A MULTILEVEL ANALYSIS OF HOME AND CLASSROOM LITERACY ENVIRONMENTS IN RELATION TO PRESCHOOLERS' EARLY LITERACY DEVELOPMENT

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ABSTRACT

A MULTILEVEL ANALYSIS OF HOME AND CLASSROOM LITERACY ENVIRONMENTS IN RELATION TO PRESCHOOLERS' EARLY LITERACY DEVELOPMENT

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This study aimed to investigate the characteristics of the preschool children's home and classroom literacy environments and to search for relationships between receptive and expressive vocabulary, phonological awareness and concepts about print development. The participants of study were 168 parents and their children attending five private preschools in Ankara. The two-wave data of the study was collected during the fall and spring semester of the 2014-2015 academic year.

The findings of the study revealed that children have more oral language related home experiences than print related experiences. Similarly, children's classroom environment related to oral language sources had the highest average scores. In addition, print related resources, experiences and book corners of the classrooms had some limitations.

The results of the Multiple Regression Analyses showed that children's home literacy environment and their mothers' education level were significant predictors for all the fall semester early literacy scores. Multilevel Linear Modeling was used to analyze the two level of data set. The results revealed that children's spring semester early literacy scores were significantly associated with their initial early literacy scores, mother's education level and the classroom literacy environment. However, home literacy environment was not significantly related to only spring semester concepts about print scores.

In the present study, the children's home literacy environment was evaluated in the context of Turkish scholarly culture. The classroom literacy environments were also examined within the scope of early childhood education program. The results of this study revealed that both home and classroom literacy environment have contribution to children's early literacy development.

Keywords: Early Literacy Skills, Home Literacy Environment, Classroom Literacy Environment, Preschool, Turkish

ÖZ

OKUL ÖNCESİ DÖNEM ERKEN OKURYAZARLIK BECERİLERİNİN EV-İÇİ VE SINIF OKURYAZARLIK ORTAMLARI İLE OLAN İLİŞKİNİN ÇOK DÜZEYLİ ANALİZİ

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Bu çalışmanın amacı okul öncesi dönem çocuklarının ev ve sınıf içi okuryazarlık ortamlarının incelenmesi ve bu iki ortamın alıcı ve ifade edici kelime bilgisi, ses farkındalığı ve yazı kavramları beceri gelişimleri ile ilişkisinin araştırılmasıdır. Araştırmanın çalışma grubunu Ankara'da bulunan beş özel okulda öğrenim gören 168 çocuk ve aileleri oluşturmaktır. Çalışma verileri 2014-2015 eğitim öğretim yılının güz ve bahar dönemi olmak üzere iki aşamada toplanmıştır.

Çalışma sonuçları çocukların ev-içi okuryazarlık ortamlarının yazı ile ilgili deneyimlerine göre sözel dil becerilerinin daha zengin olduğunu göstermektedir. Sınıf içi okuryazarlık ortamları da ev ortamları ile benzer bir şekilde sözel dil becerilerine ilişkin maddelerin daha yüksek ortalamalara sahip olduğu görülmektedir. Bununla birlikte, çalışma kapsamında veri toplanan okul öncesi

sınıflarda kitap köşesi ve çevresel yazılıma yer verme konularında problemler tespit edilmiştir.

Çoklu regresyon analizi sonuçları ev-içi okuryazarlık ortamının ve anne eğitim düzeyinin, okul öncesi dönem çocuklarının güz dönemi erken okuryazarlık becerilerinin istatistiksel olarak anlamlı yordayıcıları olduğunu göstermektedir. Çocuk ve sınıf düzeyindeki veriler çok düzeyli modelleme (MLM) analizi kullanılarak incelenmiştir. Çok düzeyli modelleme analizi sonuçları anne eğitim düzeyi, ev-içi okuryazarlık ortamı, güz dönemi erken okuryazarlık becerileri ve sınıf-içi okuryazarlık ortamının erken okuryazarlık becerileri gelişimi ile ilişkilidir. Sadece bahar dönemi yazı kavramları ile ev-içi okuryazarlık ortamı arasında bir ilişkiye rastlanmamıştır.

Bu çalışmada, Türkiye okuma kültürü bağlamında ev-içi okuryazarlık ortamını değerlendirilmiştir. Ayrıca, okul öncesi eğitim programı kapsamında sınıf içi okuryazarlık ortamı incelenmiştir. Son olarak, ev ve sınıf ortamında sunulan okuryazarlık ortamının çocukların erken okuryazarlık becerileri gelişimi açısından önemi ortaya koyulmuştur.

Anahtar Kelimeler: Erken Okuryazarlık Becerileri, Ev-içi Okuryazarlık Ortamı, Sınıf Okuryazarlık Ortamı, Okul Öncesi, Türkçe

To My Family

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LIST OF ABBREVIATIONS

C_AGE: Children's Age in Month

CAP: Concepts about Print

CAP_1: Concepts about Print for Fall Term

CAP_2: Concepts about Print for Spring Term

CLE: Classroom Literacy Environment

DUMMY_MEL: Dummy Variable-Mother Education Level

ECE: Early Childhood Education

ELLCO: Early Language and Literacy Classroom Observation

HLE: Home Literacy Environment

HLEQ: Home Literacy Environment Questionnaire

LAD: Language Acquisition Device

MLM: Multilevel Linear Modeling

MLSS: Ministry of Labour and Social Security

MONE: Ministry of National Education

MRA: Multiple Regression Analysis

NCFL: National Center for Family Literacy

NELP: National Early Literacy Panel

NIFL: National Institute for Literacy

PA: Phonological Awareness

PA-1: Phonological Awareness Scores for Fall Term

PA-2: Phonological Awareness Scores for Spring Term

PASECP: Phonological Awareness Scale of the Early Childhood Period

TIFALDI: Turkish Expressive and Receptive Language Test

VOC_EXP1: Vocabulary-Expressive Scores for Fall Term

VOC_EXP2: Vocabulary-Expressive Scores for Spring Term

VOC_REC1: Vocabulary-Receptive Scores for Fall Term

VOC_REC2: Vocabulary-Receptive Scores for Spring Term

CHAPTER 1

INTRODUCTION

Reading is a one of the necessary survival skills to adapt and fully participate in todays' literate societies (Council of The European Union [EU], 2012: Nutbeam, 2008; Plomp, 2013). In the information age (also called digital age), not only does the workplace demand a set of complex literacy skills but also the technological devices that individual's use in daily life require a range of different literacy skills (Bawden, 2001; Liu, 2005; Tyner, 2014). Thus, one of the ultimate goals of education all over the world is to raise literate citizens (United Nations Educational, Scientific and Cultural Organization, [UNESCO], 2009).

Reading is a component of the receptive language skills (Otto, 2006). It is defined as a complex process in which a reader constructs his own meaning and creates an interpretation by decoding a written language (Akyol, 2012; Thompkins, 2007). It enables individuals to obtain, construct and produce information (Allen, 2012; Scarborough, 2009). According to UNESCO (2006), reading is a base for lifelong learning and educational opportunities. It is a fundamental component of education programs for all levels (UNESCO, 2009) beginning with children learning to read, and then they read to learn (Graves, Juel, & Graves, 1998). Primary grades cover the first phase of the learning to read, then reading becomes a tool for student to gain and to construct their information for subsequent levels of education. Therefore, reading skills are one of the essential foundations for individuals' academic success (Arnold & Doctoroff, 2003; Duncan et al., 2007; Hernandez, 2011).

Turkish primary grade and high school literacy programs both aim to raise students to be competent/skilled readers (Ministry of National Education, [MONE], 2015a, 2015b). However, in international comparative studies, such as

Programme for International Student Assessment, [PISA], (2003, 2006, 2009, 2012, 2015) and *Progress* in International Reading Literacy Study, [PIRLS], (2001) consistently showed that Turkish students' reading performance scores were below the international average. According to the PISA (2012) results, the reading performance of Turkish 15-year-old students ranked 41st out of 65 countries. Recent results revealed that Turkish reading scores increased slightly and the students ranked 37th out of 64 countries.

Furthermore, PIRLS (2001) reported that 4th grade Turkish students' reading achievement scores were below the international average and among 35 countries Turkey ranked 28th in students' reading performance. These results prompted educators to question the possible reasons for the reading failure of Turkish students and the effectiveness of the Turkish Education System's Literacy policy.

Considering the results of the PISA and PIRLS surveys, the average reading scores of both Turkish high school and primary grade students are lower than international average and their ranking was also low. The link between primary grade reading achievement and upper grade reading achievement was comprehensively reported in previous studies (e.g., Cunningham & Stanovich, 1997; Fletcher & Lyon, 1998; Juel, 1988; Philips, Norris, Osmond, & Maynard, 2002; Rasinski & Padak, 2005; Spira, Bracken, & Fischel, 2005). The studies pointed out that learning to read is one of the milestones in a child educational life, and primary grade reading achievement is a prominent indicator for their later achievements. Therefore, a large number of research studies have focused on primary grade reading achievement and its potential contributions and the roots of reading skills. Various studies pointed out that children's primary grade reading achievement is related to their early literacy skills (e.g., Badian, 1998; Bishop, 2003; Coast-Kitsopoulos, 2010; Kim & Petscher, 2011; Lonigan, Burgess, & Anthony, 2000; Munger & Blachman, 2013). Reading acquisition is a

developmental continuum and the antecedents of reading skills are derived from the early childhood years (Clay, 1967, 1969, 1972; Goodman, 1967; 1986; Lonigan, 2004; Scarborough, Neuman, & Dickinson, 2009; Sulzby & Teale, 1991; Whitehurst & Lonigan, 1998, 2001).

The National Early Literacy Panel [NELP] (2008) conducted a meta-analysis study to synthesize empirical evidence on early literacy development and the precursors of later literacy achievement. According to NELP (2008), early literacy skills have medium to large predictive factors for future literacy skills. Similarly, another meta-analysis study revealed that early print related knowledge, oral language proficiency and nonverbal/visual abilities are related to later reading achievement (Scarborough, 1998). Scarborough (2001) examined the multi-faced nature of reading and how children acquire reading skills. She focused on the link between early literacy skills and later reading skills. She proposed the *Reading Rope Model* to explain how skilled reading consists of many woven strands and these strands operate together (Scarborough, 2001). Scarborough classified the strands as belonging to the two main processes of language comprehension and word recognition. She stated that to become a fluent skilled reader, an individual needs to decode print automatically (word identification) and use language comprehension, such as background information and vocabulary, in a strategic manner to construct meaning from the text. These two main processes operate reciprocally in the reading process (Scarborough, 2009). Scarborough (2001, 2009) examined the antecedents of the two main processes in early literacy skills. She found that phonological awareness, alphabet principles and sigh recognition of the familiar words are the antecedents of word recognition process, whereas vocabulary, print concepts, background knowledge and verbal reasoning are the antecedents of language comprehension.

These findings focused researchers' attention on the development of the early literacy skills as a basis for later reading achievement by the late 1970s

(Clay, 1972; Gillen & Hall, 2003; Goodman, 1967; Teale & Sulzby, 1986). The attention on early literacy development was boosted by two study trends. First, brain research examined the intellectual capacities of young children and the way they process the environmental inputs (Teale & Sulzby, 1986). The findings showed that the first three years of human life have a pivotal influence on brain development. The structures of the brain are established through dynamic interactions between the child's neurons and the psychosocial environment of their early years of life (Diamond & Hopson, 1998; Shonkoff & Philips, 2000; Walker et al., 2011). Cognitive science is an interdisciplinary field concerning the structure and processes of the brain. In this field, language acquisition is one area of research and it has been shown that early childhood is a sensitive period for the acquisition of language. Children need to be exposed to linguistic inputs: interactions, experiences and sources to acquire language (Brown, 1973; Clark, 2009; Ingram, 1989; Krashen, 1976; Kuhl, 2000) and these studies stressed that children's social and physical environment are an important source for language development.

The second study trend encompasses Vygotsky's Sociocultural Theory and associates learning with development. From the maturation perspective, development leads learning; however, Vygotsky argued that learning can also lead development (Berk, 2009) According to Vygotsky (1986), language acquisition is a socially mediated process in which children internalize language via social interactions. Children required the assistance of more capable/ knowledgeable persons to scaffold their language development (Berk, 2009; Morrow, 2009; Ochs, 1988; Smidt, 2009; Vygotsky, 1978). Similarly, in his Ecological Systems Theory, Brofenbrenner (1979, 2006) emphasized the influence of contextual factors on children's development. This theory states that a human develops within a nested environment containing both social and physical elements, and there is a reciprocal relationship between an individual and the environment which has an impact on development (Berns, 2009;

Brofenbrenner, 1979). According to the Ecological System Theory, family and school are components of the innermost level of the ecological system and the initial environments have crucial influence on a child's development (Berk, 2009; Brofenbrenner, 1979; Crockenberg & Leerkes, 2003; Krishnan, 2010; Bradley, Corwyn, McAdoo & Coll, 2001; Lee, 2007; Tong, Baghurst, Vimpani, & McMichael, 2007).

The aforementioned cognitive studies and the contextualize theories show the importance of extensively nourishing the development of early literacy skills at home and school environments. Research examining the child's home environment categorized its contribution to early literacy development under the three headings: parental characteristics, home literacy materials, and joint activities and interactions (Bennett, Weigel, & Martin, 2002; Bus, Van Ijzendoorn, & Pellegrini, 1995; Davis-Kean, 2005; Evans & Shaw, 2008; Fitzgerald, Spiegel, & Cunningham, 1991; Griffin & Morrison, 1997; Hammer, Frakas, & Maczuga, 2010; Kim, Im, & Kwon, 2015; Marvin & Wright, 1997; Niklas & Schneider, 2013; Rush, 1999; van Steensel, 2006; Weinbergen, 1996).

Concerning the parental characteristics, studies mainly focused on household income and the mother educational level, responsiveness, depression, and reading habits finding that these factors are closely related to the quality and quantity of children's language and literacy inputs (Dollaghan et al., 1999; Fernald, Marchman, & Weisleder, 2013; Hart & Risley, 1995; Hirsh-Pasek et al., 2015; Hudson, Levickis, Down, Nicholls, & Wake, 2015; Peredo, Owen, Rojas, & O'Brien-Caught, 2015; Rowe, 2012; Rush, 1999; Snow, 1977). Studies consistently showed that children had lower language and literacy skills when they lived in a home background where one or both parents suffered from and had a low level of education, the family had a low income and poor reading habits (Bracken & Fischel, 2008; Duncan, Brooks-Gunn, & Klebanov, 1994; Duncan & Magnuson, 2005; Johnson, Martin, Brooks-Gunn, & Petrill, 2008; Li

& Rao, 2000; Pan, Rowe, Singer, & Snow, 2005). Therefore, the children are called disadvantaged/at-risk group and longitudinal studies revealed that for children who were considered to be disadvantaged/at-risk, their language and literacy was below average and this gap remained through to upper education levels (Burchinal et al., 2011; Fryer & Levitt, 2004; Hair, Halle, Terry-Humen, Lavelle & Calkins, 2006).

Regarding home literacy sources, studies revealed that a literacy-enriched home environment containing toys, books, newspapers, magazines, maps, posters and other environmental prints, such as logos, brands, signs contribute to the development of children's literacy (Farver, Xu, Lonigan, & Eppe, 2012; Foy & Mann, 2003; Tomopoulos et al., 2006) and give them an opportunity recognize the functions and form of the print in a real life context (Goodman, 1986; Goodman & Altwerger, 1981; Prior & Gerard, 2004; Purcell-Gates, 1996; Sinclair & Golan, 2002; Vera, 2007). In particular, the number books in the home is an important indicator of the home literacy index and is related to children's literacy skills (Kelley, Evans & Sikora, 2007; Park, 2008; PIRLS, 2001). Furthermore, recent studies revealed that young children are not only exposed to printed-literacy environments but also to techno-literacy environments. Children are becoming more engaged with technological devices such as TV, computer games, tablets, smart phones and educational software (Akkoyunlu & Tuğrul, 2002; Altun, 2013; Dezuanni, Dooley, Gattenhof, & Knight, 2015; Marsh & Thompson, 2001; Neumann & Neumann, 2014; Kenner, 2000). The techno-literacy environments offer children exposure to signs, texts, icons, subtitles, labels, directions and experience with different forms of written symbolic systems (Marsh, 2004; Neumann, & Neumann, 2014; Vera, 2007; Zevenbergen, 2007). Recent studies pointed out the potential contribution of techno-literacy environment to children's literacy skill development and mostly the studies investigated the effect of some children's TV programs (e.g., Sesame Street), educational software and applications on children's literacy gains (Chera &

Wood, 2003; Fisch, 2014; Foy & Man, 2003; Marsh & Thompson, 2001; Rice, Huston, Truglio, & Wright, 1990; Segers & Verhoeven, 2002; Watt, 2010). In addition, these studies commented that these kinds of technological resources facilitate greater impact on children's early literacy development when the parents are also engaged with the technology giving guidance and feedback (Korat, Shamir, & Heibal, 2013; Reiser, Tessmer, & Phelps, 1984; Reiser, Williamson, & Suzuki, 1988; Segal-Drori, Korat, & Klein, 2012; Segal-Drori, Korat, Shamir, & Klein, 2010).

Parental guidance is not only important in the engagement with the techno-literacy environment but also it is the one of the major research sub-areas which investigate parent-child interactions, joint attention and shared reading activities in terms of the child's early literacy development (Jacobs, 2004). The quality, quantity and types of parent-child interactions and activities associated with children's early development has been well documented over the past few decades (Bingham, 2007; Mol, Bus, de Jong, & Smeets, 2008; Dickson & Tabor, 2001; Hindman, Connor, Jewkes, & Morrison, 2008; Rush, 1999; Scarborough & Dobrich, 1994; Sénéchal et al., 2008; Snow, 1977; Snow & Beals, 2006; Sonnenschein & Munsterman, 2002). Studies showed that not only the verbal but also non-verbal form (gestures) of interaction between children and care-givers from the first months of life are associated with children's later oral language development (e.g., Pan, Rowe, Singer, & Snow, 2005; Rowe & Goldin-Meadow, 2009a; 2009b). Parents are essential role models for children in terms of using language, expanding vocabulary knowledge and acquiring the pragmatics of the language (*the variability in the use of language in different contexts for different intentions in an appropriate way*) (Aukrust, 2002; Dodici, Draper, & Peterson, 2003; Farrant & Zubrick, 2012; Isbell, Sobol, Lindauer, & Lowrance, 2004; Ninio & Snow, 1996; Weisleder & Fernald, 2013; Westerlund & Lagerberg, 2008). Parents also have a substantial role in providing children with early print experiences as well as those pertaining to oral language (Mol, Bus, & de Jong,

2009). Children are called dependent readers because they are not only passive listeners during the process of book reading (Beaty & Pratt, 2003), they also are encouraged to explore the concepts about books, functions and forms of print, and peritextual features of picture books, such as the cover, title and dustjackets (Sipe & Brightman, 2005). In addition, children books introduce children to new words, themes and characters, and foster children's understanding of the story elements and the narrative (Zevenbergen, Whitehurst, & Zevenbergen, 2003; Lever & Sénéchal, 2011). Furthermore, the parents' engagement and interest in the shared reading process is resource that enhances children's attitudes, motivation and interest in reading activities (Altun, 2013; Sonnenchein & Munsterman, 2002; OECD, 2012; Ortiz, Stowe, & Arnold, 2001; Scarbrough & Dobrich, 1994). Therefore, the shared reading experience is accepted as a key resource to foster children's early literacy skills, and the contribution of shared reading activities is consistently reported in meta-analysis studies (Bus, IJzendoorn, & Pelligrini, 1995; Mol & Bus, 2011; Mol, Bus, de Jong, & Smeets, 2008; NELP, 2008 Scarborough & Dobrich, 1994).

Overall, in the research field of early literacy, there is a consensus that the multi-faced structure of the home literacy environment is a resource that fosters children's early literacy development (Burgess, Hecht, & Lonigan, 2002; Griffin & Morrison, 1997; Niklas & Schneider, 2015; Payne, Whitehurst, & Angell, 1994; Slaughter & Epps, 1987; Teale, 1986; Yeung & King, 2016; Weigel, Martin, & Bennett, 2006). However, this is still a prominent research topic and new dimensions have emerged and/or evolved over time due to the dynamic structure of the home environment that parallels with the changes in society and technology. In addition, cultural differences in home literacy experiences and literacy habits varied between societies and this variation is related to the diversity of children's language and literacy patterns (Evans, Kelley, Sikora, & Treiman, 2010; Phillips & Lonigan, 2009; Wasik, Dobbins, & Herrmann, 2002).

With the changes in societies, the number of children receiving early childhood education (ECE) has increased over the last few decades all over the world (Barnett & Yarosz, 2007; Behrman & Kohler, 2014; MONE, 2015; OECD, 2014). The increasing number of employed mothers, nuclear families and single parent households has generated the call for widespread ECE (Bianchi, 2000; Kinoshita & Guo, 2015; Lokshin, Glinskaya, & Garcia, 2000). Furthermore, a cost-benefit analysis showed that the short and long-term benefits of ECE for both children and society drew the attention of educational policy makers to increase the spread of education as a public investment (Barnett, 1993, 1998; Barnett & Masse, 2007; Belfield, Nores, Barnett, & Schweinhart, 2006; Dalziel, Halliday, & Segal, 2015; Kagitcibasi, Sunar, & Bekman, 2001; Kaytaz, 2005; Temple & Reynolds, 2015). Therefore, the positive contribution of preschool education to children's learning has been widely accepted in the related literature. From this point of view, early literacy studies investigated how preschool environment nourish children's development, specifically in literacy (Dickinson & McCabe, 2001; Smith, Dickinson, Sangeorge, & Anastasopoulos, 2002).

At the same time, the preschool environment has distinctive characteristics compared with the home environment (Hannon & James, 1990). Studies have pointed out that the variations between the environments can influence children's literacy development in different ways (Neuman & Roskos, 1990). The differences can be categorized under the three dimensions based on findings from previous studies. First, the school environment has a formal structure and applies planned and systematic curricula to develop children's learning and development, whereas most of children's home literacy experiences are informal and spontaneous (Ramani & Sigler, 2014). Second, the majority of the teachers in preschools are professionals with specific education in children's development and learning but in general, parents do not have this training (Department for Education and Skills [DCSF], 2007; Neuman, 1999). Third, children frequently have small group or individual interactions with parents but

in the classroom they have small or whole group interactions with adults and peers (Burgess, Hecht, & Lonigan, 2002; Moll & Whitmore, 1993; Foy & Mann, 2003; Hindman, Connor, Jewkes, & Morrison, 2008).

In the context of the classroom literacy environment, its specific structure and potential contributions to children's early literacy development, studies have examined the effect of intervention programs on children literacy gains, especially in disadvantaged children (Bailet, Repper, Piasta, & Murphy, 2009; Bus & Van IJzendoorn, 1999; Hiebert & Taylor, 1994; Justice, Chow, Capellini, Flanigan, & Colton, 2003; Wasik, Bond, & Hindman, 2006; Missall, McConnell, & Cadigan, 2006). Emergent literacy-based interventions foster early literacy skills and advocate that the acquisition of literacy skills is a developmental process and children's early childhood experiences have a crucial role in that process (Griffith, Beach, Ruan, & Dunn, 2008; Soderman et al., 2005). Emergent literacy-based interventions aim to expose children to a rich range of literacy material and experiences through an active, play-based, meaningful and contextualized interaction with oral language and print in embedded naturalistic programs through the day. Social interactions are both adult-child and child-child scaffolded to gain and use oral and written language for different contexts and purposes (Justice et al., 2003; Justice & Kaderavek, 2004; Katims, 1991; Lonigan, Purpura, Wilson, Walker, & Clancy-Menchetti, 2013; Paulson, Noble, Jepson, & van den Pol, 2001; Whitehurst et al., 1994).

In addition to research into emergent literacy intervention, other studies pointed out that classroom environment quality is associated with children's early literacy outcomes (Dickson et al., 2006; Early et al., 2007; Guo, Justice, Kaderavek & McGinty, 2012; Guo, Piasta, Justice, & Kaderavek, 2010; Neuman & Roskos, 1993). Some studies focused, more specifically, on the classroom quality regarding literacy environment. The classroom literacy environment (CLE) construct consists of the following dimensions; literacy sources and

materials, classroom environment design, curriculum goals related to early literacy skills and interactions (adult- child, child-child) to foster children's early literacy skills (Hamre & Pianta, 2005; Justice, Mashburn, Hamre, & Pianta, 2008; Makin, 2003; Meehan, Hughes, & Cavell, 2003; Neuman, 1999; Smith et al., 2002; Reutzal & Morrow, 2007). Although studies reported the association between CLE and children's early literacy skills, they varied in both the degree of the relationship and the types of early literacy skills (Coviello, 2005; Guo, Justice, Kaderavek, & McGinty, 2012; Haustein, 2012; Justice, Mashburn, Hamre, & Pianta, 2008), but they all stressed the classroom environment as an important resource to foster children's early literacy skills.

In addition to those studies that focused on a unique CLE contribution, recently a limited number of studies have examined the association between the development of early literacy skills and together with the home and classroom literacy environment in the context of an ecological system perspective (Baroody, 2011; Constantine, 2004; Dickson & McCabe, 2001; Hindman, Skibbe, Miller, & Zimmerman, 2010; Melhuish, Phan, Sylva, Sammons, Siraj-Blatchford, & Taggart, 2008). The ecological system perspective provides a whole picture of children's two most inner environments and also addresses the influence of the environmental factors on human development and learning. The debate of nature vs nurture is an old issue rooted in developmental psychology (Berk, 2009; Chapman, 2000; Pennington, 2002). Current studies of twins have explored the impact of genetic and environmental factors on literacy skills. These studies stressed that both genetic and environmental factors are related to the development of literacy skills (Friend, DeFries, Wadsworth, & Olson, 2007; Peterson & Pennington, 2012; Su et al., 2015) and proposed an interactionist perspective advocating that both nature and nurture have an influence on the development of literacy skills. The aim of education is to develop learning by providing an appropriate environment, teaching and learning methods, context and content in a systematic way. ECE aims to create optimal learning experiences

s in both the physical and social environments in order that learners can develop and learn (Essa, 2013). Thus, education considers the nurture-environmental factor as well as the individuals' nature role in the learning process. The current Turkish ECE Program (2013) offers ECE teachers suggestions for preparing an appropriate learning environment to foster children's learning. Besides, parents are one of the important components of the national ECE and the program gives high priority to parent education and involvement. The Turkish ECE program offers Integrated Family Support Guidance (OBADER, 2013) aimed to educate parents regarding child development, learning, parenting skills and parent involvement to connect between home and school in the common goal of fostering children's learning and development. In the Turkish context, research linking the classroom and home literacy environment association with children's early literacy development is missing issue. Thus, the present study aimed to investigate Turkish preschoolers' home and classroom literacy environment characteristics and investigate the relationship between preschoolers' early literacy skills and the literacy environments.

1.1. Significance of the Study

Over the past few decades, various studies have focused on preliterate children's early literacy development and potential contributory factors (Dickson & McCabe, 2001; Hart, Petrill, DeThorne, Deater-Deckard, Thompson, Schatschider, & Cutting, 2009; Johnson, Martin, Brooks-Gunn, & Petrill, 2008; Marvin & Wright, 1997; Whitehurst & Lonigan, 1998, 2001). The association between children's early literacy skills and environmental factors for both home and school have been detailed in previous studies (Bingham, 2007; Bracken & Fischel, 2008; Guo et al., 2010; Johnson et al., 2008; Mashburn, 2008; Skibbe, Connor, Morrison, & Jewkes, 2011). Early literacy skills and emergent literacy are current important research topics in early childhood education in Turkey; however, there is a gap in the research related to Turkish children's early literacy

skills and limited empirical evidence in the context of Turkey. There are only a small number of studies which focused on early literacy skills but most separately investigate one or two early literacy skills such as phonological awareness (Karaman & Üstün, 2011; Turan & Akoğlu, 2011), concepts about print (Şimsek-Çetin & Alisinanoğlu, 2013) and vocabulary (Güler & Dönmez, 2007). There is no published study that has examined the early literacy skills together. In addition, according to the literature review no published study has investigated Turkish children's early literacy skills in relation to the home and classroom environment. Turkish society has distinctive features in terms of student culture and home literacy environment, preschool curriculum, classroom environment and the structure of Turkish language. An investigation of these features has the potential to present findings related to the cultural, linguistic and educational policy differences which would greatly contribute to cross-cultural studies and international literature. The present study aims to provide information attempts to fill the gaps in the assessment of early literacy development and environmental factors in the context of Turkey.

The study motivations are presented under the three main headings: scholarly culture and home literacy environment, early literacy policy, and Turkish language structure. First, studies showed that Turkish children's home literacy index is below the international average (Martin, Mullis, & Gonzalez, 2004; Park, 2008; PIRLS, 2001). A vast number of studies consistently show that Turkish people have a habit of not reading (Aksaçlıoğlu & Yılmaz, 2007; Bayram, 2001; Gömleksiz, 2004; Odabaşı, Odabaşı, & Polat, 2008; Yalman, Özkan, & Kutluca, 2013; Yılmaz, 2002). Evans, Kelley, Sikora and Treiman (2010) explained society's literacy habits by using the terms scholarly culture which refers to the number of books at home, individuals' engagement with reading and reading related materials as daily routines at home (Dronkers, 1992; Evans et al., 2010, Evans, Kelley, & Sikora, 2014). They suggested that a scholarly culture supplies skills and knowledge that are key to literacy

acquisition. However, in Turkey, oral culture is more dominant than written culture (Ministry of Culture and Tourism, 2015; Ungan, 2008; Yıldız, 2008). In the national literature, there is a limited number of studies that investigated Turkish children's home literacy environment (Altun, 2013; Altun & Tantekin-Erden, 2015; Dolunay- Sarıca et al., 2014; Yarar & İnan, 2015; Turan & Akoğlu, 2014). Of the studies developing or adapting a home literacy environment instrument, only Turan and Akoğlu, (2014) investigated home literacy environment regarding children's phonological awareness. There is a research gap in research home literacy environment and early literacy skills. Therefore, the study aims to investigate home literacy environment association with broaden types of literacy skills: receptive-vocabulary, expressive-vocabulary, phonological awareness and concepts about print. Both receptive and expressive vocabulary are linked to oral language skills but phonologic awareness and concepts about prints are related to code related skills (Storch & Whitehurst, 2002). In this respect, the current study can offer information to connect the Turkish home literacy environment and both the code-related and oral early literacy skills from a scholarly culture perspective. This research aims to provide a more holistic picture of the home literacy environment and early literacy skills in the context of Turkey.

Second, reading readiness perspective still has more influence on the Turkish ECE Programs (MONE, 1994; 2002; 2006; 2013) from past to the present. The preschool period is accepted as preparation to reading readiness (Soderman et al., 2005) in the Turkish context, the reading readiness perspective is adopted and since maturation is a key issue in learning to read; therefore, formal literacy instruction is delayed until children attend the first grade (Morrow, 2009). In contrast to the reading readiness perspective, the emergent literacy perspective advocates that the acquisition of reading skills is a developmental process and precursors of reading originate in the early childhood period. Emergent literacy proposes that children should be exposed to enriched

oral and written materials, experiences and interactions embedded in the program (Lonigan, 2004; Sulzby & Teale, 1991; Whitehurst & Lonigan, 1998, 2001). The current Turkish ECE program covers 12 acquisitions related to the language domain and extends the goals related to early literacy development. Although two of the acquisitions are related to simple phonological awareness and print awareness skills, the program certainly avoids introducing children to the letters of the alphabet (MONE, 2013, p.44) and the early literacy activities are seen as preparation for the first grade. Parallel to the curriculum literacy policy, the undergraduate preschool teacher education program does not cover any specific course related to early literacy skills. Studies have pointed out that both in-service and pre-service teachers do not have accurate and adequate knowledge related to the notion of early literacy. According to the literature, most teachers consider that early literacy refers to children being able to read before the first grade (Altun & Tantekin-Erden, 2016; Ergül, Karaman, Akoğlu, Tufan, Dolunay-Sarıca, & Kudret, 2014; Saadet-Özdemir & Bayraktar, 2015). Thus, the notion of early literacy and the emergent literacy perspective is an emerging topic in the context of Turkey. However, early literacy education is not standardized between schools (Koçyiğit, 2009; Tantekin-Erden & Altun, 2014; Yapıcı & Ulu, 2010). For example, some preschool, especially private school, programs cover activities for letter recognition but other preschools do not give importance to simple phonological awareness and print awareness activities. There is no published study that has investigated the association of the preschool literacy environment with the development of children's early literacy skills. Only one descriptive study examined the classroom literacy environment in 17 public preschools in Turkey (Tarım, 2015). Therefore, there is a gap in the research undertaken to investigate children's early literacy skills regarding classroom literacy environment. Besides, to the researcher's knowledge, there is no longitudinal study that has examined Turkish preschoolers' early literacy development. Therefore, the present study may make a valuable contribution in emerging Turkish early literacy studies and to the policy makers by obtaining longitudinal

data for both the home literacy environment and the classroom literacy environment association with early literacy gains overall preschool year.

Third, most of the early literacy research has been conducted with English speaking children. In the literature, studies pointed out that the language structure *(deep or* shallow orthographies, sound structure etc.) can affect reading acquisition and the word recognition process (Frost & Katz, 1992; Defior, Martos, & Cary, 2002; Seymour, Aro, & Erskine, 2003; Ziegler & Goswami, 2005). However, Turkish has a shallow orthography whereas English has a deep orthography (Rayner, Pollatsek, Ashby, & Clifton, 2013); Turkish has 29 phonemes corresponding to 29 graphemes, English has 44 phonemes represented by 26 graphemes. These orthographic differences can influence the results of the study especially in the code-related skills. Therefore, the current study provides information concerning early literacy development in the Turkish language and presents an opportunity to compare early literacy development in Turkish and other languages.

1.2 Research Questions of this Study

The present study has three main research goals. First, to investigate the features of Turkish preschoolers' home and classroom literacy environment. Second, to examine the association between the preschoolers' home literacy environment and fall term early literacy skills. The third goal is explored the home and classroom environments association together with children's early literacy gains from fall to spring term. The following research questions were investigated in order to guide the attainment of these goals.

1. What are the descriptive features of Turkish preschoolers home and classroom literacy environment?

2. Is there significant predictive relationship between the preschooler's fall term early literacy skills (receptive-vocabulary, expressive-vocabulary, phonological awareness, and concepts about print) and their mothers' education level, the children's age and home literacy environments?

3. a. Are there differences in the preschoolers' spring term early literacy skills (receptive-vocabulary, expressive-vocabulary, phonological awareness, and concepts about print) between classrooms?

3. b. Is the classroom literacy environment associated with the differences in the preschoolers' spring term early literacy skills (receptive-vocabulary, expressive-vocabulary, phonological awareness, and concepts about print)?

3. c. Which child-level variables (mother education level, home literacy environment and fall term early literacy scores) explain the differences in the preschoolers' spring term early literacy skills (receptive-vocabulary, expressive-vocabulary, phonological awareness, and concepts about print)?

3. d. Does the classroom literacy environment influence the association of the child-level variables (mother education level, home literacy environment and fall term early literacy scores) with the preschoolers' spring term early literacy skills (receptive-vocabulary, expressive-vocabulary, phonological awareness, and concepts about print)?

CHAPTER 2

LITERATURE REVIEW

This chapter contains a review of the literature regarding the theoretical and empirical aspects of the development of early literacy skills and the ecological influence of the home and classroom environment on children's early literacy development. First, the theoretical background of the acquisition of language and literacy skills is presented followed by a definition of early literacy skills. The development of the early literacy skills is explained and research findings are examined regarding their relations in the reading process. Second, children's home and classroom environment are presented from the perspective of the Ecological System Theory as a potential source of early literacy development. Lastly, the national early childhood education context regarding the curriculum and early literacy policy are given to clarify the notion of early literacy in the context of Turkey.

2.1. Language Acquisition

Language is defined as a complex human specific symbolic system to enable individuals to intentionally communicate with others through socially shared linguistic codes (Machado, 2010; Nelson, 1998; Pence & Justice, 2008). Language is a cognitive tool used to learn about and represent the world (Otto, 2006; Thompkins, 2001; Vygotsky, 1986). It is a way to categorize, organize and express thoughts, ideas and emotions (Stice, Bertrand, & Bertrand, 1995). Lennenberg (1967) stated that although there are a variety of languages around the world, they have universal common features. All languages are constructed in conformity with the mechanism of human cognition; therefore, any individual is

able to learn any language. Kuhl (2004) referred to the recent research into the human brain that showed that infants determine prosodic and statistical paths in language inputs and detect phonemes and words using computational strategies. She argued for a universal language timeline for developing speech perception and production. Kuhl (2004) also stated that all young children quickly and effortlessly acquire their first/native language in the same developmental pattern (e.g. babbling around 6 months- full sentences about 3 years) independent of their culture.

The mystery of how young children acquire language so rapidly and naturally without any effort remains a prominent research topic (Gleason, 2005; Morrow, 2009; Pence & Justice, 2008). According to Gleason (2005), the first studies into child language acquisition date back to the Egyptian king Psammetichus who wanted to bring up two shepherd children, meeting their needs but not talking to them. The king wondered about the children's first words given that they had not received any language input from people. The king aimed to show that the Egyptians were the original human species. The Greek historian Herodotus wrote about the ancient roots of the child's acquisition of language in Book 2 of Histories. Although interest in language acquisition dates back to ancient times and it was examined by a variety of philosophers, such as Plato, Aristotle, Epicurus, systematic scientific studies and theories emerged only in the latter half of the nineteenth century (Berk, 2009; Gera, 2003; Gleason, 2005; Pence & Justice, 2008).

Pence and Justice (2008) classified language development theories in the context of nature-nurture controversy. Nurture-inspired theories, also referred to as empiricist theories, tend to emphasize the role of environmental agents in the language learning process. Nurture-inspired theories advocated that individuals acquire language through experience (Pence & Justice, 2008). Behaviorist theory is one example of the nurture-inspired theories which advocates that children

learn language through the stimulus-response mechanism of classic/operant conditioning. Behaviorist theory does not make distinction between language and other human behavior; thus, it proposes that complex language skills are gained in sets of steps (Bohannon & Bonvillan, 2005; Morrow, 2009).

In contrast, nature-inspired theories, also called nativist theories, highlight the innate capabilities of human beings and hold that linguistic structure is genetically transmitted rather than gained by experience (Pence & Justice, 2008). Noam Chomsky's *Universal Gra*mmar theory is an example of the nature-inspired theories. Chomsky stated that human language grammars are complex and the language input children receive is relatively imperfect; therefore, children cannot learn a language simply based on experience. He proposed that children have innate linguistic competence related to general grammar rules and this is common to all languages (Berk, 2009; Bohannon & Bonvillan, 2005; Pence & Justice, 2008). Chomsky posited the *Language Acquisition Device (LAD*) as a site of children's innate linguistic competence. According to Pinker (1994), wings enable birds to fly and children's innate language processors (LAD) enable them to speak.

Furthermore, there are eclectic theories which integrate aspects of both nurture and nature-inspired theories. The *Social Interaction Approach* advocates that language structure and rules differentiate it from other behaviors and also human beings have linguistic mental capabilities and existing processes to acquire language (Bohannon & Bonvillan, 2005). Differing from behaviorist theories and stressing the role of the environment in the language acquisition process, the Social Interaction Approach proposes that children are not passive beneficiaries of the environment and there is not one-way stimulus-response communication. In fact, children are active and language emerges through interaction between their linguistic and cognitive capabilities on the one hand, and their social environment on the other (Bohannon & Bonvillan, 2005; Pence & Justice, 2008; Morrow, 2009). Research showed that mother-child speech, joint attention and social

interactions scaffold children's language acquisition (Ninio & Bruner, 1978; Tomasello & Farrar, 1986; Tomasello & Todd, 1983; Snow, 1972, 1976, 1978). In the current study, the Social Interaction Approach was used as a theoretical framework to investigate the contribution of home literacy environment, in particular, and also the classroom environment as a social context for children's language development.

Furthermore, language is described as a set of skills that start at birth and evolve over human's life (Whitehurst & Lonigan, 2001), encompassing reading, writing, speaking, listening, visual viewing, and representing (Soderman, Gregory, & McCarty, 2005; Thompkins, 2009). These skills can be divided into the categories of receptive and expressive literacy. The former are the receptive dimensions of language, comprising listening, reading and visual viewing. The expressive language skills are the productive dimensions including speaking, writing and visual presenting (Otto, 2006).

