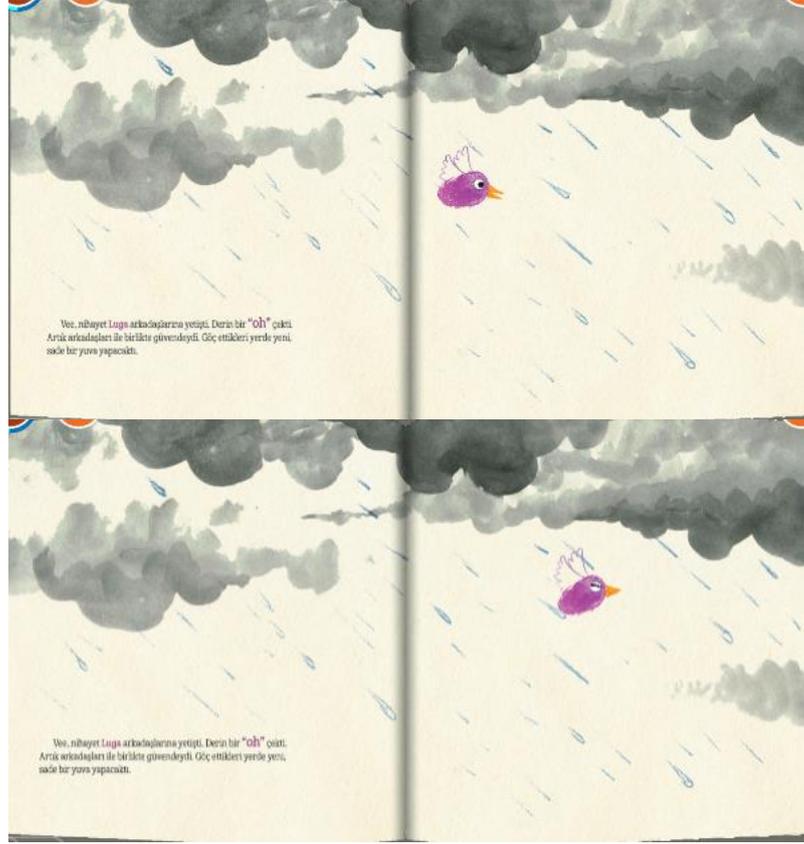


Figure A.10 *Luga trying to keep up with his friends (E-book version)*

3. Cemile Midilliye Biniyor (Cemile is Riding a Pony) (de Petigny & Delvaux, 2008)

Copyright © 2008, All rights of this book belong to “Editions HEMMA, Belgium.”



Figure A.11 Tutor Ayça puts a helmet on Cemile's head (Printed version)



Figure A.12 Tutor Ayça puts a helmet on Cemile's head (E-book version)



Figure A.13 *Cemile shows her mother the ponies running in the meadow. (Printed version)*

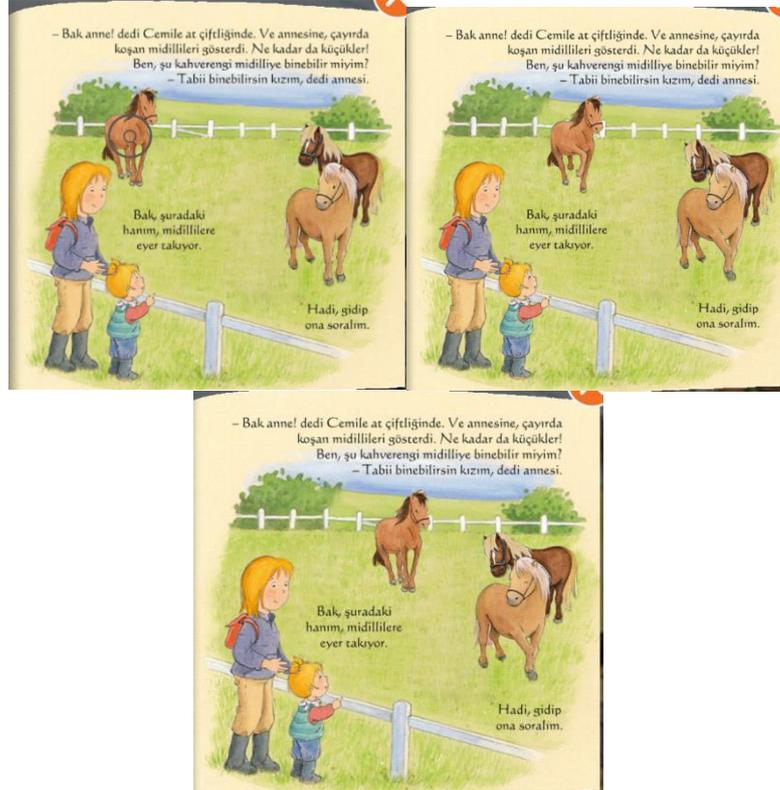


Figure A.14 *Cemile shows her mother the ponies running in the meadow. (E-book version)*

APPENDIX E: INTER-RATER RELIABILITY CHECK RESULTS

1. Let's Knit Love (Haydi Sevgi Örelim)

1.1. Narrative Comprehension Task (ESC – ISC)

Correlations

		Explicit second rater	Implicit second rater	Explicit first rater	Implicit first rater
Explicit second rater	Pearson Correlation	1	.415**	.966**	.471**
	Sig. (2-tailed)		.009	.000	.002
	N	39	39	39	39
Implicit second rater	Pearson Correlation	.415**	1	.409**	.953**
	Sig. (2-tailed)	.009		.010	.000
	N	39	39	39	39
Explicit first rater	Pearson Correlation	.966**	.409**	1	.467**
	Sig. (2-tailed)	.000	.010		.003
	N	39	39	39	39
Implicit first rater	Pearson Correlation	.471**	.953**	.467**	1
	Sig. (2-tailed)	.002	.000	.003	
	N	39	39	39	39

** . Correlation is significant at the 0.01 level (2-tailed).

1.2. Target Word Test

Correlations

		Target word test second rater	Target word test first rater
Target word test second rater	Pearson Correlation	1	.910**
	Sig. (2-tailed)		.000
	N	39	39
Target word test first rater	Pearson Correlation	.910**	1
	Sig. (2-tailed)	.000	
	N	39	39

** . Correlation is significant at the 0.01 level (2-tailed).

2. Cemile is Riding a Pony (Cemile Midilliye Biniyor)

2.1. Narrative Comprehension Task (ESC – ISC)

Correlations

		Explicit second rater	Implicit second rater	Explicit first tater	Implicit first rater
Explicit second rater	Pearson	1	.484**	.939**	.454**
	Correlation				
	Sig. (2-tailed)		.002	.000	.004
	N	39	39	39	39
Implicit second rater	Pearson	.484**	1	.551**	.957**
	Correlation				
	Sig. (2-tailed)	.002		.000	.000
	N	39	39	39	39
Explicit first tater	Pearson	.939**	.551**	1	.99**
	Correlation				
	Sig. (2-tailed)	.000	.000		.001
	N	39	39	39	39
Implicit first rater	Pearson	.454**	.957**	.499**	1
	Correlation				
	Sig. (2-tailed)	.004	.000	.001	
	N	39	39	39	39

** . Correlation is significant at the 0.01 level (2-tailed).

2.1. Target Word Test

Correlations

		Target word test second rater	Target word test first rater
Target word test second rater	Pearson Correlation	1	.982**
	Sig. (2-tailed)		.000
	N	39	39
Target word test first rater	Pearson Correlation	.982**	1
	Sig. (2-tailed)	.000	
	N	39	39

** . Correlation is significant at the 0.01 level (2-tailed).

3. Luga

3.1. Narrative Comprehension Task (ESC – ISC)

Correlations

		Explicit second rater	Implicit second rater	Explicit first rater	Implicit first rater
Explicit second rater	Pearson Correlation	1	.329*	.974**	.336*
	Sig. (2-tailed)		.041	.000	.036
	N	39	39	39	39
Implicit second rater	Pearson Correlation	.329*	1	.306	.991**
	Sig. (2-tailed)	.041		.058	.000
	N	39	39	39	39
Explicit first rater	Pearson Correlation	.974**	.306	1	.315
	Sig. (2-tailed)	.000	.058		.051
	N	39	39	39	39
Implicit first rater	Pearson Correlation	.336*	.991**	.315	1
	Sig. (2-tailed)	.036	.000	.051	
	N	39	39	39	39

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

3.2. Target Word Test

Correlations

		Target word test second rater	Target word test first rater
Target word test second rater	Pearson Correlation	1	,983**
	Sig. (2-tailed)		,000
	N	39	39
Target word test first rater	Pearson Correlation	,983**	1
	Sig. (2-tailed)	,000	
	N	39	39

**. Correlation is significant at the 0.01 level (2-tailed).

4. The Red Apple (Kırmızı Elma)

4.1. Narrative Comprehension Task (ESC – ISC)

Correlations

		Explicit second rater	Explicit first rater	Implicit second rater	Implicit first rater
Explicit second rater	Pearson	1	,966**	,385*	,285
	Correlation				
	Sig. (2-tailed)		,000	,015	,078
	N	39	39	39	39
Explicit first rater	Pearson	,966**	1	,423**	,324*
	Correlation				
	Sig. (2-tailed)	,000		,007	,044
	N	39	39	39	39
Implicit second rater	Pearson	,385*	,423**	1	,956**
	Correlation				
	Sig. (2-tailed)	,015	,007		,000
	N	39	39	39	39
Implicit first rater	Pearson	,285	,324*	,956**	1
	Correlation				
	Sig. (2-tailed)	,078	,044	,000	
	N	39	39	39	39

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

APPENDIX F: TWO WAY ANOVA ANALYSIS FOR EACH STORYBOOK

1. Let's Knit Love (Haydi Sevgi Örelim)

1.1.ESC

Table A.1 Two way ANOVA results for ESC (Let's Knit Love)

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	138.911 ^a	3	46.304	13.601	.000	.223
Intercept	2894.135	1	2894.135	850.129	.000	.857
B_TYPE	132.491	1	132.491	38.918	.000	.215
GRP_SIZE	1.051	1	1.051	.309	.579	.002
B_TYPE * GRP_SIZE	5.434	1	5.434	1.596	.209	.011
Error	483.417	142	3.404			
Total	3534.000	146				
Corrected Total	622.329	145				

a. R Squared = .223 (Adjusted R Squared = .207)

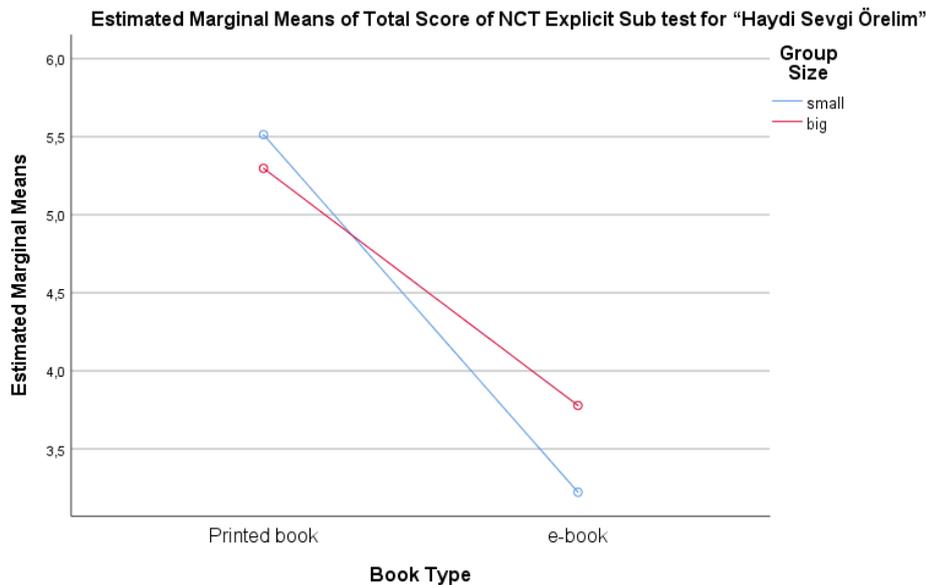


Figure A.15 Small and large groups' ESC scores by book type (Let's Knit Love)

1.2.ISC

Table A.2 Two way ANOVA results for ISC (Let's Knit Love)