Snow (1983) pointed out the distinction and importance of making clear definitions of *oral language* and *literacy* skills. According to Snow (1983), literacy refers to activities and skills directly related to print, mainly reading and writing but also versions of activities such as playing Scrabble, alphabet and name games, and imitating and writing letters. On the other hand, oral language covers the oral forms of communication skills such as listening and speaking. Snow (1983) suggested that there is a parallelism between language and literacy development regarding the task complexity and the role of social interaction in the development process. Although, there is a contradictory argument that human beings can learn to speak and understand spoken language in a natural way, they need help to learn reading and writing (Morrow, 2009). There are different approaches to characterizing the type of help needed, its dimensions, and timing. The approaches can be categorized under two main sub headings: *Reading Readiness* and *Emergent Literacy*.

2.2 Approaches to Literacy Acquisition

Literacy acquisition approaches are presented based on a chronological sequence in relation to the theoretical positions, early childhood literacy practices and associated curricula.

2.2.1 Reading Readiness Approach (1900s-1950s)

The Reading Readiness Approach maintains that children should learn to read and write only when they are ready. According to this notion of reading readiness, children cannot learn to read until they have achieved a certain level of mental and physical development. Gillen and Hall (2003) cited that the term "readiness" in association with reading was first used by Patrick (1899) and supported by Huey (1908). Gesell's (1925) ideas and studies also had an effect on the notion of readiness because he advocated that maturation was the most crucial factor in learning process (Morrow, 2005). This maturationist perspective derived from the ideas of Arnold Gesell, Granville Stanley Hall and Alfred Binet on children's development, and influenced the Child Study Movement (Cartlon & Winsler, 1999; Kelley & Surbeck, 2007; May & Kundert, 1997). Hall adapted Darwin's evolutionary perspective in order to study child development (Thorndike, 1925). Hall and his student, Gesell, suggested that children have an inner or biological time clock that is responsible for their development, which is preprogrammed. Children need to reach certain maturation, especially mentally, to profit from school and instruction because development is required in order to advance in learning (Cartlon & Winsler, 1999; Kagan, 1990; Touvell, 1992). Therefore, maturation is accepted as a primary determinant of success in learning to read, which should thus be postponed until the child is mentally and physically equipped.

The maturation stage indicating reading readiness was explored by the US psychologists Morphette and Washburne in 1928. According to Morphette and Washburne (1928), reading readiness is closely associated with mental age and reading instruction should be delayed until a child has reached a mental age of 6 years and 6 months. Thus, reading and writing instruction was postponed until first grade with the kindergarten and preschool years being accepted as forming part of the preparation of the process of learning to read. This approach was labelled reading readiness (Crawford, 1995) and in the USA, this approach influenced literacy instruction until 1970s (Gillen & Hall, 2003).

2.2.2 Emergent Literacy Approach

At the end of the 1970s, new ideas appeared concerning children's literacy development. Studies showed that some children can learn to read and write before primary school and children's engagement in, and acquisition of, literacy became a research topic (Gillen & Hall, 2003). Some research, such as that of Reid (1966) and Downing (1979), examined young children's perceptions about literacy, reporting that children had some understanding of and ideas about written language before they entered primary school. Clay (1969), Read (1970), and Downing (1969) investigated the development of children's literacy skills in the early childhood period. In addition, other studies examined the features of early readers who were able to read before starting primary school (Durkin, 1966; Forester, 1977). Durkin (1966) conducted interview with the parents of the early reader children, collecting demographic information about these families, the daily routines of the children involving their families and their home environment. Durkin (1966) reported that the parents regularly engaged in reading aloud various forms of written language such as books, labels, numbers, and logos. The children exposed to written language, including words, letters and punctuation marks, during parent-child shared reading activities demonstrated high interest in written language. In addition, in the children's homes there were a large number

of available printed materials for example, books, magazines, newspapers and maps. The children could freely access pencils and paper and were encouraged to use these materials. The results of Durkin's study showed that the acquisition of early literacy skills depends on young children's literacy related experiences. In addition, Downing, Olila and Oliver (1975) investigated cultural differences in children's understanding of written language by comparing non-Indian preschoolers (n=92) and Indian preschoolers (n=72) in Canada. They used a pictorial scale to assess the children's orientation to literacy, and other instruments to measure visual letter recognition, letter-name knowledge and understanding behavior. They reported that the children's concepts of written language were associated with their families' socio-economic status and home literacy resources and experiences. Children from low socio-economic status (SES) families with less literacy experiences showed less awareness of written language.

In her doctoral dissertation Clay (1966) investigated young children's early reading behaviors, referring to them as emergent literacy. According to Clay, literacy acquisition is a developmental process with its source being in the early childhood period rather than when children start school. Clay (1966) advocated that children first recognize printed language in their surroundings, such as traffic signs and logos of chocolate bars or other common labels. Children figured out that written language possesses meaning and then developed concepts about print, thus gradually becoming literate. Therefore, print rich environments and parental support are important for children's literacy development. Goodman (1986) proposed that children acquired written language skills in ways similar to their acquisition of oral language. The early phase of starting to read begins with recognizing that print has a meaning. For example, children ask their parents the meaning of logos and other short pieces of text. This exposure to print allows children to explore the nature and function of the printed word. Children then begin to show books to their parents or caregivers and ask them to read the book. In the second phase, children start to gain linguistic principles of written language

and acquire knowledge of the alphabet. In the last stage children develop relational principles related to the meaning and context of written text.

In contrast to the reading readiness perspective, the emergent literacy perspective identifies no definitive and strict starting point for learning reading and writing. Reading and writing are not isolated literacy capacities; each of the basic communication skills such as listening, speaking, viewing, reading and writing are influenced by, and influence each other (Lonigan, 2006; Sawyer, 2009; Soderman, Gregory, & McCarty 2005; Whitehurst & Lonigan, 1998). According to the emergent literacy perspective to become literate, children evolve and consolidate complex subsystems of resources (Whitehurst & Lonigan, 1998; Lonigan, 2004; Soderman et al., 2005). Today early literacy experts advocate the emergent literacy approach to explain literacy development since the reading readiness approach has limitations in explaining early literacy skills and their contribution to later reading achievement (e.g., Hall, 2000; Sulzby & Teale, 1991; Whitehurst & Lonigan, 1998). According to Scarborough (2009), reading skills can be separated into two main dimensions: (a) *language comprehension:* vocabulary, prior knowledge, verbal reasoning and literacy knowledge and (b) *word recognition*: phonological awareness and decoding. The sub-skills of reading are gradually derived from children's experiences; thus, preconventional early literacy skills are considered important precursors for later reading achievement. The present study used the emergent literacy approach as a theoretical framework.

Within the emergent literacy perspective, attention has been drawn to the importance of the experiences regarding language and literacy gained in early childhood period. The research carried out in this context showed that emergent literacy based interventions have a positive effect on children's early literacy skills (Balla-Boudreau & O'Reilly, 2002; Evangelou & Sylva, 2003; Israel, 2007). Furthermore, studies showed that children's early literacy skills

are related to primary grade reading achievement (e.g., Badian, 1998; Bishop, 2003; Coast- Kitsopoulos, 2010; Kim & Petscher, 2011; Scarborough, 1998). Storch and Whitehurst (2002) conducted a longitudinal study to investigate the influence of early literacy skills on later reading achievement. They collected data from 626 children in preschool up to fourth grade. The authors measured preschoolers' code-related early skills: print concepts and phonological awareness and oral language skills. They found that preschoolers' code related skills were significantly related to their first grade reading achievement. Furthermore, they also found that the preschoolers' early literacy skills also contributed to their fourth grade reading comprehension and reading accuracy. Similarly, Lonigan, Burgess and Anthony (2000) followed up preschool children in kindergarten and first grade regarding their early literacy development. They stated that the developmental roots of reading skills in kindergarten and first grade level derived from the preschool period. They stressed that, especially in preschool period, phonological sensitivity and letter knowledge have largest unique contributions to kindergarten and first grade decoding skills and the two early literacy skills jointly explained 54% of the variance in decoding skills. A number of longitudinal (e.g., Aarnoutse, van Leeuwe, & Verhoeven, 2005; Ahmad, Ibrahim, & Share, 2014; Duff, Reen, Plunkett, & Nation, 2015; Phillips, Norris, & Mason, 1996; Weinberger, 1996) and meta-analytic (e.g., Bus & Van IJzendoorn, 1999; NELP, 2008; Mol & Bus, 2011; Scarborough, 1998) studies have consistently shown that there are predictive relations between early literacy skills and later reading skills. Furthermore, children who have good early literacy skills also perform better in learning and developing reading skills from first grade to third grade (McCardle, Scarborough, & Catts, 2001). In the wake of many studies, reading acquisition came to be accepted as a developmental process and early childhood is an important period for early literacy development (Elliot & Olliff, 2008; Lonigan & Wasik, 2004; Teale & Sulzby, 1986; Whitehurst & Lonigan, 1998; Lonigan, 2004). A variety of studies investigated early literacy

skills, endeavoring to define the roots, nature, and development process of the skills, and their role in later reading skills. The National Early Literacy Panel (NELP) (2008) in the USA prepared a report concerning the development of early literacy skills based on a meta-analysis to present the empirical evidence that the early acquisition by young children (after birth to five years old or kindergarten) of literacy skills is a predictor for the attainment of later reading, writing and spelling skills. In the present study, the NELP (2008) report was used as a conceptual framework to define the domain of early literacy skills.

2. 3 Early Literacy Skills

The National Early Literacy Panel brought together expert researchers from different disciplines, such as reading, early literacy, language, cognition, special education, pediatrics, early childhood education and research methodology, to systematically examine published research regarding early literacy development (NELP, 2008). The National Institute for Literacy (NIFL) and the National Center for Family Literacy (NCFL) also contributed to the research process. The panel experts met 12 times from April 2002 to February 2006. Their main aim was to synthesize data from published early literacy studies to present scientific evidence about predictors of later reading, writing, and spelling skills. The panel also sought to present information about the programs, interventions and environments for home and school that supported or hindered children's early literacy gains. For this aim, the field experts located 7,313 studies in English related to early literacy skills. After the first round of the systematic analysis, 685 studies were chosen as candidates for a meta-analysis. Then two independent project members used a coding sheet to determine which studies fulfilled the given criteria. Finally, 234 studies met the research criteria and a meta-analysis was conducted with this set of studies (NELP, 2008).

The meta-analysis results showed that children's early literacy skills develop from birth to age five and are precursor skills for conventional literacy skills. Conventional literacy ability refers to the advanced or developed reading and writing skills: decoding, oral reading fluency, reading comprehension and spelling. Early literacy skills are foundational and precede the conventional literacy skills. NELP (2008) determined that the following early literacy skills were important predictors for later conventional literacy skills; phonological awareness, alphabet knowledge, rapid automatic naming, phonological memory, and writing/writing name, even after controlling IQ and child socioeconomic status. Variables with more moderate predictions to later reading achievement were concepts about prints, print knowledge and oral language (NELP, 2008). The current study used phonological awareness, concepts about print and vocabulary skills as outcome variables as detailed in the sections below.

2.3.1 Phonological Awareness

Phonological awareness (PA) refers to children's ability to identify, differentiate and manipulate sounds and rhymes, and independent from the meaning. PA tasks include breaking spoken words into units comprising syllables, initial sounds, and end sounds (Gillion, 2004; Goswami & Bryant, 1990; NELP, 2008;). This means that, for example, when children listen to story they can understand that "sat", "sand" and "sad" have the sound "sa" in common. For children to be able to detect and manipulate sounds (Thomkins, 2007) is part of sound awareness which is an important component of early decoding skills. Furthermore, McGee and Richgels (2012) stated that phonological awareness is an essential precursor to alphabet knowledge. Children first become aware of the existence of sounds, then they learn to differentiate between them, and move on to understanding that each sound has a printed representation in written language (Chard, Simmons, & Kameenui, 1998). Thus, phonological awareness is an

initiator skill for developing word recognition and decoding skills (Pullen & Justice, 2003).

Bus and Ijzendoorn (1999) conducted to meta-analysis to examine the contribution of phonological awareness to reading skills. They reviewed published studies and selected 36 studies with 3,092 participants. They reported that phonological awareness explained 12% of the variance in word recognition and all phonological awareness related studies had effect size of 1.04 point with r =.46. Furthermore, the meta-analysis that NELP (2008) conducted with 69 phonological awareness related studies with 8,443 children. The results showed that phonological awareness have a moderate relationship (r = .40) with later reading achievement.

Besides, MacDonald and Cornwall (1995) examined 24 kindergarteners' phonological awareness skills and those students' word identification and spelling skills at age 17. The results showed that kindergarten phonological awareness skills significantly predicted the word identification and spelling skills of 17 year olds even after controlling for SES and vocabulary.

Muter, Hulme, Snowling, and Stevenson (2004) explored the reading acquisition process of 90 British children (average age 4 years 9 months) based on early literacy skills. They followed the same students for 2 years and collected data at three periods. The study showed that phonological skills are a stronger predictor of word recognition but relatively low predictors of reading comprehension skills when compared to vocabulary and grammar skills. Similarly, a large amount of research showed that phonological awareness has a contribution to later reading skills, especially to word decoding (e.g., Anthony and Francis, 2005; Catt, Gillispie, Leonard, Kail & Miller, 2002; Erdoğan, 2012; Kirby, Parrila & Pfeiffer, 2003; Oudeans, 2003; Stahl &

Murray, 1994; Weiner, 1994).

In the national literature from Turkey, Erdoğan (2012) examined the influence of first graders' phonological awareness' skills on their first grade reading success. She conducted her study with 126 first graders (69 boys and 57 girls) in two public primary schools in Ankara. At the beginning of the first grade, she measured the children's phonological awareness skills using the Phonological Awareness Scale (Yangın, Erdoğan and Erdoğan 2008). Later, Erdoğan measured the children's reading skills three times during first grade: in the middle of the fall and spring term, and at the end of the spring term. Her study showed that phonological awareness only explained 51% of the variance in the reading achievement in the middle of the fall term.

Karakelle (2004) conducted a similar study with first graders (N=107) to investigate the relation of initial phonological awareness and letter knowledge to oral reading fluency at the end of first grade. The study revealed that initial letter knowledge explained 20% of the variance in oral reading fluency, and phonological awareness explained 26% of the variance in oral reading fluency. When the initial letter knowledge and phonological awareness predictors were entered into the regression equation, they explained 39% of the variance in oral reading fluency at the end of the first grade.

Furthermore, Güldenoğlu, Kargın and Ergül (2016) investigated the relationship between preschool phonological awareness skills and first grade reading comprehension and word reading. The study was conducted in public schools in Ankara following 85 children from the beginning of preschool to the end of the first grade. The researchers divided the children into poor (n=40) or good (n=45) phonological awareness groups based on the initial phonological awareness scores according to K-Means Cluster Analyses results. In this year-long longitudinal study, good PA groups read separate words more accurately (M= 42.55) than poor PA groups (M=35.32). In addition, in the good PA group

the oral reading fluency was significantly higher than in poor PA group. However, the study did not find any statistical difference between the groups regarding word reading accuracy in a text. Finally, the study showed that the children in the good PA group had reading comprehension scores that were significantly higher (M=50.56) than those in the poor PA group (*M*=34.50).

In a study concerning phonological awareness in relation to SES, Karaman and Üstün (2011) examined 162 preschoolers, categorizing children's SES status as low, middle and high. They found that there was a statistically significant difference in children's phonological awareness scores in favors of the middle and high SES groups.

In another study, Turan and Akoğlu (2014) investigated the PA skills of 20 preschoolers, comprising normally developing children and those with language impairment in relation to home literacy experiences. The authors reported that there was a difference between the groups, with the children in the language impairment group children having statistically lower scores in both PA skills and home literacy experiences. In an earlier study Turan and Akoğlu (2011) examined the effectiveness of a PA intervention on 29 typically developing preschoolers in a public preschool by comparing pre and post PA scores. The children were divided into control and experimental groups using a random sampling method. The intervention consisted of 15 sessions. The study results showed that the experimental group's phonological awareness skills increased significantly more than the control group's, whereas Ankara Articulation scores did not.

Overall, the literature review identified only a limited number of published studies investigating the phonological awareness of children who are native speakers of Turkish. This demonstrates that there is a gap in the research concerning the development of preschoolers' phonological awareness and its

contribution to later reading skills in Turkish language.

2.3.2 Concepts about Print

Clay (1966) was the first person who used the term "concepts about print" and developed tasks to measure children's concepts concerning print. Clay (1989) advocated that children develop some concepts about written language based on their experience with print, for example, children notice the cover of a book, punctuation, the top and bottom of the page, the page number, and that the text moves from left to right in English. In order to measure children's knowledge regarding written language, Clay developed a booklet containing a story with tasks to guide teachers and researchers to measure children's concepts about print during shared reading activities. An adult reads each page to the child and then gives some directions, such as 'show me the front of this book', and 'show me where to start reading-' (Clay, 2000, p.42). The original tasks covered 24 items including items related to letter knowledge (capital-lower) and simple word recognition (no-was). The tasks were developed in English but they have been adapted for many other languages such as French, Spanish, German, Turkish, Greek, Irish, Arabic, and Hebrew (Bourque, 2001; Clay, 1989; Korat, Aram, Hassunha-Arafat, Saiegh-Haddad, & Iraki, 2014; Rodríguez, Hobsbaum, & Bourque, 2003; Öztunç, 1994; Tafa, 2009) and for the Braille alphabet for blind children (Tompkins & McGee, 1984).

According to Clay (2000), tasks testing concepts about print are a good tool to measure children's awareness of written language structure. Sutherland (2002) pointed out that concepts about print are important in understanding reading and promoting its acquisition. Lonigan, Burgess and Anthony (2000) investigated the contribution of preschoolers' early literacy skills to first grade reading achievement by assessing 97 children. They reported that the concepts

about print task is moderately associated with first grade outcomes. Johns (1980) examined 60 first graders' concepts about print knowledge in two primary schools in USA. The student swere selected from 106 students in five classrooms. First, the classroom teachers rated the first graders' reading ability as average, above or below average according to the Metropolitan Achievement test. Johns selected 20 students from each reading level with equal numbers of girls and boys per group. After creating the groups, he measured each child's concepts about print knowledge through the task devised by Clay (1979). He reported that above average readers had a higher performance in the concepts about print tasks, whereas below average readers had the lowest performance. Thus, he concluded that having concepts about print knowledge is related to children's reading achievement.

Villalon and San Francisco (2001) investigated 115 Spanish speaking children (58 kindergarten and 57 first grade) from low SES in Santiago, Chile, aiming to compare and evaluate the children's early literacy development. The research revealed that concepts about print performance was statistically significantly associated with phonological awareness (r=.52), letter identification and reading (r=.63) and writing skills (r=.61). In addition, there was a statistically significant difference in children's concepts about print by grade level, with first grade children having higher scores.

Furthermore, the NELP (2008) meta-analysis examined the association of concepts about print with later reading skills based on 12 research projects covering in total 2,604 children. The results showed that there was a statistically significant correlation (r=.43) between concepts about print and later reading achievement. Other studies reported similar positive relations between tasks concerning concepts about print and later reading skills (e.g., Garvin & Walter, 1991; Lomax & McGee, 1987; Reutzel, 2003). In addition, the related literature contained a number of studies that investigated the effect

of print-based interventions, curriculum programs and home-based experience on children's concepts about print skills (e.g., Bauserman, 2003; Breit-Smith, Justice, Mcginty, & Kaderavek 2009; Gober, 2008; Matera, 2008; McGinty, Breit-Smith, Fan, Justice, & Kaderavek, 2011; Mol, Bus, & Jong, 2009; Pillinger & Wood, 2014).

In the Turkish context, Öztunç (1994) adapted Clay's task system to test concepts about print in Turkish with first grade students. In her dissertation Şimşek (2011) developed a list to monitor preschoolers' concepts about print. She reorganized the concepts about print task, and since the Turkish early education program avoids introducing letters to preschoolers she reduced the letter recognition based items. In her dissertation, she conducted a quasi-experimental study with 30 preschoolers. At the beginning of the study she applied the list of items and recorded children's initial concepts about print. Later, she implemented a reading and writing preparation program for 60-72 month old preschoolers (n=15). There were two groups; a control group who followed the national early childhood program and the experimental group who engaged in an intervention process over eight weeks, three days a week for half an hour a day. The intervention consisted of 24 sections. In addition, each week parents were sent brochures, notes and suggested activities to encourage parent involvement with the children in the experimental group. After the intervention, Simsek measured children's post-test scores on concepts about print. She reported there was a significant difference between experimental and control groups' scores with the former scoring higher than the control group (Şimsek, 2011).

In a later study Şimşek-Çetin (2014) examined 376 children attending public preschools in five districts of Ankara. She reported that group average mean on concepts of prnt was 6.38 on a 17-point scale. She indicated that children could only obtained a score 37.5% of the total items. She concluded

that the majority of the scores come from book concepts related items and the lower scores come from the letter recognition and word recognition items. Lastly, she investigated the correlation between the children's concepts concerning print scores and writing preparedness skills. Şimşek-Çetin reported that there is a significant but low (r=.26) correlation between the variables.

A limited number of studies conducted in Turkey investigated concepts about print. This may be related to language and literacy goals of national early childhood curriculums from the past to the present (MONE, 1994, 2002, 2006, 2013). These programs commonly prevent children from being exposed letters in preschool settings. Therefore, many of the early literacy studies in Turkey focus on oral language development and phonological awareness skills. There is further need to examine preschoolers' development of concepts about print in Turkey.

2.3.3 Vocabulary

Vocabulary refers to knowledge about the meaning of words (Christ & Wang, 2010) and this word knowledge has two dimensions. Receptive vocabulary refers to an individual's comprehension of words, even without being able to express or produce those words **(**Burger & Chong, 2011). Expressive vocabulary refers the repertoire that an individual can produce, verbalize and use (Armbruster, Lehr, & Osborn, 2001; Pan, 2005).

The breadth of a child's vocabulary is an important indicator for their oral language development. Various instruments have been developed to assess children's vocabulary knowledge, such as the British Picture Vocabulary Scale, Peabody Picture Vocabulary Scale, Comprehensive Receptive and Expressive Vocabulary Test, and the Expressive One-Word Picture Vocabulary Test (Brownell, 2000; Dunn & Dunn, 1997; Dunn, Dunn, Whetton, & Pintilie, 1982; Wallece & Hammill, 2002). Through the possession of vocabulary

children are able to express their emotions, ideas, needs, information clearly, communicate with others and make meaning from their social environment. Studies have indicated that the child's vocabulary repertoire is a potential source for them to foster phonological awareness by manipulating words, exposing different sounds, organizing and constructing new schemas to store words in memory (Goswami, 2001; Senechal, Ouellette, & Rodney, 2006; Thomas & Senechal, 2004; Walley, Metsala, & Garlock, 2003). Furthermore, vocabulary is crucial in the reading process to construct meaning from written language. The process of reading not only consists of vocalizing words but also accessing the meanings of the words and the sentences they form (Akyol, 2012; Biemiller, 2003); therefore, vocabulary is an important component of reading skills.

In the Netherlands, Leseman and Jong (1998) investigated child vocabulary development and early reading achievement. Their participants were 47 Dutch and 42 immigrant children. 19 of the immigrant children were Turkish- Dutch and 23 of the children were Surinamese-Dutch. They conducted their studies with 89 parents and their 4 year-old children. For the whole group and each subgroup vocabulary scores at age 4 strongly predicted vocabulary, reading comprehension, and word decoding scores at age 7.

Muter, Hulme, Snowling and Stevenson (2004) examined the early literacy development of 92 British children (mean age 4 years 9 months) in a two-year longitudinal study. They found that the children's initial vocabulary knowledge was significantly associated with their reading accuracy (r=.50) and reading comprehension (r=.52) two years later.

Similarly, Senechal, Ouellette, and Rodney (2006) followed 90 children from the end of the kindergarten to 4th grade. They reported that the children's kindergarten vocabulary knowledge did not statistically predict first grade

word recognition after taking into account the children's phonological awareness, early literacy and parent education. However, the kindergarten vocabulary did significantly explain 15% of the variance in the 4th grade reading comprehension scores even after taking into account the parents' education and literacy, 4th grade oral reading fluency, kindergarten term phonological awareness and early literacy variables. Other studies pointed out similar prolonged associations between early vocabulary and later reading comprehension (e.g., Catts, Fey, Zhang, & Tomblin, 1999; Storch & Whitehurst, 2002).

In the USA NELP (2008) examined the relation between early oral language skills and later reading skills based on 63 studies with decoding skills as outcomes and 30 studies of reading comprehension skills. The results showed that receptive vocabulary was significantly associated with decoding skills (average r=.34) and reading comprehension (average r=.25). In addition, expressive vocabulary was significantly related to decoding skills (average r=.24) and reading comprehension (average r=.34). The role of vocabulary in reading skills has been well documented in the related literature (e.g., Connor, Son, Hindman., & Morrison, 2005; De-Jong & Leseman, 2001; Juel, 1988; Kendeou, Van den Broek, White., & Lynch, 2009; Ouellette, 2006).

In the literature concerning Turkey, Yazıcı and Temel (2011) investigated the relationship between preschoolers' vocabulary and reading readiness scores. Their 5 to 6-year-old participants consisted of 96 bilingual Turkish preschoolers living in Germany and 100 monolingual Turkish preschoolers living in Ankara. The Turkish version of the *Peabody Vocabulary Test* and *Metropolitan Readiness* test was applied to all the children. The authors reported that there was a positive strong relationship (r=.79 for the bilingual group, and r=.80 monolingual group) between vocabulary score and reading readiness score. Furthermore, Yıldırım, Yıldız and Ateş (2011)

examined the contribution of vocabulary to reading comprehension regarding the: narrative and explanatory text types in a study conducted with 120 5th graders in public primary schools in Ankara. They used the Yıldırım (2010) vocabulary test to assess 5th grade student vocabulary. Yıldırım (2010) developed the vocabulary test based on the required vocabulary assessments (??) given in the Turkish national primary grade curriculum. Their results revealed that vocabulary was significantly related to comprehension of both narrative (r=.68) and explanatory text (r=.74).

Savaş and Turan (2011) used an interview technique to examine Turkish preschoolers' vocabulary repertoire. The participants in the study were 30 preschoolers (14 girls, 16 boys) in Elazığ. All of the children were six years old. The children's conversations were recorded over a total of 9 hours. According to the study findings, the children most frequently used the sounds *A, E, R, İ, N, M* with the sounds *J, F, Ö, C, P* being used less frequently. They also explored word frequency in the children's speech and the findings showed that the children most frequently used the words: *ben, orada, bir, çok, var, sevmek, anne, olmak, baba, biz, ama,* (me, there, one, many, exist, (to) love, mother, (to) be, father, we, but) During the interview.

Some of Turkish studies examined preschoolers' vocabulary development in relation to demographics. For example, Erdoğan, Bekir-Şimşek and Erdoğan-Aras (2005) examined 232 preschoolers' gender, mother's education level, number of children at home and duration of preschool attendance in relation to vocabulary. All the children (110 girls, 122 boys) attended public preschools in six districts of Ankara. The researchers used the Turkish version of the *Peabody Vocabulary Test.* They found that it was only children's time attending preschool that was statistically related to their vocabulary score, with those children who spent more time in preschool having higher vocabulary scores. In another study of children attending a public

primary school in Bursa, Turkey, Taner and Başar (2005) examined 240 first graders' initial vocabulary knowledge in relation to their preschool education experience. Half of the students were girls and the researchers selected an equal number of students from low, middle and high SES families. The results revealed that children who had attended preschool (*M*=69.43) had a significantly higher initial scores than who had not (*M*=63.72). In addition, the results showed that there was statistical difference in vocabulary scores between the low (*M*=60.95), middle (*M*=67.49) and high SES (*M*=71.30) groups. Similarly, the positive association of preschool education with children's vocabulary development was reported in other studies (Koçak & Aydoğan, 2003; Öztürk, 1995; Taner, 2003; Temiz, 2002). Dereli and Koçak (2005) examined 265 preschoolers' vocabulary in relation to parental factors in Konya, Turkey. They found that maternal education level had a statistical relationship to children's vocabulary whereas there was no relation to the father's education level. Erbay and Öztürk-Samur (2010) examined 112 preschoolers' receptive vocabulary development as a function of parents' ideas about children's books. The children were randomly selected from public and private preschools in Konya. They collected data through the *Peabody Receptive Vocabulary Test* and *Parents' Ideas about Children's Books* (Sağlam, 2005). The results showed that there is no association with children's receptive vocabulary and for either the mothers' (r=.12) or the fathers' (r=.02) ideas on children's book.

In addition to the correlational studies, in the Turkish context some studies have explored the effect of home and school based intervention programs on children's vocabulary development. Kotaman (2013) investigated the influence of dialogic story book reading on children's vocabulary. The participants of the study were 40 parents and their children (aged 36-48 months) and all the children were enrolled in a private preschool in Bursa. The parents were randomly assigned to a control or experimental group. Those in the experimental group

received dialogic reading training whereas the parents in the control group received no training. After a seven-week program, the researcher compared children's pre-post vocabulary scores using a Turkish version of the Peabody Vocabulary test. The results showed that there was a statistical difference between the pre-test (M=40.25) and post-test (M=47.15) vocabulary scores of the children whose parents were in the experimental group. They reported there was no significant difference between the pre-test (M=39.1) and post-test (M=41.25) scores for the children of the parents in the control group. Lastly, Kotaman (2013) compared the post-test scores of the experimental and control groups using the pre-test score as a covariate and he found that the experimental group post-test scores were significantly higher. In another home based intervention study, Ersan (2015) investigated the impact of the father's language on the development of children's receptive vocabulary. His research was based on a pre-test- post-test control group design and 42 fathers were randomly assigned to the experimental and control groups. The fathers and their children (aged 36-48 months) lived in Kütahya and none of the children were enrolled in preschool. The members of the experimental group participated in the Father Language Assistance Program developed by the researcher. The control did not receive any training or other intervention. After the 8-week training of the members of the experimental group, Ersan compared the groups' pre-test and post-test scores using the Wilcoxon Signed Rank Test. He reported that there was a statistical difference in the children's posttest receptive vocabulary scores in favor of the experimental group.

Gözalan and Koçak (2014) conducted a quasi- experimental study to examine the effect of a play-based attention program on preschoolers' vocabulary development. The study group comprised of 62 preschoolers who attended a half-day program in a public preschool in Konya. The 10-week program covered 20 sections each consisting of two games. The programs were only applied to the experimental group with the control group receiving no intervention. The authors reported a statistical difference in the children's pretest -posttest vocabulary

scores for both experimental (M=56.96 for pretest, M=68.83 for posttest) and control group (M=58.03 for pretest, M=61.48 for posttest). Lastly, they reported that there was also a statistical difference in the children's posttest scores regarding both experimental and control group.

In another study, Kayılı, Koçyiğit and Erbay (2009) investigated preschoolers' vocabulary development by comparing the Turkish National Early Childhood Education Program (2006) and the Montessori Approach. The study group comprised 40 preschoolers attending Selçuk University's Application Preschool. The children were randomly assigned to experimental and control groups with the Montessori Approach being applied to experimental group. According to the Mann Whitney U-Test results, there was a statistical difference in the child's receptive vocabulary scores in favor of the Montessori approach.

To sum up, the literature indicated that the skilled reading process covers multidimensional skills and early literacy skills are precursors of later reading. Early literacy skills is an umbrella term to describe young children's oral and code-related language and literacy skills. Each element of the early literacy skill construct is defined based on theories and empirical research findings. A variety of studies investigated different sets of early literacy skills such as vocabulary, concepts about print, phonological awareness, letter knowledge, and consistently showed that these are predictors of later reading skills. Since early literacy skills are important and are indicators of the children's later reading skills researchers have sought to trace the development process of the skills. In the second part of this chapter the Ecological System Theory is described, then studies regarding which environmental factors at home and in the classroom nourish children's early literacy development are presented.

2.4. Ecological System Theory

The investigation of the influence of the environment on human development is a long-standing issue and there are a number of philosophers and theorists who have proposed various perspectives on the contribution of nurture to human development (Berk, 2009). Distinct from the previous positions that were adopted, Urie Bronfenbrenner addressed the role of the environment on human development from a system perspective (Bronfenbrenner, 1994). He proposed the Ecological System Theory to examine the reciprocal relations between the environment and the individual regarding life-long human development. He launched his theory at the beginning of the 1970s and he gradually revised his theory until his death in 2005. His theory advocated that the environment surrounding a person is comprised of different layers and there are interactions between the layers. He classified the environment from inside outwards as follows: microsystem, mesosystem, exosystem, and macrosystem. He used the Russian matryoshka doll as a metaphor to explain the nested nature of the environment surrounding an individual (Bronfenbrenner, 1994). According to his classification, a *microsystem* is the inner close environment in which the person is included and the settings with which s/he has direct interactions. Bronfenbrenner stated that family, childcare, neighbors and school are micro settings for children; the microsystem also covers the physical, social and symbolic dimensions of the settings. The person is an active being and has bi-directional relations with the environment. Bronfenbrenner used the term *proximal process* to describe the interaction between the environment and the person (Paquette & Ryan, 2001) He advocated that the proximal process has the power to shape human development. He also considered biological resources of human ability, skills, knowledge and experience in the last version of his theory (Bronfenbrenner, 2006) but he mainly focused on environment as a context for human development. The features of the environment can invite, allow or hinder involvement in sustained interactions and

also in the increasingly more complex proximal processes (Bronfenbrenner, 1994; Bronfenbrenner & Morris, 2006).

The *mesosystem* is the second layer of the environment, consisting of connections and processes that occur between two or more microsystem settings. Bronfenbrenner gave the relations between a family and school or the family and neighbors are an example of mesosystem. Thus, he systematically addressed the interconnections between the microsystems settings in the mesosystem.

The third layer in the theory is the *exosystem* which includes the mesosystem and is similarly comprised of connections and process between two or more settings of which at least one does not directly impact the immediate environment of the human being. For example, the connections between the parents' workplace and home is an example of an exosystem because the parent's workplace only has an indirect influence on a child's development (Bronfenbrenner, 1994).

The outmost layer of the environment is the *macrosystem,* a framework that includes the other systems containing features relating to culture, ethnicity, socioeconomic status, traditions, belief systems, religious and the rules of law that are grounded in each of the systems (Bronfenbrenner, 1994). In addition to these environmental layers, Bronfenbrenner considered the influence of time on both environment and human and used *chronosystem* to demonstrate the effect of history on human development. Economic depression, war, and technological progress in society are examples of the history effect that influences human development. By adding the chronosystem, the ecological construct operates in three dimensions. Bronfenbrenner's theory was a distinctive contribution to the study of the influence of the environment on human development in natural contexts rather than artificial laboratory settings. He considered the environment in detail as a system and created a whole picture of the interconnections among

layers from inner close to outermost. Furthermore, he conceptualized the environment as a dynamic and changeable structure affected by history, and articulated the bi-directional interaction of the human being with this environment.

Bronfenbrenner's ideas are important for the fields of developmental psychology and education since they allow the examination of the influence of the environment on development form a new perspective. Through his work he made a contribution to the development of the Head Start intervention program in the USA, incorporating issues of childcare, parent-teacher collaboration, parent involvement and education (Lang, 2005). He was also involved in the assessment of the effectiveness of early childhood intervention programs in improving child development and learning. Bronfenbrenner synthesized research findings to present empirical evidence to put successful preschool programs into practice (Bronfenbrenner, 1974). His ideas led to a range of research designed to examine environmental influences on human development in a system perspective (e.g., Fraser, 2004; Hong & Espelage, 2012; Lieber, Capell, Sandall, Wolfberg, Horn, & Beckman, 1998; Rimm-Kaufman & Pianta, 2000; Odom & Diamond, 1998; Super & Harkness, 1986; Swick & Williams, 2006).

Home and school constitute the immediate environment surrounding a child and the social interaction arena from which language and literacy emerges (Bronfenbrenner, 1994; Snow, 1976; Vygotksy, 1986). Therefore, the present study, like many other early literacy studies (e.g., Gallimore & Goldenberg, 1993; Guhn, Milbrath, & Hertzman, 2016; Hindman et al., 2010; Serpell, & Sonnenschein, 2005; Wasik, Dobbins, & Herrmann, 2001), used Ecological System Theory as a framework to investigate children's language and literacy development in the home and preschool context. In the following section the early literacy development studies from the literature are synthesized under headings of the home and preschool environments.

2.5 Home Literacy Environment

For most children home provides the initial setting for their development and parents are the first teachers and role models offering resources, opportunities, and interactions for children to develop language and literacy skills (Berns, 2004; Shaffer & Kipp, 2013). Parental factors associated with children's developmental gains regarding cognitive, social, emotional, language and literacy have been well-documented in the last five decades (e.g., Cutting & Dunn, 1999; Elardo, Bradley, & Caldwell, 1977; Melhuish, Lloyd, Martin, & Mooney, 1990; Roberts, Jurgens, & Burchinal, 2005; Rondal, 1980; Shinn, 1978; Stevens, 1984).The conceptualization of the Home Literacy Environment (HLE) has evolved over the years with the earliest attempts to explain the relations between children's early literacy development and the home background mainly deal with the general demographics of the families such as household income, parents education level, ethnicity and time spent on parent-child shared reading (e.g., Bus, IJzendoorn & Pellegrini, 1995; Goldenberg,1987; Pellegrini, Brody, & Siegel, 1985; Sulzby & Teale, 1987; Taylor, 1995). Recent studies examined the home background from a more complex literacy-specific approach, attending to home literacy resources, interactions, opportunities and habits that support children's language and literacy development (Grieshaber, Shield, Luke, & Macdonald, 2012; Kluczniok, Lehrl, Kuger, & Rossbach, 2013; Niklas, Tayler, & Schneider, 2015; Rodriguez, Tamis-LeMonda, Spellmann, Pan, Raikes, Lugo-Gil, & Luze, 2009).

The available studies consistently showed that the home literacy environment is associated with children's early development of (a) phonological awareness (Burgess, 1997; 2002; Foy& Mann, 2003; Reese, Robertson, Divers, & Schaughency, 2015; Senechal and Lefevre, 2002), (b) concepts about print (Korat, Klein, & Segal-Drori, 2007; Levy, Gong, Hessels, Evans, & Jared, 2006), (c) vocabulary (Kim & Kwon, 2015; Li & Tan, 2015; Meng, 2015; Niklas, &

Schneider, 2015; Scheele, Leseman, & Mayo, 2010), (d) letter knowledge (Burgess, Hecht & Lonigan, 2002; Hood, Conlon, & Andrews, 2008; Neumann, Hood, & Neumann, 2009) and (e) later reading skills (De Jong & Leseman, 2001; Gottfried, Schlackman, Gottfried, & Boutin-Martinez, 2015; Tichnor-Wagner, Garwood, Bratsch-Hines, & Vernon-Feagans, 2015). The studies pointed out that the children's home literacy environment should be examined as a multi-faceted set of inputs, rather than focusing on single parental factors or only on shared reading activities. This led the author of this dissertation to undertake research in this direction.

Although studies in the literature consistently considered the home literacy environment as a multidimensional and complex conceptualization, nonetheless ere are different definitions of the scope of HLE and different inventories used to measure it (e.g., Burgess, Hecht, & Lonigan, 2002; Leseman & de Jong, 1998; Marjonovick Umek, Podlesek, & Fekonja, 2005; Wheaton, 2010).

Niklas and Schneider (2013) used a 12 item parent rated questionnaire covering the frequency of basic literacy related activities such as reading books, visiting a library, watching TV, and the number of books in the home. They collected data from 921 children and their parents in Germany. According to the study results, the children's home literacy environment was significantly related to their vocabulary scores (r=.63 to r=.60) and phonological awareness scores (r=.51 to r=.41 from). In addition, the children's home literacy environment was a significant predictor of their first grade reading skills. The study indicated that individual differences in children's early academic and language skills were derived not only from the cognitive capabilities of children but also from social factors such as home literacy environment.

Wheaton (2010) investigated long-term benefits of the home literacy environment on children's third grade reading skills. She used data from the American national survey, the *Early Childhood Longitudinal Study-Kindergarten Cohort*. There were 21,260 children participating in the study. She assessed the children's home literacy environment under the three dimensions of *parent-child shared reading*, *literacy sources*, and *cognitive stimulations*. In the dimension of cognitive stimulation, she examined the frequency of activities that the child engaged in with their parents. She selected specific types of activities under the headings of household, art, science, toys and games. In addition, she examined the association between children's SES status and their home literacy environment. The results of the study showed that SES was significantly related to shared reading (r=.19), literacy sources (r=.47) and cognitive stimulation (r=.12). Besides, the study showed that shared reading (β=.067) and literacy sources (β=.252) during kindergarten were positive predictors of third grade reading skills, whereas the cognitive stimulation (β=-.035) predicted in negative way.

Burgess, Hecht and Lonigan (2002) investigated HLE in more detail. They developed the following three dimensions; *limiting environment*, *passive and active literacy interface*s, and *shared reading* to assess children's HLE. According to their HLE conceptualization, *limiting environment* refers to parents' skills, competence, and capabilities to offer their children literacy experiences. Their research indicated that both parental financial status, and personal characteristics, such as education level, reading habits and attitudes, were related to the *limiting environment*. The term *literacy interfaces* represents parent's direct and indirect literacy related activities that contribute to their children's literacy experiences. The authors discriminated between active and passive literacy interfaces. The former refer to the activities in which parents directly participate with their children, but in passive interfaces parents serve as a model for children and it is not required that any activity be undertaken together with the child. For example, a mother who chooses to read a book in her leisure time and is happy to talk about

any book with her husband gives the children a message regarding the value and function of literacy in daily life. Lastly, they considered *shared reading* to be an important HLE source for children. They used the dimensions to investigate the contribution of home literacy environment to preschoolers' early literacy skills and reported that the overall HLE is significantly associated with children's oral language skills (r=.48) and phonological sensitivity (r=.56). They also examined the relation of each dimension to children's early literacy skills. Oral language was found to be significantly correlated with limiting environment (r=.34), passive literacy interfaces (r=.31), and active literacy interfaces (r=.40). On the other hand, phonological sensitivity is significantly associated with limiting environment (r=.43), passive literacy interfaces (r=.27), and active literacy interfaces (r=.50).

Marjonovick Umek, Podlesek and Fekonja (2005) also examined HLE. They conducted their analysis under five headings described as follows; (a) *stimulation to use language and explanation* covers items related to using oral language in daily home life such as having conversations with children, answering his/her question, giving explanations, encouraging repetition and expanding conversations, (b*) reading books-visiting library and puppet theatre* consists of items like shared reading frequency, parents' responsiveness to the child's reading demands, buying books and visiting the library, (c) *joint-activities and conversations* contains of items such as parent-child shared play activities, visual reading, talking about cartoons and supporting children's narrative skills, (d) *interactive readin*g includes elements related to parents expanding on the content of the book and allowing time for his/her child to ask questions and making up their own stories during the reading process, (e) *zone of proximal development* which involves parents encouraging their children's letter, oral language, number and word learning. For their study the authors developed the HLE questionnaire and included psychometric features. They reported that responses to the HLE questionnaire predicted children's oral language and storytelling skills.

Furthermore, Leseman and de Jong (1998) examined children's home literacy environment using mixed methods. They collected both qualitative and quantitative HLE data. They focused on children's home *literacy opportunities, i.e.,* materials, experiences, interactions and activities which were provided by parents to foster children's oral and written language skills. They videotaped parent-child shared book reading activities to examine the quality of parent interactions regarding instructiveness and affective responsiveness. They followed 89 children from age 4 to age7, nearly half of whom were native Dutch (n=47) and the remainder were immigrant children (n= 23 Surinamese, n=19 Turkish). They considered the SES status of the children as a variable. The study showed that SES was associated with children's literacy opportunities (r=.35), socio-emotional quality (r=.52) and instructional quality (r=.50) of home literacy skills. The results of the longitudinal data revealed that literacy opportunities significantly correlated with children's vocabulary scores for both age 4 (r=.46) and age 7 (r=.30). Similarly, children's vocabulary scores were related to socio-emotional quality (r=.41 for age 4, r=.47 for age 7) and instructional quality (r=.33 for age 4, r=.43 for age 7). They pointed out the complex structure of the home literacy environment in both the qualitative and quantitative aspects of the children's experience.

In addition, some researchers have examined the HLE more deeply by conducting observations, interviews and case studies. For example, Roberts, Jergens and Burchinal (2005) explored home literacy environments of African American children (n=72) of low-income families. The children were followed from 18 months to age 5. They collected data in multiple ways comprising questionnaires, interviews with mothers, observations of the home environment and shared reading activities. Their findings revealed that maternal sensitivity is significantly related to children's receptive vocabulary, furthermore, mothers' book reading strategies with children and home literacy practices were associated

with both receptive and expressive vocabulary for the children aged 3 to kindergarten. Neumann, Hood and Neumann (2008) examined home-based literacy activities and resources regarding print awareness. The study demonstrated how a child discovers print by being exposed to print in the environment surrounding them, print resources and shared activities in a natural home context.

Although HLE is a well-grounded concept, a limited number of published studies were found that examined the notion in Turkey; this is due to HLE being an emerging issue in this country. Most of the early literacy and language development studies concerning Turkey focus on the demographics of the parents (e.g., Erdoğan, Bekir-Şimşek, & Erdoğan-Aras, 2005; Karaman & Üstün, 2011). However, Dolunay-Sarıca et al., (2014) developed an HLE instrument covering four types of home literacy experiences; reading, writing, phonological awareness and shared reading. They conducted a pilot study with 341 children and reported findings about the instrument's psychometric characteristics. In addition, Altun (2013) adapted the Home Literacy Environment Questionnaire developed by Umek et al (2005). Altun (2013) investigated relations between preschoolers' reading attitudes and home literacy environment, finding moderate (r=.48) and significant relations between the variables. Lastly, Turan and Akoğlu (2014) examined home literacy experiences regarding normally developing and language impaired children. They reported that language impaired children's home literacy experiences were below those of the normally developing children. In another study, Altun and Tantekin-Erden (2015) examined the home literacy environment of 500 preschoolers living in Ankara. The results revealed that the preschoolers HLE scores significantly differed as a function of household income, parents' education level, reading habits and reading attitudes; however, there were no differences regarding the children's gender. A further finding was that the number of books in the children's homes was below the international average.

For the current study, the Turkish version of the *Home Literacy Environment Questionnaire* (Altun, 2013) was used to measure children's HLE. Detailed information about the instrument and adaptation process are given in the following chapter.

2.6 Classroom Literacy Environment

After the home environment, school is the second and broader context for children literacy development. School settings provide systematic and professional learning opportunities, environments, interactions and experiences for the child which differ from the home environment (Bus, Belsky, van Ijzendoorn & Clinic, 1997; Gianvecchio & French, 2012; Hindman, Connor, Jewkes, & Morrison, 2008).The value of a well-prepared classroom environment, materials and education programs has been stressed from the past, including Pestalozzi (1746-1827), Froebel (1782-1852), and Montessori (1870-1952) (Crain, 2005; Lascarides & Hinitz, 2000; Morrow, 1990) to the present.. Contemporary early childhood education approaches such as Reggio Emilia stress the importance of the effect of the environment on children's learning, calling this the "*third teacher*". Bank Street and High Scope Approaches also organize the classroom environment by dividing it into learning centers to nourish children's different developmental areas, interest and pre-academic skills (Roopnarine & Johnson, 2005; Wortham, 2006). In this context, a great body of research has investigated the contribution of the characteristics of the preschool classroom to child development and learning. The notion of classroom quality evolved based on the findings of various studies (e.g., Baratz & Baratz, 1970; Bronfenbrenner, 1974; Bryant, Burchinal, Lau, & Sparling, 1994; Hertz, 1977; Shapiro, 1975). These studies consistently showed that preschool classroom quality is related to child development and learning gains (e.g., Early et al., 2007; Guo, Piasta, Justice, & Kaderavek, 2010; LoCasale-Crouch, 2007; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009). Bryant et al. (1994) examined 145 children in the

Head Start program to explore the relationship of the family background and the classroom quality to the children's pre-academic skills. They found that classroom quality was associated with children's pre-academic gains independently from their family background. The importance of the classroom environment has been acknowledged by the National Association for the Education of Young Children (NAECY), and in order to improve the quality of early childhood education programs the organization has been accrediting preschools since 1985 (NAECY, 2016).

The literature also contains studies that specifically focus on the contribution of the classroom environment quality to children's language and literacy development. These studies found that the classroom literacy environment quality was related to children's (a) print awareness (Guo et al., 2010), (b) vocabulary (Connor, Son, Hindman, & Morrison, 2005; Xu, Chin, Reed, & Hutchinson, 2014), (c) phonological awareness (Bus, & van IJzendoorn, 1999; Phillips, Clancy-Menchetti, & Lonigan, 2008), (d) letter knowledge (Guo et al., 2012), (e) writing skills/name writing (Cunningham, 2008; Guo et al., 2012; Zhang, Hur, Diamond, & Powell, 2015), and (f) overall language and literacy skills (Connor et al., 2005; Cunningham, 2010; Mashburn, 2008). In addition, domain-specific instruments have been developed to assess the literacy quality of the preschool classroom (Goodson, Layzer, Smith, & Rimdzius, 2006; Smith, Brady, & Anastasopoulos, 2008; Wolfersberger, Reutzel, Sudweeks, & Fawson, 2004). These studies have mainly focused on the physical and instructional dimensions of the classroom. The physical dimensions considered included the availability of different books, print sources and literacy materials, the organization of the classroom, environmental print and availability of learning centers for listening and writing, together with a library area. Studies showed that physical resources and the structure of the classroom have important roles in supporting children's language and literacy development (De Temple, 2001; Guo et al., 2012; Maier, Vitiello, & Greenfield, 2012; Morrow, 1990; Neuman, 1999;

Neuman & Roskos, 1993; Philips, Clancy-Menchetti, & Lonigan, 2008; Reutzal & Morrow, 2007; Zhang et al., 2015; Xu et al., 2014).

The instructional dimension covers literacy related curriculum goals, daily routines and activity process, teacher-child and child-child interactions, the teacher's communication skills, responsiveness, language and instructional methods to scaffold the children's language and literacy development. In various studies the instructional dimension was found to contribute to children's language and literacy development (Connor, Morrison, & Slominski, 2006; Guo et al., 2012; Hamre & Pianta, 2005; Justice, Kaderavek, Fan, Sofka, & Hunt, 2009; Schachter, Spear, Piasta, Justice, & Logan, 2016; Wasik, Bond, & Hindman, 2006).

An instrument for measuring the classroom literacy environment was devised by Goodson, Layzer, Smith, and Rimdzius (2006). *The Observation Measures of Language and Literacy Instruction in Early Childhood Education Classrooms* (OMLIT) is a checklist comprising the following six sub-sections; physical environment, activities, reading activities, literacy instruction, resources and the teaching process. Tarım (2015) used OMLIT to evaluate the quality of the literacy environment of 17 public preschool classrooms in Muğla, Turkey. She reported that literacy resources in the classrooms ranged low to middle quality, the print environment was commonly low but all classrooms had a book and reading corner.

Wolfersberger, Reutzel, Sudweeks, and Fawson (2004) developed the *Classroom Literacy Environmental Profile* (CLEP) to assess classroom literacy opportunities regarding both materials and classroom climate being inviting, motivating, encouraging interactions participation and extending children's literacy experiences. The tool can be applied to both preschool and primary

grades. Their published work details the tool development process and explains the psychometric features.

The *Early Language & Literacy Classroom Observation* (ELLCO) is another instrument for the evaluation of classroom literacy quality. The instrument was developed in 2002 (Smith, Dickinson, Sangeorge, & Anastasopoulos, 2002) then revised and republished in 2008 (Smith, Brady, & Anastasopoulos, 2008). The last version of the tool consisted of five main sections: *classroom structure, curriculum, language environment, books and book reading,* and *print and early writing*. Detailed information regarding the instrument is presented in following chapter. The tool has been widely used in many early literacy studies (e.g., Cunningham, 2010; Grace, Bordelon, Cooper, Kazelskis, Reeves, & Thames, 2008; Jackson, Larzelere, Clair, Corr, Fichter, & Egertson, 2006; Lonigan, Farver, Phillips, & Clancy-Menchetti, 2011; Wasik & Hindman, 2011; Zhang et al., 2015).

Cunningham (2010) examined children's early literacy development in relation to their classroom environments. She conducted a study with 428 children from 24 classrooms. She found that the ELLCO revealed a significant relation between literacy development and classroom overall quality (r=.68) and also children's early literacy scores (r=.35). In another study Guo, Justice, Kaderavek and McGinty (2012) used the ELLCO to investigate the preschool literacy environment's contribution to children's literacy gains. The participants in the study were 30 preschool teachers and 209 children. The children were randomly selected from 38 centers and their teachers were randomly assigned to the treatment or comparison group. Teachers in the treatment group received training regarding instructional strategies to foster children's literacy experience whereas the comparison group were given training concerning behavior management. The researchers used Hierarchical Linear Modeling (HLM) to examine the nested data and discovered that children's alphabet knowledge and name writing gains were

significantly associated with available physical sources within a high promoter instructional context. Similarly, Xu, Chin, Reed and Hutchinson (2013) examined the effect of a family integrated early literacy project on the relationship between the literacy environment quality of a public preschool and children's early literacy gains. 199 children and 14 teachers participated in the study. They compared pretest and posttest scores. The results revealed that there was a significant difference in classroom's ELLCO scores in a favor of the posttest. In addition, there was a significant increase in the children's name writing, print knowledge and some aspects of phonological awareness scores. Lastly, Zhang, Hur, Diamond and Powell (2015) investigated the contribution of the writing environment to name writing skills in a term-long study of 262 preschoolers from 31 Head Start classrooms. They used the writing environment section of ELLCO to evaluate classroom opportunities for writing development. A Path Analysis showed that the classroom writing environment was a significant predictor of the children's name writing gains and name writing was also significant predictor of their letter knowledge gains.

To sum up, the classroom literacy environment is a complex and multidimensional notion and a number of studies have attempted to clarify the dimensions and their contribution to children's early literacy skills. In the context of Turkey, classroom literacy environment is an emerging issue. Only a small number of studies have examined preschool teachers' literacy practices in classrooms; they have most often found that Turkish preschoolers had a limited quantity and quality of literacy experiences in school settings (Ergül et al., 2014; Deretarla-Gül & Bal, 2006; Kerem & Cömer, 2005; Tuğluk, Kök, Koçyiğit, Kaya, & Gençdoğan, 2008). As Justice (2004) pointed out the classroom environment is related to and reflects sociocultural aspects of societies and educational philosophy of programs. Therefore, the scholarly culture and literacy policy of the countries should also be considered in the examination of classroom literacy environment.

2.7 The Cultural Context and Profile of the literacy of Turkish People

From the 10th to early 20th century the Arabic alphabet was used in Turkey. Five years after the Turkish Republic was established, in 1928, the Alphabet Revolution introduced the new Turkish orthography, derived from the Latin alphabet. Campaigns were then undertaken to teach the new alphabet to citizens to increase the number of literate people (Tunca, 2006). In 1927, only 11% of Turks were considered literate; this increased to 40% by the 1960s. Today, by some measures the number of literate Turks is 95.78% (MONE, 2013; Turkish Statistical Institute, 2013); however, according to the research, although literacy has increased, Turkish people spend little time reading (e.g., Bayram, 2001; Demir, 2009; Kurulgan & Çekerol, 2008; Ungan, 2008; Yılmaz, 2004).

A number of studies have illustrated the extent of this non-reading / yet highly literate paradox. Özdemirci (1990) shared the results of a survey of 1551 people concerning their opinion about why Turkish people do not read. The results showed that 70% of the participants read one or less than one book per month. He also found that 60% of the participants stated their parents did not have the habit of reading. Lastly, he found that 51% of the participants did not have books at home when they were children.

The Çocuk Vakfı (Child Foundation, 2006) reported on the general reading habits of the Turkish people and found that only one individual per thousand had the habit of regular reading while 88% of the population is literate. Furthermore, only 33% of teachers read regularly. The report also found that 70% of young people did not have regular reading habits and 95% of the adult population preferred watching TV to reading.

A wide range of studies provided evidence that Turkish people have a habit of not reading (e.g., Aksaçlıoğlu & Yılmaz, 2007; Demirer, Yıldız, &

Sünbül, 2011; Gömleksiz, 2004; Karaşahin, 2009; Odabaşı, Odabaşı, & Polat, 2008; Yılmaz, 2002). These studies were conducted with different groups of participants, such as students, parents, and in-service and pre-service teachers. Sünbül et al. (2010) investigated the reading habits of 20,250 Turkish primary students and reported that only 25.84% of the students and 17% of the parents had regular reading habits. Yılmaz (2004) reported that 35.7% of 5th grade students did not have reading habits, and 57.5% of the students read one book or less per month. Furthermore, 20.6% of the children stated that their mothers read at home and only 5.2% stated that their fathers read at home. It was also reported that 28.8% of the parents encouraged their children to read at home. Aksoy (2014) reported that 51.6% of the parents read less than a book per month.

The authors also pointed out that it was not only the students and parents but also the teachers that had poor reading habits (e.g., Karaşahin, 2009; Saracaloğlu, Bozkurt, & Serin; Tel, Öcalan, Ramazanoğlu, & Demirel, 2007; Yılmaz, 2002). Karaşahin (2009) conducted a survey with 4, 038 in-service teachers from elementary and secondary schools. He reported that 67.7% of the teachers read one or less than one book per month and 15% of the teachers believed that they read enough books. Another study found that 68.5% of the in-service teachers read less than one book and only 8.7% read two or more books per month (Yılmaz, 2002). In addition, it was found that 95% of the teachers did not visit a public library. Similarly, there are also studies reporting that pre-service teachers have poor reading habits (Bayram, 2001; Kuş & Türkyılmaz, 2010; Mavi & Çetin, 2009: Saracaloğlu, Karasakaloğlu, & Aslantürk: 2010; Tel, Öcalan, Ramazanoğlu, & Demirel, 2007). These studies concluded that pre-service teachers had a low interest in reading and poor attitude toward reading (Dedeoğlu & Ulusoy, 2013; Saracaoğlu et al., 2010). Yalman, Özkan, and Kutluca (2013) reported that 13.64% of the pre-service teachers read regularly. The pre-service teachers stated that children should enjoy reading in their preschool years (26.36%) and primary grades (55%). It was found that only 4.55% of the pre-

service teachers enjoyed reading in the preschool years and 41.82% in primary school years.

These studies clearly demonstrate the poor reading habits of Turkish people. Ungan (2008) investigated the cultural background of the poor reading habits of Turkish people. He explained that oral culture is more dominant and this has been maintained in the oral and visual way that technological devices are used. Despite the literacy rate being about 95%, the majority of the population of Turkey do not read regularly, a situation reminiscent of Huck's notion of illiterate literates ((Huck, 1973). Literate culture, including the value and joy of reading should be assimilated by individuals via family, school and media to foster reading habits (Gürcan, 1996; Ungan, 2008). In this context, it can be said that Turkish children have a poor reading culture in the home environment.

2.8 The Turkish Early Childhood Education Program

Preschool education is not compulsory in Turkey and the schooling ratio for age 5 children is 55.48 and the schooling ratio for 3-5 year-old children is 33.28 according to the Ministry of National Education (MONE, 2016). Preschool education is predominantly provided by public free schools, but the number of private preschools is increasing. The statistics of the ministry of education (2015) showed that 13,435 children were enrolled in private preschools and total of 63,739 children were enrolled in preschool in Ankara.

Education in private and public preschools is based on the National Early Childhood Education Program (2013). The current national ECE program was developed in 2012 marked by participating 18 early childhood academicians and 10 preschool teachers. After a year-long pilot study in ten cities (Van, Erzurum, Ağrı, Şanlıurfa, Diyarbakır, Hatay, Mersin, Ankara, İzmir, Adana), the program was published in 2013 and has begun to be applied in preschool education.

The ECE program addressed children's developmental domains including that of language. The language domain consisted of 12 acquisitions (see Appendix A), including oral language, vocabulary, visual reading, and some simple phonological awareness and concepts about print indicators. The program refers to two sub headings to address language and literacy related activities. These are Turkish *language activities* and *preparedness for reading and writin*g. The Turkish language activities mainly concern oral language skills. The program offers suggestions and content for the components of preparedness for reading and writing activities. According to the program, preparedness for reading and writing can include activities that foster children's cognition, attention, and visual and auditory perceptual skills, self-care skills, holding a pencil properly, basic concepts, and motivation and awareness of reading and writing (MONE, 2013). Also the Turkish language section clearly states in a bold font that "the program certainly does not aim to teach reading and writing to children and does not cover any goals for children to be introduced to letters and learn to write letters "(MONE, 2013, p. 45). The program only uses the term 'early literacy skills' three times, to explain that early literacy skills are related to language skills and they have role in later reading achievement (MONE, 2013, p. 46). The term 'early literacy' is not used in any of the program items related to language acquisition or indicators of this process. The program aims to foster children's reading and writing readiness for first grade. Preschool is defined as a preparation period for first grade. Thus, in the Turkish early childhood program concerning language and literacy the reading readiness approach is still predominant.

CHAPTER 3

METHODOLOGY

In this chapter, methods and procedures of the study are presented in detail. First, the design of the study is explained. Second, the description of the participants, instruments and data collection process are given. Finally, issues concerning data analysis, assumptions, limitations, internal, and external validity are addressed.

3.1 Design of the Study

The present study aimed to examine Turkish preschoolers' home literacy environment (HLE) and classroom literacy environment (CLE) features. Besides, the study aimed to investigate how home literacy environment, mother education level and children age contribute to the children's fall term early literacy skills; (a) receptive vocabulary knowledge, (b) expressive vocabulary knowledge, (c) phonological awareness and (d) concepts of print. In addition, the purpose of the study was to explore the preschoolers' early literacy skill gain from classroom literacy environment, home literacy environment, mother education level, and fall term early literacy scores.

In order to investigate the research questions for the current study, Johnson's (2001) longitudinal-predictive research design of non-experimental quantitative research was used. Children were followed over time and data were collected through two phases. The purpose of the study was explored predictive relationship among early literacy skills and literacy environment by using Bronfenbrenner's Ecological and Sociocultural Theories frameworks. Data were comprised of two level: children-level (mother education level, HLE, fall term

early literacy scores) and classroom-level (CLE) and to analyze the nested nature of the data Multilevel Linear Modeling (MLM) was used.

3.2 Participants

The participants of first phase were 168 children attending five private preschools in Çankaya, Gölbaşı and Yenimahalle districts of Ankara. The children were from 20 classes. The children's average age in this phrase was 66.44 months (range 60-72 months, SD= 3.87). Of these children, 56% were girls and 44% were boys. None of these children had any reported hearing, seeing, speech or mental problems. All of the participants were monolingual Turkish children.

Table 3.1

Age and Gender Distribution of the Participating Children

	First Phase		*Second Phase*	
	f	*%*	*f*	*%*
Age Group of Children (mths)				
60-65	83	49.4	31	18.78
66-71	57	33.9	84	50.90
72-76	28	16.7	50	30.28
Total	168	100	165	100
Gender of Children				
Girl	94	56	92	55.75
Boy	74	44	73	44.25
Total	168	100	165	100

For the second phase, the researcher contacted the classroom teachers multiple times to check that the children would be available; unfortunately two girls and one boy could not attend their preschool for health problems (pneumonia

and a fractured limb). The children's average age was 70.08 months (range 63-75 months,
SD= 3.82) for the second phase of the data collection. Table 3.1 details the ages and gender of the participants in the first and second phases of the data collection.

The data were collected in private schools for two reasons. First, the data collection process consisted of two phases and instruments were applied each child in three separate sections individually out of the classroom environment. Due to available testing room problem, school's permission and volunteering to study and difficulties to follow children in public schools, participants were selected from private preschools by a convenience sampling method. Second, concepts about print was used as one of the outcome variable for the early literacy skills. Some of the concepts about print items are related to letter knowledge but public preschools do not cover any activities related to letters. Current national early childhood curriculum (2013) stressed that the program does not aim to introduce letters to preschoolers nor teaching children to write letters. The program avoids introducing letters to children. The national program covers some goals related to simple phonemic awareness activities. Although, most of the private school programs covers activities related to letter recognition in different levels and ways. There is no standardization related to letter recognition goals and activities between private preschools. However, some private preschools introduce only vowels (*a, e, ı, i, o, ö, u, ü*) but some of gave first grade letter groups to teach reading (exp: *e, l, a, t / i, n, o, r, m*) to prepare children to first grade. Besides, small number of preschool teach 29 letters of the Turkish language. Concepts about print was used one of the outcome variables of the present study. Therefore, data were collected from private preschoolers.

The adults involved in the study were the children's parents and, indirectly, the children's preschool teachers (n=27). Of the 20 classrooms, seven had two teachers. From the total 27 teachers 23 had graduated from university

and four had a master's degree in education. As a part of the classroom literacy environment observation tool, the researcher briefly interviewed the teachers to obtain information to supplement the data gather from the classroom observations.

A total of 340 parent consent forms and questionnaires were distributed to parents. A total of 259 questionnaires (76 %) were returned however, 36 parents (10.29%) did not give permission for their children to participate the study. In addition, 56 questionnaires (16.47%) were not eligible for the study and were excluded. The final number of participants consisted of 168 parents and their children. Table 3.2 presents detailed information about the rate of return for the questionnaire.

Table 3.2

Information about the Response Rate of Questionnaires

	f	*%*
Distributed	*340*	*100*
Responders	259	76
Non-responders	81	24
Total of Excluded Questionnaires	*91*	*26.76*
Did not give permission for their child to participate the study	36	10.29
Did not complete demographic information or Home Literacy Environment questionnaire	28	8.23
Parents gave permission or returned the forms at the end of the first phase	12	3.52
Teachers lost or forgot to return the completed forms	9	2.64
Children had difficulties which prevented participation in the study (such hearing problems autism or other mental problems)	7	2.05
Total Eligible Questionnaires	*168*	*49.41*

The questionnaires were mostly completed by the mothers (78%) with a mean age of 37.48 (SD=4.01). The age range of the mothers was 25 to 48. The

fathers completed 21.4% of the questionnaires with a mean age of 40.23 (SD=4.51). The age range of the fathers was 32 to 53. Only one of the questionnaires was completed by a grandparent.

The majority of the parents of the children participants (mothers: 52% and fathers: 60%) had graduated from university. Further demographic information of parents is presented in Table 3.3.

The household income of most of the families (72%) was above 6,000 TL. According to the Ministry of Labour and Social Security (MLSS, 2015) and the *Turkish* Confederation of Public Workers' Associations (*Turkiye Kamu-Sen) in* 2015 the net minimum wage is 1,000,54 TL. Turkish Kamu-Sen (2015) calculated the individual poverty threshold as 2.076,39 TL and a living waged for four-person family as 4,626.36 TL. Ankara is the first richest city in Turkey, with annual per capita income is 20.446 TL (MLSS, 2015).

Table 3.3.

Demographic Information of Parents from the Questionnaire

	Mothers		*Fathers*		*Others*	
	f	*%*	*f*	*%*	*f*	*%*
Questionnaire completed by	131	78	36	21.4	1	0.6
Age Group of Parents						
25-29	3	1.8	-	-		
30-34	34	20.2	13	7.7		
35-39	76	45.2	69	41.1		
40-44	49	29.2	57	33.9		
44+	6	3.6	29	17.3		
Educational Level of Parents						
High School	27	16	12	7		
College	31	19	17	10		
University	88	52	101	60		
Postgraduate	22	13	38	23		

In the current study, half the families only had one child (51.2 %) therefore their income was well over the living wage. Detailed information regarding household income and number of children in the family is given in Table 3.4.

Table 3.4

Demographic Information of the Parents

	f	***%***
Household Income (monthly-Turkish Lira)		
0-1,500	2	1.2
1,501-3,000	1	0.6
3,001-4,500	10	6.0
4,501-6,000	34	20.2
6,001+	121	72
Number of children in the family		
1	86	51.2
2	77	45.8
3	5	3.0

3.3 Data Collection Instruments

In the present study, the data were collected through two sets of instruments. The first set was used to assess the preschoolers' early literacy skills through the Phonological Awareness Scale of the Early Childhood Period (PASECP), the Turkish Expressive and Receptive Language Test (TIFALDI), and a Control List for the Evaluation of the Print Awareness of Preschool Children.

The second set was employed to gain information about the children's home and classroom literacy environments using the Early Language and Literacy Classroom Observation Pre-K Tool (ELLCO), Home Literacy Environment Questionnaire (HLEQ), and parental demographic information form. The following sub-section describes the instruments in detail.

3.3.1 Instruments used to measure Early Literacy Skills

The three instruments were used twice at two time points with three-month intervals to assess children's early literacy skills for the fall and spring term of preschool.

3.3.1.1 Phonological Awareness Scale of Early Childhood Period (PASECP)

The Phonological Awareness Scale of Early Childhood Period (PASECP) was used to measure preschoolers' phonological awareness skills. Developed by Sarı and Acar (2013) in Turkish language and the scale consists of 78 items and 8 sub-scales with each sub-containing a training item. The scale is scored by giving one point for a true response and zero for a false response. The test takes 15 to 20 minutes and is applied individually to each child.

The scale was administered to 733 preschoolers. The total Cronbach's alpha coefficient value was .96 with variations from.78 to .97 for the factors. Sarı and Acar (2013) reported a Kaiser-Meyer-Olkin value of .647 and the Barlett test results as being statistically significant at the level of .001. The eight sub-scales together explained 59.179 % of the variance. Table 3.5 contains detailed information regarding the PASECP variance.

The researcher attended a day's training to use the scale presented by one of the developer of the scale. The training included how to use and point score the scale using videos of real conditions to provide practice for users. Before the data collection process, the researcher applied the scale to three preschoolers to become familiar with the administration process of the scale.

Table 3.5

Sub-scales and Explained Variance of the PASECP

The Sub-scales	Number of items	Cronbach's alpha coefficient values	Explained variance (%)
Recognizing rhyme	8	.82	11.09
Beginning sound detection	10	.97	9.80
Generating new words related to the desired phoneme	10	.86	9.68
Grouping words starting with the same sound within a group of words	10	.86	6.00
Blending phonemes	10	.78	5.92
Segmenting word into its syllables	10	.90	5.92
Omitting a word in a compound	10	.92	5.84
Alphabet knowledge	10	.93	4.90
TOTAL	78	.96	59.17

In the current study, the scale was administered to the children individually with administration time varying from 10 to 25 minutes. In order to minimize testing effects, the order of the items was randomized for the second application of the scale. In the present study, the total Cronbach's alpha coefficient value was .93 for both data collection phases. The sub-scales values ranged from .75 to .95 for the first phase and .76 to .95 for second phase.

3.3.1.2 Turkish Expressive and Receptive Language Test (TIFALDI)

TIFALDI is used to assess children's expressive and receptive vocabulary skills. The test was developed and standardized by Kazak-Berument and Güven (2013) to assess vocabulary skills of 2 to 12-year-old Turkish children.

3.3.1.2.1 Turkish Receptive Vocabulary Sub-Scale

The test consists of 104 pictorial cards for children aged 2 to 12. For each task there are four black and white drawings on the card and one of the drawing is target with the other three being distractors. The drawings were drawn by a professional artist. During the test, the child is asked to point to the drawing representing the target word. There are 104 test items with two training items. The test was developed in three phases.

In 1998, the initial development phase of the test word list was determined based on word frequency list. At the end of the initial phase, 242 abstract and concreate words were chosen for pilot study of receptive vocabulary sub-test. A pilot study was conducted with 648 children with age range 2 to 13 in Ankara after which the number of words was decreased to 157 words.

The 157 word item version was tested by using larger nationally representative data to determine age equivalence and standard scores. The test was administered to 3755 children aged 2 to 13 years old from 61 cities across Turkey from June 2007 to November 2008. Afterwards, Item Response Theory (IRT) analyses were conducted to examine item difficulty, guess and discrimination using the BILOG-MG (SSI 2002) program resulting in 53 items being excluded with the final version of receptive vocabulary test consists of 104 items with two training items.

For the standardized test, the Cronbach's alpha coefficient values were .99 for total test and .96 for 5-year-old group (Kazak Berument & Güven, 2013). Table 3.6 presents detailed information about reliability scores of the test across age groups.

Table 3.6.

The Reliability Scores for Receptive Vocabulary Test Regarding Ages

Age	*Internal Consistency*	*Split-half*	*Test-retest*
2	.94	.94	.94
3	.95	.95	.85
4	.96	.96	.92
5	.96	.96	.78
6	.95	.95	.81
7	.93	.94	.70
8	.94	.94	.76
9	.90	.92	.87
10	.91	.92	.74
11	.89	.88	.74
12	.88	.89	.76

In order to check concurrent validity of the TIFALDI-Receptive vocabulary test, Peabody and WISC-R applied children age above 6 years. In addition, Ankara Developmental Screening Inventory (ADSI) was applied to children aged below 6 years. Kazak-Berument and Güven (2013) reported that TIFALDI-receptive vocabulary subtest significantly correlated (r= .62) with the ADSI-language and cognitive subtest. According to the results for older age group, TIFALDI-Receptive vocabulary subtest significantly associated with WISC-R, whereas Peabody did not have an association.

3.3.1.2.2 Turkish Expressive Vocabulary Sub-Scale

In expressive vocabulary part of the test, each page has one black and white picture and children are asked to say the pertaining to the drawing. The drawings were drawn by the same professional artist. The expressive vocabulary sub-scale was applied after the receptive vocabulary sub-scale; therefore, there was no need for additional training item for the expressive part.

The pilot study of the Turkish Expressive Vocabulary Sub-Scale conducted with 3467 children aged from two to 12. The data collected from 61 cities to obtain nationally representative sample. The pilot version of the subscale consisted of 95 words. IRT analyses conducted to examine item difficulty, guess and discrimination after which 15 words were eliminated from the test. The final version of the test comprises of 80 words (Kazak-Berument & Güven, 2013).

According to the results of the pilot study, the Cronbach's alpha coefficient values was .98 for total sub-scale and .95 for 5-year-old group (Kazak-Berument & Güven, 2013). Table 3.7 provides information about reliability scores of the test in terms of age groups.

Similarly, concurrent validity of the expressive vocabulary sub-scale was examined by comparing scores with Peabody, WISC-R and ADSI tests. The TIFALDI- expressive sub-scale significantly correlated with ADSI language and cognitive subtest (r=. 65) and WISC-R verbal subtest (r = .52) whereas Peabody did not.

Table 3.7.

The Reliability Scores for Expressive Vocabulary Subscale for Ages 2 to 12

Age	*Internal Consistency*	*Split-half*	*Test-retest*
2	.96	.97	.97
3	.96	.96	.94
4	.95	.96	.89
5	.95	.96	.94
6	.95	.96	.79
7	.94	.94	.82
8	.91	.91	.89
9	.92	.92	.80
10	.90	.89	.84
11	.88	.86	.96
12	.86	.86	.84

The researcher received one-day training in the use of TIFALDI by Turkish Psychological Association. One of the test developers presented the training that covered; introducing the test battery, administration process and scoring issue. After the training, the researcher applied the test to a five-year old child and videotaped the administration process. The accuracy of the administration process and scoring was checked and approved by the test developer/trainer and the researcher was given an accreditation certificate to use TIFALDI.

3.3.1.3. Control List for the Evaluation of the Print Awareness of Preschool Children

Based on her classroom observations in 1989 Clay developed Concepts about Prints (CAP) to measure preliterate children's concepts and understanding of print and written systems**.** She prepared a book with pictures to present to young children. During the process the researcher asks the children questions related to the book regarding; the front of the book, direction of the reading, line order, punctuation, capital and lower letter pairs (Clay, 2000).

When using CAP the researcher introduces the book and asks the child to show them the front of this book. The child is expected to respond to the questions verbally or point to the appropriate place on or in the book. The researcher completes the observation form and scores the child's response giving one point for each correct answer and zero for each false answer. CAP consists of 24 questions and it is administered individually to each child. The reliability coefficient was .95 for split half way and the Cronbach alpha was .87. The concurrent validity coefficient was reported as .79 using the Metropolitan Reading Readiness Test (Clay, 2000). CAP has been translated into many languages including; Spanish, Greek, French, Hebrew and Turkish (Clay, 1989; Öztunç, 1994; Tafa, 2009). It is a well-established and common measurement in the field of literacy.

Öztunç (1994) translated CAP into Turkish conducting an adaptation study with 186 preschools and first grade children. She used the split-half procedure as an internal consistency method and reported that the Turkish version of the CAP was reliable and valid. However, some of the CAP tasks include punctuation marks. In the Turkish context, the reading readiness approach dominates the early literacy policy and children are not exposed to letters and punctuation marks in their preschool years. Therefore, Şimşek-Çetin and Alisinanoğlu (2013) adapted the concepts about print tasks to the Turkish context developing a control list for the evaluation of print awareness of Turkish preschool children. The initial version of the control list consisted of 20 items. After obtaining expert opinion, one item was omitted from the list and an explanatory factors analysis was conducted using 19 items with 200 preschoolers. According to the factor analysis, the list contained 17 items and 2 factors. The two-factor structure explained a total of 73.71% of the variance, of which 45.26% were related to the book concepts factor and 28.45% corresponding to the print concepts factor. To further validate the factor analysis, a confirmatory factor analysis was conducted using 17 items with 200 preschoolers. The developers reported that their model had reasonable good-fit indices consisting of a 'Goodness of Fit Index' (GFI) of 0.98; an adjusted Goodness of Fit Index (AGFI) of 0.97 and a $(\chi 2)/df$ of 52.16 ($\chi 2$) = 6102.71, df= 117, p<.001). The control list total reliability was.72 in the Kuderson Richardson Formula 20.

Çetin and Alisinanoğlu (2013) did not prepare a specific book to assess print awareness through the control list instead, they used published children's book with pictures in the test. For the current study, to minimize the testing effect, two different but equivalent books selected from the early childhood series from TUBİTAK Publications. The Cronbach's alpha value was .78 for both administrations. Although the Reliability coefficients are slightly low the values reach the minimum level of .70, therefore it can be considered an appropriately reliable scale for educational studies (Hatcher & Stepanski, 1994; Pallant, 2007).

3.3.2. Instruments measuring Early Literacy Environments

These instruments were used for a single point of time to gather information about the home and classroom literacy environments of the participant children.

3.3.2.1 Home Literacy Environment Questionnaire (HLEQ)

The Home Literacy Environment Questionnaire (HLEQ) was developed by Marjanovic Umek, Podlesek and Fekonja (2005) to assess different aspects of home literacy context and interactions that support children's language development. The questionnaire measures various aspects of home environment to produce data concerning the quality of the home literacy environment. The first version of HLEQ consisted of 31 items and 4-point Likert type (never to always) scale and pilot study conducted with Slovenian mothers of preschooler children. After the pilot study, one item was reformed and another item was divided into two new items. Additionally, a 6-point Likert type was chosen to raise the level of the discriminative power of the response to the items. The final version of the questionnaire was piloted on 353 mothers of preschoolers in Slovenia.

According to the results of the explanatory factor analysis, the KMO value was .88, and the Barlett's Test result was significant *(x^2*= 4998, df = 528, p = .000). The questionnaire contains five factors with a total of 32 items, which together explain 54.1% of the variance. The HLEQ factor item numbers and unique contribution that explain the variance percentage are given in Table 3.9. The questionnaire reliability coefficient was .91 ranging from 77 to 85.

Table 3.9.

Factors and Explained Variances of the 0riginal and Turkish Versions of HLEQ

Factor name	Number of items	Original Version (Marjanovic Umek et al., 2005)	Turkish Version (Altun, 2013)
		Explained variance (%)	
1: Stimulation to use language, and explaining	11	30	25.68
2: Reading books to the child, visiting a library and puppet theatre	8	8.8	7.85
3: Joint activities and conversation	6	5.7	6.23
4: Interactive reading	3	3.5	4.75
5: Zone-of-proximal-development stimulation	4	4.4	4.18
Total	32	54.1	48.7

HLEQ was translated and adapted into Turkish by Altun (2013). A pilot study conducted with 754 parents from five districts of Ankara. Altun (2013) reported that the Cronbach's alpha coefficient was .89 for the Turkish version and varied from .74 to .84. Table 3.10 provides information about the reliability coefficients scores for HLEQ. The explanatory factor analysis results gave a KMO value of .89, and the Barlett's Test result was significant (x^2= 8749.68, p=.000). In order to investigate the number of factors, parallel analysis (32 variables x 754 cases) was conducted using the Monte Carlo PCA (2000). A Structure Matrix table was checked to obtain information about the correlation between variables and factors. The 32 items were loaded ≥.40 into five factors and these factors explained a total of 48.7% of the variance for the Turkish version.