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	66.309 ^a	3	22.103	5.053	.002	.096
Intercept	2759.355	1	2759.355	630.790	.000	.816
B_TYPE	54.615	1	54.615	12.485	.001	.081
GRP_SIZE	5.530	1	5.530	1.264	.263	.009
B_TYPE * GRP_SIZE	6.324	1	6.324	1.446	.231	.010
Error	621.170	142	4.374			
Total	3458.000	146				
Corrected Total	687.479	145				

a. R Squared = .096 (Adjusted R Squared = .077)

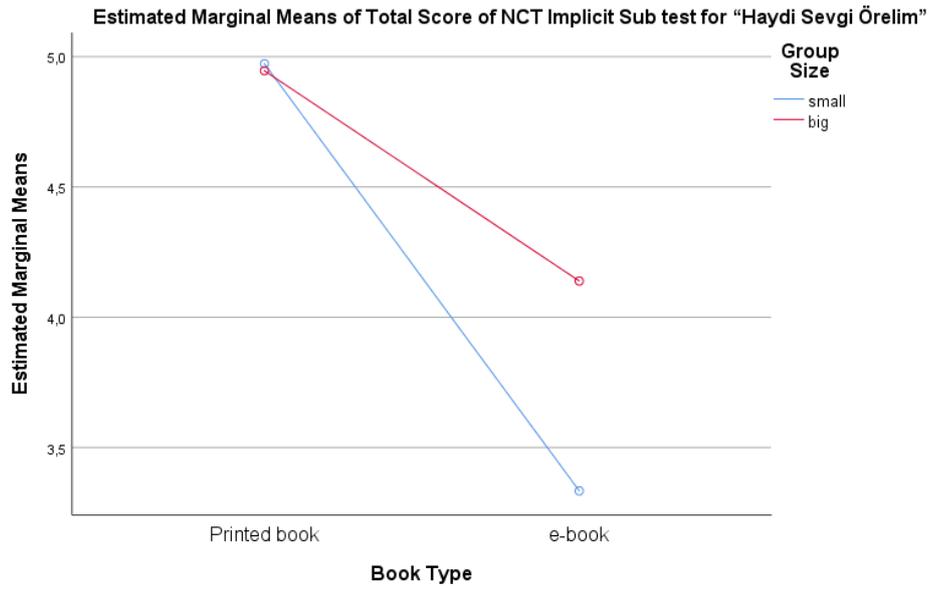


Figure A.16 Small and large groups' ISC scores by book type (Let's Knit Love)

1.3. TWT

Table A.3 Two way ANOVA results for TWT (Let's Knit Love)

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	47.333 ^a	3	15.778	2.221	.088	.045
Intercept	4796.962	1	4796.962	675.242	.000	.826
B_TYPE	40.113	1	40.113	5.646	.019	.038
GRP_SIZE	6.233	1	6.233	.877	.350	.006
B_TYPE * GRP_SIZE	1.055	1	1.055	.149	.701	.001
Error	1008.777	142	7.104			
Total	5866.000	146				
Corrected Total	1056.110	145				

a. R Squared = .045 (Adjusted R Squared = .025)

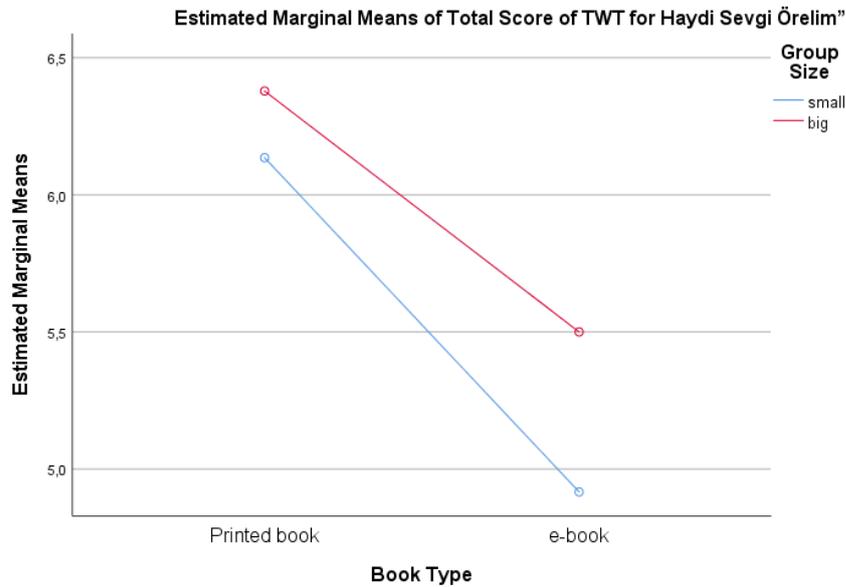


Figure A.17 Small and large groups' TWT scores by book type (Let's Knit Love)

2. Cemile is Riding a Pony (Cemile Midilliye Biniyor)

2.1. ESC

Table A.4 Two way ANOVA results for ESC (Cemile is Riding a Pony)

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	67.690 ^a	3	22.563	8.689	.000	.155
Intercept	2397.779	1	2397.779	923.335	.000	.867
B_TYPE	59.094	1	59.094	22.756	.000	.138
GRP_SIZE	8.425	1	8.425	3.244	.074	.022
B_TYPE * GRP_SIZE	.206	1	.206	.079	.779	.001
Error	368.755	142	2.597			
Total	2845.000	146				
Corrected Total	436.445	145				

a. R Squared = .155 (Adjusted R Squared = .137)

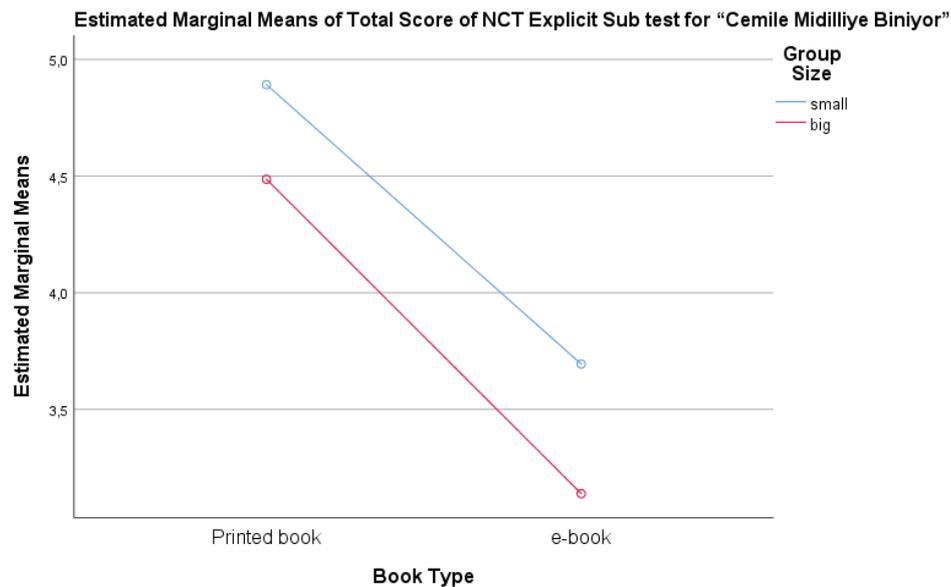


Figure A.18 Small and large groups' ESC scores by book type (Cemile is Riding a Pony)

2.2. ISC

Table A.5 Two way ANOVA results for ISC (Cemile is Riding a Pony)

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	32.409 ^a	3	10,803	3,156	,027	,063
Intercept	2484.267	1	2484,267	725,679	,000	,836
B_TYPE	17.637	1	17,637	5,152	,025	,035
GRP_SIZE	6.381	1	6,381	1,864	,174	,013
B_TYPE * GRP_SIZE	8.190	1	8,190	2,392	,124	,017
Error	486.119	142	3,423			
Total	3009.000	146				
Corrected Total	518.527	145				

a. R Squared = ,063 (Adjusted R Squared = ,043)

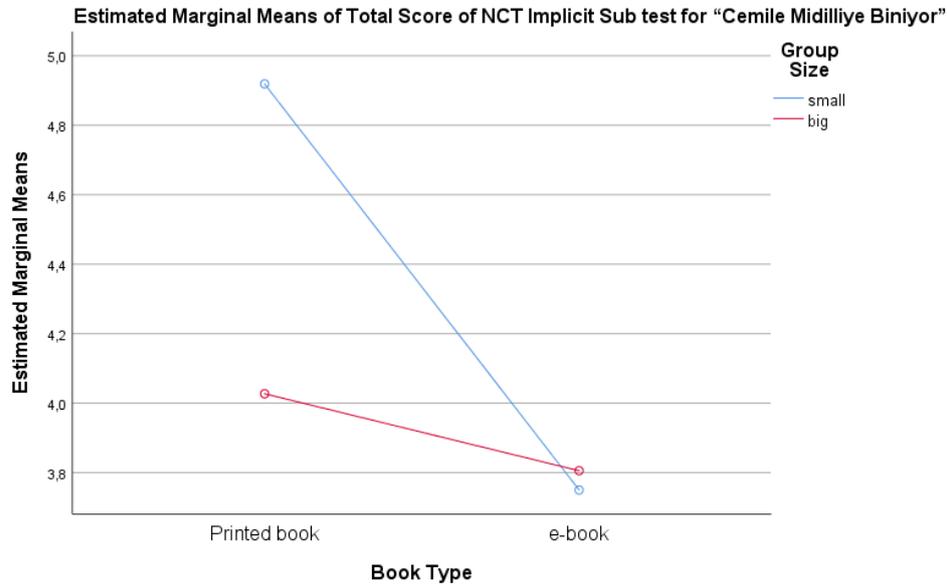


Figure A.19 Small and large groups' ISC scores by book type (Cemile is Riding a Pony)

2.3. TWT

Table A.6 Two way ANOVA results for ISC (Cemile is Riding a Pony)

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	52.795 ^a	3	17.598	1.340	.264	.028
Intercept	11534.612	1	11534.612	878.397	.000	.861
B_TYPE	49.735	1	49.735	3.787	.054	.026
GRP_SIZE	.587	1	.587	.045	.833	.000
B_TYPE * GRP_SIZE	2.505	1	2.505	.191	.663	.001
Error	1864.664	142	13.131			
Total	13475.000	146				
Corrected Total	1917.459	145				

a. R Squared = .028 (Adjusted R Squared = .007)

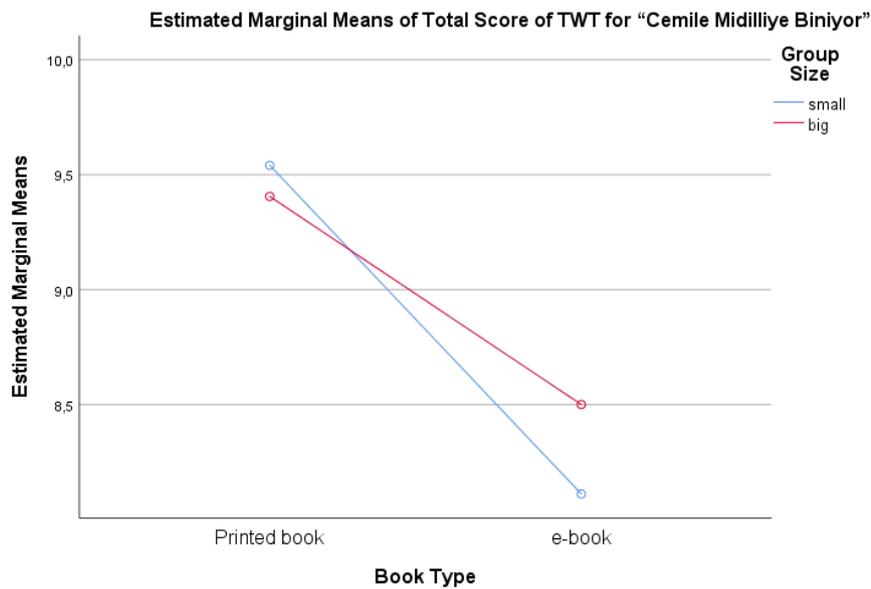


Figure A.20 Small and large groups' TWT scores by book type (Cemile is Riding a Pony)

3. Luga

3.1.ESC

Table A.7 Two way ANOVA results for ESC (Luga)

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	42.734 ^a	3	14.245	3.588	.015	.070
Intercept	3954.910	1	3954.910	996.298	.000	.875
B_TYPE	40.170	1	40.170	10.120	.002	.067
GRP_SIZE	.584	1	.584	.147	.702	.001
B_TYPE * GRP_SIZE	2.009	1	2.009	.506	.478	.004
Error	563.684	142	3.970			
Total	4573.000	146				
Corrected Total	606.418	145				

a. R Squared = .070 (Adjusted R Squared = .051)