Table 3.10

Reliability Coefficients Scores for HLEQ

HLEQ factors	Original version Marjanovic Umek et al., 2005)	Turkish version (Altun, 2013)	Present study
	Cronbach Alphas		
F1	.85	.84	.84
F2	.84	.82	.81
F3	.84	.83	.84
F4	.79	.76	.74
F5	.77	.75	.74
Total	.91	.89	.89

In the current study, HLEQ was used to assess home literacy environment in three reasons. First, the factors of HLEQ correspond to the theoretical framework of the present study. According to Vygotsky's socio-cultural theory, learning occurs in the zone of the proximal development (ZPD) and children gain language skills through social interactions. In this context, *social-interactionists*, such as Snow (e.g., 1972, 1976, 1977, 1978) pointed out a mother talking to her child/ren, the joint attention and responsiveness to children's communication signals. In other words, the conversational context of home environment has a role in a child's process of acquiring language.

Second, the format, content and item numbers of HLEQ is user friendly for parents. They can easily respond to the questionnaire in their own home. Observation and interviews are a good way to obtain more detailed information regarding the home literacy environment but unfortunately, due to time constraints, financial budget and security conditions this was not a feasible methodology for the present study.

Third, the psychometric properties of HLEQ regarding *reliability* coefficients scores and explanatory factor analysis results demonstrated that it is appropriate scale for the present study. In addition, the HLEQ demographic

information form was sent to parents to acquire detailed information of home characteristics including the parents' educational level, age, household income, number of children at home, number of books at home and the parents' reading habits.

3.3.2.2. Early Language and Literacy Classroom Observation (ELLCO-Pre-K) Tool

The Early Language and Literacy Classroom Observation (ELLCO-Pre-K) Tool is one of the well-known domain specific instruments to measure structural characteristics and the instructional process of center-based preschool settings (Smith, Dickinson, Sangeorge, & Anastasopoulos, 2002;Whittaker & Pianta, 2012). ELLCO-Pre-K is an observational instrument to assess different aspects of classroom literacy environment for 3 to 5-year-old children to present information concerning the classroom literacy environment quality to support the development of children's language and literacy. This tool has been widely used in early literacy studies (e.g., Anderberg & Ruby, 2013; Buysse, Castro, & Peisner-Feinberg, 2010; Cunningham, 2010; Castro, 2005; Duran, Roseth, & Hoffman, 2010; Edgar, 2008; Neuman & Dwyer, 2011; Wayne, DiCarlo, Burts, & Benedict, 2007). It was developed by Smith, Brady and Anastasopoulos as product of studies conducted at the Center for Children and Families at the Education Development Center in the USA since 1997 (Smith, Brady, & Anastasopoulos, 2012). The initial version of the tool was published in 2002 (Smith, Dickson, Sangeorge, & Anastasopoulos, 2002) then some revisions were made based on the data collected from six different projects from 2002 to 2007. The second version of the tool was published in 2008 in which the literacy environment checklist and literacy activities rating scale were combined into the observation structure. Additionally, this second version was more user friendly in applying and scoring the tool (Smith, Brady, & Anastasopoulos, 2012).

The tool consists of 19 items with five main sections: classroom structure, curriculum, the language environment, books and book reading, and print and early writing. Each item was prepared to represent essential and observable features of language and literacy in preschool settings. The five main sections were grouped into two main subscales: General Classroom Environment subscale and Language and Literacy subscale (Smith, Brady, & Anastasopoulos, 2012). More detailed information of the five sections, number of items and subscales are given in Table 3.11.

Table 3.11

Sections, Number of Items and Subscales of ELLCO-Pre-K

ELLCO-Pre-K sections	Number of items	Subscales	Number of items
1. Classroom Structure	4	*General Classroom Environment Subscale*	7
2. Curriculum	3		
3. The language environment	4	*Language and Literacy Subscale*	12
4. Books and Book Reading	5		
5. Print and Early Writing	3		
Total	19		19

The ELLCO-Pre-K items are rated on a 5-point scale (exemplary to deficient). Each item has descriptive anchor statement to present scope of the item from 5 to 1. In addition, each anchor statement has bulleted explanatory indicators to present users with concrete and observable exemplars to easily differentiate rating points. Furthermore, the tool has an evidence section for each item to focus and take observational notes for content of each item. The evidence data is used to

assign points for each item. Furthermore, an interview with the teacher can be used as a source of support for the observed data. One or two general questions are also provided related to each of the five sections of the tool.

Smith, Brady and Anastasopoulos (2012) reported Cronbach's alpha scores of .86 for the General Classroom Environment Subscale and .92 for the Language and Literacy Subscale. The tool average interrater reliability reported as 74%. Table 3.12 provides detailed information about the internal consistency of the ELLCO-Pre-K tool.

Table 3.12.

Internal Consistency Scores of the ELLCO-Pre-K tool

	ELLCO-Pre-K Original	The Present Study
	Cronbach's Alphas	
Classroom structure	.78	.83
Curriculum	.72	.71
General Classroom Environment Subscale	.86	.88
The language environment	.78	.81
Books and Book Reading	.87	.85
Print and Early Writing	.89	.81
Language and Literacy Subscale	.92	.93

Smith, Brady and Anastasopoulos (2012) suggested spending at least 3.5 hours on the observations to obtain sufficient evidence for scoring the items. They pointed out that that it is important not only to observe book reading, specific literacy activities and free time but also other activities such as mealtimes, greetings and parting to ensure the capture of evidence of teacher-child interactions and conversations in diverse settings. This allows for a whole and accurate picture of the classroom language and the literacy context to be formed.

In order to gain experience in the observation process, the item contents and scoring pilot observation were undertaken in one preschool classroom with a second observer. The second observer was a preschool teacher with five years teaching experience and a graduate student attending an early childhood education program. The joint observation took about 8 hours in one week. The teacher interview conducted by the researcher and the second observer as a supplementary source. Each researcher assigned a score based on their own observation notes and cross checked the teacher interview notes with the other researcher. The interrater agreement of the pilot observation was found to be 89%.

In the present study, the researcher spent at least a month in per school and mostly from 09.00 am to 5.00 pm. During a preschool year, the researcher observed 20 classrooms. The researcher approximately 4.5 hours spent for per classroom observation time. The researcher observed four literacy related activities (story book reading, phonological awareness, print awareness and talking-telling-conversation) and three other activities (science, math, and play) for each classroom. Besides activity times, greeting, departing, free play, outdoor play, project time etc. have a chance to make observations. In addition, the researcher had a meal with different classrooms for per meal time (breakfast-lunch-snack time). In the wake of long-term observation process and field notes based on evidence notes section and supplementary teacher interview source the toolkit scored for each classroom.

In the study, videotaping was a problem since most of the participating schools did not give permission and in those schools that allowed the videoing it was difficult to record activities such as meal times, greetings and other settings of the classroom environment. Furthermore, pre-arranging additional observation times for the second researcher within the duration of the study was also difficult. Therefore, five of the classroom data from each preschool (25% of observation data) were also rated with the second-rater. The detailed photos of the five classrooms also provided to the second rater for items related to classroom design,

furniture, and book center. The interrater agreement was calculated 85%. Stemler (2004) advocated that at least 75% of absolute agreement level is sufficient for studies.

In the present study, the Cronbach's alphas were .91 for the total tool, .88 for the General Classroom Environment subscale, and .93 for the Language and Literacy subscale. Table 3.12 presents detailed information concerning the internal consistency for the data set of the current study.

3.4 Data Collection Procedures

The data were collected during the 2014-2015 fall and spring term in private preschools in Ankara. After the official permission was received from the university's Human Subjects Ethics Committee and the Ministry of National Education, the researcher contacted the private schools from the districts of Çankaya, Gölbaşı & Yenimahalle. Five schools agreed to join the study. Parent consent forms were sent to parents through the classroom teachers and the study was conducted with children whose parents give permission to participate in the research. The demographic information form and HLEQ were sent to the participating parents. The parents completed the forms at home and envelope was provided for to return the forms in sealed envelope. Detailed information and explanations were added the forms and the parents were given the researcher's contact information. Confidentiality issue was informed and the parents were assured that no one but the researcher could access and analyze the data and the names of the participating children and parent would be removed from the forms.
.

The following instruments were individually administered to each child by the researcher; Phonological Awareness Scale (PASECP), Vocabulary Scale (TIFALDI), Concepts about Prints, and Letter-naming task. The instruments were

applied twice in both the fall and spring semesters of the preschool year with a three month interval. The duration of the data collection process was about eight months from October 2014 to June 2015. Since preschoolers' have a short attention span instruments were administered in three separate 15-25 minute sections a) vocabulary tests, b) phonological awareness, and c) concepts about print. In some administrations, depending on the individual child attention span a short break was given to help focus the child's attention and motivation. The researcher administered the instruments to children outside their classroom in separate rooms that had common characteristics of being away from the classroom traffic and noise and having a table and two chairs, both child sized.

The ELLCO-Pre-K tool observations were conducted throughout the fall and spring terms. The researcher spent more than a month per school nearly full time and the children's data collection based on the daily classroom schedule. On completion of the data collection process, the ELLCO-Pre-K tool was rated based on the evidence notes and teacher interview data.

3.5. Data Analysis

In the present study, data were investigated through descriptive statistical analysis and inferential statistical analysis methods. In addition, preliminary analyses were conducted to examine normality, outliers, missing values, skewness, and kurtosis values of the variables. Descriptive statistical analyses were used to examine frequencies, range, mean, standard deviation of the variables and to present general picture of the participants' demographic background and both home and school literacy environment.

Four separate Multiple Regression Analysis (MRA) were conducted to examine the contribution of home literacy environment and mother educational level on preschoolers' on fall term early literacy skills: receptive vocabulary,

expressive-vocabulary, phonological awareness, and concepts about print. SPSS 22. was used to performed descriptive statistical analyses and MRA.

Multilevel Linear Modelling (MLM) technique was conducted to explain how the classroom literacy environment (Level-2 variable) and child-level variables (Level-1 variables) contribute children's early literacy gains because the data nature showed a nested structure. MLM is a sophisticated version of ordinary least squares (OLS) regression that is performed to analyze variance in dependent variable (outcome) when independent variables (predictors) are varying different levels (Woltman, Feldstain, MacKay, & Rocchi, 2012). One of the OLS regression analyses is that each individual has a unique datum/data unrelated to other individuals' data in the sample (O'Dwyer & Parker, 2014). Children nested in classrooms and children in the same classroom/school might be more similar than children in different classrooms/schools. In addition, children's literacy environment score is the same for children in the same classroom. Since classroom literacy environment construct is used as index of the overall classroom literacy environment quality. The nested structure of the data is a threat to independence of observations (Snijders & Bosker, 2012). Hox (2010) stated that individual scores are analyzed without considering the nested structure of data produce the inflation of Type-1 error rate due to too many degrees of freedom which are not really independent (Tabachnick & Fidell, 2007). The dependence of observation causes to estimate too low standard errors and pose deceitful significant results (Hox, 2010). Besides, independence of error is not often met each level analyses and the assumption violated for nested data structure. MLM analysis is not required the assumption of the independence of errors. In order to avoid biased estimates of the standard errors related to regression coefficients, MLM technique used to analyze the nested data of the study. Four sets of models were built for per early literacy outcome: receptive vocabulary, expressive-vocabulary, phonological awareness, and concepts about print. STATA 14. data analysis and statistical software was used to conduct multilevel linear modelling

analyzes. The analyses were performed by using "xtmixed- multilevel mixed-effects linear model" command (Rabe-Hesketh & Skrondal, 2008).

3.6 Variables of the Study

The study variables can be categorized into Level-1 and Level-2 variables. Children's early literacy skills are outcome variables. Home literacy environment, classroom literacy environment, the children's fall term early literacy scores, a child age in month and mother's educational level are predictors of the outcome variables. The names, types, description and abbreviation of the variables are presented in Table 3.13.

3.7. Internal Validity of the Study

Fraenkel and Wallen (2009) pointed out that observed relationship or difference may pertain to other factors in unintentional ways. These unintentional factors can reduce the internal validity of the study. Therefore, it is important to consider the possible threats then minimize and monitor them to diminish the probability of obtaining misleading results. This section describes the possible internal validity threats to the study and the ways of reducing these threats.

The characteristics of the subjects can be seen as a potential threat related to the internal validity of the present study. The participating children were selected from private preschools by a convenience sampling method. To reduce this threat the characteristics of the participating children and their family background are presented in detail for the reader to interpret results in this context. In addition, the child's age and mother's educational level can be related to the child's early literacy skills thus, these variables were used as predictor variable.

Table 3.13

The Description of the Study Variables

Name	*Description*	*Type*
Level-1 Variables		
VOC_REC2	Children's Turkish Expressive Language Test (TIFALDI) scores for spring term	Outcome Continuous
VOC_EXP2	Children's Turkish Receptive Language Test (TIFALDI) scores for spring term	Outcome Continuous
PA-2	Children's Phonological Awareness Scale of Early Childhood Period (PASECP) scores for spring term	Outcome Continuous
CAP_2	Children's Control List for the Evaluation of the Print Awareness of Preschool Children scores for spring term	Outcome Continuous
VOC_REC1	Children's Turkish Expressive Language Test (TIFALDI) scores for fall term	Predictor-MLE Outcome-MRA Continuous
VOC_EXP1	Children's Turkish Receptive Language Test (TIFALDI) scores for fall term	Predictor-MLE Outcome-MRA Continuous
PA-1	Children's Phonological Awareness Scale of Early Childhood Period (PASECP) scores for fall term	Predictor-MLE Outcome-MRA Continuous
CAP_1	Children's Control List for the Evaluation of the Print Awareness of Preschool Children scores for fall term	Predictor-MLE Outcome-MRA Continuous
HLE	Parents' responded the Home Literacy Environment Questionnaire scores	Predictor Continuous
C_AGE	Children's age in month	Predictor Continuous
DUMMY_ME	Children's mother educational level Dummy variable	Predictor Dummy Coded
Level-2 Variable		
CLE	Classroom's Early Language and Literacy Classroom Observation (ELLCO-Pre-K) scores	Predictor Continuous

Mortality is one of the potential threats to longitudinal studies. Participants can leave the study for different reasons and this can reduce the numerical validity of the study. Fortunately, in the present study only three children, due to serious health problems, were unable to participate the second phase of the data collection. In order to minimize the mortality threat, the researcher on multiple occasions checked that the participating children would be available at school and to determine whether children would be absent.

Location can also be considered a possible internal threat to the present study. The data collection environment can affect the level of the children's attention on the instruments. To reduce this possible threat, the data were collected in a similar standardized environment containing a child-size table and two child-size chairs. The areas were separate from the classroom and away from the classroom traffic and noise. The researcher sat on the child-size chair to talk with the child at their eye level.

The characteristics of the data collector such as, language patterns, gender, experience, communications skills and knowledge of the instruments might affect the data collection process when administering the instruments. To reduce this threat, the instruments were administered to all the children by a single researcher who provided the same instruction rubric to each child in the same way. Furthermore, the single researcher receiving adequate training in the use of the instruments.

Since the instruments were applied twice in order to eliminate the testing effect for norm based instruments which do have not equivalent forms (e.g., A and B) small changes were made such as randomizing the phonological awareness scale item orders for the second administration inside each sub-scale. Furthermore, in the administration of the instruments the researcher did not name any vocabulary test picture, did not answer questions related to the pictures did

not give feedback to children's responses. The researcher aimed to prevent children from learning from their mistakes. Two different but equivalent books were used for testing the concepts about print for each phase of the data collection. Furthermore, the order of the letters was randomized for each administration. In addition, the data collection interval was about three months, which is an interval that is considered to be a sufficiently long period for preliterate children not to be able to remember the items in the instruments.

Lastly, maturation can be considered threat for the present study. Time factor may be related to children's early literacy skills development. Fraenkel and Wallen (2009) stated that maturation is a serious threat only pre-post group intervention research or research that time span of long years. The present study was neither pre-post group intervention research or had long span time. None the less, to eliminate the threat, children age in month was used a predictor variable.

3.8. External Validity of the Study

External validity is related to the generalizability of the research findings from a sample to a larger population (Fraenkel & Wallen, 2009). The study participants were selected from five private preschools in three different districts of Ankara by a convenience sampling method. The characteristics of the participants and the family backgrounds are detailed to consider in interpreting and extending the results of the study to allow a generalization in different settings and samples.

3.9. Assumptions and Limitations of the Study

The present study has some limitations and made assumptions. The first limitation of the study is related to sampling methods and participants'

characteristics. The participants were selected from five private schools in three districts of Ankara using a convenience sampling method.

The second limitation is children's home literacy environment was assessed through a self-rated questionnaire completed by a parent. Therefore, it is assumed that the parent honestly responded to the questionnaire in relation to their home literacy context.

The third limitation is that the present study is a non-experimental longitudinal design. Although, the nature of longitudinal studies is appropriate to constitute a time order to present ideas related to causality, but the nature of non-experimental research has limitations in terms of establishing cause-and-effect relationships (Johnson, 2001).

CHAPTER 4

RESULTS

This chapter contains the results of the present study in relation to the research questions. First, preliminary analysis and descriptive information of the data set are given. Second, the assumption checking procedures are explained for each multiple regression and the multilevel linear modeling analysis. Third, the result of the multiple regression analyses and a series of tested multilevel linear models are presented.

4.1 Preliminary Analysis

Prior to conducting the inferential statistical analysis, the data were screened regarding missing values. There were three missing values in the second wave child-level data. The percentage of missing values was 1.78 but did not exceed 5 for all the variables (Tabachnick & Fidell, 2007). The missing values in child-level data were excluded from the data set for multilevel linear modeling analysis.

After the deletion of the missing values, the univariate outliers were checked by examining the histogram, boxplots, and trimmed means. Tabachnick and Fidell (2007) suggested using standardized scores to search for potential outliers for the univariate continuous variables. They stated that cases which have standardized score above 3.29 ($p < .001$, two tailed) are potential outliers. Accordingly, using these procedures, one outlier was detected in the phonological awareness scores and two outliers were detected in both the receptive-vocabulary and expressive- vocabulary scores. These cases were removed from the data set.

4.2 Descriptive Statistics

Descriptive statistical techniques were used to provide information about some of the main characteristics of the data set. Table 4.1 provides information about minimum and maximum scores, means, standard deviations, skewness and kurtosis values of the variables in the study. Mother education level variable only used as a dummy coded (*M* = .69, *SD*= .46, 1: graduated at least university, 0: graduated high school or college).

Concerning the distributions of the data set, it can be seen in Table 4.1 that the Skewness and Kurtosis values do not exceed the -1 to + 1 values. These findings suggest that the variables are distributed normally (George & Mallery, 2002). In addition , the shape of the distributions was checked by examining histogram of each variable.

4.2.1 Descriptive Statistics of Home Literacy Context of the Preschoolers

RQ1: What are the descriptive features of Turkish preschoolers home and classroom literacy environment?

Before presenting the research questions related to home and classroom literacy environments contribution to early literacy skills, first, the preschoolers' home literacy contexts regarding reading habits and books numbers are explained. Then detailed information of the home and classroom literacy environment scales are presented.

Table 4.1

Descriptive Statistics for the Data Set

Child Variables (Level 1)	*N*	*Min*	*Max*	*M*	*SD*	*Skewness*	*Kurtosis*
Child's age (mths)	168	60	72	66.44	3.87	.73	.94
Home Literacy Environment (HLE)	168	125	185	155.31	14.64	-.22	-.40
Wave-1 Phonological Awareness/ (PA1)	167	29	77	49.72	13.02	.01	-.31
Wave-2 Phonological Awareness (PA2)	164	33	78	58.97	11.53	-.02	-.65
Wave-1 Concepts about Print (CAP1)	168	4	16	9.80	2.71	.28	-.24
Wave-2 Concepts about Print (CAP2)	165	5	17	12.10	2.93	.10	-.80
Wave-1 Vocabulary-Receptive (Voc-rec1)	166	67	94	82.40	6.20	-.54	-.14
Wave-2 Vocabulary-Receptive (Voc-rec2)	163	78	98	88.74	4.36	-.20	-.11
Wave-1 Vocabulary-Expressive (Voc-exp1	166	45	76	61.04	7.03	-.33	-.45
Wave-2 Vocabulary-Expressive (Voc-exp2)	163	48	79	66.95	6.12	-.41	.25
Classroom Variable (Level-2)							
Classroom Literacy Environment (CLE)	20	50	86	70.05	9.21	-.71	.99

4.2.1.1. Preschoolers Shared and Individual Reading Experiences at Home

According to the parents' responses, 30.4% of the preschoolers spent three to four hours a week in shared reading experiences. While, 17.3% of the preschoolers spent daily one or more hours in shared reading activities, however, 2.4% of the preschoolers did not have any shared reading experiences at home.

Regarding the preschoolers spending time with a book by themselves, the frequency table shows that 45.8% of the preschoolers spent five to six hours each week engaged in individual reading experiences, 12.5% of the preschoolers spent one or more hours with books. On the other hand, 3.6% of the preschoolers did not spend any time by themselves with a book. The detailed information is presented in Table 4.2.

Table 4.2

The frequency of the Preschoolers Spending Time in Shared Reading Experiences

	f	*%*
The frequency of the parents participating in shared reading activities with preschoolers		
Never	4	2.4
One to two hours a week	47	28.
Three to four hours a week	51	30.4
Five to six hours a week	37	22.
One or more hours per day	29	17.3
Total	168	100
The frequency of the preschoolers spending time with a book (e.g. looking at the book, pretending to read, etc.) by themselves.	6	3.6
Never	13	7.7
One to two hours a week	51	30.4
Three to four hours a week	77	45.8
Five to six hours a week	21	12.5
One or more hours per day	168	100
Total		

4.2.1.2. Parents Who Mostly Read to Their Preschool children

Parents responded that mostly mothers (67.9%) read books to their child. Among parents; 18 (10.7%) participated in reading activities together with their child. However, 2.4% of the preschoolers did not experience shared reading activities with anyone. As indicated in Table 4.3, similarly 2.4 of the preschoolers participated in reading activities with others.

Table 4.3

The Person Who Frequently Read Books to the Child

	f	*%*
The frequency of the parents participating in shared reading activities with preschoolers		
No one	4	2.4
Mother	114	67.9
Father	28	16.9
Mother and father together	18	10.7
Others (grandparents, childminder, sister)	4	2.4
Total	168	168

4.2.1.3. Parents Reading Frequency at Home

Concerning the parents' weekly time of reading, 35.7 of the mothers and 39.3% of the fathers spent daily one or more than an hour for reading. However, 2.4% of the mothers and 7.7% of the fathers did not have reading habits. Detailed information is presented in Table 4.4

Table 4.4

Parents' Weekly Time of Reading

	f	*%*
The frequency of mothers spending time with books		
Never	4	2.4
One to two hours a week	32	19.
Three to four hours a week	37	22.
Five to six hours a week	35	20.8
One or more hours per day	60	35.7
Total	168	100
The frequency of fathers spending time with books		
Never	13	7.7
One to two hours a week	33	19.6
Three to four hours a week	31	18.5
Five to six hours a week	25	14.9
One or more hours per day	66	39.3
Total	168	100

4.2.1.3. Number of Books at Home

Finally, parents were asked about the number of books at home both those specifically for children and other books. Of the parents 30.4% had more than 201 books and 41.1 % had between 26 and 100 books in their homes. However, 6% of the parents had less than 11 books. The total number of books at home ranged from 0 to 5000 with a mean of 267.

As indicated in Table 4.5, for the majority of the preschoolers (66.7%) there were between 26 and 50 children's books at homes and 14.9% had 11 to 25 books. Only 4.2% of the preschoolers had more than hundred books which was the same percentage as the preschoolers who had less than eleven books. The total number of children's books ranged from 0 to 500 with a mean of 74. Further information is presented in Table 4.5.

Table 4.5

The Numbers of Books at Home

	f	*%*
Number of books at home (apart from children's books)	10	6
0-10*	14	8.3
11-25	69	41.1
26-100	24	14.3
101-200	51	30.4
201+	168	100
Total		
Number of children's books at home		
0-10*	7	4.2
11-25	25	14.9
26-50	112	66.7
51-100	17	10.1
111+	7	4.2
Total	168	100

**Progress in International Reading Literacy Study's (PIRLS, 2001) number of books range used in this study*

4.2.2 Descriptive Information of Home Literacy Environment Questionnaire (HLEQ)

The descriptive information about the factors in HLEQ instrument is presented in Table 4.6. The five factors have different item numbers, the item average score are also provided to compare factors easily.

As Table 4.6 shows that the first factor; *Stimulation to use language, explanation* had the highest item average (*M*=5.22). The total items for the first factor ranged from 39 to 66 with a mean of 57.48. However, the second factor; *Reading books to the child, visiting a library and puppet theatre* had the lowest item average (*M*=4.21). The total items for the second factor varied from 18 to 46 with a mean of 33.71.

Table 4.6

Descriptive Information Concerning Home Literacy Environment Questionnaire

Factor Name	*Number of items*	*Min*	*Max*	*Factor Average*	**Item Average*
1. Stimulation to use language explanation	11	39	66	57.48	5.22
2. Reading books to the child, visiting a library and puppet theatre	8	18	46	33.71	4.21
3. Joint activities and conversation	6	16	36	26.97	4.49
4. Interactive reading	3	8	18	14.82	4.94
5. Zone-of-proximal-development stimulation	4	8	24	17.94	4.48
Total	32	125	185	155.31	4.85

***** *6-point Likert*

The, total score for the HLEQ varied between 125 to 185 with a mean of 155.31. The item average for all factors was above the midpoint; ranging from 4.21 to 5.22 with a mean of 4.85. Table 4.6 provides detailed information regarding the scores of HLEQ factors.

4.2.3 Descriptive Information of Early Language and Literacy Classroom Observation (ELLCO-Pre-K)

Table 4.7 presents the ELLCO-PRE-K scores regarding the two main dimensions which are; *General Classroom Environment* consisting of classroom structure and curriculum sections *and Language and Literacy* comprising the language environment, books and book reading, and print and early writing.

The total scores of the *General Classroom Environment Dimension* ranged from 20 to 32 with a mean of 26.55. The item average of the dimension is 3.79. When examining the classroom structure and curriculum sections item average, the classroom structure item average (*M*=3.81) was relatively higher than the curriculum item average (*M*=3.76).

Table 4.7

The Descriptive Information of ELLCO-Pre-K

Dimensions of the ELLCO-Pre-K	*Number of items*	*Min*	*Max*	*Mean*	**Item Average*
1) Classroom Structure	4	10	19	15.25	3.81
2) Curriculum	3	10	13	11.30	3.76
General Classroom Environment Dimension I	*7*	*20*	*32*	*26.55*	*3.79*
3) Language Environment	4	11	19	15.90	3.97
4) Books and Book Reading	5	12	23	17.30	3.46
5) Print and Early Writing	3	7	12	10.30	3.43
Language and Literacy Dimension II	*12*	*30*	*54*	*43.50*	*3.62*
Total	*19*	*50*	*86*	*70.05*	*3.68*

***5-point rating scale*

As Table 4.7 reveals the total scores for the *Language and Literacy Dimension* range from 30 to 54 with a mean of 43.50. The language environment section had the highest item average (3.97) whereas print and early writing section had the lowest item average (3.43) overall in the ELLCO-Pre-K sections. Furthermore, the mean scores of all sections and dimensions were above the 2.5 midpoint. The total score for the ELLCO-Pre-K ranged between 50 to 86 with a mean 70.05.

4.3 Results of the Multiple Regression Analyses

RQ2: Is there significant predictive relationship between the preschooler's fall term early literacy skills and their mothers' education level, the children's age and home literacy environments?

The first wave of the data set was analyzed by conducting multiple regression analyses to examine the predictive relationships between the children's fall term early literacy skills and their mothers' education, the children's age and home literacy environments. Multiple regression analysis facilitates the examination of the predictive relationship between one dependent variable and several independent variables (Tabachnick & Fidell, 2007). Therefore, four separate multiple regression analyses conducted for each of the early literacy skills; receptive-vocabulary, expressive vocabulary, phonological awareness, and concepts about print. The relative contribution of each predictors concerning the prediction of the early literacy skills are reported.

Firstly, the bivariate correlations between the variables are displayed in Table 4.8. Secondly, the assumptions of the analyses are reported for multiple regression analyses. Thirdly, the results of the four sets of multiple regression analyses are presented.

As the bivariate correlation matrix indicates, the study variables were significantly and positively correlated with each other. The Home Literacy Environment (HLE) was strongly correlated (r=.51 to r=.57) with all of the early literacy skills and the mother's education was strongly correlated with the receptive vocabulary (r=.53) and expressive vocabulary (r=.50). However, there were minor relationships among children age (r= .10 to r=.20) and the other variables. Furthermore, there was a medium correlation (r=.39) between HLE and the mother's education.

Table 4.8

Bivariate Correlations between the Study Variables

Variable	1	2	3	4	5	6	7
1. Child's age	-						
2. Mother's education	.109*	-					
3. HLE	.208*	.395**	-				
4. PA_1	.185*	.492**	.579**	-			
5. CAP_1	.161*	.441**	.532**	.722**	-		
6. VOC_REC1	.201*	.536**	.551**	.420**	.334**	-	
7. VOC_EXP1	.183*	.503**	.518**	.453**	.470**	.547**	-

*All correlations are significant *p <.05, **p<.01*

4.3.1 Assumptions for the Multiple Regression Analyses

Prior to conducting four sets of multiple regression analysis, the assumptions of the analyses were checked for each data set. Tabachnick and Fidell (2007) suggested checking sample size, outliers, multicollinearity and singularity, normality, linearity, homoscedasticity and independence of residuals as major assumption before conducting the multiple regression analysis.

4.3.1.1. Sample Size

There are different formulations and suggested ways to calculate the required sample size and the ratio of cases to predictors for conducting a multiple regression analysis. Tabachnick and Fidell (2007) offered a simple formulation to decide on the required sample size for the analysis based on the number of predictors. This formulation is, $N \geq 50 + 8m$ (m refers to the number of predictors) to conduct multiple correlation. In the present study, the number of participants was above this limit, therefore the assumption was met.

4.3.1.2 Multicollinearity and Singularity

These assumptions are related to the relationship between the predictor variables. Tabachnick and Fidell (2007) indicated that multicollinearity occurs when there is a high correlation (r=.7 and above) between the predictor variables. Singularity exists when one predictor variable comprises a combination of the other predictor variables. Both these conditions create statistical problems.

As the bivariate correlation in Table 4.8 shows, the predictor variables were not highly correlated with each other (r=.10 to r=.39). Besides, none of the predictor variables was a combination of the other predictor variables.

Furthermore, the collinearity diagnostics part of the SPSS outputs was examined for the Tolerance and Variance inflation factors (VIF) for multicollinearity assumption for four separate multiple regression analyses. The tolerance values were higher than .10 and the VIF values were less than 10. Therefore, in the present study the multicollinearity and singularity assumptions were not violated.

In addition, Pallant (2007) pointed out that relationships between dependent variable and predictor variables should be researched. Pallant (2007) suggested that the predictor for the multiple regression analysis should be at r=.30. The child age variable had a low correlation (r= .10 to r=.20) with early literacy skills. The preliminary multiple regression analysis showed that the child's age is not a significant predictor for all four of the multiple regression analyses. Therefore, the child's age variable is removed from the multiple regression equation.

4.3.1.3. Outliers

Outliers are sensitive problems for both the dependent and predictor variables in multiple regression analysis (Tabachnick & Fidell, 2007). In the current study the univariate outliers were checked in the data screening process furthermore, the multivariate outliers were explored by inspecting Mahalanobis and Cook's distance using the residuals statistics tables. According to these tables, none of the Mahalanobis distance values exceeded the critical value (13.82) for using two predictor variables. Furthermore, the maximum value for all Cook's distances was less than 1. Therefore, the outlier assumption was not violated in the present study.

4.3.1.4. Normality, Linearity, Homoscedasticity and Independence of the Residuals

These assumptions were monitored using the residuals scatterplots. According to the scatterplots, the residuals were distributed normally regarding the predicted early literacy scores (dependent variable). In addition, the distributions of the scores were presented in the preliminary analysis and the skewness and kurtosis values were reported.

In addition, the Normal P-P Plot was also checked for linearity assumptions and the Plot showed that points lie close to the line in reasonably linear way. Lastly, the scatterplots of the standardized residuals were checked for homoscedasticity. The scatterplots displayed that the residuals were distributed in rectangular shape and most of the scores were concentrated along the zero point. These results indicated that these assumptions were not violated in the present study.

4.3.2.1 The Contributions of HLE and Mother's Education Level on the Preschoolers' Fall Term Receptive Vocabulary Skills

RQ2.1: How well do the home literacy environment and mother's education level predict preschoolers' fall term receptive vocabulary skills?

Multiple regression analysis was conducted to examine how much variance in preschoolers' fall term receptive vocabulary scores can be explained by scores on home literacy environment (HLE) and mother's education level (DUMMY_ME) measures. As Table 4.9 indicates, a significant regression equation was found F (2, 163) = 69.00, p=.000). HLE and mother's education level significantly predict preschoolers' fall term receptive vocabulary scores. The multiple correlation *(R)* was .68 with R^2=.46 and the two predictor model significantly explained 46% of the variance in fall term receptive vocabulary scores.

Table 4.9

Predicting Preschoolers' Fall Term Receptive Vocabulary from HLE and Mother's Education Level

Predictor	*B*	*β*	*t*	*p*
Constant	33.983		7.470	.000
HLE	.258	.461	6.967	.000
DUMMY_ME	.181	.320	4.841	.000

Fit for model R^2 = .46, Adjusted R^2 = .46, F (2, 163) = 69.00, p=.000.

The multiple regression equation for the analyses is;

Voc-rec1= 33.98 + .25HLE + .18 DUMMY_ME

The results of the comparison of the contribution of each predictor variable showed that HLE made the largest unique contribution (β =.46) to explain the receptive vocabulary scores. While, DUMMY_ME had a slightly lower unique contribution (β =.32).

4.3.2.2 The Contributions of Home Literacy Environment (HLE) and Mother's Education Level on Preschoolers' Fall Term Expressive Vocabulary Scores.

RQ 2.2: How well do the home literacy environment and mother's education level predict preschoolers' fall term expressive vocabulary skills?

Multiple regression analysis was performed to explore the contributions of the home literacy environment (HLE) and mother's education level (DUMMY_ME) on preschoolers' fall term expressive vocabulary scores. The analysis result is given in Table 4.10. As the table indicates, a regression equation was significant F (2, 163) = 55.91, p=.000. HLE and mother's education level were significant predictors of preschoolers' fall term expressive vocabulary scores. The multiple correlation *(R)* was .63 with R^2 =.40 and the two predictors significantly explained 40% of the variance in fall term expressive vocabulary scores.

The multiple regression equation for the analyses is;

Voc-exp1= 26.05 + .23HLE + .17 DUMMY_ME

Table 4.10

Predicting Preschoolers' Fall Term Expressive Vocabulary from HLE and Mother's Education Level

Predictor	*B*	*β*	*t*	*p*
Constant	26.053		7.585	.000
HLE	.237	.421	6.169	.000
DUMMY_ME	.173	.317	4.650	.000

Fit for model R^2 = .40, Adjusted R^2 = .39, F (2, 163) = 55.91, p=.000.

The contribution of each predictor variable was examined by comparing beta values. While HLE had the largest unique contribution (β =.42) to explain receptive vocabulary scores, DUMMY_ME had a slightly lower unique contribution (β =.31).

4.3.2. 3 The Contributions of Home Literacy Environment (HLE) and Mother's Education Level on Preschoolers' Fall Term Phonological Awareness Scores.

RQ 2.3: How well do the home literacy environment and mother's education level predict preschoolers' fall term phonological awareness skills?

Multiple regression analysis was used to test whether home literacy environment and mother's education level significantly predict preschoolers' scores of fall phonological awareness. The results of the regression showed that the two predictor model significantly explained 36% of the variance (F (2, 164) = 47.64, p=.000). The multiple correlation *(R)* was .60 with R^2 =.36. The analysis result is presented in Table 4.11.

Table 4.11

Predicting Preschoolers' Fall Term Phonological Awareness Score from HLE and Mother's Education Level

Predictor	*B*	*β*	*t*	*p*
Constant	26.441		7.299	.000
HLE	.866	.531	5.921	.000
DUMMY_ME	.317	.298	2.359	.019

Fit for model R^2 = .36, Adjusted R^2 = .36, F (2, 164) = 47.64, p=.000.

The multiple regression equation for the analyses is;
Voc-pa1= 26.44 + .86HLE + .31 DUMMY_ME

As the table indicates, the home literacy environment has a higher beta value (β =.53, p=.00) than the mother's education level (β =.30, p=.019). Home literacy environment was a stronger predictor of the regression equation.

4.3.2.4 The Contributions of Home Literacy Environment (HLE) and Mother's Education Level on Preschoolers' Fall Term Concepts about Print Skills

RQ 2.4: How well do the home literacy environment and mother's education level predict preschoolers' fall term concepts about print skills?

Multiple regression analysis was conducted to investigate how much variance in preschoolers' fall term concepts about print scores can be explained by scores on home literacy environment (HLE) and mother's education level (DUMMY_ME) measures. A significant regression equation was found F (2, 165) = 42.72, p=.000). Table 4.12 displays that HLE and DUMMY_ME significantly

predict preschoolers' fall term concepts about print scores. The multiple correlation *(R)* was .58 with R^2=.34 and the two predictor significantly explained 34% of the variance in fall term receptive vocabulary scores.

Table 4.12

Predicting Preschoolers' Fall Term Concepts about Print from HLE and Mother's Education Level

Predictor	*B*	*β*	*t*	*p*
Constant	2.283		4.174	.002
HLE	.329	.432	2.922	.000
DUMMY_ME	.153	.210	1.294	.001

Fit for model R^2 = .34, Adjusted R^2 = .34, F (2, 165) = 42.72, p=.000.

The multiple regression equation for the analyses is;

Voc-cap1= 2.28 + .32HLE + .15 DUMMY_ME

The contribution of each predictor variable was examined by comparing beta values. HLE had the largest unique contribution (β =.43) to explain receptive vocabulary scores. On the other hand, DUMMY_ME had a slightly lower unique contribution (β =.21).

4.4. Multilevel Modeling Analyses

Tabachnick and Fidell (2007) indicated that multilevel linear modeling (MLM) is an elaborated version of multiple regression analysis. Therefore, the assumptions of the multiple regression analysis are applied to each level data. The outliers, normality and missing data assumptions are addressed in the preliminary analyses part for both child-level and classroom-level data. In this section the normality of residuals and sample size assumptions of the MLM are presented.

A large sample size is suggested for multilevel liner modeling analyses. In the related literature, there are different recommendation for the sample size. Hox (2010) pointed out that sample size is an important issue for more accurate estimates, standard errors and power of the analyses results, he recommended 100 groups with 10 individuals. Kreft and De Leeuw (1998) stated that 50 group number is frequently used in research and 30 groups is considered acceptable for organizational and school research. Snijders and Bosker (1999) cited that at least 10 groups is required for multilevel modeling since at least this number of groups tend to show a small bias for level-1 variance components and level-2 regression parameters. Furthermore, Kreft and de Leeuw (1998) indicated that 20 groups is appropriate to determine intra-class correllation. Lastly, Eliason (1993) proposed that at least a sample size of 60 is needed for the estimation of five or less parameters.

In the present study there were 20 groups and a total of 165 children. There were 7 to 11 children in the class with the average is 8. Thus, the number of children in each class were close to each other. The study group size is relatively small but it is acceptable for multilevel model analysis.

The normality of the residuals is one of the important assumptions in multilevel modeling (Maas & Hox, 2004). The assumption was checked for both level-1 and level-2 residuals for full models. One way of checking the residuals distributions is using histograms . In this study the histograms given in Appendix B show that the distributions of both level-1 and level-2 residuals were approximately bell-shaped and normal. Therefore, the assumption was met for the present study.

4.4. The Results of the Multilevel Modeling Analyses (MLM)

The first set of MLM analyses were performed to test the research questions related to the preschoolers' spring term receptive vocabulary knowledge. The preschoolers' spring term receptive vocabulary scores were used as an outcome variable in these analyses. The research questions were tested in this section in the following order.

RQ3.1.1: Are there differences in the preschoolers' spring term receptive vocabulary knowledge among classrooms?
RQ3.2.1: Is the classroom literacy environment associated with the differences in the preschoolers' spring term receptive vocabulary knowledge?
RQ 3.3.1: Which child-level variables explain the differences in the preschoolers' spring term receptive vocabulary knowledge?
RQ3.4.1: Does classroom literacy environment influence the association of the child-level variables with the preschoolers' spring term receptive vocabulary knowledge?