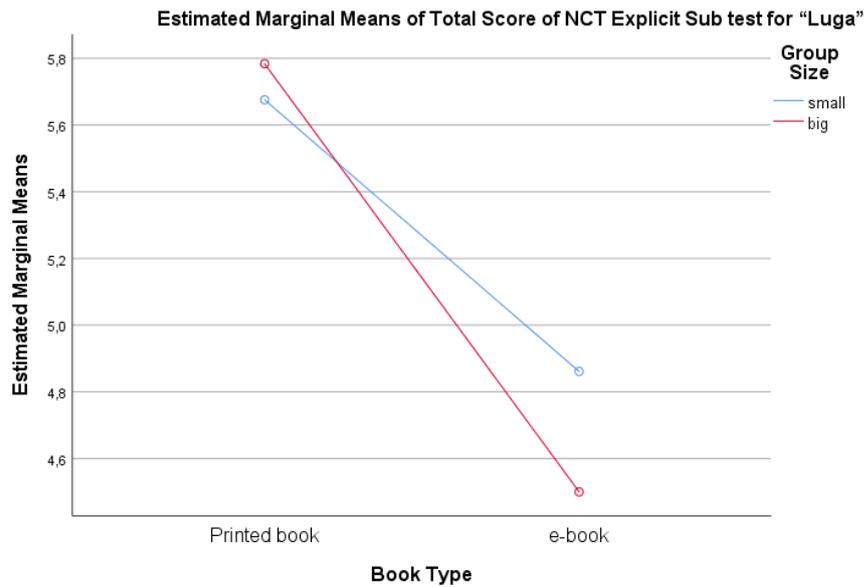


Figure A.21 Small and large groups' ESC scores by book type (Luga)

3.2.ISC

Table A.8 Two way ANOVA results for ISC (Luga)

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	49.311 ^a	3	16.437	2.652	.051	.053
Intercept	3054.395	1	3054.395	492.755	.000	.776
B_TYPE	48.149	1	48.149	7.768	.006	.052
GRP_SIZE	.005	1	.005	.001	.978	.000
B_TYPE * GRP_SIZE	1.155	1	1.155	.186	.667	.001
Error	880.203	142	6.199			
Total	3995.000	146				
Corrected Total	929.514	145				

a. R Squared = .053 (Adjusted R Squared = .033)

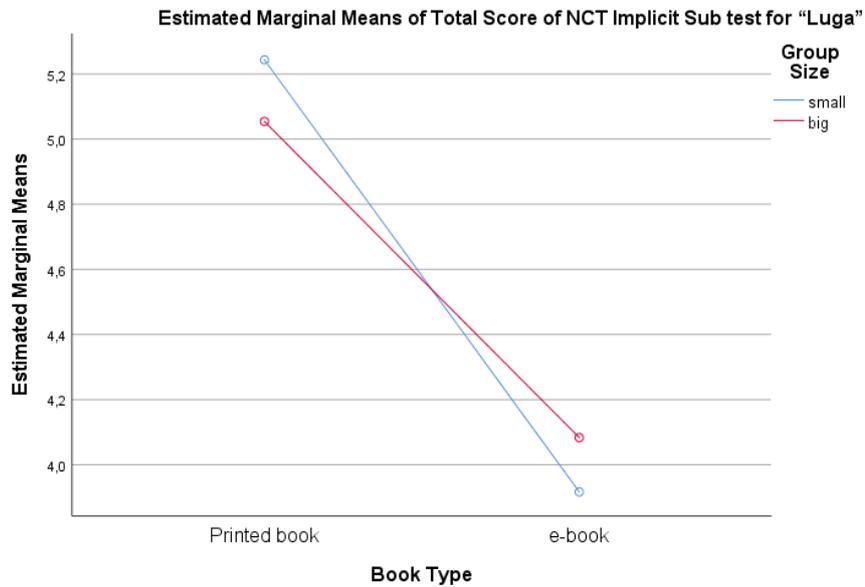


Figure A.22 Small and large groups' ISC scores by book type (Luga)

3.3. TWT

Table A.9 Two way ANOVA results for TWT (Luga)

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	3.288 ^a	3	1.096	.150	.930	.003
Intercept	2663.947	1	2663.947	363.818	.000	.719
B_TYPE	3.153	1	3.153	.431	.513	.003
GRP_SIZE	.026	1	.026	.004	.953	.000
B_TYPE * GRP_SIZE	.108	1	.108	.015	.903	.000
Error	1039.753	142	7.322			
Total	3710.000	146				
Corrected Total	1043.041	145				

a. R Squared = .003 (Adjusted R Squared = -.018)

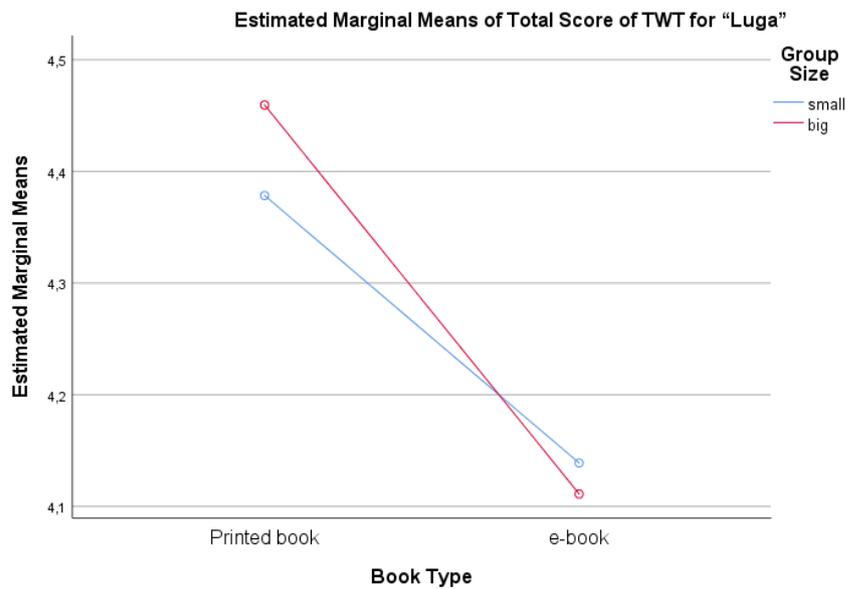


Figure A.23 Small and large groups' TWT scores by book type (Luga)

APPENDIX G: NORMALITY ASSUMPTION CHECK

Explicit Story Comprehension (ESC)

The 5% trimmed mean ($\mu = 13.86$) and mean ($M = 13.74$) scores of ESC were very close to each other, indicating normality. Skewness ($-.331$), and kurtosis values ($-.433$) between $+2$ and -2 , also indicated normality. As can be seen in Figure A.24, the shape of the histogram was close to a normal distribution, and in the normal Q-Q plot of ESC (see Figure A.25), there was a reasonably straight line, which suggests normality. In the detrended normal Q-Q plot of ESC (see Figure A.26) it was seen that values did not create clusters and most of them were close to the zero line, and there was only one outlier which did not violate normality assumption in the boxplot (see Figure A.27). On the other hand, the P value of Kolmogorov-Smirnov statistic was less than $.05$ ($.001$), which did not indicate a normal distribution. However, according to Pallant (2016), if Kolmogorov-Smirnov statistics do not indicate normality, the researcher can consider histograms, and, most importantly, Q-Q plots and boxplots. Because the histograms, Q-Q plots, and boxplots indicated normality, the normal distribution assumption was not violated in the present study.

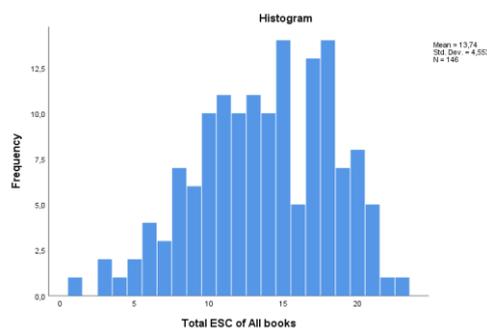


Figure A.24 Histogram of total ESC scores

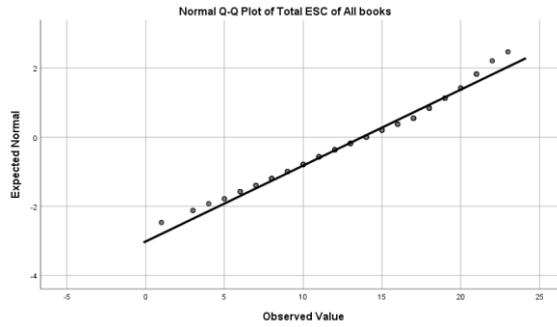


Figure A.25 Normal Q-Q plot of total ESC scores

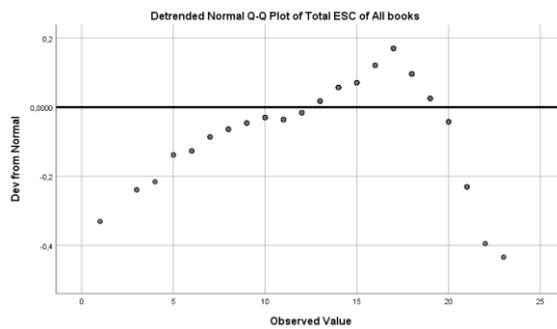


Figure A.26 Detrended normal Q-Q plot of total ESC scores

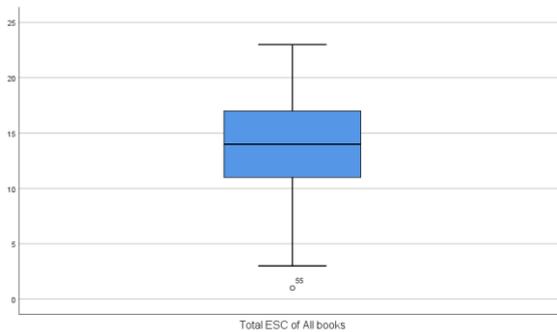


Figure A.27 Boxplot of total ESC scores

Implicit Story Comprehension (ISC)

Since the 5% trimmed mean ($\mu= 13.05$) and mean ($M= 13.07$) scores of ISC were very close to each other, this indicated normal distribution. Skewness (-.046), and kurtosis values (-.607) were between +2 and -2, also indicating normality. As Figure

A.28 illustrates, the shape of the histogram was very close to a normal distribution and in the normal Q-Q plot of ISC (see Figure A.29), a reasonably straight line was seen, which suggests normality. In the detrended normal Q-Q plot of ISC (see Figure A.30), there were no clusters and most of the values were close to the zero line and there were no outliers in the boxplot (see Figure A.31). In addition, because the P value of the Kolmogorov-Smirnov statistics was also higher than .05 (.200) there was no violation for normality assumption.

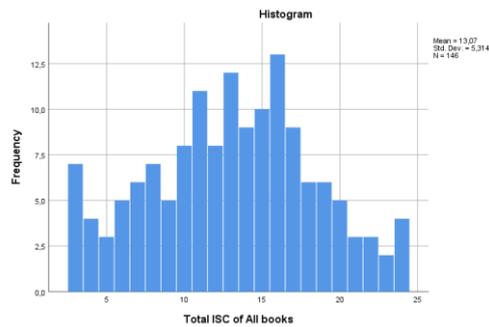


Figure A.28 Histogram of total ISC scores

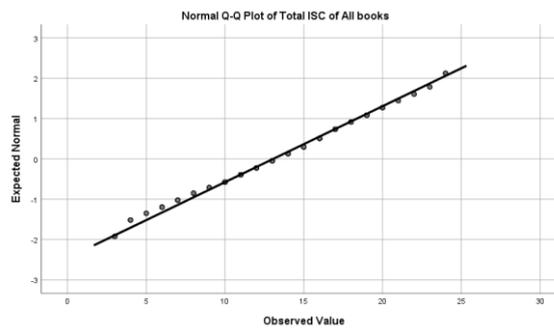


Figure A.29 Normal Q-Q plot of total ISC scores

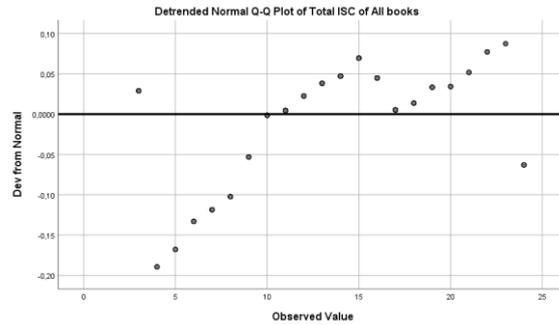


Figure A.30 *Detrended normal Q-Q plot of total ISC scores*

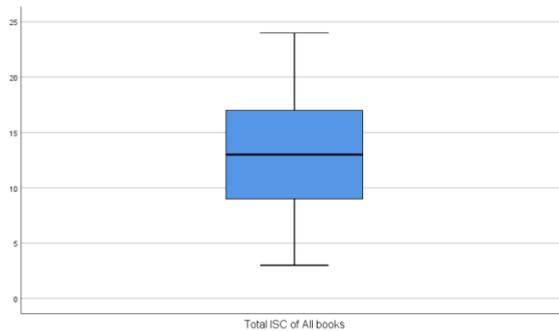


Figure A.31 *Boxplot of total ISC scores*

Target Word Test (TWT)

The 5% trimmed mean ($\mu= 18.93$) and mean ($M= 18.91$) scores of TWT were very close to each other, indicating normality. Skewness (.019), and kurtosis values (-.561) were between +2 and -2 also indicating normality. As Figure A.32 shows, the shape of the histogram showed a normal distribution, and a reasonably straight line can be seen in the normal Q-Q plot of ESC (see Figure A.33). In the detrended normal Q-Q plot of ESC (see Figure A.34), there were no clustered values and a reasonable number of values were close to the zero line. Moreover, no outliers could be seen in the boxplot (see Figure A.35). Although the P value of Kolmogorov-Smirnov statistics did not indicate normality (.004), since histograms, Q-Q plots, and boxplots indicated normality, there was no violation for a normal distribution assumption.

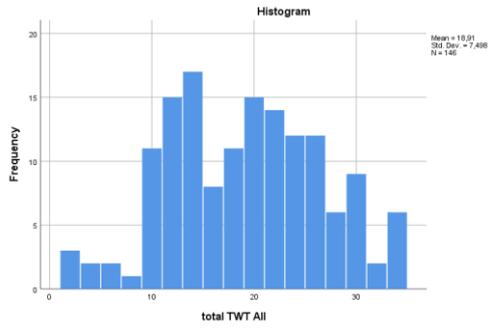


Figure A.32 Histogram of total TWT scores

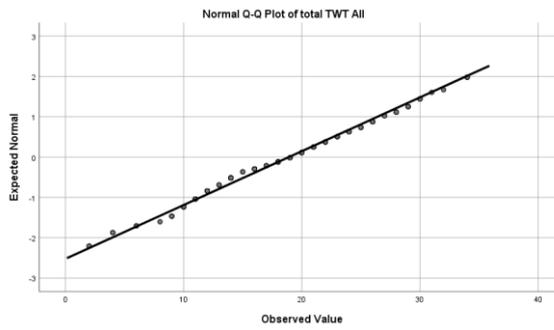


Figure A.33 Normal Q-Q plot of total TWT scores

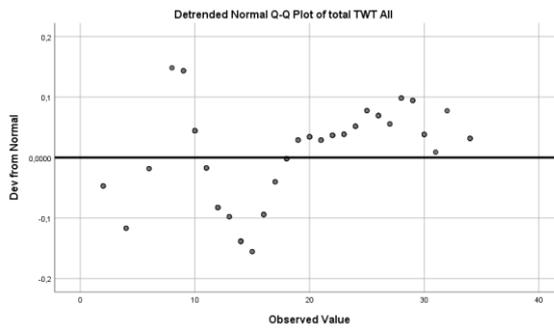


Figure A.34 Detrended normal Q-Q plot of total TWT scores

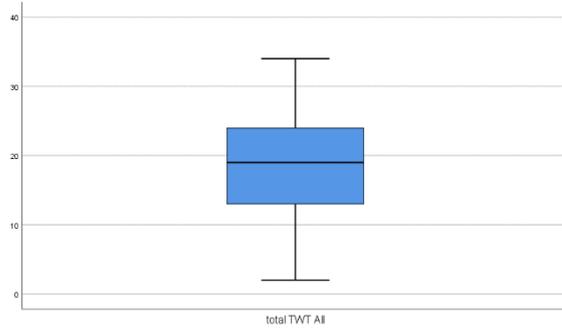


Figure A.35 *Boxplot of total TWT scores*

APPENDIX H: “AYU”, THE TEDDY BEAR, USED IN THE STUDY



**APPENDIX I: AN EXAMPLE OF CLASSROOM ENVIRONMENT WHERE
THE STORYBOOK READING ACTIVITIES AND ASSESMENT HELD**



Figure A.36 *Book reading environment printed book large group*



Figure A.37 *Book reading environment electronic book small group*



Figure A.38 *Assessment environment.*

APPENDIX J: NARRATIVE COMPREHENSION TASK ASSESSMENT CHART

DATE:

NAME OF BOOK:

PARTICIPANT ID:		BOOK FORMAT:			GROUP SIZE:			SCHOOL:			
ESC Q1	ESC Q2	ESC Q3	ESC Q4	ESC Q5	ESC Q1	ESC Q2	ESC Q3	ESC Q4	ESC Q5	SCHOOL:	
0	1	2	0	1	2	0	1	2	0	1	2
ISC Q1	ISC Q2	ISC Q3	ISC Q4	ISC Q5	ISC Q1	ISC Q2	ISC Q3	ISC Q4	ISC Q5		
0	1	2	0	1	2	0	1	2	0	1	2
NAME:											

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PARTICIPANT ID:		BOOK FORMAT:			GROUP SIZE:			SCHOOL:			
ESC Q1	ESC Q2	ESC Q3	ESC Q4	ESC Q5	ESC Q1	ESC Q2	ESC Q3	ESC Q4	ESC Q5	SCHOOL:	
0	1	2	0	1	2	0	1	2	0	1	2
ISC Q1	ISC Q2	ISC Q3	ISC Q4	ISC Q5	ISC Q1	ISC Q2	ISC Q3	ISC Q4	ISC Q5		
0	1	2	0	1	2	0	1	2	0	1	2
NAME:											

PARTICIPANT ID:		BOOK FORMAT:			GROUP SIZE:			SCHOOL:			
ESC Q1	ESC Q2	ESC Q3	ESC Q4	ESC Q5	ESC Q1	ESC Q2	ESC Q3	ESC Q4	ESC Q5	SCHOOL:	
0	1	2	0	1	2	0	1	2	0	1	2
ISC Q1	ISC Q2	ISC Q3	ISC Q4	ISC Q5	ISC Q1	ISC Q2	ISC Q3	ISC Q4	ISC Q5		
0	1	2	0	1	2	0	1	2	0	1	2
NAME:											

APPENDIX K: AN EXAMPLE OF TARGET WORD TEST ASSESSMENT CHART

DATE:

CEMILE MIDİLLİYE BİNİYOR (CEMILE IS RIDING A PONY)

PARTICIPANT ID:		BOOK FORMAT:			GROUP SIZE:			SCHOOL:				
Çayır	0	1	2	0	1	2	0	1	2	0	1	2
Kask	0	1	2	0	1	2	0	1	2	0	1	2
NAME:												

PARTICIPANT ID:		BOOK FORMAT:			GROUP SIZE:			SCHOOL:				
Çayır	0	1	2	0	1	2	0	1	2	0	1	2
Kask	0	1	2	0	1	2	0	1	2	0	1	2
NAME:												

PARTICIPANT ID:		BOOK FORMAT:			GROUP SIZE:			SCHOOL:				
Çayır	0	1	2	0	1	2	0	1	2	0	1	2
Kask	0	1	2	0	1	2	0	1	2	0	1	2
NAME:												

APPENDIX L: TWT WORD FREQUENCIES

TableA.10. Frequency distributions of TWT scores for per target word

	Frequency		
	Children gave wrong or no answer (0 point)	Children explain/define a word derived from same root (1 point)	Children explain/define the word in a detailed way (2 points)
<i>Let's Knit Love (Dasuki & Rasuli, 2020)</i>			
Yün (Wool)	76	0	70
Önermek* (Suggest)	143	0	3
Meşhur* (Renowned)	145	0	1
Hünerli* (Talented)	140	0	6
Zarif* (Elegant)	125	0	21
Örmek (Knit)	53	2	91
Karşılama* (Welcome)	115	0	31
Etkilenmek (Be affected)	47	0	99
Onaylamak (Approve)	50	0	96
<i>Cemile is Riding a Pony (de Petigny & Delvaux, 2008)</i>			
Çayır (Meadow)	47	0	99
Eyer (Saddle)	87	0	59
Binici (Horseback Rider)	106	1	39
Nişane (White-Blaze)	45	2	99
Kask* (Helmet)	19	0	127
Okşamak (Fondle)	42	0	104
Usluca (Sofly)	93	0	53
Benimsemek* (Embrace)	113	0	33
Midilli (Pony)	109	0	37
<i>Luga (Hemmatirad, 2018)</i>			
Kalıcı* (Permanent)	118	0	28
Geçici*	137	0	9
Göçmen (Migrator)	71	35	40

Table A.10 Frequency distributions of TWT scores for per target word (Cont'd)

Göçebe (Migratory)	104	16	26
Kuvvetli* (Strong, powerful)	30	0	116
Kibir* (Arrogence)	120	0	26
Ferah* (Spacious)	121	0	25
Ummak* (Hope, anticipate)	132	0	14
Tecrübeli* (Experienced)	143	0	3

* Words in which children's scores were clustered in certain points ($n=14$)

As a follow-up analysis, the researcher eliminated the words in which children's scores were clustered in certain points, and conducted an additional two-way ANOVA analysis to examine whether the results would change. The result of this follow-up analysis is presented in Table A.11.

Table A.11 Two-way ANOVA results for follow-up analysis

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>	η_p^2
Corrected Model	226.742 ^a	3	75.581	2.723	.047	.054
Intercept	24145.062	1	24145.062	869.973	.000	.860
B_TYPE	189.336	1	189.336	6.822	.010	.046
GRP_SIZE	32.036	1	32.036	1.154	.284	.008
B_TYPE * GRP_SIZE	5.734	1	5.734	.207	.650	.001
Error	3941.039	142	27.754			
Total	28376.000	146				
Corrected Total	4167.781	145				

a. R Squared = .054 (Adjusted R Squared = .034)

An additional two way between-groups analysis of variance (ANOVA) was conducted to understand whether there could be a change in the results of the study in terms of TWT when the researcher eliminated the words in which children's scores were clustered in certain points. The new analysis illustrated that as in the main analysis, the interaction effect was not statistically significant, $F(1, 142) = .207$, $p > .05$; there was no statistically significant main effect of group size, $F(1, 142) = 1.15$, $p > .05$; and there was a statistically significant main effect for book type, $F(1, 142) = 6.82$, $p < .05$ with a small effect size ($\eta_p^2 = .046$). As shown in Figure A.39. and

Table A.11, both small and large groups had higher target word test scores in the printed book condition.