4.4.1.1 The results of the One-Way Random Effects ANOVA Model

One-Way Random Effects ANOVA Model was performed to test the first research question (3.1.1). In this model, the child-level nor classroom-level predictors were not entered into regression equation, therefore the model named as null- empty-unconditional. This null model used to examine variation in the outcome scores within and between the classes. The Intra-Class Correlation Coefficient (ICC) is calculated to determine the variation in outcome scores within and between classes. The null model is also used as a baseline model for sophisticated models (with predictor variables). The ICC served as an indicator proportion of variance in outcome variable among classroom and required to be

analyzed by using multilevel modeling (Hayes, 2006: Garson, 2013; Woltman, Feldstain, MacKay, & Rocchi, 2012).

The regression equation was used to calculate the ICC of the preschoolers' spring term receptive vocabulary scores.

Level-1 (child level) model: $Yij = \beta 0j + eij$

Level-2 (classroom level) model: $\beta 0j = \gamma 00 + u0j$

j = 1……. N (classrooms)

i: 1…… nj (preschoolers within classrooms)

Yij is the outcome variable- preschoolers' spring term receptive vocabulary

$\beta 0j$ is the intercept of class j, it is the class mean on the preschoolers' spring term receptive vocabulary score.

eij is the child-level error/ random effects of child i in class j.

$\gamma 00$ is the grand mean/ overall average score of the preschoolers' spring term receptive vocabulary scores for all classrooms.

$u0j$ is the classroom level error / random effects of class j.

The results of the null model is presented in Table 4.13 showing that the grand mean of the preschoolers' spring term receptive vocabulary scores ($\gamma 00$) is statistically different from zero. The results showed that there are significant differences between classrooms.

Table 4.13.

The Results of the One-Way Random Effects ANOVA

Fixed Effects	*Estimate*	*SE*	*z-stat*	*p*	*95% Confidence. Interval*
Intercept (γ00)	88.74	1.363	212.23	0.000	87.017 - 89.442
Variance Components					
Intercept ($u0j$)	3.66	.369			
Residual (eij)	18.04	.177			
Model Fit Statistics					
Deviance	848.53				
AIC	854.53				
BIC	863.85				

LR test vs. linear model: chibar2 (01) = 170.01, Prob >= chibar2 = 0.0000

The results also revealed the variance of the child-level residual errors (σ2) = (eij) = is estimated as 18.041379 and at classroom-level variance residual errors ($u0j$) = τ00= is estimated as 3.661462. The ICC calculated from the following formulation (Raudenbush & Bryk, 2002):

ICC: $\rho = \tau00/ (\tau00 + \sigma2)$

ρ= 3.661462 / (3.661462+18.041379) = 0.168

The results of the calculation indicated that approximately 17% of the total variability in the preschoolers' spring term receptive vocabulary scores was attributed to differences between classrooms.

The model fit statistics were based on deviance: Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC) values. The values

indicate the model's goodness of fit and each of the values give log-likelihood statistics (Singer & Willett, 2003). However, there are no critical values that can evaluate the models' goodness of fit but the values help to compare the goodness of fit of the models. Smaller AIC, BIC and deviance indicates that the model fits better than others (Ruppert & Matteson, 2011; Singer & Willett, 2003). The deviance was 848.53 for the null model with the AIC= 854.53 and BIC=863.85.

Below the table, the likelihood ratio test is compared the model with the equivalent single model. Chibar 2(01) = 170.01, ($p<0.001$) suggested that there is significant difference between the simple OLS model and random effects should be retained in the model (Schofer, 2010; West, Welch, & Galecki, 2014).

4.4.1.2 The results of the Means as Outcomes Model

In order to explore the variances in the preschoolers' spring term receptive vocabulary scores in relation to the classroom-level (CLE) predictor, as given in the second research question (3.2.1) means as outcome model was utilized. The following regression equation was used to test the means as outcomes model:

Level-1 (child level) model: $Yij = \beta 0j + eij$
Level-2 (classroom level) model: $\beta 0j = \gamma 00 + \gamma 01$ (CLE) + $u0j$

In this models:
j = 1……. N (classrooms)
i: 1…… nj (preschoolers within classrooms)

Yij is the outcome variable- preschoolers' spring term receptive vocabulary

$\beta 0j$ is the intercept of class j, this is the class mean on the preschoolers' spring term receptive vocabulary score.

$\gamma 00$ is the grand mean, overall average score of the preschoolers' spring term receptive vocabulary variable for all classrooms.

$\gamma 01$ is the differentiating effect of the *classroom literacy environment (CLE)* on the classroom mean of the preschoolers' spring term receptive vocabulary score.

eij is the child-level error.

$u0j$ is the classroom level error.

The results of the means as outcome models revealed that *classroom literacy environment* (CLE) was significantly and positively associated with the preschoolers' spring term receptive vocabulary scores (γ = .119, SE = .024, p < .001). Table 4.14 displays fixed effects obtained from the means as outcome model.

Table 4.14

The results of the Means as Outcome Model

Fixed Effects	β	*SE*	*p*
Intercept	74.35	1.756	0.000
Classroom-level Predictor			
CLE	0.119	0.024	0.000
Model Fit Statistics			
Deviance	837.450		
AIC	845.450		
BIC	857.874		

LR test vs. linear model: chibar2 (01) = 160.03, Prob >= chibar2 = 0.0000

For the model random effects part, the results showed that the variance of the child level residual errors ($\sigma 2$) = (eij) = is estimated as 18.025061 (SE= .17) and at classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 1.382447 (SE=.64).

The residuals between classrooms $\tau 00$=1.082447 is smaller than the null model variance ($\tau 00$= 3.661462) due to the addition of the classroom level (CLE) variable. The following formulation used to calculate the proportion of the explained variance (R^2):

$$R^2 = \frac{\tau 00 \text{ (One} - \text{Way Random Effects } ANOVA) - \tau 00 \text{ (}Means\ as\ Outcome\text{)}}{\tau 00 \text{ (One} - \text{Way Random Effects } ANOVA)}$$

$R^{2\,=}$ (3.661462) – (1.082447) / (3.661462) = 0.704

The results revealed that 70 % of the true between classroom variance in the preschoolers' spring term receptive vocabulary score was accounted for by classroom literacy environment (CLE).

Concerning the model fit statistics, the deviance was 837.450 for the model with AIC= 845.450 and BIC=857.874. Lastly, the chibar 2(01) = 160.03, ($p<0.001$) suggests that there is significant difference between the simple OLS model and random effects should be retained in the model.

4.4.1.3 The Results of the Random Coefficient Model

The Random Coefficient Model was used to examine the third research question (3.3.1) concerning which of the child-level variables explain the variance in the preschoolers' spring term receptive vocabulary scores. The following regression equation was used to test the random coefficient model:

Level-1 (child level) model: $Yij = \beta 0j + \beta 1j$ (VOC_REC 1) $+ \beta 2j$ (HLE) $+ \beta 3j$ (DUMMY_ME) $+ eij$

Level-2 (classroom level) model: $\beta 0j = \gamma 00 + u0j$

In these models:

Yij is the outcome variable- preschoolers' spring term receptive vocabulary

$\beta 0j$ is the class mean on the preschoolers' spring term receptive vocabulary score.

$\beta 1j$ is the differentiating effect of *preschoolers' fall term receptive vocabulary (VOC_REC 1*) in classroom j.

$\beta 2j$ is the differentiating effect of *home literacy environment (HLE*) in classroom j.

$\beta 3j$ is the differentiating effect of *mother's education level (DUMMY_ME*) in classroom j.

$\gamma 00$ is the average of classroom means on the preschoolers' spring term receptive vocabulary scores across the population of the classrooms.

$u0j$ = the unique increment to the intercept associated with classroom j.

The three child-level predictors were entered into the model. The results are presented in Table 4.15. The random coefficient model showed that the fall term voc-rec1 was significantly and positively associated with the spring term VOC_REC2 (γ = .534, SE = .033, $p < .001$). The voc_rec1 slope coefficient indicates that a higher fall term VOC_REC1 score corresponded to the higher spring term VOC_REC2 score.

Table 4.15

The Results of the Random Coefficient Model

Fixed Effects	β	*SE*	*p*
Intercept	28.33	1.642	0.000
Child-level Predictors			
VOC_REC1	0.534	0.033	0.000
HLE	0.038	0.009	0.000
DUMMY_ME	0.891	0.322	0.006
Model Fit Statistics			
Deviance	608.898		
AIC	620.898		
BIC	639.534		

LR test vs. linear model: chibar2 (01) = 154.92 Prob >= chibar2 = 0.0000

The home literacy environment slope coefficients (γ = .038, SE = .009, p < .001) revealed that children having a higher home literacy environment score had better spring term VOC_REC2 than the other children. The Home Literacy Environment was significantly and positively associated with the spring term VOC_REC2.

Concerning mother's education level slope coefficients (γ = .891, SE = .322, p=.006) indicated that children of mothers who were university graduates have higher spring term VOC_REC2 scores. This means that there was a significant and positive association between mother's education and the spring term VOC_REC2 scores.

According to the part of the model concerning the random effects, the results showed that the variance of the child level residual errors (σ2) = (eij) = is

estimated as 12.360943 (SE= .46) and at classroom level variance residual errors ($u0j$) = τ00= is estimated as 1.987726 (SE=.22).

In order to calculate the proportion of the in-residuals variance for the spring term VOC_REC2, sigma square, which were obtained from null model and random coefficient models, then used in the following formulation:

$$R^2 = \frac{\sigma 2 \text{ (Random } ANOVA) - \sigma 2 \text{ (Random Coefficient)}}{\sigma 2 \text{ (Random } ANOVA)}$$

R^2 = (18.041379 - 12.360943) / (18.041379) = 0.314

According to the calculation, adding these child-level variables as predictors of the spring term receptive vocabulary decreased the residual variance by 31%.

Lastly, the model fit statistics showed that the deviance was 608.898 for the model with AIC= 620.898 and BIC=639.534. The chibar 2(01) = 154.92, ($p<0.001$) suggested that there is a significant difference between the simple OLS model and random effects should be retained in the model.

4.4.1.4 The results of the Intercepts and Slopes as Outcomes Model

Intercepts and Slopes as Outcomes Model was used to answer the fourth research question (3.4.1.) regarding whether the classroom-level variable predicts preschoolers' spring term receptive vocabulary (VOC_REC2) and influences the strength of the association between the child-level variables and VOC_REC2. This model allows for the investigation of the child-level and classroom-level variables in one regression equation. The child-level and classroom-level variables were both entered into the regression equation. The following

regression equation was used to test the intercepts and slopes as an outcomes model:

$$\textit{Spring term receptive vocabulary } ij = \gamma 00 + \gamma 10\ \textit{VOC\_REC1}_{ij} + \gamma\ 20\ \textit{HLE}_{ij} + \gamma\ 20\ \text{DUMMY-ME}_{ij} + \gamma 01\ \text{CLE}_{ij} + \text{uoj} + \text{eij}$$

According to the final model, both the classroom-level and child-level predictors were significantly and positively associated with the preschoolers' spring term VOC_REC2 scores. The results are presented in Table 4.16.

Similar to the results from the Random Coefficient Model, children who have higher fall term receptive vocabulary scores appeared to have higher spring term VOC-REC2 scores (γ = .534, SE= .032, p < .001). Besides, the results revealed that children whose mother graduated from university (γ = .773, SE = .322, p=.017) and came from a more enriched home literacy environment (γ = .036, SE = .009, p < .001) have higher spring VOC-REC2 scores.

Regarding the classroom-level variable, the classroom literacy environment together with child-level predictors was still positive and significantly related to the preschoolers' spring term VOC-REC2 score (γ = .054, SE = .017, p=.001). The results revealed that the coefficient of the classroom literacy environment was slightly lower than the means as an outcome model (γ = .119, SE = .024, p < .001) but the direction and significant relation are same as in the previous model.

For the part of the model concerning the random effects, the results showed that the variance of the child level residual errors ($\sigma 2$) = ($\mathrm{e}ij$) = is estimated as 12.454486 (SE= .08) and at classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 1.1642652 (SE=.16).

$$R^2 = \frac{\tau 00 \text{ (Random Coefficient)} - \tau 00 \text{ (Intercepts and slopes)}}{\tau 00 \text{ (Random Coefficient)}}$$

$R^2 =$ (1.987726 - 1.164265) / (1.987726) = .414

The results of the intercepts and slopes as outcomes model showed that 41% of the variance in the between classroom difference in the mean spring term receptive vocabulary was explained by including classroom-level predictor (CLE).

Table 4.16

The Results of the Intercepts and Slopes as Outcomes Model

Fixed Effects	*β*	*SE*	*p*
Intercept	25.30	1.927	0.000
Child-level Predictors			
VOC_REC1	0.534	0.033	0.000
HLE	0.036	0.009	0.000
DUMMY_ME	0.773	0.322	0.017
Classroom-level Predictor			
CLE	0.054	0.017	0.001
Model Fit Statistics			
Deviance	606.500		
AIC	620.500		
BIC	632.242		

LR test vs. linear model: chibar2 (01) = 148.05, Prob >= chibar2 = 0.0000

The model fit statistics showed that the deviance was 606.500 for the model with AIC= 620.500 and BIC= 632.242. The chibar 2(01) = 148.05, ($p<0.001$) suggested that there is significant difference between the simple OLS model and random effects should be retained in the model.

4.4.2. The results of the Expressive Vocabulary Multilevel Models

The second set of the Multilevel Model (MLM) analyses were performed to test the research questions related to the preschoolers' spring term expressive vocabulary knowledge. These vocabulary scores were used as an outcome variable in this analysis. In this section the research questions given below were tested in in the following order.

RQ 3.1.2: Are there differences in the preschoolers' spring term expressive vocabulary knowledge among classrooms?
RQ 3.2.2: Is the classroom literacy environment associated with the differences in the preschoolers' spring term expressive vocabulary knowledge?
RQ 3.3.2: Which child-level variables explain the differences in the preschoolers' spring term expressive vocabulary knowledge?
RQ 3.4.2: Does the classroom literacy environment influence the association of the child-level variables on the preschoolers' spring term expressive vocabulary knowledge?

4.4.2.1 The results of the One-Way Random Effects ANOVA Model

In order to examine the variation in the outcome scores within and between classes, the One-Way Random Effects ANOVA model was used and an Intra-Class Correlation Coefficient (ICC) was calculated. The following regression equation was used to answer the first research question (3.1.2):

Level-1 (child-level) model: $Yij = \beta 0j + eij$
Level-2 (classroom-level) model: $\beta 0j = \gamma 00 + u0j$

j = 1……. N (classrooms)

i: 1…… nj (preschoolers within classrooms)

Yij is the outcome variable for the preschoolers' spring term expressive vocabulary

$\beta 0j$ is the intercept of class j, it is the class mean for the preschoolers' spring term expressive vocabulary score.

eij is the child-level error/ random effects of child i in class j.

$\gamma 00$ is the grand mean/ overall average score of the preschoolers' spring term expressive vocabulary scores for all classrooms.

$u0j$ is the classroom level error / random effects of class j

Table 4.17 displays the results of the One-Way Random Effects ANOVA model. The grand mean of the preschoolers' spring term expressive vocabulary scores ($\gamma 00$) is statistically different from zero (SE= .59, $p < .001$). The results revealed that there are significant differences among classrooms.

The results show that the variance of the child level residual errors ($\sigma 2$) = (eij) = is estimated as 12.165883 and at classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 2.971582. The following formulation was used to calculate the ICC (Raudenbush & Bryk, 2002):

ICC: $\rho = \tau 00 / (\tau 00 + \sigma 2)$

$\rho =$ 2.971582 / (2.971582 +12.165883) = 0.196

Table 4.17

The results of the One-Way Random Effects ANOVA Model

Fixed Effects	*Estimate*	*SE*	*z-stat*	*p*	*95% Confidence Interval*
Intercept (γ00)	66.95	.592	112.43	0.000	65.43634 67.75837
Variance Components					
Intercept ($u0j$)	2.971582	.784			
Residual (eij)	12.165883	.367			
Model Fit Statistics					
Deviance	1088.742				
AIC	1094.742				
BIC	1104.078				

R test vs. linear model: chibar 2(01) = 135.02 Prob >= chibar2 = 0.0000

The calculation results revealed that about 20 % of the total variability in preschoolers' spring term expressive vocabulary scores was attributed differences between classrooms.

Regarding model fit statistics, the deviance was 1088.742 for the null model with AIC= 1094.742 and BIC =1104.078. Finally, the chibar 2(01) = 135.02, ($p<0.001$) indicated that there is significant difference between simple OLS model and random effects should be retain in the model.

4.4.2.2 The results of the Means as Outcomes Model

The Means as Outcome model was used to examine the explained variances in preschoolers' spring term expressive vocabulary scores related to the

classroom-level (CLE) predictor. The following regression equation was used to respond to the second research question (3.2.2):

Level-1 (child level) model: $Yij = \beta 0j + eij$

Level-2 (classroom level) model: $\beta 0j = \gamma 00 + \gamma 01$ (CLE) + $u0j$

In this model:
j = 1……. N (classrooms)

i: 1…… nj (preschoolers within classrooms)

Yij is the outcome variable- preschoolers' spring term expressive vocabulary

$\beta 0j$ is the intercept of class j, this is the class mean of the preschoolers' spring term expressive vocabulary score.

$\gamma 00$ is the grand mean, overall average score of the preschoolers' spring term expressive vocabulary variable for all classrooms.

$\gamma 01$ is the differentiating effect of *classroom literacy environment (CLE)* on the classroom mean of the preschoolers' spring term expressive vocabulary score.

eij is the child-level error.

$u0j$ is the classroom level error.

Table 4.18 presents the fixed effects obtained from the means as outcome model. The results revealed that *classroom literacy environment* (CLE) was

significantly and positively associated with the preschoolers' spring term expressive vocabulary scores (γ = .207, SE = .045, p < .001).

For the random effects part of the model, the results showed that the variance of the child level residual errors ($\sigma 2$) = (eij) = is estimated as 11.584474 (SE= .33) and at classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 1.235184 (SE=.68).

In order to examine the reduction of the residual variances between the null model and the model given is this section; R^2 was calculated using $\tau 00$ estimated from the two models. The residuals between classrooms $\tau 00$= 1.235184 is smaller than the null model variance ($\tau 00$= 2.971582) due of the inclusion of the CLE variable.

Table 4.18

The results of the Means as Outcome Model

Fixed Effects	β	*SE*	*p*
Intercept	51.620	1.33	0.000
Classroom-level Predictor			
CLE	.207	.045	0.000
Model Fit Statistics			
Deviance	1070.593		
AIC	1078.593		
BIC	1091.041		

LR test vs. linear model: chibar2(01) = 130.77 Prob >= chibar2 = 0.0000

$$R^2 = \frac{\tau 00 \text{ (One} - \text{Way Random Effects } ANOVA) - \tau 00 \text{ (Means as Outcome)}}{\tau 00 \text{ (One} - \text{Way Random Effects } ANOVA)}$$

$R^2 =$ (2.971582) – (1.235184) / (2.971582) = .584

According to the calculation, the CLE accounted for 58 % of the true between-classroom variance in the preschoolers' spring term expressive vocabulary score.

Table 4.18 shows that the deviance was 1070.593 for the model with AIC= 1078.593 and BIC= 1091.041. The chibar 2(01) = 130.77, ($p<0.001$) indicates that there is significant difference between the simple OLS model and random effects should be retained in the model.

4.4.2.3 The results of the Random Coefficient Model

To test the third research question (3.3.2.) the Random coefficient model was used. The third research question examined which of the child-level variables explained the variance in the preschoolers' spring term expressive vocabulary scores. The following regression equation was used for the model:

Level-1 (child level) model: $Yij = \beta 0j + \beta 1j$ (VOC_EXP 1) $+ \beta 2j$ (HLE) $+ \beta 3j$ (DUMMY_ME) +eij

Level-2 (classroom level) model: $\beta 0j = \gamma 00 + u0j$

In these models:
Yij is the outcome variable- preschoolers' spring term expressive vocabulary

$\beta 0j$ is the class mean on the preschoolers' spring term expressive vocabulary score.

$\beta 1j$ is the differentiating effect of *preschoolers' fall term expressive vocabulary (VOC_EXP 1*) in classroom j.

$\beta 2j$ is the differentiating effect of *home literacy environment (HLE*) in classroom j.

$\beta 3j$ is the differentiating effect of *mother's education level (DUMMY_ME*) in classroom j.

$\gamma 00$ is the average of classroom means on the preschoolers' spring term expressive vocabulary scores across the population of the classrooms

$u0j$ = the unique increment to the intercept associated with classroom j.

The results are displayed in Table 4.19. The random coefficient model revealed that fall term VOC_EXP1 was significantly and positively associated with spring term VOC_EXP2 (γ = .632, SE = .042, p < .001). The VOC_EXP1 slope coefficient revealed that a higher fall term score corresponded to a higher spring term VOC-EXP2 score.

Regarding the HLE slope coefficients (γ = .085, SE = .019, p < .001) showed that children having a higher HLE score had a better spring term VOC_EXP2 than the other children. The HLE was significantly and positively associated with the spring term VOC_EXP2.

Table 4.19 shows that the mother's education level slope coefficients (γ = 1.53, SE = .642, p=.017) was significantly and positively related to VOC.EXP_2. The results revealed that children's whose mother graduated university have higher spring term VOC.EXP_2 scores.

Table 4.19

The results of the Random Coefficient Model

Fixed Effects	β	*SE*	*p*
Intercept	22.948	1.81	0.000
Child-level Predictors			
VOC_EXP1	.632	.042	0.000
HLE	.085	.019	0.000
DUMMY_ME	1.53	.642	0.017
Model Fit Statistics			
Deviance	837.774		
AIC	849.774		
BIC	868.446		

LR test vs. linear model: chibar2 (01) =106.02, Prob >= chibar2 = 0.0000

According to the model random effects part, the results showed that the variance of the child level residual errors ($\sigma 2$) = (eij) = is estimated as 9.036094 (SE= .170) and at classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 2.559467 (SE=.367).

In order to calculate the proportion of the in-residuals variance for VOC_EXP2, sigma square obtained from the One-Way Random Effects ANOVA model and the Random Coefficient Model, were used in the following formulation:

$$R^2 = \frac{\sigma 2 \text{ (Random } ANOVA) - \sigma 2 \text{ (Random Coefficient)}}{\sigma 2 \text{ (Random } ANOVA)}$$

R^2 = (12.165883 - 9.036094) / (12.165883) = 0.257

The computed R^2 showed that adding these child-level variables as predictors of the spring term receptive vocabulary, the residual variance was decreased by 26%.

Regarding the model fit statistics, the results revealed that the deviance was 837.774 for the model with AIC= 849.774 and BIC=868.446. Finally, the chibar 2(01) = 106.02, ($p<0.001$) showed that there is significant difference between the simple OLS model and random effects should be included in the model.

4.4.2.4 The results of the Intercepts and Slopes as Outcomes Model

In order to answer the fourth research question (3.4.2) of whether classroom-level variable predicts the preschoolers' spring term expressive vocabulary (VOC_EXP2) and influences the strength of association between the child-level variables and (VOC_EXP2), intercepts and slopes as outcomes model was used. Child-level and classroom-level variables were both entered into the regression equation. The following regression equation was used to test the intercepts and slopes as outcomes model:

$$\textit{Spring term expressive vocabulary } yij = \gamma 00 + \gamma 10\ \textit{VOC\_EXP1}_{ij} + \gamma\ 20\ \textit{HLE}_{ij} + \gamma\ 20\ \text{DUMMY-ME}_{ij} + \gamma 01\ \text{CLE}_{j} + \text{uoj} + \text{eij}$$

The final model revealed that both the classroom-level and child-level predictors were significantly and positively related to the preschoolers' spring term expressive vocabulary scores. The results are presented in Table 4.20.

Similar to the Random Coefficient Models, the fall term expressive (γ = .628, SE = .041, $p < .001$) was significantly and positively related to the spring term scores. Besides, the results revealed that the children whose mother

graduated from university (γ = 1.37, SE = .642, p=.032) and who come from a more enriched home literacy environment (γ = .080, SE = .019, p < .001) have higher spring VOC_EXP2 scores.

Additionally, the classroom-level variable (CLE) was still positive and significantly related to the preschoolers' spring term VOC_EXP2 score (γ = .078, SE = .029, p=.018) together with the child-level predictors The results showed that the coefficient of the classroom literacy environment was slightly lower than the means as outcome model (γ = .207, SE = .045, p < .001) but the direction and significant relation are same as the previous model.

Table 4.20

The results of the Intercepts and Slopes as Outcomes Model

Fixed Effects	β	*SE*	*p*
Intercept	19.923	1.23	0.002
Child-level Predictors			
VOC_EXP1	.628	. 041	0.000
HLE	.080	.019	0.000
DUMMY_ME	1.37	.642	0.032
Classroom-level Predictor			
CLE	.078	.029	0.018
Model Fit Statistics			
Deviance	832.789		
AIC	846.789		
BIC	868.573		

LR test vs. linear model: chibar2(01) =96.87 Prob >= chibar2 = 0.0000

Regarding to the model random effects, the results revealed that the variance of the child level residual errors (σ2) = (eij) = was estimated as 9.170615

(SE= .15) and at classroom level variance residual errors ($u0j$) = τ00= was estimated as 1.365742 (SE=.32).

$$R^2 = \frac{\tau 00 \text{ (Random Coefficient)} - \tau 00 \text{ (Intercepts and slopes)}}{\tau 00 \text{ (Random Coefficient)}}$$

R^2 = (2.559467 - 1.365742) / (2.559467) = .466

The results of the intercepts and slopes as outcomes model indicated that approximately 47% of the variance in the between classroom difference in the mean spring term receptive vocabulary was explained by including the classroom-level predictor (CLE).

Finally, the results of the Model fit statistics showed that the deviance was 832.789 for the model with AIC= 846.789 and BIC= 868.573. The chibar 2(01) = 96.87, ($p<0.001$) suggested that there is significant difference between the simple OLS model and random effects should be retained in the model.

4.4.3. The results of the Phonological Awareness Multilevel Models

The third set of the Multilevel Model (MLM) analyses were conducted to test the research questions related to the preschoolers' spring term phonological awareness skills. The preschoolers' spring term phonological awareness scores were used as the outcome variable in these analyses. The following research questions were tested in this section respectively.

RQ 3.1.3: Are there differences in the preschoolers' spring term phonological awareness skills between classrooms?

RQ 3.2.3: Is the classroom literacy environment associated with the differences in the preschoolers' spring term phonological awareness skills?

RQ 3.3.3: Which child-level variables explain the differences in the preschoolers' spring term phonological awareness skills?

RQ3.4.3: Does classroom literacy environment influence the association of the child-level variables with the preschoolers' spring term phonological awareness skills?

4.4.3.1 The results of the One-Way Random Effects ANOVA Model

The One-Way Random Effects ANOVA model was used to examine the variation in outcome scores within and between classes. For this purpose, the ICC was calculated to determine the variation in outcome scores within and between classes. The following regression equation was used to answer the first research question (3.1.3):

Level-1 (child level) model: $Yij = \beta 0j + eij$

Level-2 (classroom level) model: $\beta 0j = \gamma 00 + u0j$

j = 1……. N (classrooms)

i: 1…… nj (preschoolers within classrooms)

Yij is the outcome variable- preschoolers' spring term phonological awareness

$\beta 0j$ is the intercept of class j this is the class mean on the preschoolers' spring term phonological awareness.

eij is the child-level error/ random effects of child i in class j.

$\gamma 00$ is the grand mean/ overall average score of the preschoolers' spring term phonological awareness scores for all classrooms.

$u0j$ is the classroom level error / random effects of class j

The results from the application of the One-Way Random Effects ANOVA model showed that the grand mean of the preschoolers' spring term phonological awareness scores ($\gamma 00$) is statistically different from zero (SE= .121, p < .001). The results revealed that there are significant differences between classrooms.

As Table 4.21 reveals the variance of the child level residual errors ($\sigma 2$) = (eij) = is estimated as 10.931410 and at classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 3.788953. In order to calculate intra class correlation, the following formula was used (Raudenbush & Bryk, 2002).

Table 4.21

The results of the One-Way Random Effects ANOVA

Fixed Effects	*Estimate*	*SE*	*z-stat*	*p*	*95% Conf. Interval*
Intercept ($\gamma 00$)	58.97	1.21	48.38	0.000	56.40315 - 61.1656
Variance Components					
Intercept($u0j$)	3.78	1.30			
Residual (eij)	10.93	.642			
Model Fit Statistics					
Deviance	1267.819				
AIC	1273.819				
BIC	1283.137				

LR test vs. linear model: chibar2 (01) = 114.81, Prob >= chibar2 = 0.000

ICC: $\rho = \tau 00 / (\tau 00 + \sigma 2)$

ρ= 3.788953 / (3.788953 + 10.931410) = 0.257

According to the ICC calculation, approximately 26 % of the total variability in preschoolers' spring term phonological awareness scores was attributed to differences between classrooms.

The model fit statistics showed that the deviance was 1267.819 for the null model with AIC= 1273.819 and BIC=1283.137. At the bottom of Table 4.21 the likelihood ratio test is compared the model with the equivalent single model. The chibar 2(01) = 170.01, ($p<0.001$) suggests that there is significant difference between the simple OLS model and random effects should be kept in the model (West, Welch, & Galecki, 2014).

4.4.3.2 The results of the Means as Outcomes Model

In order to examine the variances in preschoolers' spring term phonological awareness scores due to the classroom-level (CLE) predictor, the means as outcomes model was implemented. The following regression equation was used to answer the second research question (3.2.3):

Level-1 (child level) model: $Yij = \beta 0j + eij$

Level-2 (classroom level) model: $\beta 0j = \gamma 00 + \gamma 01$ (CLE) + $u0j$

In this model:

j = 1……. N (classrooms)

i: 1…… nj (preschoolers within classrooms)

Yij is the outcome variable- preschoolers' spring term phonological awareness

$\beta 0j$ is the intercept of class j, this is the class mean on the preschoolers' spring term phonological awareness score.
$\gamma 00$ is the grand mean, overall average score of the preschoolers' spring term phonological awareness variable for all classrooms.

$\gamma 01$ is the differentiating effect of *classroom literacy environment (CLE)* on the classroom mean of the preschoolers' spring term phonological awareness score.

eij is the child-level error.

$u0j$ is the classroom level error.

According to the fixed effects of the means as outcome model, the *classroom literacy environment* (CLE) was significantly and positively associated with the preschoolers' spring term phonological awareness scores (γ = .458, SE = .079, p < .001). The results are presented in Table 4.22.

Regarding the random effects, the results revealed that the variance of the child level residual errors ($\sigma 2$) = (eij) = is estimated as 10.542524 (SE= .58) and at classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 1.087513 (SE=.92). In order to examine the reduction of the residual variances between the null model and the means as outcome model, R^2 was calculated by using $\tau 00$ estimated from the two models.

Table 4.22

The results of the Means as Outcomes Model

Fixed Effects	β	*SE*	*p*
Intercept	38.38	1.70	0.000
Classroom-level Predictor			
CLE	.458	.079	0.000
Model Fit Statistics			
Deviance	1245.325		
AIC	1253.325		
BIC	1265.749		

LR test vs. linear model: chibar2 (01) = 97.02, Prob >= chibar2 = 0.0000

$$R^2 = \frac{\tau 00 \text{ (One} - \text{Way Random Effects } ANOVA) - \tau 00 \text{ (Means as Outcome)}}{\tau 00 \text{ (One} - \text{Way Random Effects } ANOVA)}$$

$R^2 =$ (3.788953) – (1.087513) / (3.788953) = .712

According to the R^2 calculation, 71 % of the true between-classroom variance in the preschoolers' spring term phonological awareness score was accounted for by the classroom literacy environment (CLE).

Concerning the model fit statistics, the deviance was 1245.325 for the model with AIC= 1253.325 and BIC= 1265.749. The chibar 2(01) = 97.02, ($p<0.001$) indicated that there is significant difference between the simple OLS model and random effects should be retained in the model.

4.4.3.3 The results of the Random Coefficient Model

The Random Coefficient Model was used to answer the third research question (3.3.3) regarding which of the child-level variables explained the variance in the preschoolers' spring term phonological awareness scores. The following regression equation was used for the model:

Level-1 (child level) model: $Yij = \beta 0j + \beta 1j$ (PA_ 1) $+ \beta 2j$ (HLE) $+ \beta 3j$ (DUMMY_ME) +eij

Level-2 (classroom level) model: $\beta 0j = \gamma 00 + u0j$

In these models:
Yij is the outcome variable- preschoolers' spring term phonological awareness
$\beta 0j$ is the class mean on the preschoolers' spring term phonological awareness score.

$\beta 1j$ is the differentiating effect of *preschoolers' fall term phonological awareness (PA_1*) in classroom j.

$\beta 2j$ is the differentiating effect of the *home literacy environment (HLE*) in classroom j.

$\beta 3j$ is the differentiating effect of *mother's education level (DUMMY_ME*) in classroom j.

$\gamma 00$ is the average of classroom means on the preschoolers' spring term phonological awareness scores across the population of the classrooms

$u0j$ = the unique increment to the intercept associated with classroom j.

In Table 4.23 the results of the random coefficient model are given and reveal that fall term phonological awareness (PA_1) was significantly and positively associated with the spring term phonological awareness (γ = .764, SE = .025, p < .001). The PA_1 slope coefficient revealed that a higher fall term PA_1 score corresponded to a higher spring term PA_2 score.

Concerning the home literacy environment slope coefficients (γ = .056, SE = .021, p= .010) showed that children having higher HLE score had better spring term PA_2 than the other children. Thus, the HLE was significantly and positively associated with the spring term PA_2.

Table 4.23

The results of the Random Coefficient Model

Fixed Effects	β	*SE*	*p*
Intercept	10.89	1.95	0.000
Child-level Predictors			
PA_1	.764	.025	0.000
HLE	.056	.021	0.010
DUMMY_ME	1.68	.740	0.023
Model Fit Statistics			
Deviance	875.4245		
AIC	889.4245		
BIC	911.1661		

LR test vs. linear model: chibar2(01) = 87.38, Prob >= chibar2 = 0.0000

Similarly, mother's education level slope coefficients (γ = 1.68, SE = .740, p=.023) was significantly and positively related to PA_2. The results revealed that children's whose mother graduated university have higher spring term PA_2 scores.

According to the random effects of the model, the results showed that the variance of the child level residual errors ($\sigma 2$) = (eij) = is estimated as 8.305317 (SE= .190) and at classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 2.225504 (SE=.511).

In order to calculate the proportion of the in-residuals variance for PA_2, sigma square, obtained from the One-Way Random Effects ANOVA model and the Random Coefficient Model were used in the following formulation:

$$R^2 = \frac{\sigma 2 \text{ (Random } ANOVA) - \sigma 2 \text{ (Random Coefficient)}}{\sigma 2 \text{ (Random } ANOVA)}$$

R^2 = (10.542524 - 8.305317) / (10.542524) = 0.212

The R^2 Calculation revealed that by adding these child-level variables as predictors of spring term receptive vocabulary, the residual variance was decreased by 21%.

Concerning the model fit statistics, the results revealed that the deviance was 875.424 for the model with AIC= 889.424 and BIC=868. 911.166. Lastly, the chibar 2(01) = 87.38, ($p<0.001$) indicated that there is significant difference between the simple OLS model and random effects should be included in the model.

4.4.3.4 The results of the Intercepts and Slopes as Outcomes Model

Intercepts and slopes as outcome model was used to test the fourth research question (3.4.3) of whether the classroom-level variable (CLE) predicts the preschoolers' spring term phonological awareness (PA_2) and influences the strength of association between the child-level variables and (PA_2). The child-level and classroom-level variables were both included the regression equation.

The following regression equation was used to test the intercepts and slopes as outcomes model:

$$\textit{Spring term phonological awareness } yij = \gamma 00 + \gamma 10\ PA\_1_{ij} + \gamma\ 20\ HLE_{ij} + \gamma\ 20\ \mathrm{DUMMY\_ME_{ij}} + \gamma 01\ \mathrm{CLE_j} + \mathrm{uoj} + \mathrm{eij}$$

The final model showed that both classroom-level and child-level predictors were significantly and positively related to the preschoolers' spring term (PA_2) scores. The results are presented in Table 4.24.

Table 4.24

The results of the Intercepts and Slopes as Outcomes Model

Fixed Effects	*β*	*SE*	*p*
Intercept	8.11	1.20	0.011
Child-level Predictors			
PA_1	.757	.025	0.000
HLE	.050	.021	0.021
DUMMY_ME	1.51	.738	0.041
Classroom-level Predictor			
CLE	.058	.029	0.043
Model Fit Statistics			
Deviance	874.230		
AIC	886.230		
BIC	904.866		

LR test vs. linear model: chibar 2(01) = 81.22, Prob >= chibar2 = 0.0000

According to the results, children who had higher fall term (PA_1) scores appeared to have higher spring term (PA_2) scores (γ = .757, SE = .025, p < .001). Besides, the results indicated that children whose mother graduated from

university (γ = 1.51, SE = .738, p=.041) and who come from a more enriched home literacy environment (γ = .050, SE = .021, p= .021) have higher spring (PA_2) scores.

Concerning the classroom-level variable, classroom literacy environment together with child-level predictors was still positive and significantly related to the preschoolers' spring term (PA_2) scores (γ = .058, SE = .029, p=.043). The results revealed that the coefficient of the classroom literacy environment was slightly lower than the means as outcome model (γ = .458, SE = .079, p < .001) but the direction and significant relation are same as the previous model.

For the random effects part of the model, the results showed that the variance of the child level residual errors (σ2) = (eij) = is estimated as 8.724592 (SE= .193) and at classroom level variance residual errors ($u0j$) = τ00= is estimated as 1.067416 (SE=.551).

$$R^2 = \frac{\tau 00 \text{ (Random Coefficient)} - \tau 00 \text{ (Intercepts and slopes)}}{\tau 00 \text{ (Random Coefficient)}}$$

R^2 = (2.225504 - 1.167416) / (2.225504) = .475

The results of the R^2 calculation showed that 47% of the variance in the between classroom difference in mean spring term phonological awareness was explained by including the classroom-level predictor (CLE).

The model fit statistics showed that the deviance was 874.230 for the model with AIC= 886.230 and BIC= 904.866. The chibar 2(01) = 81.22, (p<0.001) suggested that there is significant difference between the simple OLS model and the random effects should be retained in the model.

4.4. 4The results of the Concepts about Print Multilevel Models

The fourth set of the Multilevel Model (MLM) analyses were conducted to test the research questions related to preschoolers' spring term concepts about print skills. The preschoolers' spring term concepts about print (CAP_2) scores were used as an outcome variable in these analyses. This section reports on the following research questions that were tested in order.

RQ 3.1.4: Are there differences in the preschoolers' spring term concepts about print skills among classrooms?

RQ 3.2.4: Does the classroom literacy environment is associated with the differences in the preschoolers' spring term concepts about print skills?

RQ 3.3.4: Which child-level variables explain the differences in the preschoolers' spring term concepts about print skills?

RQ 3.4.4: Does classroom literacy environment influence the association of the child-level variables on the preschoolers' spring term concepts about print skills?

4.4.4.1 The results of the One-Way Random Effects ANOVA Model

In order to examine variation in outcome scores within and between classes, the One-Way Random Effects ANOVA model was used. The Intra-Class Correlation Coefficient (ICC) was calculated to determine the variation in outcome scores within and between classes. The following regression equation was used to answer the first research question (3.1.4):

Level-1 (child level) model: $Yij = \beta 0j + eij$

Level-2 (classroom level) model: $\beta 0j = \gamma 00 + u0j$

j = 1……. N (classrooms)

i: 1…… nj (preschoolers within classrooms)

Yij is the outcome variable- preschoolers' spring term concepts about print.

$\beta 0j$ is the intercept of class j, this is the class mean on the preschoolers' spring term concepts about print.

eij is the child-level error/ random effects of child i in class j.
$\gamma 00$ is the grand mean/ overall average score of the preschoolers' spring term concepts about print scores for all classrooms.

$u0j$ is the classroom level error / random effects of class j

The results from the model showed that the grand mean of the preschoolers' spring term concepts about print scores ($\gamma 00$) is statistically different from zero (SE= .333, p < .001). The results indicated that there are significant differences between classrooms.

Table 4.25 shows that the variance of the child level residual errors ($\sigma 2$) = (eij) = is estimated as 2.579218 and at classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 1.378973. In order to calculate ICC, the following formulation was used (Raudenbush & Bryk, 2002).