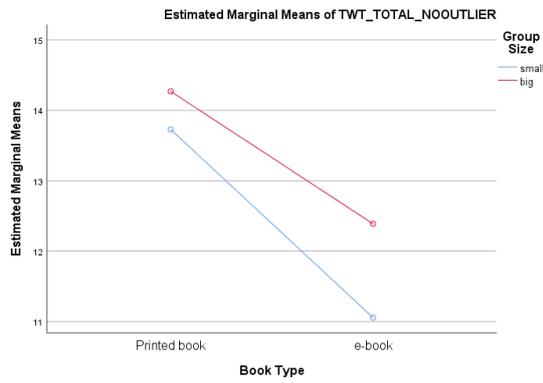


Figure A.39 *Small and large groups' target word test scores by book type_Follow-up*

**APPENDIX M. APPROVAL OF METU HUMAN SUBJECT ETHICS
COMMITTEE**

<p>UYGULAMALI ETİK ARAŞTIRMA MERKEZİ APPLIED ETHICS RESEARCH CENTER</p> <p>DUMLUPINAR BULVARI 06800 ÇANKAYA ANKARA/TURKEY T: +90 312 210 22 91 F: +90 312 210 79 59 ieam@metu.edu.tr www.usam.metu.edu.tr</p>	 <p>ORTA DOĞU TEKNİK ÜNİVERSİTESİ MIDDLE EAST TECHNICAL UNIVERSITY</p>
<p>Konu: Değerlendirme Sonucu</p>	<p>13 EYLÜL 2022</p>
<p>Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)</p>	
<p>İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu</p>	
<p>Sayın Feyza Tantekin ERDEN</p> <p>Danışmanlığınızı yürüttüğünüz Müge ONGUR'un "Grup Büyüklüğü ve Elektronik Hikaye Kitabı Okuma: Farklı Grup Büyüklüklerinde Uygulanan E-kitap Okuma Etkinliklerinin Hikayeyi Anlama ve Kelime Edinimi Becerileri Açısından Kıyaslanması" başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay 0486-ODTÜİAEK-2022 protokol numarası ile onaylanmıştır.</p> <p>Bilgilerinize saygılarımla sunarım.</p>	
<p>Prof. Dr. Mine MISIRLISOY Başkan</p>	
<p>Doç. Dr. İ. Semih AKÇOMAK Üye</p>	<p>Dr. Öğretim Üyesi Müge GÜNDÜZ Üye</p>
<p>Dr. Öğretim Üyesi Şerife SEVİNÇ Üye</p>	<p>Dr. Öğretim Üyesi Murat Perit ÇAKIR Üye</p>
<p>Dr. Öğretim Üyesi Süreyya ÖZCAN KABASAKAL Üye</p>	<p>Dr. Öğretim Üyesi A. Emre TURGUT Üye</p>

APPENDIX N. PERMISSION FROM MoNE



T.C.
KOCAELİ VALİLİĞİ
İl Millî Eğitim Müdürlüğü

Sayı : E-99332089-605.01-62114154
Konu : Araştırma İzni
(Müge ONGUR)

27/10/2022

ORTA DOĞU TEKNİK ÜNİVERSİTESİ REKTÖRLÜĞÜNE
(Öğrenci İşleri Daire Başkanlığı)

İlgi : 27/09/2022 tarih ve 54850036-044-E.319 sayılı yazınız.

Üniversiteniz Temel Eğitim Anabilim Dalı Okul Öncesi Eğitimi Yüksek Lisans öğrencisi Müge ONGUR'un "*Grup Büyüklüğü ve Elektronik Hikaye Kitabı Okuma: Farklı Grup Büyüklüklerinde Uygulanan E-kitap Okuma Etkinliklerinin Hikayeyi Anlama ve Kelime Edinimi Becerileri Açısından Kıyaslanması*" konulu çalışmasını İlimiz Körfez İlçesi Okullarında uygulama talebi, komisyonumuzca uygun görülmüş olup, Türkiye Cumhuriyeti Anayasası, Millî Eğitim Temel Kanunu ile Türk Millî Eğitiminin genel amaçlarına uygun olarak, 6698 sayılı Kişisel Verilerin Korunması Kanununa ve yürürlükteki diğer tüm düzenlemelerde belirtilen hüküm, esas ve amaçlara aykırılık teşkil etmeyecek şekilde, denetimleri ilgili okul, ilçe millî eğitim müdürlükleri tarafından gerçekleştirilmek üzere, gönüllülük esasına göre, anket çalışmasının İlçe Millî Eğitim Müdürlükleri ve Okul Müdürlüklerinin denetimi, gözetimi ve sorumluluğunda yapmasının uygun görüldüğüne ilişkin, 25/10/2022 tarih ve E-99332089-605.01-61780536 sayılı Valilik Onayı ekte gönderilmiştir.

Gereğini rica ederim.

Abdul Rauf ULUSOY
Vali a.
Vali Yardımcısı

Bu belge güvenli elektronik imza ile imzalanmıştır.

Adres : Kozluk Mahallesi İnönü Caddesi No:32
41040 İzmit/KOCAELİ
Telefon No : 0 (262) 322 12 69
E-Posta: stratejigelistirme41@meh.gov.tr
Kep Adresi : meh@hs01.kep.tr

Belge Doğrulama Adresi : <https://www.turkiye.gov.tr/meh-ebys>
Bilgi için: İbrahim TURAN
Unvan : Veri Hazırlama ve Kontrol İşletmeni
İnternet Adresi: www.kocaelimem.meh.gov.tr Faks: _____

Bu evrak güvenli elektronik imza ile imzalanmıştır. <https://evrakorgu.meh.gov.tr> adresinden Cf21-833d-34bf-868f-2aa7 kodu ile teyit edilebilir.

APPENDIX N. PERMISSION FROM MoNE (CONT'D)



T.C.
KOCAELİ VALİLİĞİ
İl Millî Eğitim Müdürlüğü

Sayı : E-99332089-605.01-61780536
Konu : Araştırma İzni
(Müge ONGUR)

25/10/2022

VALİLİK MAKAMINA

İlgi : Orta Doğu Teknik Üniversitesinin 27/09/2022 tarih ve 54850036-044-E.319 sayılı yazısı.

Orta Doğu Teknik Üniversitesi Temel Eğitim Anabilim Dalı Okul Öncesi Eğitimi Yüksek Lisans öğrencisi Müge ONGUR'un "*Grup Büyüklüğü ve Elektronik Hikaye Kitabı Okuma: Farklı Grup Büyüklüklerinde Uygulanan E-kitap Okuma Etkinliklerinin Hikayeyi Anlama ve Kelime Edinimi Becerileri Açısından Kıyaslanması*" konulu çalışmasını İlimiz Körfez İlçesi Okullarında uygulama talebi, Üniversitenin ilgi yazıları ile bildirilmektedir.

Adı geçenin söz konusu çalışmasına esas olmak üzere, ekte sunulan çalışmayı İlimiz Körfez İlçesi Okullarında uygulama talebi komisyonumuzca uygun görülmüş olup, Türkiye Cumhuriyeti Anayasası, Millî Eğitim Temel Kanunu ile Türk Millî Eğitiminin genel amaçlarına uygun olarak, 6698 sayılı Kişisel Verilerin Korunması Kanununa ve yürürlükteki diğer tüm düzenlemelerde belirtilen hüküm, esas ve amaçlara aykırılık teşkil etmeyecek şekilde, denetimleri ilgili okul, ilçe millî eğitim müdürlükleri tarafından gerçekleştirilmek üzere, gönüllülük esasına göre, anket çalışmasının İlçe Millî Eğitim Müdürlükleri ve Okul Müdürlüklerinin denetimi, gözetimi ve sorumluluğunda yapması Müdürlüğümüzce uygun görülmektedir.

Makamlarınızca da uygun görüldüğü takdirde olurlarınıza arz ederim.

Ömer AKMANŞEN
Millî Eğitim Müdürü

OLUR
25/10/2022

Abdul Rauf ULUSOY
Vali a.
Vali Yardımcısı

İbrahim TURAN
V.H.K.İ.

Adres : Kozluk Mahallesi İnönü Caddesi No:32
41040 İzmit/KOCAELİ
Telefon No : 0 (262) 322 12 69
E-Posta: stratejigelistirme41@meh.gov.tr
Kep Adresi : meb@hs01.kep.tr

Bu belge güvenli elektronik imza ile imzalanmıştır.

Belge Doğrulama Adresi : <https://www.turkiye.gov.tr/meb-ebys>

Bilgi için: İbrahim TURAN

Unvan : Veri Hazırlama ve Kontrol İşletmeni

İnternet Adresi: www.kocaelimem.meb.gov.tr

Faks: _____

Bu evrak güvenli elektronik imza ile imzalanmıştır. <https://evraksorgu.meb.gov.tr> adresinden a31e-fa1b-36bd-9248-4f60 kodu ile teyit edilebilir.



APPENDIX O. NARRATIVE COMPREHENSION TASK QUESTIONS UTILIZATION PERMIT

Yanıtla Toplu Yanıtla İlet Sil İstenmeyen İşaretle Diğer

Re: utilization permit for Narrative Comprehension Task Questions



Scott Paris göndericisinden 2022-09-19 08:45 tarihinde

[Ayrıntılar](#)

Thank you for seeking permission but I don't think it is necessary. Alison Paris is no longer involved in research but I'm sure she would give her permission to you, as I do, and good luck with your research.

Cheers, Scott Paris

Sent from my iPhone

On 18 Sep 2022, at 21:53, e215684 <muge.ongur@metu.edu.tr> wrote:

Dear Dr. Paris,

I am Müge Ongur who is a MAster's student in Middle East Technical University. I would like to use the version I adapted into Turkish of "Narrative Comprehension Task" questions for my thesis research, if you allow me.

My research questions are below for your information:

- 1) Does the size of the e-book reading activity group (individuals, small group, big/whole group) affect the efficacy of e-books in terms of the development of explicit and implicit story comprehension (ESC and ISC) skills of 60 - 72-month-old kindergarteners?
- 2) Does the size of the e-book reading activity group affect the efficacy of e-books in terms of vocabulary acquisition of 60 - 72-month-old kindergarteners?
- 3) Does the story presentation format (printed format or digital format) differentially affect story comprehension and vocabulary acquisition of preliterate children who belong to different size of reading activity group?

If you need more information, please do not hesitate to ask me.

APPENDIX P. TURKISH SUMMARY / TÜRKÇE ÖZET

ELEKTRONİK HİKAYE KİTAPLARININ FARKLI GRUP BÜYÜKLÜKLERİNDE HİKAYE ANLAMA VE KELİME EDİNİMİ BECERİLERİNE YÖNELİK ETKİSİ

1. GİRİŞ

Fiziksel ve zihinsel süreçlerin iş birliği ile gerçekleşen okuma eylemi, basit kod çözmenin ötesinde, anlama, değerlendirme ve analiz etmeyi gerektiren karmaşık bir süreçtir (Kaya & Kardaş, 2020). Okumak, bilgi edinmenin en güvenilir yollarından biridir, bireyleri özgür ve bağımsız kılar, cehaletten ve yanlış inançlar edinmekten korur (İşeri & Ünal, 2010). Bu önemli beceri, alanyazında yazma becerisi ile birlikte "okuryazarlık" kavramı altında değerlendirilmektedir. Okuryazarlık bir öğrenme sürekliliğini kapsar ve bir toplumdaki insanların potansiyellerini ve bilgilerini genişletmelerini ve kendi topluluklarına tamamen katılmalarını sağlar (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2004; 2023). Bu nedenle, yaşamın ilk yıllarından itibaren bu beceriler için sağlam bir temel oluşturmak önemlidir (Dickinson & Tabors, 2001; Snow vd., 1998).

Türk eğitim sisteminde okuma-yazma eğitimi birinci sınıfta örgün eğitim ile birlikte başlamaktadır. Dolayısı ile okul öncesi eğitim kurumlarında okuma-yazma eğitimi sağlanmamakta (Education Information Network in the European Community [EURYDICE], 2021; Ministry of National Education [MoNE], 2018), bunun yerine çocukların ileriki okuryazarlık becerilerinin bir ön koşulu olarak kabul edilen erken okuryazarlık becerilerinin desteklenmesi amaçlanmaktadır (MoNE, 2013). Alanyazındaki birçok araştırma da erken çocukluk döneminde edinilen erken okuryazarlık becerileri ve ileriki yıllardaki okuma başarısı arasındaki anlamlı ilişkiyi vurgulamaktadır (Bishop, 2003; Grigorakis vd., 2022; Lepola vd., 2016; Utchell, 2016). Bu araştırmaların bulgularına göre, erken okuryazarlık becerileri, bireylerin

sonraki yıllardaki okuma başarıları için sağlam bir temel oluşturarak okuryazarlık sürecine büyük katkı sağlamaktadır. Bu önemli ilişki nedeniyle okuduğunu anlama gibi okuma becerilerinin öncülleri onlarca yıldır araştırmacılar için dikkat çekici bir konu olmuş ve bu süreçte çeşitli öncüller tanımlanmıştır (Kim & Petscher, 2011; Munger & Blachman, 2013; Oakhill & Cain, 2012; Silvén vd., 2007; Storch & Whitehurst, 2002; Utchell vd., 2016). Bu öncüllerin en önemlilerinden ikisi *hikâye anlama becerileri* ve *kelime bilgisi* olarak sıralanabilir.