Table 4.25

The Results of the One-Way Random Effects ANOVA Model

Fixed Effects	*Estimate*	*SE*	*z-stat*	*p*	*95% Confidence Interval*
Intercept ($\gamma 00$)	12.10	.333	38.10	0.000	12.06508 - 13.37369
Variance Components					
Intercept($u0j$)	1.378973	.261			
Residual (eij)	2.579218	.093			
Model Fit Statistics					
Deviance	654.3028				
AIC	660.3029				
BIC	669.6025				

LR test vs. linear model: chibar2 (01) = 46.86, Prob >= chibar2 = 0.0000

ICC: $\rho = \tau 00/ (\tau 00 + \sigma 2)$

ρ= 1.378973/ (1.378973 + 2.579218) = 0.348

The ICC calculation showed that approximately 35 % of the total variability in preschoolers' spring term CAP_2 was attributed to differences between classrooms.

The model fit statistics reveals that the deviance was 654.302 for the null model with AIC= 660.302 and BIC= 669.602. Lastly, the likelihood ratio test is compared the model with the equivalent single model. The chibar 2(01) = 46.86, ($p<0.001$) suggested that there is significant difference between the simple OLS model and random effects should be kept in the model.

4.4.4.2 The results of the Means as Outcomes Model

The Means as Outcomes Model was used to investigate the explained variances in preschoolers' spring term concepts about print (CAP_2) scores due to the classroom-level (CLE) predictor. The following regression equation was used to answer the second research question (3.2.4):

Level-1 (child level) model: $Yij = \beta 0j + eij$

Level-2 (classroom level) model: $\beta 0j = \gamma 00 + \gamma 01$ (CLE) + $u0j$

In these models:

j = 1……. N (classrooms)

i: 1…… nj (preschoolers within classrooms)

Yij is the outcome variable- preschoolers' spring term concepts about print

$\beta 0j$ is the intercept of class j, this is the class mean on the preschoolers' spring term concepts about print.

$\gamma 00$ is the grand mean, overall average score of the preschoolers' spring term concepts about print variable for all classrooms.

$\gamma 01$ is the differentiating effect of *classroom literacy environment (CLE)* on the classroom mean of the preschoolers' spring term concepts about print score.

eij is the child-level error.

$u0j$ is the classroom level error.

The fixed effects part of the means as outcome model showed that the *classroom literacy environment* (CLE) was significantly and positively associated with the preschoolers' spring term concepts about print scores (γ = .103, SE = .023, p < .001). The results are presented in Table 4.26.

Table 4.26

The Results of the Means as Outcome Model

Fixed Effects	β	*SE*	*p*
Intercept	5.492	1.63	0.001
Classroom-level Predictor			
CLE	.103	.023	0.000
Model Fit Statistics			
Deviance	640.236		
AIC	648.237		
BIC	660.636		

LR test vs. linear model: chibar2 (01) = 37.65 Prob >= chibar2 = 0.0000

According to the random effects part of the model, the results showed that the variance of the child level residual errors (σ2) = (eij) = is estimated as 2.550223 (SE= .09) and at classroom level variance residual errors ($u0j$) = τ00= is estimated as 0.501633 (SE=.20). In order to examine the reduction of the residual variances between the null model and the means as outcome model, R^2 was calculated using τ00 estimated from the two models.

$$R^2 = \frac{\tau 00 \text{ (One} - \text{Way Random Effects } ANOVA) - \tau 00 \text{ (Means as Outcome)}}{\tau 00 \text{ (One} - \text{Way Random Effects } ANOVA)}$$

$R^2 =$ (1.378973) – (0.501633) / (1.378973) = .636

According to the R^2 calculation, 64 % of the true between-classroom variance in the preschoolers' spring term concepts about print score was accounted for by classroom literacy environment (CLE).

The results of the model fit statistics showed that the deviance was 640.236 for the model with AIC= 648.237 and BIC= 660.636. The chibar 2(01) = 37.65, ($p<0.001$) indicated that there is significant difference between the simple OLS model and random effects should be retained in the model.

4.4.4.3 The results of the Random Coefficient Model

In order to answer the third research question (3.3.4) concerning which of the child-level variables explain the variance in the preschoolers' spring term concepts about print (CAP_2) scores, a Random Coefficient Model was used. The following regression equation was used in the model:

Level-1 (child level) model: $Yij = \beta 0j + \beta 1j\ (\text{CAP\_1}) + \beta 2j\ (\text{HLE}) + \beta 3j$ (DUMMY_ME) +eij

Level-2 (classroom level) model: $\beta 0j = \gamma 00 + u0j$

In these models:

Yij is the outcome variable- preschoolers' spring term concepts about print

$\beta 0j$ is the class mean on the preschoolers' spring term concepts about print score.

$\beta 1j$ is the differentiating effect of *preschoolers' fall term concepts about print (CAP_1*) in classroom j.

$\beta 2j$ is the differentiating effect of *home literacy environment (HLE*) in classroom j.

$\beta 3j$ is the differentiating effect of *mother's education level (DUMMY_ME*) in classroom j.

$\gamma 00$ is the average of classroom means on the preschoolers' spring term concepts about print scores across the population of the classrooms

$u0j$ = the unique increment to the intercept associated with classroom j.

Table 4.27 shows that the fall term concepts about print (CAP_1) was significantly and positively associated with the spring term phonological awareness (γ = .634, SE = .042, p < .001). The CAP_1 slope coefficient revealed that a higher fall term concepts about print score corresponded to a higher spring term CAP_2 score.

Table 4.27

The Results of the Random Coefficient Model

Fixed Effects	β	*SE*	*p*
Intercept	7.117	.918	0.000
Child-level Predictors			
CAP_1	.634	.042	0.000
HLE	.001	.006	0.760
DUMMY_ME	.608	.215	0.005
Model Fit Statistics			
Deviance	481.312		
AIC	493.312		
BIC	512.912		

LR test vs. linear model: chibar2 (01) = 39.04 Prob >= chibar2 = 0.0000

Besides, mother's education level, the slope coefficients (γ = .608, SE = .215, p=.005) was significantly and positively related to CAP_2. The results revealed that children's who were university graduates have a higher spring term CAP_2 scores. However, the home literacy environment slope coefficients (γ = .001, SE = .006, p= .076) were not significantly associated with the spring term CAP_2.

Concerning the random effects part of the model, the results showed that the variance of the child level residual errors ($\sigma 2$) = (eij) = is estimated as 2.0856968 (SE= .055) and at classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 1.185943 (SE=.154).

In order to calculate the proportion of the in-residuals variance for PA_2, sigma square, the One-Way Random Effects ANOVA model and the Random Coefficient Model, were used in the following formulation:

$$R^2 = \frac{\sigma 2 \text{ (Random } ANOVA) - \sigma 2 \text{ (Random Coefficient)}}{\sigma 2 \text{ (Random } ANOVA)}$$

R^2 = (2.550223 - . 2.085696) / (2.550223) = 0.182

According to the R^2 Calculation, adding these child-level variables as predictors of spring term concepts about print, led to an 18% decrease in the residual variance.

Regarding the model fit statistics, the results showed that the deviance was 481.312 for the model with AIC= 493.312 and BIC=512.912.166. Lastly, the chibar 2(01) = 39.04, (p<0.001) indicated that there is significant difference between the simple OLS model and random effects should be included in the model.

4.4.4.4 The results of the Intercepts and Slopes as Outcomes Model

In order to test the fourth research question (3.4.4) of whether the classroom-level variable (CLE) predicts preschoolers' spring term concepts about print (CAP_2) and influences the strength of the association between the child-level variables and (CAP_2). The child-level and classroom-level variables were included the regression equation together. The following regression equation was used to test the intercepts and slopes as outcomes model:

$$\textit{Spring Term Concepts About Print yij} = \gamma 00 + \gamma 10\ \textit{CAP\_1}_{ij} + \gamma\ 20\ \textit{HLE}_{ij} + \gamma\ 20\ \text{DUMMY\_ME}_{ij} + \gamma 01\ \text{CLE}_{j} + \text{uoj} + \text{eij}$$

The final model showed that both the classroom-level and child-level predictors of mother's education and the fall term score (CAP_1) were significantly and positively related to the preschoolers' spring term (CAP_2) scores. The full results are presented in Table 4.28.

According to the results, children who had higher fall term (CAP_1) scores appeared to have higher spring term (CAP_2) scores (γ = .624, SE = .042, p < .001). Furthermore, the results indicated that children whose mother had graduated from university (γ = .583, SE = .215 p=.041). However, HLE (γ = .002, SE = .006, p= .684) was not significantly associated with the spring (CAP_2) scores.

Concerning the classroom-level variable, classroom literacy environment together with the child-level predictors was still positive and significantly related to the preschoolers' spring term (CAP_2) scores (γ = .039, SE = .017, p=.026). The results revealed that the coefficient of the classroom literacy environment was slightly lower than the means as outcome model (γ = .103, SE = .023, p < .001) but the direction and significant relation are same as in the previous model.

Regarding the model random effects, the results showed that the variance of the child level residual errors ($\sigma 2$) = (eij) = is estimated as 2.107836 (SE= .057) and the classroom level variance residual errors ($u0j$) = $\tau 00$= is estimated as 0.516078 (SE=.138).

$$R^2 = \frac{\tau 00 \text{ (Random Coefficient)} - \tau 00 \text{ (Intercepts and slopes)}}{\tau 00 \text{ (Random Coefficient)}}$$

R^2 = (1.185943 - 0.516078) / (1.185943) = .564

According to the R^2 calculation, 56% of the variance in the between classroom difference in mean spring term concepts about print was explained by including classroom-level predictor (CLE).

Table 4.28

The Results of the Intercepts and Slopes as Outcomes Model

Fixed Effects	*β*	*SE*	*p*
Intercept	4.588	0.428	0.001
Child-level Predictors			
CAP_1	.624	.042	0.000
HLE	.002	.006	0.684
DUMMY_ME	.583	.215	0.007
Classroom-level Predictor			
CLE	.039	.017	0.026
Model Fit Statistics			
Deviance	476.729		
AIC	490.729		
BIC	511.428		

LR test vs. linear model: chibar2 (01) = 34.52 Prob >= chibar2 = 0.0000

Finally, the model fit statistics revealed that the deviance was 476.729 for the model with AIC= 490.729 and BIC= 511.428. The chibar 2(01) = 81.22, ($p<0.001$) suggested that there is significant difference between the simple OLS model and random effects should be retained in the model.

CHAPTER 5

DISCUSSION

In this chapter, the major findings of the present study are discussed in the context of the literature under two main headings. The first section is devoted to the findings of the descriptive statistics of home and classroom literacy environments with the second section dealing with the findings of the inferential statistics of the study. Lastly, conclusion, implication and recommendations for future study are given.

5.1 The Characteristics of the Preschoolers' Home and Classroom Literacy Environments

The characteristics of the participating preschoolers' home and classroom literacy environments are discussed in the light of findings from international studies and those pertaining to Turkey.

5.1.1 Home Literacy Environment

The first research question of the current study aimed to investigate the characteristics of Turkish preschoolers' home and classroom literacy environments. The findings of the study revealed that the preschoolers' *HLEQ* scores varied from 125 to 185 with a mean of 155.31. The highest item average scores came from the *stimulation to use language and explanation* factor and the lowest scores from the *reading books to the child*, and *visiting a library-puppet theatre* factors. The lowest item scores were related to visiting a library and puppet theatre (item 14; *M*=1.99, and item 15: *M*=2.25) and to supporting children learning letters (item 31; *M*= 3.51), whereas the highest item scores dealt with talking about how a child spent his/her day (item 3; *M*= 5.55). These findings are

consistent with previous studies that examined Turkish children's home literacy environments (Altun, 2013; Altun & Tantekin-Erden, 2015). Furthermore, previous studies based on participant characteristics reported lower HLEQ scores (M= 141.79 and M= 143.40) than the current study. Even though the participants in the present study have higher SES than seen in previous studies and the increase in the scores was related to this higher SES, the studies did display similar distribution patterns for the scores with respect to the factors. Thus, the *stimulation to use language and explanation* factor had the highest item average while *reading books to the child* and *visiting a library* had the lowest item average in all the studies. These findings can be interpreted to say that the prevalent oral literacy culture in Turkish society (Ungan, 2008; Yıldız, 2008) is reflected in children's home literacy environments. Therefore, children's early home literacy experiences are mostly made up of oral language related activities than print related activities.

Furthermore, research has indicated that Turkish people are not in the habit of using libraries. Recent statistics revealed that there are 1,130 public libraries in Turkey with children's sections and there are only 1,367,139 registered users (TUİK, 2014). This figure is less than 2% of the national population. In Turkey, Esgin and Karadağı (2000) reported that only 5% of university students chose to spend leisure time in a library and Yılmaz (2002) found that 95.3% of primary teachers never use a public library. In another study, Odabaş, Odabaş and Polat (2008) indicated that 63.8% of sixth graders rarely used libraries. In addition, Çakmak and Yılmaz (2009) found that 30% of the preschoolers participating in their study did not visit a library with parents. They also reported that 72% of the children visited the school library with their teachers whereas 28% of the children did not have any library experience.

Concerning research in other countries, Korkeamaki, Dreher and Pekkarinen (2012) examined Finnish preschoolers' and first graders' home

literacy experiences. The study results revealed that 48% of parents in rural areas and 32% of parents in urban area visited a library at least 2-3 times a month. In another study, Brueggeman (2008) stated that about 80% of Finnish people use public libraries and found that many Finnish children visited public library with their parents. In other developed countries such as England, similar wide-spread library usage habits were revealed (Public Library Survey, 2013). A Public Library Survey (2013) reported that 58% of English people are library members. Library usage in the young generation based on visiting a library in the past 12 months was 60% of the 5-10 age group and 77% of children aged 11 to 15. Miller, Zickuhr, Rainie and Purcell (2013) found that 70% of American parents visit a library in a year and 39% of the 0-5 age children are members of a public library. When comparing the library usage habits of developing countries with those in Turkey, it can be seen that Turkish children have low library-visiting experiences. These findings can be also related to the library environment in Turkey since the majority of the libraries in Turkey do not have any specific environment in which children can read, share and play with books with their families. This type of library design is not welcoming for children and previous studies have pointed out correlations between the role of space and library environment design and individuals' behavior, activities and interactions in a library (Aabo & Audunson, 2012; Aarts & Dijksterhuis, 2003; Yılmaz, 2008).

The literature from Turkey supports the findings of the current study with respect to the children's home literacy environment even though the participating children's scores were higher than in the previous studies (e.g., Altun, 2013; Altun & Tantekin-Erden, 2015). In the related literature the association between home literacy environment and family socio-economic status (SES) is well-documented (Aram, Korat, Saiegh-Haddad, Arafat, Khoury, & Elhija, 2013; Aram & Levin, 2002; Davis-Kean, 2005; Meng, 2015; Van Steensel, 2006). In the current study the majority of the children are from high SES so that their HLE scores are higher than in previous studies. Although there is a difference between the scores, the

distribution pattern of the scores with respect to factors is similar. Oral language related items had the highest scores whereas visiting a library and print related activities had the lowest scores. From this point of view, it can be said that not only individuals' SES but also society's literacy culture can shape the home literacy environment. Thus, it might be useful to examine home literacy environment in the context of scholarly culture. In addition, cross cultural studies may provide information to examine scholarly culture influence on individuals' home literacy environment across different SES groups.

5.1.1.1 Number of Books at Home

Another important indicator of the home literacy environment is the number of books in the child's home (Evans, Kelley, Sikora & Teiman, 2010). The study's findings demonstrated that 41.1% of parents have between 26-100 books at home and the majority of the children (66%) have 26 to 50 books of their own at home. According to the PISA (2006) survey, 31% of Turkish 15 year old students had between 26-100 books and 27% of students had between 11-25 books at home (Özer & Anıl, 2011). In addition, another study conducted with preschool children showed that 36% of parents owned 1-40 books and 38% of the children owned 1-15 books (Altun & Tantekin-Erden, 2015). Similarly, in her study, Altun (2013) found that 33.7% of preschoolers had 1-15 books and 23.5% of the parents had 41-80 books at home.

Studies regarding the number of children having their own books at home showed that 75% of Australian children had 50 or more books at homes (Hood, Conlon, & Andrew, 2008). In a survey in the USA children's book ownership ranges from 0 to 250 giving a mean of 81 books per child (Foy & Mann, 2003). Similarly, Canadian children owned 61 to 80 books at their home (Senechal, Lefevre, Thomas, & Daley, 1998). Lastly, findings from Finland showed that 60%

of children owned fewer than 40 children books (Korkeamaki, Dreher, & Pekkarinen, 2012).

The number of books is a predictor index for children's later language and literacy development (e.g., Bennett, Weigel, & Martin, 2002; Gürsakal, 2009; Kutlu, Yıldırım, Bilican, Kumandaş, 2011; Senechal et al., 2002; Shiel, Sofroniou, & Cosgrove, 2006).

In addition, Evans et al. (2010) examined home literacy sources from a scholarly culture perspective using a 27-nation dataset. They found that children who came from homes with abundant books sources (about 500 books) got more than 3.2 years of education regardless of the level of education of their parents and SES. According to their data set, 35% of Israeli children, 29% of Swedish children and 28% of the Norwegian and children from New Zealand lived in homes that had more than 500 books.

The findings of the current study regarding the number of books at home were higher than other findings from Turkey-based research. However, the book enriched home environment percentage is still below the findings of international comparative studies. The results of Evans et al. (2010) international comparative study pointed out that the number of books is not only related to the economic development level of a nation but also to its scholarly culture. From this point of view, the economic status of the study participants and the oral-dominated literacy culture in Turkey both have a bearing on the number of books at home. The number of books at home may also provide insight into reading habits of family members.

5.1.1.2 Parent and Children Book Reading Habits at Home

The present study examined the time spent during the week by parents and children reading at home. Parents' reading habits were examined for both mothers and fathers. The study results showed that 35.7% of the mothers and 39.5 of the fathers spent one hour or more per day reading. However, for 21.4 % of the mothers and 27.3% of the fathers the weekly duration of reading was less than three hours. Regarding parent-child shared reading weekly time, 30.4% of the children had three to four hours shared reading experience with only 17.3% of the children having one or more hours reading experience per day. Similarly, Altun and Tantekin-Erden (2015) found that 33% of preschoolers have 0-60 minutes per week shared reading experience with parents and only 15% of the preschoolers have one or more shared reading experience at home. In addition, 43% of mothers and 40% of fathers similarly spent 0-60 minutes a week on reading. Çakmak and Yılmaz (2009) examined 50 preschoolers' reading experience and their results showed that 64% of the children have books read to them a few times in a week and for 24% of the children this is on a daily basis. In another study, Altun (2013) reported that 66% of preschoolers engage in 0-60 minutes shared reading experiences. However, their mothers (30.7%) and fathers (33.7%) spent less than one hour on reading. Lastly, Yılmaz (2004) examined fifth grade students' parents reading habits and according to the students' responses, 59.1% of the children's mothers did not read books at home and 20.3% of the mothers rarely read. In terms of the fathers, 70.9% of did not read at home and 23.9% rarely read books at home.

In the international context, Kuo, Franke, Regalodo and Halfon (2004) stated that 52% of American young children are read a book daily by their parents. In another study, Kim, Im and Kwon (2015) reported that 48% of American parents read books to their children on a daily basis. Korkeamaki, Dreher and Pekkarinen (2012) reported that 50% of Finnish preschoolers are read

to very often and the parents of 20 of the preschoolers read to them often. The *Let's Read Them a Story* report conducted by PISA (2012) showed that in Lithuania, Germany, Hungary, Denmark and New Zealand more than 80% of parents read to their first grade children regularly at home.

In conclusion, the current study findings are consistent with previous studies in Turkey revealing that Turkish parents have low rates of reading habits both personally and in shared reading with their children even though the majority of the parent participants had graduated from university, the household income level was high and the number of books at home was also higher than the results of other national surveys. These results showed that the daily shared experience of the children is still low. These findings pointed out that individuals reading habits should be interpreted in the context of the literacy cultural background of the society they inhabit (Evans et al., 2010). Thus, reading habits cannot be related solely to the individual and the family; they are also affected by broader cultural and societal issues.

5.1.2 Classroom Literacy Environment (CLE)

Within the context of the Ecological System Theory the present study aimed to provide information concerning not only preschoolers' home literacy environments but also classroom literacy environments in order to broaden the understanding of literacy and the contextual sources of literacy. For this purpose, the ELLCO-Pre-K tool (2008) was used to measure the quality of the literacy environment in 20 classrooms. The study's results revealed the ELLCO scores ranging from 50 to 86 with a mean of 70.05. The item average score was 3.68 for the total tool. The *language environment* aspect (M=3.97) had the highest item score; whereas the *print and early writing* aspect (M= 3.46) had the lowest item average. In addition, the *books and book reading* aspect had the second lowest

item average with 3.46. In this section the observation findings are elaborated and discussed in the context of the related literature.

The language environment aspect covers items related to oral language content such as extended conversations, vocabulary, discourse and phonological awareness. Previous studies in Turkey support the findings that preschool teachers mostly conduct activities related to introducing basic concepts, phonological awareness and having a conversation (Erdoğan, Özen-Altınkaynak, & Erdoğan, 2013; Ergül, Karaman, Akoğlu, Tufan, Dolunay-Sarica, & Bahap-Kudret, 2014; Gönen et al., 2010; Tuğluk, Kök, Koçyiğit, Kaya, & Gençdoğan, 2008). On the other hand, the participant preschool teachers in the current study introduced new words to the children and gave definitions and examples related to the new words but only a few of the preschool teachers endeavored to incorporate the new words in daily classroom conversations. The preschool teachers seldom used different methods or strategies such as a word wall and visuals to help the children remember and practice the vocabulary and rarely encouraged the children use the new words in their conversations and play. Similarly, Erdoğan, Özen-Altınkaynak and Erdoğan (2013) stated that preschool teachers applied limited types of activities to support children's vocabulary development. This situation appears to be caused by the preschool teachers' limited knowledge regarding children's vocabulary development and how to use appropriate instructional methods to foster children's language development (Erdoğan, Özen-Altınkaynak & Erdoğan, 2013; Ergül et al., 2014).

There was variation between schools with respect to whether or not the *classroom structure* was good. The private schools did not have major problems for supplying materials but there was a variation (M=2.50 to 4.75) between schools regarding the design, accessibility and traffic flow of the classrooms. Varied scores for classrooms were also observed between classrooms even in the same school. In addition, in the same schools applying an identical curriculum

there was a difference between classrooms regarding teacher applications. The findings can be interpreted as not only demonstrating the importance of the school's education philosophy and physical sources in terms of education quality but also the importance of the teacher's role. The teacher has a key role in applying the curriculum effectively and uses the available sources to prepare a well-designed classroom environment for the children. This interpretation is also consistent with the literature (Handler, 2010; Hensley-Pipkin, 2015; Roehrig, Kruse, & Kern, 2007).

Regarding the book and book reading aspects, the current study found that all the classrooms had book corners and three of the five schools also had a school library. Although all classrooms had book corners most of them were not well organized. None of the book corners were decorated so as to attract the children's attention. In addition, there was no comfortable environment containing items such as pillows, bean bags, armchairs and soft furniture to invite children to spend time in the area. Furthermore, for nearly half the book corners the location was not suitable in terms of traffic flow, noise and lighting. The majority of the book corners had a limited number of book types with most being story books from limited genres. Lastly, although the teachers commonly read books to the children on a daily basis they used the same approaches in reading activities. Only four teachers used different materials and methods in reading activities such as reading rope, a flannel board, and puppets.

The national early childhood program contains suggestions for the organization of book corners and the many kinds of materials to include. However, as mentioned above, none of the classrooms observed in the current study had followed these suggestions. Similarly, Tarım (2015) reported that each public preschool classroom had a book corner but there were deficiencies regarding organization and book types. Furthermore, in research in the USA

studies cited limited book genres and types in preschool book corners (Kraemer, McCabe, & Sinatra, 2012; Roskos & Neuman, 2001).

Lastly, the print and early writing aspects had the lowest scores. However, although the classrooms had sufficient materials for writing, none had any writing corner/center. Materials were stored in the classroom cupboards and were available for children's use but children were not encouraged to use the materials to express their feelings, ideas and information in their play, free time or in their daily classroom experience. Children-initiated writing, scribbles and visual presentations were observed to be low. Most of the writing related activities were teacher-directed including straight and wavy line activities, painting and drawing, dot to dot, play-dough, and writing numbers and some letters (commonly vowels and *l,t).*Most of the activities were implemented using worksheets and workbooks. Previous studies in Turkey pointed out that preschool teachers frequently conducted painting and drawing, paper cutting and pasting, and line activities to improve children's writing skills (Erdoğan, Özen-Altınkaynak, & Erdoğan, 2013; Ergül et al., 2014). The activities mainly aimed to foster fine motor skills and hand-eye coordination rather than name writing and introducing letters. In addition, the environment in the classrooms was used only to a limited degree for print although all the children's personal materials and spaces (for example; cupboards and desks) were mostly labeled to help children find their own items easily. Only two of the classrooms observed in the current study had alphabet posters and six of the classrooms having printed posters at children eye-level. All the classrooms had number and concept posters of colors, geometric shapes and seasons but most of these were above a child's eye level. Tarım's (2015) findings were similar regarding public schools low use of environmental print and he reported that in these schools writing materials in classrooms are inadequate or unavailable.

The findings from the present study are consistent with literature concerning Turkey and this is in keeping within the context of the national early childhood education program. The current program (2013) only specified one acquisition regarding writing which is "holding a pencil properly and drawing a line properly" in motor development domain. Previous early childhood programs did not contain any goals and objectives regarding writing. In addition, reading and writing readiness activities aim to prepare children for their first writing activities by conducting cutting, pasting, painting, folding and kneading materials, drawing a line, and holding a pencil properly. The program does not mention writing corners in the list of suggested learning centers and avoids introducing letters. From this point of view, it can be said that the national program's language and literacy perspective is reflected in the design and applications of the classroom environment in private schools. In addition, the private schools apply the MoNE program more flexibly and add additional goals to literacy development and they have sufficient materials and other resources. However, it was seen that the reading readiness perspective adopted by the MoNE program has an bearing on their educational applications. In conclusion, especially for print related applications, the environment of the preschools that participated in the current study occupies the middle ground between the reading readiness predominant national curriculum and the emergent literacy perspective. All of the participating preschool programs aim to foster the development of children's familiarity with letters and want to adapt emergent literacy in their curriculum but most of the schools do not have any clear idea regarding developmentally appropriate activities and natural settings that support their aims. Three of the five schools received support from first grade teachers to plan letter recognition activities. These observations from the current study are supported by previous research conducted with in-service (Ergül et al., 2014; Kerem & Cömer, 2005; Parlakyıldız & Yıldızbaş, 2004) and pre-service (Altun & Tantekin-Erden, in press) preschool teachers which revealed that the teachers did not have adequate knowledge regarding children's early literacy development and instructional

methods to foster their development. The in-service teachers' requested more in-service training (Kerem & Cömer, 2005; Uşun & Cömert, 2003) and the pre-service teachers suggested undergraduate courses related to children's language and literacy development (Altun & Tantekin-Erden, 2016).

In conclusion, in both the children's classroom environment and the home environment oral language sources have the highest average scores. Concerning international literature, for the present study the ELLCO scores close to the level of US federal funded preschools (Peisner-Feinberg, Schaaf, Hildebrandt, & LaForett, 2013; Weiland, Ulvestad, Sachs, & Yoshikawa, 2013) but lower than some studies (Polk, 2013; Seplocha & Strasser, 2008). Lastly, the present study scores were higher than a preschool group in a Portuguese sample (Abreu-Lima, Leal, Cadima, & Gamelas, 2013).

Overall, in the present study the classrooms' literacy quality was above the basic standards of the ELLCO. Although previous studies stressed that well-designed poster-enriched environments foster children's print knowledge (Neumann, Hood, & Ford, 2013; Neuman & Roskos, 1990, 1993; Zhang et al., 2015), the current study showed that the classrooms' print related sources, experiences and book corners had some limitations even though the schools had enough materials and financial resources. The findings suggest that the design and value of literacy in classroom environments are affected not on only by financial considerations but also by a society's education philosophy and literacy culture. In addition to this, the findings pointed out the teacher's role in the classroom literacy environment. The limitations of the classroom literacy environment regarding book corners, environmental prints and posters and writing centers may be related to what the teachers know about early literacy. Previous studies showed that both in-service and pre-service teachers did not have adequate knowledge and clear ideas in this area (Altun & Tantekin, in press; Ergül et al., 2014). The preschool teacher education program can be examined in terms of early literacy notions and

further studies may investigate how the program prepares teachers to foster children's early literacy skills and design their classroom literacy environment.

5.2 The Predictive Relations Between Children's Early Literacy Skills, Their Literacy Environments, and the Mother's Level of Education

One of the main purposes of the present study was to investigate the predictive relationship between the child's early literacy skills, their mother's level of education and the child's literacy environments. The results of the study are discussed regarding each of the early literacy skills: vocabulary, phonological awareness and concepts about prints.

5.2.1 Vocabulary

The current study examined both receptive and expressive vocabulary knowledge in the fall term in association with the factors of children's home literacy environment and the mother's level of education. The Multiple Regression results showed that these two factors were significant predictors of the children's fall term vocabulary skills. Together these two predictors explained 46% of the variance in receptive vocabulary and 40% of the expressive vocabulary scores. In order to investigate the predicted spring term vocabulary using the fall term vocabulary scores, the predictor variables were the children's home and classroom literacy environments, and the mother's level of education. Multilevel Linear Modeling (MLM) was conducted to analyze the nested data. Four sets of MLM were applied for each element of vocabulary knowledge. The unconditional model findings revealed that 17% of the total variability in the spring term receptive vocabulary and 20% of the total variability in the expressive vocabulary were attributed to differences between classrooms. This finding showed that there were variations between classrooms and the data set appropriate for MLM analyzing. In addition, the findings showed that the majority of the

variability in both vocabulary scores was attributed to child level. Similarly, Guo, Piasta, Justice and Kaderavek (2010) reported the intra-class correlation (ICC) value for vocabulary as .15 and indicated that the highest variation was related to child level. The results of another study found 8% of the total variability in receptive vocabulary and 13% of the total variability in expressive vocabulary were attributed to child-level variables (Gonzalez, Pollard-Durodola, Simmons, Taylor, Davis, Fogarty, & Simmons, 2014). Lastly, the reported ICC value was 19 for expressive vocabulary and .003 for receptive vocabulary (Cabell et al., 2011).

While the findings are consistent with the previous studies, there is a significant variation in children's vocabulary among classrooms but the majority of variations can be localized at child level. In addition, the results showed that the data set was appropriate for MLM analysis.

The MLM results showed that at child level the fall term vocabulary score, home literacy environment and mother's level of education were positively associated with the spring term vocabulary scores for both receptive and expressive. This means that a child whose mother graduated from university, has an enriched home literacy environment and higher fall term vocabulary scores will also have higher spring term scores for both receptive and expressive vocabulary. Furthermore, a positive correlation was found between the classroom literacy environment and the spring term vocabulary scores.

The current study findings were consistent with the related literature. Previous studies indicated that the mothers' level of education affected the quality and quantity of maternal speech, and also the level and quantity of conversation with their child(ren) (Dickson, McCabe, Anastasopoulos, Peisner-Feingbers, & Poe, 2003; D'odorıco, Carubbi, Salerni, & Calvo, 2001; Dolloghan et al., 1999; Hoff, 2003; Hoff-Ginsberg, 1991; Pan et al., 2005; Westerlund & Lagerberg, 2008). Hoff-Ginsberg (1991) examined maternal speech with respect to education

level and social class. She found that well-educated mothers' utterances, use of a range of words roots, morphemes and rate of conversation with children in different daily settings such as meal times, play and reading was higher than mothers with low levels of education. Pan, Rowe, Singer and Snow (2005) showed that the mothers' level of communication with children regarding the use of different word types had a bearing on children's vocabulary development. In another study, Dollaghan et al., (1995) examined aspects of mother-child conversations such as amount of words, use of different words, and total utterances with respect to the mother's level of education. They found that the mother's education level significantly affected the quality and quantity of her conversation with three-year-old children. In addition, the children's vocabulary scores were higher if their mothers had a higher level of education. Similarly, Dickson et al., (2003) found a positive association between the mother's education level and children's receptive vocabulary knowledge. The mother's education level is related to the mothers' word repertoire and language skills therefore the children of mothers with a high level of education are exposed to a rich vocabulary and more frequently interact with their mothers (Pan et al., 2005). Furthermore, some studies pointed out a correlation between the mother's education level and the household income and SES, and these factors were associated with children's cognitive development. (Patra, Greene, Patel, & Meier, 2016; Schady, 2011; Sullivan, Ketende, & Joshi, 2013; Zhang, 2013). In addition, studies pointed out that mother's education level can be related to maternal sensitivity, which in turn is positively associated with the child's vocabulary development (Nozadi et al., 2013; Peredo, Owen, Rojas, & Caughy, 2015). In order to make clear the justifications regarding a mother education level and both direct and mediated contribution to the child's vocabulary development, further methodologically sophisticated analysis like meta-analysis is needed.

Concerning the home literacy environment, the findings from the current study are supported by previous studies (DeTemple & Snow, 2003; Frijters,

Barron, & Brunello, 2000; 2014; Kim, Im, & Kwon, 2015; Kotaman, 2013; Raikes et al., 2006; Rodriguez et al., 2009; Senechal & Lefevre, 2002; Senechal, Pagan, Lever, & Ouellette, 2008) in terms of HLE having multiple aspects with each aspect nourishing the children's vocabulary development. Kim, Im and Kwon (2015) found positive relations (r=.31) between children's vocabulary development and the home literacy environment regarding book reading, storytelling, singing songs and the number of books at home. They reported that HLE explained 15% of the variance in children's vocabulary development even after factoring in the household and SES. The studies consistently found that shared reading experiences have contributed to children's vocabulary development. Similarly, Frijters, Barron and Brunello (2000) reported that home literacy activities explained 21% of the variance in children's vocabulary scores. Lastly, Rodriguez and Tamis-LeMonda (2011) examined children's home literacy experience and language development from 15 to 63 months and stated that early home literacy experience is a significant predictor of prekindergarten vocabulary scores.

Furthermore, some studies mainly focused on the contribution of parent-child shared reading experiences to children's vocabulary development. The results of a five year study by Senechal and LeFevre (2002) revealed that storybook reading was positively related to the development of children's receptive vocabulary (r=.38) and it explained 9% of the variance at the beginning of first grade vocabulary scores even after factoring in the parent's education and the child's initial early literacy skills. Meta-analysis studies also found similar results for 8% of the variance in expressive vocabulary (Mol, Bus, de Jong, & Smeets, 2008; and previous studies also reported 8% to 10% of the variance in vocabulary scores were explained by shared reading experiences (Bus, van IJzendoorn, & Pellegrini, 1995; Senechal & LeFevre, 2002; Senechal, Pagan, Lever, R., & Ouellette, 2008).

The existing literature pointed out that the book reading process introduces new words to children, and present examples using the words in context and expand children's receptive and expressive vocabulary. In addition, in this process children can ask questions, tell stories and talk about pictures (Bus, van IJzendoorn, & Pellegrini, 1995; Doyle & Bramwell, 2006; Heubner & Meltzoff, 2005; Justice, 2002; LaCour, McDonald, Tissington, & Thomason, 2013). These enable children to learn and use new words in their parent-child conversations. Therefore, shared book reading especially dialogic reading is an important context in which to foster children's vocabulary development. Additionally, other studies stressed that not only shared book reading but also daily home language in different settings such as mealtimes, play times, dressing, and conversations are also important context for children to gain vocabulary (Hoff, 2010; Hoff-Ginsberg, 1991; Tabors, Beals, & Weizman 2001; Tabors, Roach, & Snow, 2001; Weizman & Snow, 2001). In the current study, the HLEQ had detailed and rich content covering both reading related activities and also various home setting activities that were expected to foster children's vocabulary development such as playing, talking about cartoons, watching TV programs, encouraging children to talk to adults and peers, extending their conversation, explaining and repeating words and speech. In addition, the HLEQ items related to scaffolding children's language and literacy through parent mediated activities. From this point of view, it can be said that HLE is a multi-aspect notion and it can foster children's vocabulary through the agency of different types of home literacy experiences.

Another finding of this study is that the children's fall term vocabulary score is positively related to the spring term vocabulary scores. These findings are in line with previous studies such as; Connor, Morrison and Slominski (2006) who found that children who have lower vocabulary scores in the fall term showed lower vocabulary growth in the spring term and Gou, Piasta, Justice and Kaderavak (2010) who reported that fall term vocabulary scores are a predictor of spring term vocabulary gains. However, in the Head Start context Hindman,

Skibbe, Miller and Zimmerman (2010) found that children who have weaker initial vocabulary scores at the beginning of the program have higher growth rates than the other children. This might be related to the majority of their sample coming from disadvantaged families and meaning the children's initial vocabulary scores would have been below the age equivalent and the Head Start program helped to close the initial vocabulary gap. The present study findings are acceptable and supported by the aforementioned studies given that children's vocabulary development is a cumulative process and therefore their initial word repertoire is important for their vocabulary gains (Schady, 2011).

Additionally, at classroom-level the predictor of literacy environment quality was positively linked to the children's vocabulary scores. These findings are in parallel with previous studies (Dickson & Smith, 1994; Farran, Aydoğan, Kang, & Lipsey, 2006; Harris, Golinkoff, & Hirsh-Pasek, 2011; Guo et al., 2010; Hindman et al., 2010; Xu et al., 2014). Bryant et al., (1994) found that the classroom environment quality was linked to preschoolers' language gains independent of their home environment. The classroom environment quality was related to many aspects of the children's literacy experiences such as the quality and quantity of book reading experiences, extended conversations, interactions with adults and peers, and opportunities for discourse. The literacy experiences exposed children to new words and contexts in which they learn and use the new words. Studies similarly found reading book activities and other oral language activities to be related to children's vocabulary development (Hargrave & Senechal, 2000; Mol, Bus, & de Jong, 2009; Wasik & Bond, 2001) Dickson and Smith (1994) examined different types of book reading activities in classrooms as a long-term contributor to preschoolers' vocabulary gains. Their study showed that participation in analytic discourse was strongly (R^2=.51) associated with their vocabulary scores. In their meta-analysis Mol, Bus and de Jong (2009) found that 6% of the variance in expressive vocabulary was explained by interactive reading.

Furthermore, preschool curricula that are professionally developed and that aim to introduce certain key words and concepts to children differ from the experience in the home environment. Building vocabulary knowledge is also an inherent part of the literacy environment. Studies showed that the teaching of words and concepts is not only related to the literacy domain' it is also integrated into other activity domains such as science, mathematics, play and drama can support children's new word acquisition and usage (Kontos, 1999; Leung, 2008; Szecsi, 2008; Meacham, Vukelich, Han, & Buell, 2013).

Additionally, the teacher's skills and emotional responses have an impact on the quality of the classroom literacy environment. Studies have pointed out that teachers' personal communications skills, responsiveness, warmth, and the climate of classroom emotional discourse are related to the development of children's vocabulary skills (Aydoğan, 2004; Farran et al., 2006; Guo et al., 2010). Children need encouragement to express their ideas, listen to others and respond and they need to be provided with an equal chance to share opinions.

Lastly, classroom resources such as different kinds of toys, books and book corners, posters and the design of the classroom are also related to the classroom literacy environment quality, and studies have indicated that these elements do enhance children's literacy behaviors (Lindfors, 2002; Naylor, Keogh, Downing, Maloney, & Simon, 2007; Neuman & Roskos, 1992) and can also foster children's expressive and receptive vocabulary in free play.

The overall finding of the current study showed that children's vocabulary development is linked to both child-level and classroom-level variables. The study findings are consistent with related literature. As a result, children's vocabulary development can be nourished in the multiple contexts of both the home and classroom environments. In addition, these findings indicated that the children have more opportunity to be exposed to oral language experiences. The findings

showed that home literacy environment and mother's education levels explained why the vocabulary scores were higher than PA and CAP scores.

The findings demonstrate variances in vocabulary scores higher than phonological awareness (PA) and concepts about print (CAP). The findings can be interpreted as the Turkish oral literacy culture being able to foster vocabulary development more than code related skills. Furthermore, the results can be also related to the developmental process of language and the acquisition of literacy skills. In order to understand the contextual relationships in children's vocabulary development in the context in which Turkish oral literacy is predominant, additional and replication studies need to be conducted within different school settings using children from families with differing SES.