Dinlediğini anlama ya da anlatıyı anlama olarak da adlandırılan hikâye anlama becerileri sözel dilin anlamsal ve sözdizimsel özelliklerini anlama becerisi olarak tanımlanmaktadır (Isbell vd., 2004; Lonigan vd., 2008). Bu beceri, "Açık hikâye anlama" ve "Örtük hikâye anlama" olmak üzere iki temel kategoriye ayrılmaktadır. Açık hikâye anlama becerileri, hikayedeki karakterleri, sorunları, olayları ve hikâyenin geçtiği yeri tasvir etme gibi yüzeysel anlama becerileri ile ilişkilirken, örtük hikâye anlama becerileri daha çok hikâyenin kahramanlarının duygu ve düşünceleri hakkında çıkarımlarda bulunma gibi daha derin beceriler ile ilişkilidir (Paris & Paris, 2003). Gelişmiş hikâye anlama becerileri sonraki yıllarda iyi bir okuduğunu anlama becerisini de beraberinde getirmektedir. Hikâye anlama ve okuduğunu anlama arasındaki ilişki Kendeou ve arkadaşları (2005) tarafından "Yeni gelişimsel/egitimsel model" (*A new developmental/instructional model*) ile açıklanmaktadır. Bu modele göre, başarılı bir okuduğunu anlama sürecinin merkezinde temel dil becerileri, kelime çözme becerileri ve hikâye anlama becerileri yer alır. Bu modelin temelinde, eğer okuyucu sağlam hikâye anlama becerileri geliştirmemişse, okunan metni anlayamayacağını vurgulamaktadır (Kendeou vd., 2005). Bu modelin yanı sıra Gough ve Dunmer (1986) tarafından öne sürülen "Basit Okuma Modeli" (*Simple View of Reading*) ve Scarborough (2001) tarafından öne sürülen "Okuma Halatı Modeli" (*Reading Rope Model*) de temelde hikâye anlama becerilerinin okuduğunu anlama becerilerinin temel taşı konumunda olduğunu vurgulamaktadır. Tüm bu teorik altyapıya ek olarak alanyazında da pek çok çalışma hikâye anlama becerileri ve okuduğunu anlama becerisi arasındaki ilişkiyi destekler niteliktedir (Babayiğit vd., 2021; Catts vd., 1999; Catts vd., 2015; Griffin vd., 2004; Isbell vd., 2004; Kendeou vd., 2005; Kendeou vd., 2008; Kendeou vd., 2009; van

Kraayenoord & Paris, 1996; Lervåg vd., 2017; Wise vd., 2007). Bu çalışmaların ortak bulguları, erken çocukluk dönemindeki çocukların hikâye anlama becerilerinin sonraki yıllarda okuduğunu anlama becerilerinin bir yordayıcısı olduğunu vurgulamaktadır.

Hikâyeyi anlamının yanında kelime edinimi becerilerinin de bu beceri ile beraber değerlendirilmesi okuduğunu anlama becerilerinin desteklenmesinde büyük önem taşımaktadır. Çocukların anladıkları, anlamlarını bildikleri ve uygun şekilde kullanabildikleri tüm kelimeler olarak geniş bir şekilde tanımlanabilecek olan *kelime bilgisi* (Akyol & Temur, 2007) ve *hikâye anlama becerileri* birbirini destekleyerek okuyucu ve dinleyicilerin metinden anlam çıkarmasını sağlamaktadır (Lepola vd., 2016). Küçük çocukların hikâye anlama becerileri ile kelime bilgileri arasındaki bu ilişkiyi vurgulayan önemli sayıda çalışma bulunmaktadır (Clarke vd., 2010; Hirsch, 2003; Kim, 2015, 2016; Lepola vd., 2016; Lervåg & Aukrust, 2010; Protopapas vd., 2013; Senechal vd., 2006). Bu çalışmaların bulguları genel olarak çocukların zengin kelime bilgisinin hikâyeleri anlamalarına yardımcı olduğunu göstermektedir.

Bu becerileri destekleyerek okuryazarlık öncesi çocukları okuma yazma serüvenine hazırlamak için anaokullarında öğretmenler tarafından çeşitli etkinlikler uygulanmaktadır, bu etkinliklerin başında ise hikâye kitabı okuma gelmektedir. Mol ve Bus (2011) tarafından yapılan bir meta-analitik çalışma, hayatlarının ilk yıllarında hikâye kitabı okuma etkinliklerine maruz kalan çocukların, buna maruz kalmayan akranlarına kıyasla daha zengin bir kelime bilgisine sahip olduğunu ve okuryazarlık becerilerinin daha fazla geliştiğini göstermiştir. Hikâye kitapları pek çok farklı format ve teknik ile çocuklara sunulabilmektedir. Teknolojik gelişmelerin de etkisi ile nispeten daha yeni bir tür olan elektronik kitaplar da bir seçenek olarak karşımıza çıkmaktadır. Çocuklar için geliştirilen e-kitapların çoğu, basılı muadillerinin dijital versiyonları olmalarına karşın bu kitaplardaki ses efekti, arka plan müziği, hikâye seslendirmesi ve animasyon gibi multimedya özellikleri onları basılı kitaplardan ayırmaktadır (de Jong & Bus, 2003; Labbo & Kuhn, 2000). Bu fark, e-kitapların ve basılı kitapların çocukların erken okuryazarlık becerilerine farklı oranda katkı sağlamalarına neden olabilir. Paivio'nun "İkili Kodlama Kuramı" (*Dual Coding*

Theory) (Schnotz, 2005) ve Mayer'in (2001) "Çoklu Ortam Öğrenme Kuramı" (*Cognitive Theory of Multimedia Learning*) bu düşünceyi destekler niteliktedir. Bu iki kuram temelde çocukların bir bilgiyi görsel ve işitsel olmak üzere iki farklı kanal vasıtası ile edindiklerinde bilginin hem daha kolay öğrenilebileceğini hem de daha etkili öğrenmenin gerçekleşebileceğini öne sürmektedir (Low & Sweller, 2014; Mayer, 2001; Paivio, 2006; Sadoski & Paivio, 2013). Hem basılı resimli hikâye kitabı okuma etkinlikleri hem de e-kitap okuma etkinlikleri süreç boyunca görsel ve işitsel uyaranlar sağlasa da e-kitaplara eklenen hareketli resim, animasyon ve ses efekti gibi çoklu ortam özellikleri görsel uyaranların hikâye anlama becerilerini destekleme konusundaki etkilerini artırma potansiyeline sahiptir (Takacs & Bus, 2018). Bu noktada, e-kitapların basılı muadillerine kıyasla hikâye anlama becerilerini daha fazla destekleme potansiyeline sahip olduğu söylenebilir.

Bu nedenle birçok çalışma e-kitaplar ve basılı kitapların öğrenme sürecine olan etkisini karşılaştırmıştır, ancak bu çalışmaların sonuçları incelendiğinde hangi kitap formatının sürece daha katkı sunduğuna dair bir fikir ayrılığının olduğu görülmektedir. Çalışmalardan bazıları e-kitapların çocukların erken okuryazarlık becerilerine daha fazla katkı sunduğu sonucuna varırken (Chera & Wood, 2003; Flewitt, vd., 2014; de Jong & Bus, 2003; Korat vd., 2017; Korat & Shamir, 2012; Korat vd., 2014; Labbo & Kuhn, 2000), bazıları basılı kitapların daha fazla katkı sunduğunu (Chiong vd., 2012; Krcmar & Cingel, 2014; Reich vd., 2019; Sapasağlam vd., 2020; Şimşek, 2017), bir kısmı ise iki kitap formatının benzer şekilde katkı sağladığını belirtmişlerdir (de Jong & Bus, 2004; Korat & Shamir, 2007; Korat vd., 2013).

1.1.Araştırmanın Önemi

İçinde bulunduğumuz yüzyıl dijital teknolojinin insan hayatının vazgeçilmez bir parçası haline gelmesi sebebi ile teknoloji çağı olarak isimlendirilmektedir (Raja & Nagasubramani, 2018). Özellikle son 20 yıldır eğitim almakta olan öğrenciler dijital teknoloji ile büyüyen nesilleri oluşturmaktadır. Bu durum bu nesillerin ihtiyaç ve ilgilerinde önceki nesillere göre değişikliklere yol açmıştır (Prensky, 2001). Bu nedenle eğitim de bu ihtiyaçları gidermek ve öğrencileri eğitim sürecinde

desteklemek için teknoloji entegrasyonu gibi yeniliklere açık olmalıdır (Prensky, 2001). Eğitim arařtırmacıları tarafından eğitimde teknoloji kullanımına yönelik arařtırmaların yapılması bu nedenle önem taşımaktadır.

Bu arařtırmanın önemi, bilimsel alanyazın için önemi, anaokullarındaki uygulamalar için önemi ve Türk öğrencilerin gelecekteki okuduğunu anlama becerilerinin desteklenmesine ışık tutmaya yönelik önemi olmak üzere 3 ana başlık altında ele alınmıştır.

İlk olarak, daha önceden de belirtildiği gibi alanyazında basılı ve elektronik kitapların çocukların erken okuryazarlık becerilerini geliştirme konusundaki etkilerini karşılařtıran pek çok çalışma olmasına rağmen hangi kitap formatının daha etkili olduğuna dair bir fikir ayrılığının olduğu görülmektedir. Bu çalışmalar incelendiğinde çalışmaların kiři sayısı bakımından birbirinden farklı grup büyüklükleri ile yapıldığı görülmüřtür, ancak alanyazındaki birçok arařtırma grup büyüklüğünün eğitimsel süreci ve öğrenme sürecini etkileyen bir faktör olabileceğini de vurgulamıştır (Dickinson, 1995; Morrow & Smith, 1990; Phillips & Twardosz, 2003; Vaughn vd., 2009). Bu nedenle e-kitapları ve basılı kitapları erken okuryazarlık becerilerine katkı bakımından kıyaslayan çalışmalarda görülen fikir ayrılığının bu durumdan kaynaklanabileceği düşünölmektedir. E-kitaplar ve basılı kitapların grup büyüklüğü de göz önünde bulundurularak karşılařtırılması önceki çalışmalardaki farklı bulguların nedenini potansiyel olarak açıklayabileceği için önemlidir. Buradan hareketle bu çalışma, elektronik kitap ve basılı kitap okuma etkinliklerini küçük ve büyük grup olmak üzere farklı grup büyüklüklerini de göz önünde bulundurarak kıyasladığı için önceki çalışmalarda ortaya çıkan fikir ayrılığının grup büyüklüğüne baėlı olup olmadığına yönelik bir bakış açısı sunarak bilimsel alanyazına katkı sağlamaktadır.

İkinci olarak, daha önceden de belirtildiği gibi özellikle son 20 yılda çocuklar dijital teknolojiye büyük bir ilgi duymakta ve bu ilgi her yıl teknolojik gelişmeler ile paralel olarak artış göstermektedir. Türkiye İstatistik Kurumu'nun (TÜİK) arařtırmasına göre, çocuklar ekran karşısında daha fazla zaman geçirebilmek için uyku, kitap

okuma ve yaşlıları ile yüz yüze oyunlar oynama gibi aktivitelere daha az zaman ayırmaktadır (TURKSTAT, 2021). Çocukların teknolojiye olan bu ilgisi genellikle olumsuz yönde değerlendirilmekte ve alanyazındaki çalışmalarda da genelde “teknoloji bağımlılığı” gibi olumsuz durumlar ile ilişkilendirilmektedir (Ertemel & Aydın, 2018; Gökel, 2020; Mustafaoğlu vd., 2018). Ancak çocukların dijital teknolojiye olan bu engellenemez ilgileri öğrenme süreçlerini kolaylaştıracak ve katkı sağlayacak bir araç olarak kullanılabilir. Bunu başarmak için eğitim araştırmacılarının, dijital teknolojinin öğrenme sürecini kolaylaştırmak için nasıl faydalı bir şekilde kullanılabileceğini araştırması önemlidir. Örneğin e-kitaplar, multimedya özellikleri sayesinde, küçük çocukların dijital teknolojilere olan ilgilerini kullanarak okuma etkinliklerine ilgilerini artırmak ve becerilerini geliştirmek için basılı kitaplara etkili bir alternatif olabilir. Ancak Skibbe ve arkadaşlarının da (2017) vurguladığı gibi, küçük çocukların erken okuryazarlık becerilerini desteklemek için e-kitapların nasıl iyi bir şekilde kullanılabileceği konusunda pek az şey bilinmektedir. Bu durumda bu çalışma, e-kitap okuma sürecinde grup büyüklüğünün etkinlik sürecine bir etkisi olup olmadığının anlaşılmasına yardımcı olduğu ve eğer bir etkisi var ise elektronik kitapların hangi grup büyüklüğünde daha etkili olduğu konusunda bir bakış açısı sunması sebebiyle önem taşımaktadır. Bu bulgular ışığında öğretmenler okuma-yazmaya hazırlık etkinliklerini tasarlarırken hangi kitap formatının hangi grup büyüklüğünde kullanılması gerektiği konusunda fikir edinebilir ve etkinliklerini küçük çocuklar için en faydalı şekilde hazırlayabilirler.

Son olarak, akademik başarıyı ölçmek için uluslararası olarak uygulanan testlerde (örn. PIRLS, PISA), Türk öğrencilerin okuma ve okuduğunu anlama başarısının ortalamanın altında kaldığı görülmektedir (MoNE, 2019). Okuduğunu anlama becerisinin temellerinin erken çocukluk döneminde gelişen hikâye anlama ve kelime edinimi becerilerine dayandığı düşünülürse (Lepola vd., 2016), okul çağındaki çocukların okuduğunu anlama becerilerinin geliştirilmesi ve buna bağlı olarak uluslararası testlerdeki başarının artırılması için hikâye anlama ve kelime edinimi becerilerinin erken yaşlarda desteklenmesi önem taşımaktadır. Bu çalışma da bu becerilerin hikâye kitabı okuma etkinliklerinde hangi kitap türü ve grup

büyükliğünde daha iyi desteklenebileceğine yönelik bir fikir sunduğundan önemlidir.

1.2.Araştırmanın Amacı

Araştırmanın amacı anaokulu çocuklarının hikâye anlama (*örtük hikâye anlama* ve *açık hikâye anlama*) ve kelime edinimi becerileri üzerinde kitap formatı (e-kitap ve basılı kitap), grup büyüklüğü (küçük grup ve büyük grup), ve bu iki faktör arasındaki etkileşimin bir etkisinin olup olmadığının anlaşılmasıdır. Bu amaç doğrultusunda aşağıdaki sorulara yanıt aranmıştır.

- 1) Anaokulu öğrencilerinin açık hikâye anlama becerisi puanlarında kitap formatı ve grup büyüklüğü açısından anlamlı bir fark var mıdır?
- 2) Anaokulu öğrencilerinin örtük hikâye anlama becerisi puanlarında kitap formatı ve grup büyüklüğü açısından anlamlı bir fark var mıdır?
- 3) Anaokulu öğrencilerinin kelime edinimi becerisi puanlarında kitap formatı ve grup büyüklüğü açısından anlamlı bir fark var mıdır?

2. YÖNTEM

Bu çalışma nicel araştırma desenlerinden biri olan faktöriyel deneysel desen kullanılarak yürütülmüştür. Çalışmada her biri iki düzeyli iki bağımsız faktör mevcut olduğundan, tasarım 2x2 faktöriyel desen olarak adlandırılmıştır. Toplamda 4 ana grup birbiri ile kıyaslanmıştır, bunlar: 1) e-kitap okuma müdahalesi almış küçük gruplar; 2) e-kitap müdahalesi almış büyük gruplar; 3) basılı kitap müdahalesi almış büyük gruplar ve 4) basılı kitap müdahalesi almış küçük gruplardır. Detaylar şekil A40'da sunulmuştur.

		Grup Büyüklüğü	
		Küçük Gruplar	Büyük Gruplar
Hikaye Kitabı Formatı	E-Kitap Okuma	4-5 kişilik gruplar halinde, toplamda 36 katılımcı	11-13 kişilik gruplar halinde, toplamda 36 katılımcı
	Basılı Kitap Okuma	4-5 kişilik gruplar halinde, toplamda 37 katılımcı	11-13 kişilik gruplar halinde, toplamda 37 katılımcı

Şekil A40. 2x2 Faktöriyel desene ait detaylar

2.1. Çalışma Grubu

Bu araştırmanın evrenini Kocaeli ilinde bulunan ve anadili Türkçe olan 60-72 ay arası beklenen gelişim düzeyine sahip, anadili Türkçe olan tüm anaokulu öğrencileri oluşturmaktadır. Kocaeli ilindeki tüm anaokulu öğrencileri ile çalışmak mümkün olmadığından bu çalışma için Körfez ilçesi ulaşılabilir evren olarak belirlenmiştir. Örneklem seçiminde küme tipi tesadüfi örnekleme yöntemi kullanılmıştır ve 3 anaokulunun 5 yaş grubu öğrencileri örneklem olarak seçilmiştir. Son durumda araştırmaya toplamda 146 5 yaş grubu anaokulu öğrencisi katılım göstermiştir.

2.2. Veri Toplama Araçları

Bu çalışmada biri çalışmanın ilk aşamasında kullanılmak üzere 4 adet çocuk kitabı kullanılmıştır. Bu kitaplar, Kırmızı Elma, (Oral, 2021), Haydi Sevgi Örelim, (Dasuki & Rasuli, 2020), Cemile Midilliye Biniyor (de Petigny & Delvaux, 2008) ve Luga (Hemmatirad, 2018)'dir. Kitapların elektronik versiyonları için "TRT Çocuk Kitaplık" uygulaması kullanılmıştır. Çocukların hikâye anlama becerilerini ölçmek için Paris & Paris (2003) tarafından geliştirilen "Anlatıyı Anlama Testi" kullanılmıştır. Anlatıyı anlama testi her kitabın konusuna ve içeriğine göre uyarlanmaktadır. Her kitap için yapılan uyarlamalar alanda uzman 2 öğretim

üyesinin kontrolünden geçmiş ve onayları alınmıştır. Kelime edinimi becerilerini ölçmek için ise araştırmacı tarafından seçilen hedef kelimelerden oluşan “Hedef Kelime Testi” kullanılmıştır. Hedef kelime testindeki kelimeler belirtilen yaş grubundaki çocukların henüz edinmediği kelimelerden seçilmiştir, bu aşamada araştırmacı iki farklı veri tabanından yararlanmıştır [Türkçe ’deki kelimelerin edinim yaşı (Göz vd., 20016) ve (Türkçe ’de erken ve sık edinilen kelimeler listesi, Acar vd., 2016)]. Bunun yanı sıra devlet anaokullarında görev yapan 3 okul öncesi öğretmeninin de kelimelerin uygunluğu konusunda fikirleri alınmış, bu fikirler doğrultusunda hedef kelimeler düzenlenmiştir.

2.3. Veri Toplama Süreci

Üniversitenin etik kurulundan, Kocaeli İl Milli Eğitim Müdürlüğünden, okulların idari personellerinden, öğretmenlerden, velilerden ve katılımcı çocuklardan gerekli izinler ve onaylar alındıktan sonra araştırma iki aşamada gerçekleştirilmiştir. İlk aşamada Kırmızı Elma isimli kitabın basılı versiyonu 4-5 kişilik küçük gruplar halinde çocuklarla okunmuş, ardından Anlatıyı Anlama Testi uygulanmıştır. Bu test neticesinde katılımcılar araştırmanın daha önceden belirtilen 4 ana grubuna gruplar hikâye anlama becerisi bakımından eşit olacak şekilde atanmıştır. İkinci aşamada ise her hafta bir kitap okunmak üzere “Hadi Sevgi Örelim”, “Cemile Midilliye Biniyor” ve “Luga” isimli kitaplar çalışma grubu özelliklerine göre okunmuştur. Örneğin, “e-kitap küçük grup” özelliğine sahip gruplarda bu kitapların elektronik formatları 4-5 kişilik küçük gruplara iPad Air 2 ile gösterilmişken, “basılı kitap büyük grup” özelliğine sahip gruplarda kitabın basılı formatı 11-13 kişilik büyük gruplar ile okunmuştur. Sıralama etkisinin gözlemlenmemesi için kitapların sıraları çalışma alt gruplarında değiştirilmiştir (Bkz. Tablo A.12).

Kitap okuma ve değerlendirme süreci okulda bulunan ayrı bir sınıfta gerçekleştirilmiştir. Okuma süreçleri gruplar ile yürütülürken, değerlendirme sürecine çocuklar bireysel katılım göstermiş ve süreç boyunca araştırmanın güvenilirliğini artırmak için ses kaydı alınmıştır. Katılımcı yanıtlarının rastgele seçilmiş %25’i kodlayıcı tutarlılığının değerlendirilmesi için ikinci bir kodlayıcı

tarafından da değerlendirilmiştir. İki kodlayıcı arasında yüksek oranda tutarlılık bulunmuştur.

Tablo A.12 Kitapların okunma sıraları

		I. Okuma Seansı	II. Okuma Seansı	III. Okuma Seansı	
Büyük gruplarda basılı kitap okuma etkinliğine katılan katılımcılar					
a. Basılı kitap grup 1 n=11	Büyük	Haydi Sevgi Örelim	Cemile Biniyor	Midilliye	Luga
b. Basılı kitap grup 2 n=13	Büyük	Cemile Biniyor	Midilliye	Luga	Haydi Sevgi Örelim
c. Basılı kitap grup 3 n=13	Büyük	Luga	Haydi Sevgi Örelim	Cemile Biniyor	Midilliye
Küçük gruplarda basılı kitap okuma etkinliğine katılan katılımcılar					
a. Basılı kitap grup 1 n=12	Küçük	Haydi Sevgi Örelim	Cemile Biniyor	Midilliye	Luga
b. Basılı kitap grup 2 n=12	Küçük	Cemile Biniyor	Midilliye	Luga	Haydi Sevgi Örelim
c. Basılı kitap grup 3 n=13	Küçük	Luga	Haydi Sevgi Örelim	Cemile Biniyor	Midilliye
Büyük gruplarda e-kitap okuma etkinliğine katılan katılımcılar					
a. E-Kitap Büyük grup 1 n=13	Büyük grup 1	Haydi Sevgi Örelim	Cemile Biniyor	Midilliye	Luga
b. E-Kitap Büyük grup 2 n=12	Büyük grup 2	Cemile Biniyor	Midilliye	Luga	Haydi Sevgi Örelim
c. E-Kitap Büyük grup 3 n=11	Büyük grup 3	Luga	Haydi Sevgi Örelim	Cemile Biniyor	Midilliye
Küçük gruplarda e-kitap okuma etkinliğine katılan katılımcılar					
a. E-kitap Küçük grup 1 n=10	Küçük grup 1	Haydi Sevgi Örelim	Cemile Biniyor	Midilliye	Luga
b. E-kitap Küçük grup 2 n=11	Küçük grup 2	Cemile Biniyor	Midilliye	Luga	Haydi Sevgi Örelim
c. E-kitap Küçük grup 3 n=15	Küçük grup 3	Luga	Haydi Sevgi Örelim	Cemile Biniyor	Midilliye

2.4. Veri Analizi

Veriler SPSS 26 paket programı kullanılarak araştırma sorularını yanıtlayabilmek adına bir dizi çift yönlü ANOVA testi uygulanarak analiz edilmiştir.

3. BULGULAR VE TARTIŞMA

Bu bölümde çalışmanın sonuçları her araştırma sorusu özelinde uygulanmış olan iki yönlü ANOVA testinin bulguları dahilinde sunulmuş, en sonunda da bulgular alanyazın ışığında tartışılmıştır.

Araştırma Sorusu 1: Anaokulu öğrencilerinin açık hikâye anlama becerisi puanlarında kitap formatı ve grup büyüklüğü açısından anlamlı bir fark var mıdır?

Analiz sonuçları incelendiğinde kitap formatı bakımında gruplar arasında basılı kitaplar lehine anlamlı bir fark bulunurken ($F(1, 142) = 39.45, p < .05, \eta_p^2 = .217$), grup büyüklüğü ($F(1, 142) = .422, p > .05, \eta_p^2 = .003$) ve kitap formatı-grup büyüklüğü etkileşimi ($F(1, 142) = .013, p > .05, \eta_p^2 = .000$) bakımından gruplar arası anlamlı bir fark bulunamamıştır. Bu durumda basılı kitapların her iki grup boyutunda da açık hikâye anlama becerisini destekleme konusunda e-kitaplara göre daha etkili olduğu sonucu çıkarılabilmektedir.