5.2.2 Phonological Awareness

In the current study an analysis was conducted to find any correlation between children's fall term PA and their home literacy environment and the mother's level of education. The Multiple Regression results showed that these two factors were significant predictors of the fall term phonological awareness explaining 36% of the PA scores. In order to investigate the predicted spring term PA using fall term PA, the children's home literacy environment, the mother's level education and the classroom literacy environment were used as predictor variables. To analyze the nested data four sets of MLM were applied to the spring term PA scores. The unconditional model findings revealed that 26% of total variability in PA was attributed to differences between classrooms. This finding showed that there were variations between classrooms. The data set was appropriate for MLM analysis since the majority of the variation in PA scores was attributed to child level variables.

The current study's findings showed that the mothers' level of education (with a bachelor's degree) was positively associated with children's phonological awareness skills. These results are supported by the literature (Dickinson, Bryant, Peisner–Feinberg, Lambert, & Wolf, 1999; Leppanen, Niomi, Aunota & Nurmi, 2006; Puolakanaho et al., 2007). Leppanen et al., (2006) indicated that the education level of Finnish mothers and their children's phonological awareness skills are positively associated (r=.26 to r=.34). The positive relation is reasonable because various studies showed that the mother's education level has a bearing on the mothers' use of language and communication skills with their children (e.g., Pan et al., 2005; Westerlund & Lagerberg, 2008). This exposure to enriched oral language gives the child(ren) an opportunity for them to hear, identify and differentiate different sounds in oral language. Previous studies (Goswami, 2001; Walley, Metsala, & Garlock, 2003) also remarked on the connection between the children's vocabulary and PA skills. The studies indicated that children who have a large word repertoire need to organize and construct schemas to store them. The organization process can enable children to manipulate words and improve their phonological awareness (Senechal, Quellette, & Rodney, 2006). Furthermore, studies showed a correlation between the mother's level of education and the children's cognitive skills, and there is also a correlation between this and children's cognitive functions such as working memory and phonological awareness skills (Alloway, Gathercole, Adams, Willis, Eaglen, & Lamont, 2005; Milwidsky, 2009). Thus, the correlations between the mother's level of education and children's phonological awareness skills is consistent with the existing literature and this can be potentially explained by the direct connection between exposure to language inputs and/or mediated children's cognitive functions. Lastly, the level of education can also be related to mothers' parenting skills and responsiveness to children and these parenting skills can be related to children's PA development (Boe, Sivertsen, Heiervang, Goodman, Lundervold, & Hysing, 2014; Merz, et al., 2015). Further studies are needed to examine the multifaceted

direct and indirect relationship between mothers' education levels and children's PA development.

Another child-level variable is the HLE and the study showed that children who came from an enriched HLE have a higher PA scores. This positive relation is also reported by previous studies (Burgess, 2002; Foy & Mann, 2003; Hood, Conlon, & Andrews, 2008; Senechal & LeFevre, 2002; Turan & Akoğlu, 2014). Turan and Akoğlu (2014) found that children's home literacy experiences were related to PA skills for both typical and atypical development groups. Foy and Mann (2003) showed that print-related home media sources (r=.40) and parents teaching (r=.35) were related to children's PA. Senechal and LeFevre (2002) indicated that a child's higher PA was more related to parents helping the children read and write words at home (r=.38) than story book reading (r=.10). Furthermore, the studies also remarked that nursery rhymes, singing songs, finger play and play related to sounds are potential sources for the development of children's PA (Bryant, Bradley, Maclean, & Crossland, 1989; Flett & Conderman, 2002; Pullen & Justice, 2003). The previous studies clarify that HLE can foster children's PA in multiple ways through different types of activities and interactions. This study used HLEQ, which covers different daily parent-child shared activities, play, book reading, conversations and also parental scaffolding of their child's learning. The content of the HLEQ is in keeping with the potential PA sources as reported in previous studies. Thus, the positive association between the home literacy environment and children's PA skills is consistent with previous studies.

The last child-level variable is the children's fall term PA scores. The findings of the current study revealed a correlation between children's initial scores and their spring term scores. This is consistent with the literature (Carroll, Snowling, Stevenson, & Hulme, 2003; Leppanen, Nieme, Aunola, & Nurmi 2006; Muter, Hulme, Snowling, & Stevenson, 2004; Wagner, Torgesen, & Rashotte,

1994). The findings can lead to the conclusion that children's early/preschool entrance skills are important and that initial gaps tend to last throughout the preschool education year. This situation is reminiscent of the *Matthew effect* the "*rich get richer and poor get poorer*" thus children who have strong literacy skills early on are more likely to take advantage of later educational opportunities (Stanovich, 1986). Furthermore, previous studies also pointed out the developmental bi-directional relationship between early literacy skills such as phonological awareness and children's letter knowledge (e.g., Burgess & Lonigan, 2002; Foy & Mann, 2006 Leppanen, 2006; Mann & Foy, 2003). These initial scores can also give clues as to the other early literacy skills and there may also be a connection with other development domains. Children who have strong initial early literacy skills having been exposed to various language inputs and substantial early language experiences can foster cognitive skills by creating connections between the synapses in their brains. Therefore, if a child gains an initial advantage here this can lead to a cumulative effect as explained by Stanovichs (1986) in terms of reading referring to the Matthew effect in which the richer get richer meaning that early literacy development explains cumulative disadvantage and achievement gaps between children.

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With respect to the classroom literacy environment, those children with an enriched classroom experience had higher spring PA scores. These findings are supported by existing literature that pointed out that the preschool literacy experience contributes to children's PA gains (e.g., Bus, & van IJzendoorn, 1999; Landry, Swank, Smith, Assel, & Gunnewig, 2006; Phillips, Clancy-Menchetti, & Lonigan, 2008). Various studies indicated that classroom-based phonological awareness programs foster children's phonological awareness development and Landry et al., (2006) reported positive relation between the teachers' language skills and their children's PA scores. In addition, studies pointed out that oral language experiences such as conversations, nursery rhymes, poems, singing

songs, finger plays and other word games are useful ways to improve children's phonological awareness (Pullen & Justice, 2003).

Furthermore, Bus and van IJzendoorn (1999) examined the influence of phonological awareness programs on children's PA development. They conducted a meta-analysis study and their results showed that phonological awareness training that integrated letter recognition is more effective than phonologic training alone. The current Turkish early childhood education program states that phonological awareness activities must be covered purely through phonics and that introducing letters should not be undertaken. The participating private schools conducted PA activities in a more flexible way than public schools and they did touch on the topic of letter recognition but there was no consensus between schools on how to introduce letters. Therefore, this can explain the difference in the children's PA scores with respect to the classroom literacy environment. To achieve a clear interpretation of the children's PA gains in the context of Turkey, further research is needed to examine phonological awareness in both public and private preschools particularly concerning the issue of when to introduce letters.

5.2.2 Concepts about Print

The last set of analyses was conducted to examine the fall term concepts about print (CAP) in relation to children's home literacy environment and the mother's level education. The Multiple Regression results showed that the home literacy environment and the mother's level of education were significant predictors of the fall term concepts about print. Together the two predictors explained 34% of the children's phonological awareness scores. The children's home literacy environment, mother's level of education and classroom literacy environment were used as the predictor variables in order to investigate the predicted spring term concepts about print using the fall term CAP scores. MLM was conducted to analyze the nested data. Four sets of MLM were applied to the

spring term CAP scores. Unconditional model findings revealed that 35% of total variability in the CAP scores was attributed to differences between classrooms**.** This finding showed that there were variations between classrooms and the data set was appropriate for MLM analysis. Similarly, previous studies reported that 32% of the variance in preschoolers' print awareness was attributed to classroom–level variables (Dobbs-Oates, Kaderavek, Guo, & Justice, 2011; Guo et al., 2010). These results indicated that the majority of the variability in CAP scores was attributed to child-level variables.

With respect to the child-level variables, the results showed that the mother's level of education and fall term CAP scores were positively associated with the spring term CAP scores, whereas the home literacy environment was not associated even though the children's fall term CAP scores were significantly related to the home literacy environment. The association with home literacy environment was partially supported by the existing literature (Foy & Mann, 2003; Justice & Ezell, 2000, 2004; Korat, Klein, & Segal-Drori, 2007; Neumann, Hood, & Ford, 2013). Korat et al., (2007) found that 9% of the variance in the children's CAP was explained by HLE. Furthermore, studies indicated a positive correlation between children's CAP and mother-child "*print referencing*" interactions during play and other daily activities (Justice & Ezell, 2000, 2004; Neumann, Hood, & Ford, 2013). In the current study the children's fall term CAP scores were associated with their HLE scores. Since their initial scores mainly came from book concepts an examination of their spring scores showed that the children gained more points in print knowledge. From the responses to the HLE questionnaire it was seen that the children were rarely encouraged and supported by exposure to print concepts at home. In addition to the HLE the researcher also talked to more than 40 parents (for example: parents called the researcher to gain detailed information regarding the study and the researcher talked with parents while dropping off the preschoolers and picking them up). The parents consistently commented that they avoided introducing letters to the children at

home. They believed that if their children could read and write before first grade, they would have motivation and adaptation problems. The parents explained this saying the first grade teacher would not pay attention to children that already had these skills; rather s/he would focus on teaching other children to read and write. Consequently, their children would get bored in school. Most of the parents gave examples of their older child's and/or friends' experiences and problems concerning this issue. In addition, since the national curriculum avoids the introduction of letters in preschool, parents probably conform to this idea. Furthermore, parents also stated that introducing and dealing with letters was a professional issue so teachers should do it. Some parents said that their son/daughter was interested in letters but they suppressed his/her interest. Other parents said that they actually support children's letter interest but they are afraid of making mistakes, which is why they prefer not to encourage their children's interest in letters. Lastly, the parents commented that the children learn to read and write in first grade so there is no need to deal with letters before this time. Therefore, HLE might not be specifically related to children's spring term CAP scores. These findings recall the argument that literacy acquisition is not only a cognitive issue but also a social one. Society's literacy habits, expectations and ideas on literacy acquisition can shape home literacy practices. The HLE and societal literacy acquisition ideas related to children's literacy development. Parents' ideas may also send hindering messages to children manipulating their early interest in print with the result that children also expect to learn the letters at first grade. Further studies are needed to examine how societal expectations about literacy acquisition reflect the process of children's literacy acquisition.

Another finding regarding child-level variables showed a positive correlation between the mother's education level and the children's CAP scores. The findings can be explained as mentioned earlier by the link between the mother's level of education and parenting skills, language input and children's cognitive functions (e.g., Boe et al., 2014; Merz, et al., 2015). In addition,

previous studies pointed out that mother's level education was related to the mothers' literacy beliefs (e.g., Curenton, & Justice, 2008; Skibbe, Justice, Zucker, & McGinty, 2008; Weigel, Martin, & Bennett, 2006b). The mother's beliefs were associated with the quality of shared reading and literacy activities (e.g., Curenton & Justice, 2008; Edward, 2014; Justice, Weber & Bakeman, 2002; Meagher, Arnold, Doctoroff, & Baker, 2008). In addition, Weigel et al., (2006b) reported that mothers who believed that they have an active status in their children literacy education had children with better print knowledge than their peers. Further research is needed to examine the mother's education level, literacy practices and their quality in the context of Turkey to clarify the relationship in more detail.

The last child-level variable is the child's initial CAP score. These results implied that children who have higher initial CAP scores also have higher spring CAP scores. As expected, in parallel with the current study the findings from the related literature concerning the other early literacy skills and children's preschool entrance skills are important and related to their language gains (Dobbs-Oates, 2011; Guo et al., 2010). These results demonstrated that early childhood is an important period for the development of concepts about print development and the variation in children's initial CAP scores and its influence on children CAP gains should be investigated in the Turkish context.

Concerning the classroom-level variable, there was a positive correlation between the quality of the literacy environment and the children's spring term CAP scores. These findings were consistent with previous studies (Dobbs-Oates, 2011; Guo et al., 2010; Justice, 2006; Justice, Kaderavek, Fan, Sofka, & Hunt, 2009). Pullen & Justice, 2003). When comparing ICC of the early literacy scores, the CAP scores had the highest ICC value meaning that there was a high variation in CAP among the classrooms. The findings were supported by other studies (Dobbs-Oates, 2011; Guo et al., 2010). It can be interpreted that classroom level factors such as instruction, environment and other issues were more related to

CAP than the other early literacy skills. The interpretation is reasonable for the Turkish context since children have limited print related source and experience at home when compared with oral language experience. In addition, since oral literacy culture is more dominant in Turkey it stands to reason that children's CAP scores are more varied based on classrooms. From this point of view, it can be said that the classroom literacy environment can be a print related experience resource for children who have limited home print experience.

5.3 Conclusion

The present study investigated preschool children's home and classroom literacy environment characteristics and the relationship between receptive and expressive vocabulary, phonological awareness and concepts about print development. The findings indicated that the children's have more oral language related home experiences when compared to print related experiences. Although the majority of participants are in the high SES group the numbers with respect to book reading frequency, visiting the library and print related items are lower than expected. Similarly, the classroom literacy environment had the lowest scores with respect to print and early writing, book reading, and book corners. Thus, these results suggested that the predominant oral literacy culture in Turkey reflects on both the classroom and home environment. In addition, the current study revealed that the quality of the classroom literacy environment varied between and within the participating private schools. Even though the schools applied the same curriculum and had very similar physical resources the classroom literacy environment scores varied between classrooms. The findings showed that the teacher's role is important for the classroom literacy environment with respect to the instructional process, interaction with children and physical organization. Although the participating private schools implemented the national curriculum they were more flexible in terms of fostering children's letter recognition. However, the schools had limitations regarding the adoption of an

emergent literacy perspective and determining how they can foster children's early literacy skills in developmentally appropriate natural ways. Thus, early literacy is an emerging issue in Turkish classrooms.

Overall, the children's home literacy environment and their mothers' education levels were significant predictors for all the fall term early literacy scores. These findings are consistent with the emergent literacy perspective in that the source of early literacy skills is early childhood experiences. Lastly, the results revealed that the children's spring term early literacy scores were significantly associated with their initial early literacy scores, mother's level of education and the classroom literacy environment. Home literacy environment was not significantly related to spring term concepts about print scores. The findings can be linked to children's limited print experience at home while parent guidance can be linked to the non-significant relationship that was found for the spring term CAP scores. To conclude, the present study examined contextual relations with children's early literacy development in order extend the findings across different school types and examine the broader relations between other classroom- and child-level variables and further studies should be undertaken.

5.4 Implications

This study examined children's early literacy development from the perspective of the home and classroom literacy environment. Therefore, it provides information for parents, teachers and those involved in the Turkish early childhood education curriculum. The study showed that the mother's level of education and the home literacy environment were both predictors of children's fall term early literacy skills. These findings demonstrate how the home literacy environment should be enriched to foster a child's early literacy development. The study showed that the frequency of the children's daily shared reading with parents and their print-related home experiences were limited. The literature

review revealed that although almost all Turkish people are literate, they lack the habit of reading (e.g., Aksaçlıoğlu & Yılmaz, 2007; Sünbül et al., 2010; Yılmaz, 2002). A great body of research showed that the parent-child shared reading experience is an essential resource for children's overall early literacy development (e.g., Senechal, 2002; Bus et al., 1995). If the parents do not have a habit of reading, then they are unlikely to engage in reading activities with their children. Therefore, there is a need to change this behavior and Turkish people should be encouraged to develop reading habits to support the children in the family. An OECD report (2012) presented some successful national campaigns to improve the value of reading and to develop reading habits in society. These programs aimed to shape societies' attitudes towards reading and their habits, and to enhance their scholarly culture. For example; Poland devised the "*All of Poland Reads to Kids*" campaign, which has been implemented since 2002, to increase parent-child shared reading experiences and raise awareness of the value and contribution of book reading to children's literacy development. Famous people and popular artists participated in the campaign visiting preschools and reading books to children. Social media, TV shows and advertisements broadcast celebrities engaged in reading activities with children as public service announcements. The campaign also included promoting public libraries, publishing better quality children's books and offering seminars and conferences for parents to attend. The nationwide campaign was successful and was replicated in the Czech Republic under the slogan "*Every Czech Reads to Kids*" and then expanded to the whole of Europe ("*All of Europe Reads to Kids*") (OECD, 2012). From this point of view, campaigns supporting the literary culture of society are an important factor in developing an individual's literacy habits. Therefore, nationwide programs can be more effective in breaking the Turkish people's vicious circle of illiteracy in order to foster children's shared reading experiences and also bring up citizens who value reading and have regular reading habits.

Moreover, the present study revealed that children are exposed to limited print related resources and activities at home. Furthermore, the national literacy policy for early education specifies that children only start to learn letters at age six in first grade. The Finnish case has been used by some educators to support the Turkish system. There is no formal literacy instruction in preschool education in Finland. Similarly, the Finnish language has shallow orthography like Turkish. Children are not expected to learn to read or write in preschool (Leppänen et al., 2006). Despite the Finnish preschool program not having formal literacy instruction, the children's reading scores are above the international average (PISA, 2009, 2012). This result seems to stem from Finnish children having enriched print experiences at home and parents encouraging their print interest and scaffolding their learning (Brueggeman, 2008; Korkeamaki et al., 2012). The scholarly culture in Finland is higher than in Turkish society (e.g., Brueggeman, 2008; Mäkinen, 2015). Korkeamaki et al. (2012) indicated that 72% of Finnish children can recognize all the letters in the alphabet at the beginning of preschool and only 2% of the children could not recognize any letter. Furthermore, 77% of the preschoolers are able to read on entry to first grade (Korkeamaki et al., 2012). Preschool education enrollment is very high and pre-primary school education for six year olds has been compulsory since August 2015. Furthermore, children aged between 0 to 6 years have access to day care and for low income families' day care is free (Heinämäki, 2008). Their early childhood education program adopted *educate* as a principle. They integrate both education and care to foster both development and learning in children (Heikkilä, Ihalainen, & Välimäki, 2004).

Even though in the present study the majority of children were from higher SES families, the children had limited print related experiences. Therefore, it is expected that for the children attending public preschools their home literacy experiences for both shared reading and print related activities will be lower based on previous study findings (e.g. Çakmak and Yılmaz, 2009 Altun, 2013; Altun & Tantekin-Erden, 2015). Furthermore, early childhood education is not compulsory

and the schooling rate is 33.28 for children aged 3-5 (MONE, 2016). To improve the situation, home-based intervention programs can be prepared to develop the children's home literacy environment in terms of materials and experiences. In Turkey, some intervention programs such as AÇEV (Mother Child Education Foundation) have been conducted but only on a small scale. In future, these kinds of programs can be applied as a part of family social services. The results from various studies showed that fathers rarely participated in shared reading experiences although research has indicated that father involvement in children's literacy experience contributes to children's early literacy development (Ersan, 2015; Varghese & Wachen, 2015). Therefore, not only the mother but also the father should be involved in family education programs and campaigns to improve home literacy practices. Furthermore, maybe the integration of family support into the national preschool program (OBADER, 2013) can be enriched with respect to home literacy experiences in order to support the development of parents' literacy practices at home. Preschool teachers can also inform parents about their children's literacy development and they can collaborate with parents to enrich their child's home experiences.

The findings of the current study also have implications for teachers. The study indicated that the classroom literacy environment is multi-aspectual and that not only the school curriculum but also the teacher's classroom design, interaction with children and the quality of their activity processes have a bearing on the children's early literacy development (Smith, Brady, & Anastasopoulos, 2008). The variations in classroom literacy environment between classrooms in the same school demonstrate the importance of the teacher's role in the education process. Furthermore, given that children's background knowledge and their home literacy environment can impact the children's spring term early literacy scores, teachers can assist and scaffold those children who are disadvantaged in order to close the gaps in the initial stage of acquiring early literacy skills.

Lastly, the study provides information for the Ministry of National Education and early childhood policy and program makers. Existing studies have remarked that reading acquisition is a developmental continuum and early literacy skills are pioneers of reading skills (e.g. Whitehurst & Lonigan, 2002). The emergent literacy perspective prevails in the field of early literacy research and it has been adopted in many developed countries in place of the reading readiness perspective. The language and literacy domain of the current early education curriculum has been adapted and extended but reading readiness is still predominant. This study showed that the scores for children's spring term CAP were linked to their classroom literacy environment scores but not with their home environment scores. The schools that participated in the current study integrated letter related activities into their curriculum and the children were exposed to letter recognition at school. Letter related activities can contribute to children's print concepts and various studies have commented that print knowledge is an important predictor for children's later reading skills (NELP, 2008; Villalon & San Francisco, 2001). In addition, Bus et al., (1995) showed that phonological awareness activities are more effective when combined with letter integrated activities. Therefore, early letter experience is important for children's early literacy development. Even though the majority of children participating in this study came from high SES families they had limited home print related experiences and this situation could be worse for children from low SES families. Therefore, the preschool setting can be an opportunity to foster code related early literacy skills before starting first grade. The related literature has advocated that a strong start in primary grade is important for children's later reading skills and academic success and that preschool education programs should be used as an intervention tool to fill early literacy gaps prior to the child entering first grades (Bennett, 2006; OECD, 2012). This does not mean that children are forced to learn letters or that didactic methods are used to teach letters to children; rather that the children are exposed to a rich print environment. Children need to be actively exposed to a rich literacy environment and natural learning experiences in

order to foster both oral and code-related early literacy skills. The Turkish language has an orthographic advantage but our PISA reading scores are consistently below the international average. The low reading achievement results indicate that a review of Turkish literacy policy from preschool to high school is necessary. In order to make clear judgments and implications for Turkish early literacy policy, there is need for further longitudinal studies examining the policy effect on children's literacy development at both public and private preschools.

5.5. Limitations and Recommendations

The present study had three specific limitations. First, it was conducted with preschool children attending private schools and most were from high SES families. Further studies are needed to examine children's early literacy development from families from varying SES and different school types to make more clear judgments about contextual factors relating to children's early literacy development.

Secondly, in the present study home the literacy environment was measured by parent-answered questionnaires. Further studies can examine children's home literacy environment in more detail using observations and interviews. In addition, the study focused on the relations between home and classroom literacy environments, two settings of the microsystem, and preschoolers' early literacy development. Further studies can examine broaden settings like neighborhood and community relations to preschoolers' early literacy development.

Thirdly, the classroom literacy environment was used to gain information regarding overall classroom literacy quality. The observation process allows the researcher to determine literacy at a child-level and some children, especially those who have low motivation, low literacy skills, who are less social and need

more time to express themselves, are less likely to benefit from classroom resources and teacher interaction. Therefore, further studies should investigate children's classroom literacy environment at classroom-level and at individual level. This would facilitate a clearer interpretation of the relationship between the classroom literacy context and the children's early literacy skills.

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APPENDICES

Appendix A: Language and Literacy Acquisitions and Indicators

A1. The child differentiates the sounds.

(Indicators: The child explains where the sound comes from (the direction of the sound). S/he explains the source of the sound. S/he explains features of the sound. S/he explains the similarities and differences between sounds. S/he produces sounds similar to the sound presented.

A2. The child uses his/her voice appropriately/effectively.

(Indicators: He/she uses his/her breath properly/effectively while speaking/singing. S/he sets his/her tone, speed and volume of voice when speaking/singing.

A3. The child forms a sentence using the rules of syntax.

(Indicators: He/she forms affirmative, negative, interrogative and compound sentences. He/she uses the structures appropriately in sentences.

A4. The child uses grammar rules correctly while speaking.

(Indicators: S/he uses nouns, verbs, adjectives, conjunctions, plural forms, adverbs, pronouns, prepositions, and postpositions, case markers and negative structures while forming a sentence.

A5. The child uses language for communicative purposes.

(Indicators: S/he establishes eye contact while speaking. S/he understands mime and gestures. S/he uses mime and gestures while speaking. S/he initiates the conversation. He/she maintains the conversation. S/he ends the conversation. S/he

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uses polite words in his/her speech. S/he takes part in the conversation. S/he waits for his/her turn to speak. S/he tells his/her feelings, ideas and dreams. S/he tells the reasons for his/her feelings and ideas.

A6. The child enriches his/her vocabulary.

(Indicators: S/he recognizes new words in speech and asks the meanings of these words. S/he remembers the words and explains their meanings. S/he uses the new words that he/she has learnt meaningfully. S/he makes use of antonymous, synonymous and heteronymous words.

A7. The child grasps the meaning of what he/she has listened and watched.

(Indicators: He/she follows verbal instructions. He/she explains what he/she has listened and watched. He/she comments on what he/she has listened and watched.

A8. The child expresses what he/she has listened and watched in various ways.

(Indicators: S/he asks questions about what he/she has listened and watched. S/he answers the questions on what s/he has listened and watched. S/he explains what he/she has listened and watched to someone else. S/he explains what he/she has listened and watched through paintings, music, drama, poetry, narrations, etc.

A9. The child shows awareness of phonetics.

(Indicators: He/she tells the initial sounds of words. S/he tells the last sounds of words. S/he produces words beginning with the same sound. S/he produces words ending with the same sound. S/he tells the rhymes in poems,

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stories and nursery rhymes. S/he tells different words using the same rhyme as a word given to him/her.

A10.The child reads visual materials.

(Indicators: S/he investigates visual materials. S/he explains visual materials. S/he asks questions about visual materials. S/he answers questions about visual materials. S/he creates compositions such as cases and stories making use of visual materials.

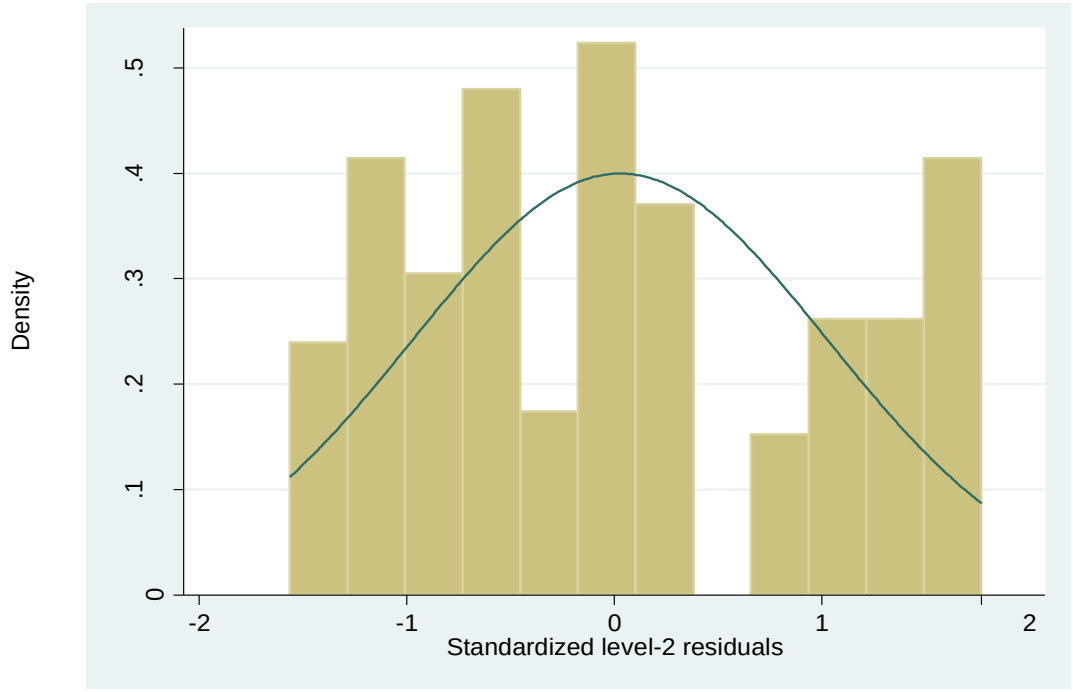
A.11. The child shows an awareness of reading.

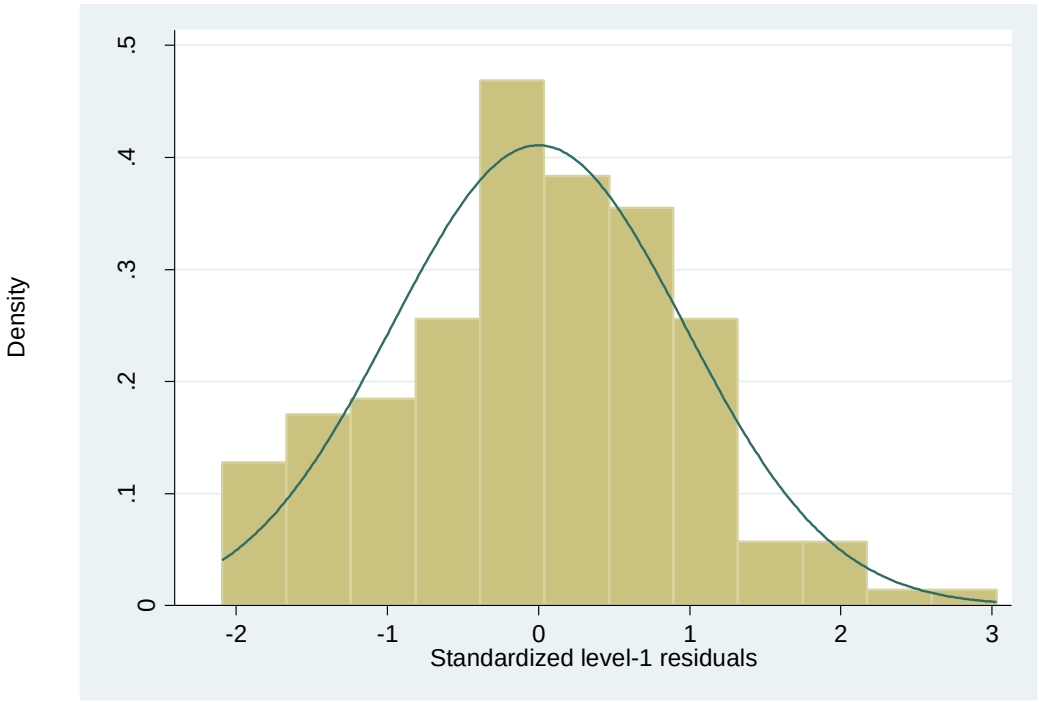
(Indicators: S/he talks about the written materials around him/her. S/he requests that a grown-up reads a book to him/her. S/he imitates what is being read to him/her. S/he explains the importance of reading in daily life.

A.12. The child shows an awareness of writing.

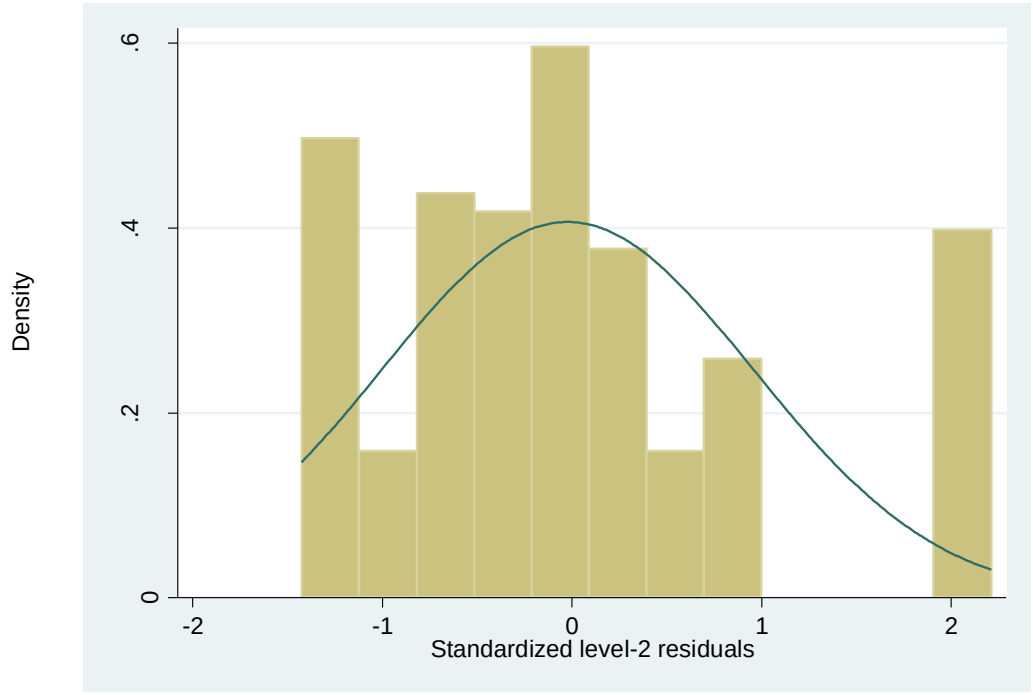
(Indicators: S/he points to the scripts around him/her. S/he points to the punctuation in written materials. S/he indicates the direction of the script. S/he requests that a grown-up writes his/her feelings and opinions. S/he explains the importance of writing in daily life.

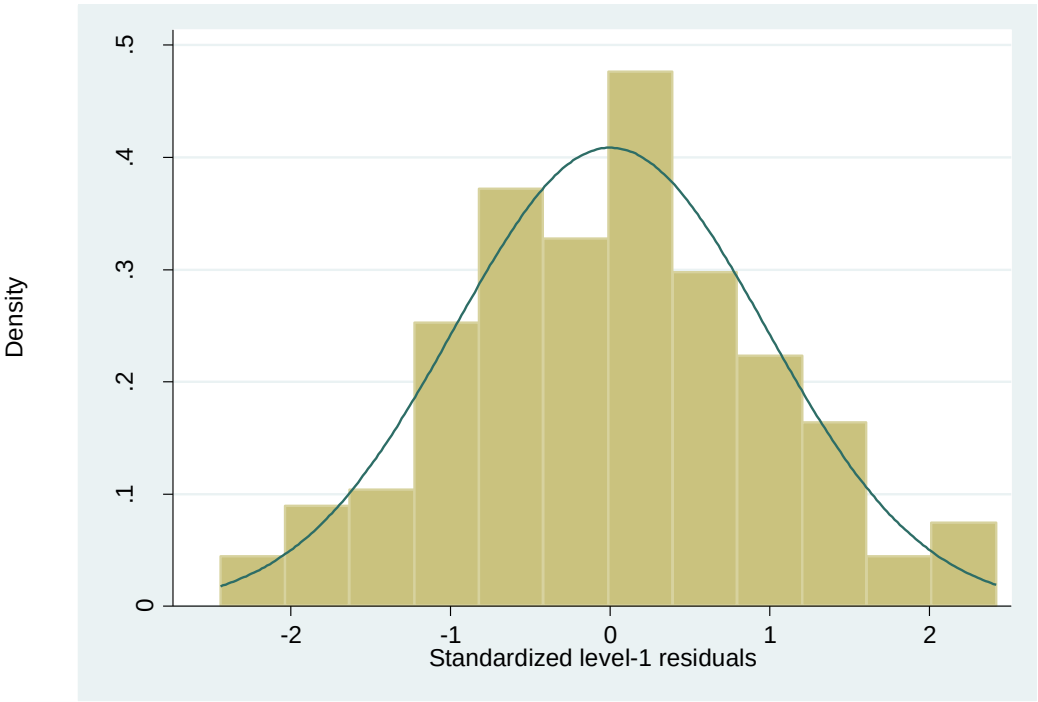
APPENDIX B: Full Model for Vocabulary -Receptive Scores



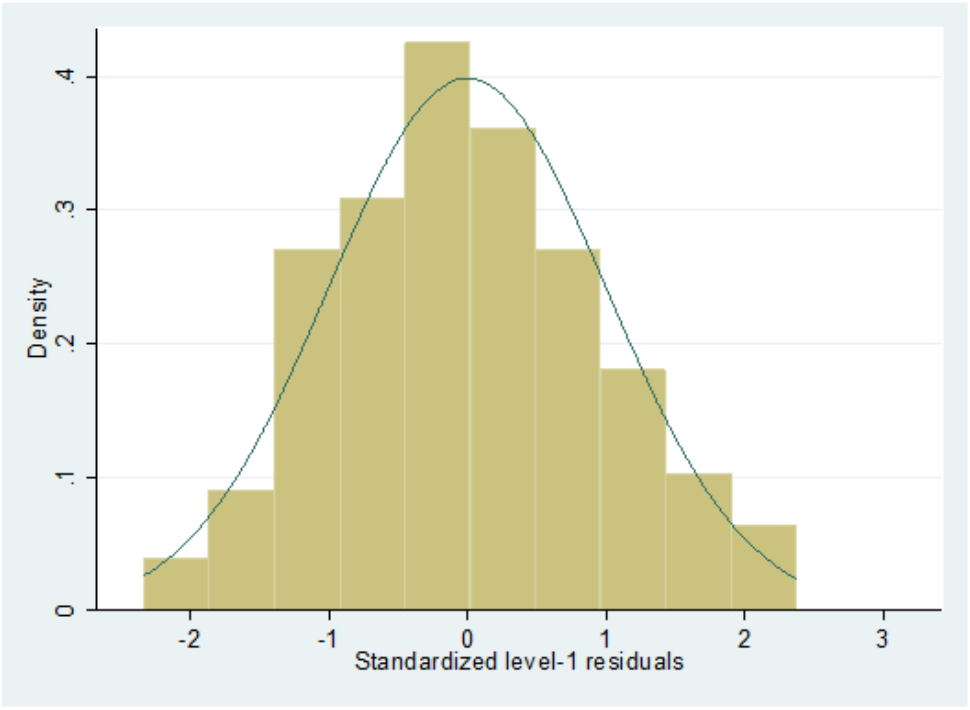


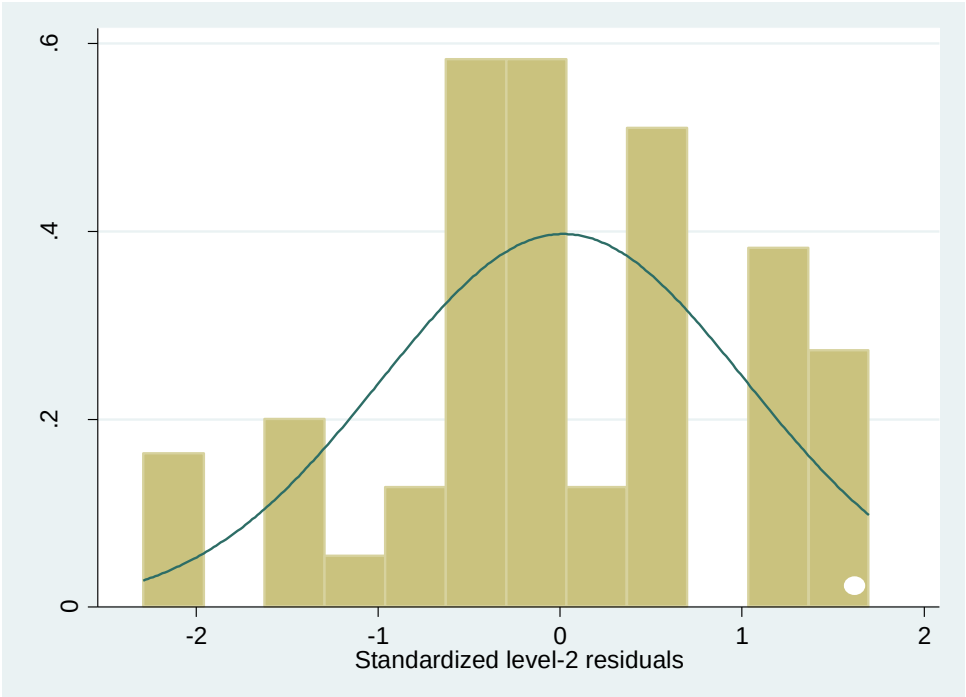
Full Model for Vocabulary -Receptive Scores



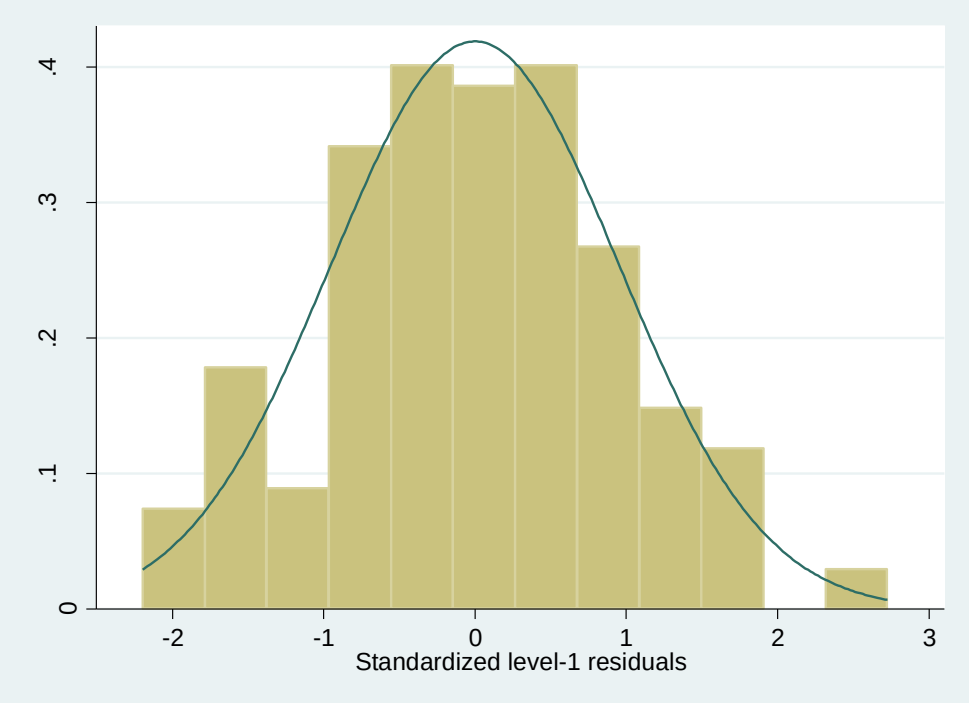


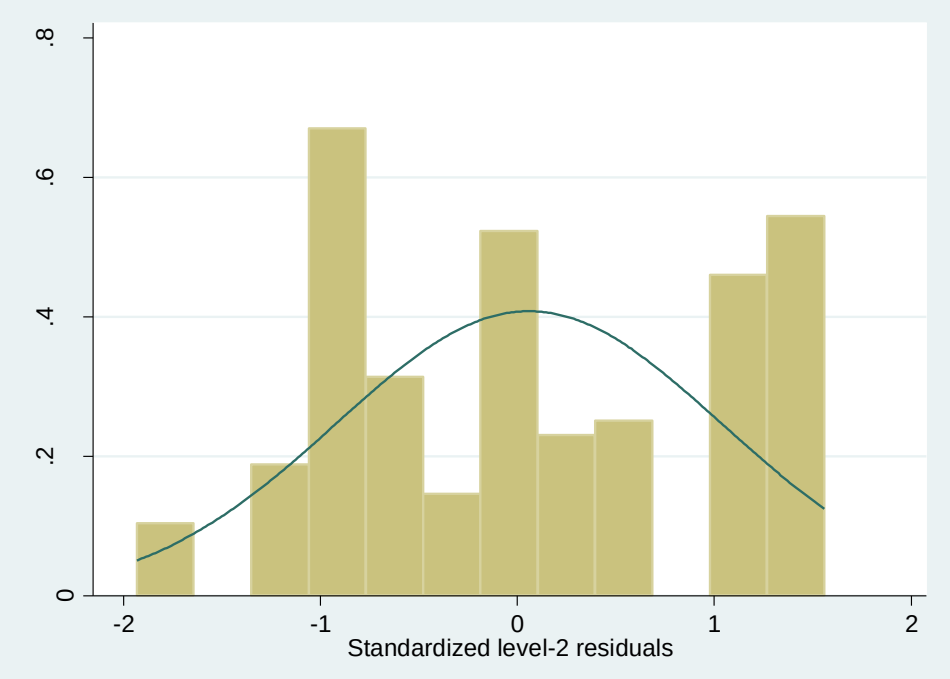
Full Model for Phonological Awareness





Full Model for Concepts about Print





APPENDIX C: TURKISH SUMMARY

OKUL ÖNCESİ DÖNEM ERKEN OKURYAZARLIK BECERİLERİNİN EV-İÇİ VE SINIF OKURYAZARLIK ORTAMLARI İLE OLAN İLİŞKİNİN ÇOK DÜZEYLİ ANALİZİ

1. GİRİŞ

Günümüz bilgi çağında, sadece iş ortamları değil günlük yaşam ortamları da işlevsel okuryazarlık becerilerinin kullanımını gerektirmektedir (Bawden, 2001; Liu, 2005; Tyner, 2014). Bu nedenle, dünya genelinde eğitim programlarının başta gelen temel amaçlarından biri okuryazar vatandaşlar yetiştirmektir (United Nations Educational, Scientific and Cultural Organization, [UNESCO], 2009).