Tablo A.13 Açık hikâye anlama puanları gruplar arası İki yönlü ANOVA sonuçları

	<i>Kareler</i>					
	<i>Toplamı</i>	<i>sd</i>	<i>Kareler Ort.</i>	<i>F</i>	<i>P</i>	<i>η_p^2</i>
Kitap Formatı	652.074	1	652.074	39.455	.000	.217
Grup Büyüklüğü	6.979	1	6.979	.422	.517	.003
Kitap Formatı * Grup Büyüklüğü	.212	1	.212	.013	.910	.000

Araştırma Sorusu 2: Anaokulu öğrencilerinin örtük hikâye anlama becerisi puanlarında kitap formatı ve grup büyüklüğü açısından anlamlı bir fark var mıdır?

İki yönlü ANOVA testi sonuçlarına göre anaokulu çocuklarının örtük hikâye anlama becerilerinde gruplar arasında kitap formatına göre basılı kitaplar lehinde istatistiksel

olarak anlamlı bir fark gözlemlenirken ($F(1, 142) = 13.13, p < .05, \eta_p^2 = .085$), grup büyüklüğü ($F(1, 142) = .002, p > .05, \eta_p^2 = .000$) ve grup büyüklüğü-kitap formatı etkileşimine ($F(1, 142) = 1.59, p > .05, \eta_p^2 = .011$) göre gruplar arasında anlamlı bir fark bulunamamıştır. Bu sonuç basılı kitapların hem küçük hem de büyük grup büyüklüklerinde çocukların örtük hikâye anlama becerilerine daha çok katkıda bulunduğu anlamına gelebilir.

Tablo A.14 Örtük hikâye anlama puanları gruplar arası İki yönlü ANOVA sonuçları

	<i>Kareler</i>					
	<i>Toplamı</i>	<i>Sd</i>	<i>Kareler Ort.</i>	<i>F</i>	<i>P</i>	η_p^2
Kitap Formatı	343.315	1	343.315	13.139	.000	.085
Grup Büyüklüğü	.059	1	.059	.002	.962	.000
Kitap Formatı * Grup Büyüklüğü	41.621	1	41.621	1.593	.209	.011

Araştırma Sorusu 3: Anaokulu öğrencilerinin kelime edinimi becerisi puanlarında kitap formatı ve grup büyüklüğü açısından anlamlı bir fark var mıdır?

Analiz sonuçları incelendiğinde çocukların kelime edinimi becerisi puanlarında grup arasında kitap formatına göre basılı kitaplar lehine anlamlı bir fark bulunurken ($F(1, 142) = .412, p < .05, \eta_p^2 = .028$), grup büyüklüğü ($F(1, 142) = .211, p > .05, \eta_p^2 = .001$) ve grup büyüklüğü-kitap format etkileşimine göre ($F(1, 142) = .093, p > .05, \eta_p^2 = .001$) anlamlı bir fark bulunamamıştır. Bu durumda çocukların kelime edinimi becerisinin her iki grup büyüklüğünde de basılı kitaplar tarafından daha çok destelendiği sonucuna varılabilir.

Tablo A.15 Kelime edinimi puanları gruplar arası İki yönlü ANOVA sonuçları

	<i>Kareler</i>					
	<i>Toplamı</i>	<i>sd</i>	<i>Kareler Ort.</i>	<i>F</i>	<i>P</i>	η_p^2
Kitap Formatı	229.866	1	229.866	4.129	.044	.028
Grup Büyüklüğü	11.725	1	11.725	.211	.647	.001
Kitap Formatı * Grup Büyüklüğü	5.204	1	5.204	.093	.760	.001

Özetle, sonuçlar, basılı kitap koşullarındaki çocukların değerlendirilen tüm erken okuryazarlık becerilerinde e-kitap koşullarındaki çocuklardan daha iyi performans gösterdiğini, bunun yanında grup büyüklüğünün her üç erken okuryazarlık becerisine de bir etkisinin olmadığını ortaya koymuştur. Daha önceden de belirtildiği gibi alanyazında bu konu hakkında bir fikir birliği olmadığından sonuçlar bazı araştırmalar ile paralellik gösterirken (de Jong & Bus,2002; Reich vd., 2019; Chiong vd., 2012; Krcmar & Cingel, 2014; Sapağlam vd., 2020), bazıları ile paralellik göstermemektedir (Altun, 2018a; Ihmeideh, 2014; Rvachew vd., 2017; Sarı, 2018). Bu durumda alanyazındaki fikir ayrılığının grup büyüklüğünün etkisinden dolayı ortaya çıkmadığı sonucuna varılabilir.

Basılı kitapların e-kitaplara göre çocukların hikâye anlama ve kelime edinimi becerilerini desteklemede daha etkili çıkmasının 3 temel nedeni olabileceği düşünülmektedir.

İlk olarak, araştırmacı her iki kitap formatı ile yaptığı okuma etkinliklerinde de çocuklarla sohbet etmek, sorularını cevaplamak ya da buna benzer bir etkileşimde bulunmamış olsa da e-kitap okuma etkinliklerinde kitabın oto-seslendirme özelliği kullanılırken, basılı kitap okuma etkinliklerinde hikâyeyi araştırmacının kendisi seslendirmiştir. Bu durum basılı kitap okuma etkinliklerine katılan çocuklar ve araştırmacı arasında doğal bir etkileşim oluşturmuştur. Vygotsky'ye (1986) göre öğrenme toplumsal bir düzen içinde gerçekleşmekte ve çocukların daha bilgili bir bireyle etkileşimi onların öğrenme sürecini desteklemektedir, bu nedenle basılı kitap okuma gruplarında ortaya çıkan bu doğal etkileşimin çocukların dikkatini etkinliğe daha çok vermesini ve öğrenme sürecinin desteklenmesini sağlamış olabileceği düşünülmektedir. Basılı kitap okuma etkinlikleri sırasında okuyucu ve dinleyici arasında ortaya çıkan olası etkileşimin olumlu etkisi alanyazında yer alan önceki çalışmalarda da vurgulanmıştır (Chiong vd., 2012; Kozminsky & Asher-Sadon, 2013; Krcmar & Cingel, 2014; Reich vd., 2019).

İkinci olarak, çocukların teknolojiye yönelik tutumları ve teknoloji alışkanlıklarının da çocukların e-kitap okuma etkinliklerindeki performanslarını etkilemiş olabileceği

düşünülmektedir. Son yıllarda yapılan araştırmalar, küçük çocukların evde geçirdikleri zamanın önemli bir kısmını ekran karşısında geçirdiklerini ortaya koymaktadır (Can-Yaşar vd., 2012; Livingstone vd., 2014; Neumann & Neumann, 2017; TURKSTAT, 2021). Araştırmalara göre çocuklar ekran karşısında geçirdikleri bu zamanın çoğunda oyun oynamayı ve eğlenceli videolar seyretmeyi tercih etmektedir. (Altun, 2019; Bulut, 2018; Chiong ve Schuler, 2010; Güngör vd., 2020). Çocukların teknolojik aletlerle yaşadıkları bu deneyim onların bilgisayar ve tablet gibi teknolojik aletleri daha çok eğlence ve “oyun oynama zamanı” ile ilişkilendirmelerine sebep olmaktadır. Bu ilişkilendirme nedeniyle, ekran başında geçirilen süre boyunca çocukların hikâye dinlemek yerine oyun oynama beklentisine sahip olabileceği ve bu karşılanamayan beklentinin onların e-kitap okuma etkinliklerine katılma konusundaki motivasyonlarını olumsuz etkilemiş olabileceği düşünülmektedir. Solomon’un (1981) “Yatırılan Zihinsel Çaba Miktarı Teorisi” (*Amount of Invested Mental Effort Theory, AIME*) bu konuyu farklı bir bakış açısı ile açıklamaktadır. Bu teoriye göre bireyler, var olan zihinsel şemalarını kullanarak kolayca açıklayamadıkları karmaşık ve belirsiz uyarınları işlemeye çalıştıklarında daha fazla zihinsel çaba sarf etme eğilimindedirler. Başka bir deyişle, insanlar kolay buldukları bir durumla karşılaştıklarında daha az zihinsel çaba sarf ederler (Rieh vd., 2012). Çocuklara göre “ekran zamanı”, “oyun zamanı” anlamına geldiği için onların e-kitap okuma etkinlikleri süresince daha az zihinsel çaba gösterme eğiliminde olduğu düşünülmektedir. Bu durum onların e-kitap okuma etkinliklerinde basılı kitap okuma etkinliklerine göre daha az bilgi edinmelerine ve buna bağlı olarak da hikâyeyi daha az anlamalarına yol açmış olabilir. Bu nedenle basılı kitap koşullarındaki çocukların, e-kitap koşullarındaki çocuklardan daha iyi performans göstermiş olabileceği düşünülmektedir.

Son olarak, e-kitaplarda bulunan çoklu ortam özelliklerinin çocukların performansını etkilediği bilinmektedir. Örneğin bazı çalışmalarda e-kitaplardaki arka plan müziğinin çocukların erken okuryazarlık becerilerini desteklediği sonucuna varılırken (Bus vd., 2015; Takacs vd., 2015), bazılarında ise hikâye anlama gibi becerileri olumsuz etkilediği sonucuna varılmıştır (Lehmann & Seufert, 2017; Sarı, 2019; Smeets vd., 2014). Bu çalışmada kullanılan e-kitaplar da arka plan müziği ve

hikâye seslendirmesi gibi özelliklere sahiptir. Basılı kitap okuma etkinliklerine katılan çocukların e-kitap okuma etkinliklerine katılan çocuklara göre daha iyi performans göstermelerinin nedeninin e-kitaplarda hikâye anlatımı ve fon müziğinin aynı anda bulunması olabileceği düşünülmektedir. Bu durum çocukların kısa süreli belleğinde bilişsel bir yük oluşturarak hikâyeyi anlamalarını ve hikâyeden yeni kelimeler edinmelerini olumsuz etkilemiş olabilir. İkili Kodlama Kuramı ve Çoklu Ortam Öğreme Kuramı'nda bahsedildiği gibi bilgi hem sözlü hem de görsel kanallardan toplandığında öğrenme daha iyi gerçekleşir. Farklı kanallar kullanmak öğrenmeyi daha kalıcı hale getirir ve bir kanalda oluşabilecek aşırı yükü azaltır (Mayer, 2001; Paivio, 2006; Sadoski & Paivio, 2013; Schnotz, 2005). Ancak elektronik kitaplardaki arka plan müziği ve ses efektleri hikâye anlatımı ile aynı kanalı kullanmakta ve bu da işitsel kanalda bilişsel yüke neden olabilmektedir (Kirschner, 2002). Bu durumun e-kitap okuma gruplarındaki çocukların hedef kelimeleri edinmesini ve hikâyeyi kavramasını engellemiş olabileceği düşünülmektedir.

Öte yandan grup büyüklüğünün bir etkisinin olmadığı sonucu araştırmacı tarafından beklenmedik bir sonuç olsa da bu durumun bazı olası nedenleri olduğu düşünülmektedir. Farklı grup büyüklükleri arasında anlamlı farklılıklar olduğunu ortaya koyan araştırmalar incelendiğinde, bu farklılıkların daha çok müdahale sürecinde gruptaki çocuklar arasında meydana gelen akran etkileşimiyle ilişkili olduğu görülmektedir (Morrow & Smith, 1990; Phillips & Twardosz, 2003). Ancak bu çalışmada, etkinlik sürecinde çocukların birbirleriyle etkileşime girmesine veya konuşmasına izin verilmemiştir, bu da okuma etkinlikleri sırasında öğrenciler arasındaki etkileşimi sınırlandırmıştır. Eğer ki okuma etkinlikleri sırasında grup büyüklüğünün etkileri akran etkileşimine bağlı olarak görülüyorsa, mevcut çalışmada öğrenciler arasındaki sınırlı etkileşimin, grup büyüklüğünün süreç içinde meydana gelen herhangi olası bir etkisini engellemiş olabileceği düşünülmektedir.

Gelecekteki çalışmalar, grup büyüklüğünün e-kitap ve basılı kitap okuma etkinliklerinin erken okuryazarlık becerileri üzerine bir etkisinin olup olmadığını

inceleyebilmek için akranlar arası etkileşime daha fazla fırsat veren paylaşımlı hikâye kitabı okuma tekniğini kullanarak benzer bir çalışmayı tekrarlayabilir.

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TEZİN ADI / TITLE OF THE THESIS (İngilizce / English): THE EFFECT OF E-STORYBOOKS IN DIFFERENT GROUP SIZES ON THE STORY COMPREHENSION AND VOCABULARY ACQUISITION SKILLS

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