Okuma, bireyin yazılı dili çözümleyerek, anlam kurduğu karmaşık bir süreç olarak tanımlanmaktadır (Akyol, 2012; Thompkins, 2005). Okuma becerileri, bireyin bilgiye ulaşmasını, yapılandırmasını ve bilgiyi yeniden üretmesini sağlar (Allen, 2012; Scarborough, 2009). UNESCO (2006)'e göre okuryazarlık hayat boyu öğrenme ve eğitim hayatı için temel olan becerilerdir. Bu beceriler her kademesindeki eğitim programlarının esas unsurları arasında yer almakta (UNESCO, 2009), öğrenciler ilk önce okumayı öğrenmekte ve daha sonra da öğrenmek için okumaktadırlar (Graves, Juel, ve Graves, 1998). İlkokul kademesinde öğrenciler okumayı öğrenirken, ortaokul ve daha ileriki eğitim kademelerinde öğrenciler okuma becerilerini bilgiye ulaşma ve yapılandırmada bir araç olarak kullanmaktadır. Bu nedenle, okuma becerileri bireyin akademik başarı için büyük önem taşımaktadır (Arnold ve Doctoroff, 2003; Duncan vd., 2007; Hermandez, 2011).

İlkokuldan lise kademesine kadar Türk eğitim programları yetkin okuryazar bireyler yetiştirmeyi amaçlamaktadır (Milli Eğitim Bakanlığı [MEB], 2011, 2015). Bununla birlikte, Uluslararası Öğrenci Değerlendirme Programı (Programme for International Student Assessment [PISA], 2003,2006, 2009, 2012, 2015) verileri Türk öğrencilerin okuma başarılarının uluslararası ortalamanın altında olduğunu göstermektedir. Bu sonuçlar Türk öğrencilerin okuma alanında yaşadığı bu sorunların nedenlerini ve okuma eğitim programlarının etkililiğini sorgulanması gerektiğini göstermektedir.

Okuma alanında yürütülen birçok çalışma ilkokul dönemi okuma başarısının ileriki kademelerdeki okuma başarısı ile ilişkili olduğunu göstermektedir (örn. Cunningham ve Stanovich, 1997; Fletcher ve Lyon, 1998; Juel, 1988; Philips, Norris, Osmond ve Maynard, 2002; Rasinski ve Padak, 2005; Smith, 1997; Spira, Bracken ve Fischel, 2005). Bu çalışma sonuçlarına göre, okuma becerileri öğrencilerin eğitim hayatları için temel teşkil etmekte ve ilkokul okuma başarısı, ileriki eğitim kademelerinde öğrencinin okuma başarısının önemli bir göstergesidir. Bu nedenle, ilgili alanyazında birçok çalışma ilkokul dönemi okuma başarısına odaklanmıştır. Bu çalışmalar ilkokul dönemi okuma becerilerinin gelişimi ve okuma başarısını etkileyen faktörleri araştırmışlardır. Bu çalışma sonuçlarına göre, ilkokul dönemi okuma başarısı ile erken okuryazarlık becerileri ile ilişkili olduğunu göstermektedir (örn. Badian, 1998; Bishop, 2003; Coast-Kitsopoulos, 2010; Kim ve Petscher, 2011; Lonigan, Burgess ve Anthony, 2000; Munger ve Blachman, 2013). Okuma becerileri gelişimsel bir süreç içinde edinilmekte ve okuma becerilerinin öncülü olan erken okuryazarlık becerileri köklerini erken çocukluk döneminden almaktadır (örn. Clay, 1967, 1969, 1972; Goodman, 1967; 1986; Lonigan, 2004; Scarborough, Neuman, ve Dickinson, 2009; Sulzby ve Teale, 1991; Whitehurst ve Lonigan, 1998, 2001).

Ulusal Erken Okuryazarlık Paneli (NELP) (2008) okuma becerilerinin öncülü olan erken okuryazarlık becerileri hakkında yapılan araştırma sonuçlarını

sentezlemek amacıyla meta-analiz çalışması yürütmüştür. NELP (2008) raporuna göre, sesbilgisel farkındalık, harf bilgisi, yazı farkındalığı, kelime dağarcığı, sözel dil becerileri, yazı kavramları ve sesbilgisel bellek gibi erken okuryazarlık becerileri, ileriki dönemi okuma becerilerinin önemli yordayıcıları arasındadır. Benzer bir şekilde Scarborough (1998) tarafından yürütülen meta-analiz çalışmasında da erken okuryazarlık becerilerinin ileriki dönem okuma becerilerinin yordayıcısı olduğu tespit edilmiştir. Scarborough (2001) erken okuryazarlık becerileri ile ileriki dönem okuma becerileri arasındaki ilişkiyi açıklayan "Okuma Halatı Modelini" ortaya atmıştır. Bu modele göre okuma birçok iç içe geçmiş beceriden oluşmaktadır. Halat okumayı temsil ederken, bu süreçte gerekli olan her bir beceri bu halatı oluşturan lifleri temsil etmektedir. Scarborough (2001) bu halatı oluşturan becerileri iki ana başlık altında ele almıştır. Scarborough'a (2001) göre bireylerin akıcı ve yetkin okuyucular olmaları için kelime tanıma ve dili anlama ana becerilerine sahip olması gerektiğini belirtmiştir. Bireyler, kelime tanıma becerisi ile yazılı dili çözümlemede otomatiklik kazanarak ve önbilgilerini kullanma, kelime bilgisi gibi dili anlama becerilerinde strateji geliştirerek yetkin ve akıcı okuyucular haline gelebilmektedir. Scarborough'a (2001) göre bu iki ana süreç birbiri ile işbirliği halinde işlemektedir. Erken okuryazarlık becerileri, bu iki ana sürecin öncül becerilerini oluşturmaktadır. Sesbilgisel farkındalık, yazı farkındalığı ve harf bilgisinin kelime tanıma sürecinin öncül becerilerini oluştururken, kelime dağarcığı ve sözel dil becerileri ise dili anlama sürecinin öncülleri arasındadır (Scarborough, 2001, 2009). Bu çalışma sonuçları erken okuryazarlık becerilerinin önemini ortaya koymaktadır. Bu amaçla bu çalışma kapsamında sesbilgisel farkındalık, kelime hazinesi ve yazı farkındalığı becerilerinin incelenmesi hedeflenmiştir.

Sesbilgisel farkındalık, sesi fark edebilme, ayırt edebilme ve sözcükler içerisinde yer alan sesleri anlamından bağımsız olarak manipüle edebilme

becerilerini içermektedir (Armbruster, Lehr ve Oshorn, 2001; Gillion, 2004; Goswami ve Bryant, 1990; NELP, 2008).

McGee ve Richgels (2012) sesbilgisel farkındalığın alfabe bilgisinin öncülü olan temel becerilerden biri olduğunu ifade etmektedir. Çocuklar, öncelikle dilin üniteleri olan sesleri fark etmekte ve daha sonra seslerin yazılı dilde alfabe aracılığıyla temsil edildiğini kavramaktadır (Chard, Simmons ve Kameenui, 1998). İlgili alanyazında yer alan birçok araştırma sesbilgisel farkındalığın kelime tanıma sürecinin öncülü olan beceriler arasında yer aldığını ve ileriki dönem okuma becerilerinin yordayıcısı olduğunu göstermektedir (örn. Anthony ve Francis, 2005; Catt, Gillispie, Leonard, Kail ve Miller, 2002; Erdoğan, 2012; Kirby, Parrila ve Pfeiffer, 2003; Oudeans, 2003; Stahl ve Murray, 1994; Weiner, 1994). Ulusal alanyazında sınırlı sayıda yürütülen çalışmalarda da okul öncesi dönem sesbilgisel farkındalık ile birinci sınıf okuma becerileri arasında benzer yordayıcı ilişkiler bulunmuştur (Güldenoğlu, Kargın ve Ergül, 2016; Karakelle, 2004). Karaman ve Üstün (2011) okul öncesi dönem çocukları sesbilgisel farkındalığını sosyoekonomik düzey açısından incelemişlerdir. Bu çalışma sonucuna göre orta ve yüksek sosyoekonomik grupta yer alan çocukların sesbilgisel farkındalık puanları alt sosyoekonomik gruba göre daha yüksek bulunmuştur. Turan ve Akoğlu (2011) ise hazırladıkları eğitim programının okul öncesi dönem çocuklarının sesbilgisel farkındalık gelişimine etkisi incelemişlerdir. Çalışma kapsamında uygulanan ve 15 oturumdan oluşan eğitimin çocukların sesbilgisel farkındalığına olumlu katkı sağladığını belirtmişlerdir. Turan ve Akoğlu (2014) tarafından yapılan başka bir çalışmada ise normal gelişim gösteren ve dil gelişimi açısından problem yaşayan okul öncesi dönem çocuklarının sesbilgisel farkındalıklarını ev okuryazarlık ortamı açısından incelemişlerdir. Normal gelişim gösteren çocuklar ile dil gelişimi açısından problem yaşayan çocuklar arasında sesbilgisel farkındalık ve ev okuryazarlık ortamları bakımından anlamlı bir farklılık olduğu tespit edilmiştir.

Özetle, ulusal alanyazında yer alan çalışmalar incelendiğinde sesbilgisel farkındalığın birinci sınıf okuma becerileri ile ilişkili olduğu ve bu konuda basılı olan sınırlı sayıda araştırmanın bulunduğu görülmektedir.

Bir diğer erken okuryazarlık becerisi olan yazı kavramları, yazının yönü, yazının sayfada ki konumunu, sözcükler arasındaki boşlukları, sözcük, cümle gibi yazı dilinin birimlerini kapsamaktadır (Clay, 1998, 2000). Yazı kavramları testi İngiliz dili için geliştirilmiş ve daha sonra Fransızca, Almanca, İspanyolca, Türkçe, Arapça ve İbranice gibi birçok dile uyarlanmıştır (Bourque, 2001; Clay, 1989; Korat, Aram, Hassunha-Arafat, Saiegh-Haddad ve Iraki, 2014; Rodríguez, Hobsbaum ve Bourque, 2003; Öztunç, 1994; Tafa, 2009).

Clay'a (2000) göre yazı kavramları testi, çocukların yazılı dilin yapısı hakkındaki farkındalıklarını ölçmek için uygun bir araçtır. Lonigan, Burgess ve Anthony (2000) okul öncesi dönem yazı kavramlarının birinci sınıf okuma başarısı ile orta dereceli ilişkili olduğunu tespit etmişlerdir. NELP (2008) raporuna göre, yazı kavramları ile ileriki dönem okuma başarısı arasında anlamlı bir ilişki (r=.43) bulunmaktadır. Alanyazında yer alan diğer çalışmalarda da benzer sonuçlar sunulmuştur (örn. Garvin & Walter, 1991; Lomax & McGee, 1987; Reutzel, 2003).

Öztunç (1994) yüksek lisans tez çalışmasında yazı kavramları testini Türkçe' ye uyarlamıştır. Yazı kavramları testi kapsamında noktalama işaretleri, harf ve kelime tanıma maddeleri de yer almaktadır. Türkiye'de uygulanan okul öncesi eğitim programı kapsamında harf öğretimi yapılmadığı için Şimşek (2011) doktora tezi kapsamında yazı kavramları listesini geliştirmiş ve test maddelerinde sadeleştirme yapmıştır. Şimşek (2011) çalışmasında kendi hazırladığı sekiz haftalık okuma yazmaya hazırlık çalışmalarının çocukların yazı kavramları gelişimine katkısını incelemiştir. Uygulanan program sonucunda deney grubunda yer alan çocukların kontrol grubunda yer alan çocuklara oranla puanlarında

istatistiksel olarak anlamlı bir şekilde daha fazla artış olduğunu belirtmiştir. Başka bir çalışmasında Şimşek-Çetin (2014) devlet anaokullarına giden 376 çocuğun yazı kavramları becerilerini incelemiştir. Çalışmaya katılan çocuklar, yazı kavramları testinin sadece %37,5'lik kısmından puan alabilmişlerdir. Çocukların aldıkları puanların büyük bir kısmı kitap kavramları ile ilgiliyken, yazı farkındalığı kısmından çok düşük puan alabilmişlerdir.

Ulusal alanyazında yazı kavramları konusunda yapılmış sınırlı sayıda basılı çalışmaya ulaşılabilmiştir. Geçmişten günümüze okul öncesi eğitim programlarında harf öğretiminden sakınılması ve yazı farkındalığı konusunda sınırlı amaç ve kazanımların yer verilmesinin bu konuda az sayıda çalışma bulunmasında etkili olduğu düşünülmektedir.

Çalışma kapsamında ele alınan bir diğer erken okuryazarlık becerisi de kelime hazinesidir. Kelime hazinesi, çocukların sahip olduğu kelime repertuarını ifade etmektedir. Kelime hazinesi kendi içinde alıcı kelime bilgisi ve ifade edici kelime bilgisi olarak iki ana başlığa ayrılmaktadır (Christ ve Wang, 2010). Alıcı kelime bilgisi, çocukların anlamını bildiği kelime repertuarını oluştururken, ifade edici kelime bilgisi ise sözel olarak ifade edebildiği kelime repertuarını oluşturmaktadır (Armbruster, Lehr ve Osborn, 2001; Burger ve Chong, 2011; Pan, 2005). Çocukların sahip oldukları kelime hazinesi sözel dil gelişimlerinin önemli bir göstergesidir. Çocuklar sahip oldukları kelime hazinesi vasıtasıyla duygularını, düşüncelerini, ihtiyaçlarını ve düşüncelerini ifade edebilmekte ve çevreleri ile iletişim kurabilmektedirler. Ayrıca, yapılan çalışmalar kelime bilgisinin sesbilgisel farkındalık becerilerinin gelişimde potansiyel bir kaynak olduğuna işaret etmektedir. Çocuklar ne kadar fazla kelime repertuarına sahip olursa, o kadar fazla sayıda kelimeyi manipüle etme ve sahip olduğu yeni kelimeler için zihinsel şemalarını organize etme şansına sahip olacaktır. Çocukların kelimeler ile ilgili bu deneyimlerinin, farklı sesleri ayırt etme ve manipüle etme becerilerini destekleyeceği ifade edilmiştir (Goswami, 2001; Senechal, Ouellette ve Rodney,

2006; Thomas ve Senechal, 2004; Walley, Metsala ve Garlock, 2003). Bununla birlikte, okuma sürecinde anlama ulaşmak için kelime bilgisine ihtiyaç duyulmaktadır. Okuma sadece yazılı dili seslendirme değil aynı zamanda yazılı dilden anlam kurma sürecidir. Bu nedenle, kelime tanıma süreci ile yazılı dili çözümlerken aynı zamanda kelime bilgisini kullanarak metinden anlam kurma sürecinin gerçekleşmesi gerekmektedir (Akyol, 2012; Biemiller, 2003). Bu nedenle, kelime bilgisi okuma sürecinde gerekli olan temel becerilerden birisidir (Kendeou, Van den Broek, White ve Lynch, 2009; Muter, Hulme, Snowling ve Stevenson, 2004; NELP, 2008; Scarborough, 2009; Senechal, Ouellette ve Rodney, 2006).

Yıldırım, Yıldız ve Ateş (2011) çalışmalarında kelime bilgisinin hikâye edici ve bilgi verici metin türlerinde okuduğunu anlamaya katkısını araştırmışlardır. Bu araştırma sonuçlarına göre, kelime bilgisi ile hikâye edici (r=.68) ve bilgi verici (r=.74) metinden okuduğunu anlama puanları arasında anlamlı bir ilişki bulunmuştur. Ulusal alanyazında yer alan başka bir çalışmada da Erdoğan, Bekir-Şimşek ve Erdoğan-Aras (2005) okul öncesi dönem çocukların kelime bilgilerini cinsiyet, okul öncesi eğitim süresi ve anne eğitim düzeyi açısından incelemişlerdir. Çocukların kelime bilgisi puanlarının okul öncesi eğitim alma süresi bakımından farklılaşma gösterdiği, daha uzun süre okul öncesi eğitim alan çocukların daha yüksek kelime bilgisi puanına sahip olduğu belirtmişlerdir. Taner ve Başar (2005) birinci sınıf öğrencilerinin, ilkokula başlangıçta sahip oldukları kelime bilgilerini okul öncesi eğitim alma durumları ve sosyoekonomik durumları bakımından incelemişlerdir. Çocukların kelime bilgisi puanları okul öncesi alanların aleyhinde anlamlı bir farklılaşma göstermektedir. Bununla birlikte, orta ve üst sosyoekonomik gruptan gelen çocukların kelime bilgisi puanlarının, alt sosyoekonomik düzeyden gelen çocuklara oranla istatistiksel olarak daha yüksek olduğu bulunmuştur. Başka çalışmalarda da okul öncesi eğitimin çocukların kelime bilgisi puanlarına olumlu katkı sağladığı tespit edilmiştir (Koçak ve Aydoğan,

2003; Öztürk, 1995; Taner, 2003; Temiz, 2002). Dereli ve Koçak (2005) anne eğitim düzeyinin çocukların kelime bilgisi puanları ile ilişkili olduğunu belirtmişlerdir.

Bu sonuçlar erken okuryazarlık becerilerinin ileriki dönem okuma becerilerinin yordayıcısı ve öncülü olduğunu ortaya koymaktadır (örn. Kim ve Petscher, 2011; Munger ve Blachman, 2013; NELP, 2008). Erken okuryazarlık becerilerini araştıran birçok araştırma, okul öncesi dönem ev ve okul ortamında sunulan zengin okuryazarlık ortamının, bu becerilerin gelişmesinde önemli bir rol oynadığını göstermiştir (örn. Bennett, Weigel ve Martin, 2002; Evans ve Shaw, 2008; Hammer, Frakas ve Maczuga, 2010; Kim, Im ve Kwon, 2015; Niklas ve Schneider, 2013).

Ev-içi okuryazarlık ortamı, çocuğa evde sunulan okuryazarlık ile ilgili materyal, iletişim, etkileşim, fırsat ve deneyimleri kapsamaktadır. Alanyazında yer alan çok sayıda araştırma ev-içi okuryazarlık ortamının çocukların erken okuryazarlık becerileri; (a) sesbilgisel farkındalık (Burgess, 1997; 2002; Foy ve Mann, 2003; Reese, Robertson, Divers ve Schaughency, 2015; Senechal ve Lefevre, 2002), (b) yazı kavramları (Korat, Klein ve Segal-Drori, 2007; Levy, Gong, Hessels, Evans ve Jared, 2006), (c) kelime bilgisi (Kim ve Kwon, 2015; Li ve Tan, 2015; Meng, 2015; Niklas ve Schneider, 2015; Scheele, Leseman ve Mayo, 2010), (d) harf bilgisi (Burgess, Hecht ve Lonigan, 2002; Hood, Conlon ve Andrews, 2008; Neumann, Hood ve Neumann, 2009) ve (e) ileriki dönem okuma başarısı (De Jong ve Leseman, 2001; Gottfried, Schlackman, Gottfried ve Boutin-Martinez, 2015; Tichnor-Wagner, Garwood, Bratsch-Hines ve Vernon-Feagans, 2015) ile ilişkili olduğunu göstermektedir.

Ev-içi okuryazarlık ortamı çocuğa sağlanan fiziksel ortamın yanı sıra aile bireyleri ile kurulan iletişim ve çocukların dil gelişimi için sağlanan desteği de kapsayan çok boyutlu bir kavramdır (örn. Grieshaber, Shield, Luke, &

Macdonald, 2012; Kluczniok, Lehrl, Kuger, & Rossbach, 2013; Niklas, Tayler, & Schneider, 2015). Ulusal alanyazında yer alan araştırmalar incelendiğinde ise çocukların erken okuryazarlık becerilerinin daha çok anne eğitim durumu ve sosyoekonomik düzey açısından incelendiği görülmektedir (örn. Dereli ve Koçak, 2005; Erdoğan, Bekir-Şimşek ve Erdoğan-Aras, 2005; Karaman ve Üstün, 2011; Taner ve Başar, 2005). Sınırlı sayıda okul öncesi dönem ev-içi okuryazarlık ortamını inceleyen çalışmaya ulaşılabilmiştir (örn. Altun, 2013; Altun ve Tantekin-Erden, 2015; Dolunay-Sarıca vd., 2014; Turan ve Akoğlu, 2014). Altun (2013) okul öncesi dönem çocukların ev-içi okuryazarlık ortamları ile okumaya karşı tutumlarının ilişkili olduğunu bulmuştur. Turan ve Akaoğlu (2014) ise ev-içi okuryazarlık ortamlarına göre çocukların sesbilgisel farkındalık puanlarının anlamlı bir şekilde farklılaştığını tespit etmişlerdir.

Okul, çocukların ev ortamında sonra karşılaştıkları ikinci çevredir. Okul, ev ortamından farklı olarak sistematik bir şekilde çocukların gelişim ve öğrenmelerin desteklendiği kurumlardır (Gianvecchio ve French, 2012; Hindman, Connor, Jewkes ve Morrison, 2008). Geçmişten günümüze iyi düzenlenmiş fiziksel ortam ve planlanmış eğitim programlarının çocukların gelişim ve öğrenmeleri üzerine olumlu etkileri vurgulanmaktadır (Crain, 2005; Lascarides ve Hinitz, 2000; Morrow, 1990). Yürütülen birçok araştırma sınıf ortamının kalitesinin çocukların erken okuryazarlık becerileri; (a) yazı farkındalığı (Guo vd., 2010), (b) kelime bilgisi (Connor, Son, Hindman ve Morrison, 2005; Xu, Chin, Reed ve Hutchinson, 2014), (c) sesbilgisel farkındalık (Bus ve van IJzendoorn, 1999; Phillips, Clancy-Menchetti, ve Lonigan, 2008), (d) harf bilgisi (Guo vd., 2012), (e) yazma becerileri/kendi ismini yazma (Cunningham, 2008; Guo vd., 2012; Zhang, Hur, Diamond ve Powell, 2015), ve (f) genel dil gelişimi (Connor vd., 2005; Cunningham, 2010; Mashburn, 2008) ile ilişkili olduğunu tespit etmiştir.

Bununla birlikte bazı çalışmalar sınıf ortamını özellikle okuryazarlık açısından ele almıştır. Okul öncesi sınıf ortamının okuryazarlık açısından kalitesini değerlendiren araçlar geliştirilmiştir (örn. Goodson, Layzer, Smith ve Rimdzius, 2006; Smith, Brady ve Anastasopoulos, 2008; Wolfersberger, Reutzel, Sudweeks ve Fawson, 2004). Bu araçlar genel olarak sınıf ortamının fiziksel düzenlemesi, okuryazarlık ile ilgili materyalleri, eğitim programını ve sınıf içi iletişim ve etkileşimleri ele almaktadır. Alanyazında yer alan çalışmalar okuryazarlık açısından zengin materyal bulunduran ve fiziksel açıdan iyi düzenlenmiş sınıf ortamlarının çocukların erken okuryazarlık gelişimlerine katkı sağladığını göstermektedir (örn. De Temple, 2001; Guo vd., 2012; Maier, Vitiello ve Greenfield, 2012; Morrow, 1990; Neuman ve Roskos, 1993; Philips, Clancy-Menchetti ve Lonigan, 2008; Zhang vd., 2015; Xu vd., 2014). Ayrıca, çalışmalar okul öncesi eğitim programının okuryazarlık ile ilgili amaçlarının, sınıf içi günlük rutinlerin ve etkinlik süreçlerinin, öğretmen-çocuk arasındaki etkileşimin, öğretmenin iletişim ve dil becerilerinin de çocukların erken okuryazarlık becerilerinin gelişimi ile ilişkili olduğu tespit edilmiştir (örn. Connor, Morrison ve Slominski, 2006; Guo vd., 2012; Hamre ve Pianta, 2005; Schachter, Spear, Piasta, Justice ve Logan, 2016; Wasik, Bond ve Hindman, 2006).

Ulusal alanyazında birçok çalışma okul öncesi dönemde sınıf ortamında sunulan okuma yazmaya hazırlık çalışmalarını araştırmıştır. Bu çalışma sonuçlarına göre, okul öncesi dönemde sınıf ortamında sunulan okuma yazma çalışmaları nitelik ve nicelik açısından sınırlılıklar göstermektedir (Ergül vd., 2014; Deretarla-Gül ve Bal, 2006; Kerem ve Cömer, 2005; Tuğluk, Kök, Koçyiğit, Kaya ve Gençdoğan, 2008). Tarım (2016) çalışmasında 17 devlet anasınıfının sınıf içi okuryazarlık ortamını betimsel olarak incelemiştir. Ulusal alanyazında sınıf içi okuryazarlık ortamının yeni yeni araştırma konusu olduğu görülmektedir. Ulusal bağlamda sınıf içi okuryazarlık ortamının çocukların erken okuryazarlık becerilerinin gelişimi açısından incelenmesinin önemli olduğu düşünülmektedir.

1.1 Araştırmanın Önemi

İlgili alanyazında yer alan çok sayıda çalışmalar erken okuryazarlık becerilerinin gelişimini ve bu gelişime katkı sağlayan faktörleri ele almıştır (örn. Dickson ve McCabe, 2001; Hart, vd., 2009; Johnson, Martin, Brooks-Gunn, ve Petrill, 2008; Whitehurst ve Lonigan, 1998, 2002). Sınıf-içi ve ev-içi okuryazarlık ortamlarının çocukların erken okuryazarlık becerileri ile ilişkili olduğu tespit edilmiştir (Bingham, 2007; Bracken ve Fischel, 2008; Guo vd, 2010; Johnson, Martin, Brooks-Gunn ve Petrill, 2008; Mashburn vd., 2008; Skibbe, Connor, Morrison ve Jewkes, 2011). Ulusal alanyazında ise sınırlı sayıda araştırma erken okuryazarlık becerilerini ele almış (örn. Güler ve Dönmez, 2007; Karaman ve Üstün, 2011; Turan ve Akoğlu, 2011; Şimşek, 2011) ve bu becerilerin ev-içi ve sınıf-içi okuryazarlık ortamı açısından gelişimini araştıran basılı bir çalışmaya, araştırmacı tarafından rastlanamamıştır. Çocukların ileriki dönem okuma başarısının öncülü olan bu erken okuryazarlık becerilerinin gelişimi ile çevresel faktörler ile ilişkisinin Ekolojik perspektif ile incelenmesinin önemli olduğu düşünülmektedir.

Bununla birlikte, önceki çalışmalar kültürün, sınıf ve ev ortamlarının düzenlenmesi üzerinde etkisi olabileceğini işaret etmektedir (Justice, 2004). Alanyazında yer alan çalışmaların büyük bir çoğunluğu İngiliz dilinde ve batı kültüründe gerçekleştirilmiştir. Türkçe, İngilizce'den ortografik açıdan farklılık göstermektedir. Türkçede her ses bir harf ile temsil edilebilirken, İngilizcede 46 sesi temsil eden 26 harf bulunmaktadır. Ayrıca, Türkiye'de sözlü kültürün yazılı kültürden daha baskın olduğu belirtilmiştir (Ungan, 2008; Yıldız, 2008). Bu nedenle, Türkiye bağlamında ve Türk dilinde çocukların erken okuryazarlık becerilerini çevresel faktörler açısından inceleyen bu çalışma sonuçlarının uluslararası alanyazına da katkı sağlayacağı düşünülmektedir.

Bu amaçla, bu çalışma kapsamında okul öncesi dönem ev-içi ve sınıf okuryazarlık ortamının özellikleri incelenmiş ve bu iki ortamın çocukların erken okuryazarlık gelişimlerine katkısının araştırılması hedeflenmiştir.

2. YÖNTEM

Bu çalışmanın verileri güz ve bahar döneminde okul öncesi öğrencilerine erken okuryazarlık becerilerini ölçen testler kullanılarak toplanmıştır. Ayrıca, çocukların ev ve sınıf-içi okuryazarlık ortamları hakkında bilgi toplamak amacıyla ölçekler kullanılmıştır. Çalışma verileri öğrenci ve sınıf olmak üzere iki düzeyden oluşmaktadır. Bu nedenle çalışma verileri çok düzeyli modelleme analizi kullanılarak (MLM) incelenmiştir.

2.1 Çalışma Grubu

Bu çalışmaya Ankara ilinde beş özel okulda öğrenim gören 168 okul öncesi çocuğu ve onların aileleri katılmıştır. Çalışma grubu uygun örnekleme yöntemi kullanılarak seçilmiştir. Çalışmanın bahar döneminde 3 çocuktan veri toplanamamıştır. Çalışma grubunda yer alan çocuklara ilişkin detaylı bilgi Tablo E.1'de sunulmuştur.

Tablo E.1
Çalışmaya Katılan Çocuklara İlişkin Demografik Bilgiler

	Güz Dönemi		*Bahar Dönemi*	
	f	*%*	*f*	*%*
Yaş Grubu (ay)				
60-65	83	49.4	31	18.78
66-71	57	33.9	84	50.90
72-76	28	16.7	50	30.28
Toplam	168	100	165	100
Cinsiyet				
Kız	94	56	92	55.75
Erkek	74	44	73	44.25
Toplam	168	100	165	100

Ev-içi okuryazarlık ortamına hakkında bilgi toplamak amacıyla evlere ölçek gönderilmiştir. Ölçeği çoğunlukla anneler (%78) tarafından doldurulmuştur. Çalışma grubunda yer alan velilerin büyük bir çoğunluğu üniversite mezunudur. Velilere ilişkin detaylı bilgi Tablo E.2'de sunulmuştur.

Tablo E.2

Çalışmaya Katılan Çocuklara İlişkin Demografik Bilgiler

	Anne		*Baba*		*Diğerleri*	
	f	*%*	*f*	*%*	*f*	*%*
Ölçeği dolduran	131	78	36	21.4	1	0.6
Yaş Grubu						
25-29	3	1.8	-	-		
30-34	34	20.2	13	7.7		
35-39	76	45.2	69	41.1		
40-44	49	29.2	57	33.9		
44+	6	3.6	29	17.3		
Eğitim Düzeyi						
Lise	27	16	12	7		
Yüksekokul	31	19	17	10		
Üniversite	88	52	101	60		
Lisansüstü	22	13	38	23		

2.2 Veri Toplama Araçları

Çalışma kapsamında okul öncesi dönem çocuklarının erken okuryazarlık becerilerini ölçmek ve okuryazarlık ortamları hakkında bilgi edinmek amacıyla iki grup ölçek kullanılmıştır. Bununla birlikte, çalışmada toplanan veriler çocuk ve sınıf olarak iki düzeyden oluşmaktadır. Tablo 3.E'de veri toplama araçlarına ilişkin detaylı bilgi sunulmuştur.

Tablo 3.E

Çalışmada Kullanılan Veri Toplama Araçları

Veri Toplama Aracı	Değişken	Düzey
Erken Okuryazarlık Becerileri		
Türkçe İfade Edici ve Alıcı Dil Testi (TİFALDİ) *Geliştiren: Kazak-Berument ve Güven (2013)*	Kelime Bilgisi	Çocuk
Erken Çocukluk Dönemi Fonolojik Duyarlılık Ölçeği (EÇDFDÖ) *Geliştiren: Sarı ve Acar (2013)*	Ses Farkındalığı	Çocuk
Okul öncesi dönemdeki çocukların yazı farkındalığını değerlendirme kontrol listesi *Geliştiren: Şimşek-Çetin ve Alisinanoğlu (2013)*	Yazı Kavramları	Çocuk
Okuryazarlık Ortamı		
Ev-içi Okuryazarlık Ortamı Ölçeği (EVOY) *Geliştiren: Marjanovic-Umek, Podlesek ve Fekonja (2005)* *Türkçe'ye Uyarlama: Altun (2013)*	Ev-içi Okuryazarlık Ortamı	Çocuk
Erken Dil ve Okuryazarlık Sınıf Gözlem Aracı *Geliştiren: Smith, Brady ve Anastasopoulos (2008)*	Sınıf Okuryazarlık Ortamı	Sınıf

3. BULGULAR VE TARTIŞMA

Çalışmada toplanan veriler, çoklu regresyon ve çok düzeyli modelleme (MLM) kullanılarak analiz edilmiştir. Çalışmanın bulguları aşağıda yer alan başlıklar altında sunulmuş ve ilgili alanyazın ışığında tartışılmıştır.

3.1.1 Ev-içi Okuryazarlık Ortamı

Çocukların ev-içi okuryazarlık ortamına ilişkin demografik bilgiler incelendiğinde, çocukların %30,4'ü aileleri ile birlikte haftada üç ya da dört saat kitap okumaktadır. Çocukların sadece %17,3'ü her gün bir saat ve üstü aileleri ile kitap okumaktadır. Bununla birlikte, çocukların %45,8'i haftada beş ya da altı saat bireysel olarak kitapları incelemektedir. Tablo 4.E'de detaylı bilgi sunulmuştur.

Tablo 4.E

Çocukların Haftalık Kitap Okuma ve İnceleme Süreleri

	f	*%*
Ailelerin çocukları ile birlikte haftalık kitap okuma süreleri		
Hiç	4	2.4
Haftada bir ya da iki saat	47	28.
Haftada üç ya da dört saat	51	30.4
Haftada beş ya da altı saat	37	22.
Her gün bir saat ya da üstü	29	17.3
Toplam	168	100
Çocukların kendi başlarına bireysel olarak kitaplar ile geçirdiği süre (inceleme, oynama, okuyormuş gibi)		
Hiç	6	3.6
Haftada bir ya da iki saat	13	7.7
Haftada üç ya da dört saat	51	30.4
Haftada beş ya da altı saat	77	45.8
Her gün bir saat ya da üstü	21	12.5
Toplam	168	100

Ebeveynlerin çocuklarına kitap okuma sıklıkları incelendiğinde ise en çok annelerin evde çocukları ile okuma etkinlikleri yaptıkları görülmektedir.

Tablo 5.E

Evde Çocuklara En çok Kitap Okuyan Ebeveyn

	f	*%*
Ebeveynlerin çocukla birlikte kitap okuma durumları		
Anne	4	2.4
Baba	114	67.9
Anne ve Baba Birlikte	28	16.9
Diğerler (dede, babaanne, abla, bakıcı)	18	10.7
Toplam	168	100

Ebeveynlerin haftalık kitap okuma süreleri incelediğinde, annelerin %35,7'si ve babaların %39,3'ü her gün bir saat ya da üstü kitap ve diğer yazılı mecmuaları okumaktadır. Tablo 6'da detaylı bilgi sunulmuştur.

Tablo 6.E

Ebeveynlerin Haftalık Kitap-Dergi- Gazete Okuma Süreleri

	f	%
Annenin haftalık kitap okuma süresi		
Hiç	4	2.4
Haftada bir ya da iki saat	32	19.
Haftada üç ya da dört saat	37	22.
Haftada beş ya da altı saat	35	20.8
Her gün bir saat ya da üstü	60	35.7
Toplam	168	100
Babanın haftalık kitap okuma süresi		
Hiç	13	7.7
Haftada bir ya da iki saat	33	19.6
Haftada üç ya da dört saat	31	18.5
Haftada beş ya da altı saat	25	14.9
Her gün bir saat ya da üstü	66	39.3
Toplam	168	100

Çalışmaya katılan ailelerin %30,4'ünün evlerinde 200'den fazla kitap bulunmaktadır. Bununla birlikte, çocukların %66,7'sinin evlerinde 26 ile 50 adet çocuk kitabı bulunmaktadır. Tablo 7.E'de detaylı bilgi sunulmuştur.

Tablo 7.E

Evde Bulunan Kitap Sayısı

	f	%
Ebeveynlere ait Kitap sayısı		
0-10	10	6
11-25	14	8.3
26-100	69	41.1
101-200	24	14.3
201+	51	30.4
Total	168	100
Çocuk Kitapları		
0-10	7	4.2
11-25	25	14.9
26-50	112	66.7
51-100	17	10.1
111+	7	4.2
Total	168	100

Ev-içi Okuryazarlık Ortamı Ölçeğine ilişkin betimsel istatistik sonuçları incelendiğinde, toplam ortalama puanın 155,31, alınan en yüksek puanın 185 ve alınan en düşük puanın 125 olduğu görülmektedir. Ölçekten alınan puanlar alt boyutlar açısından incelendiğinde ise en yüksek madde ortalaması (X=5.22) sözel dil kullanımını teşvik etmeye aitken, en düşük madde ortalaması (X=4.21) kitap okuma-kütüphane-tiyatro-kukla gösterisi ziyaretine ait olduğu bulunmuştur.

Ev-içi okuryazarlık ortamına ilişkin sonuçlar incelendiğinde, çocukların sözel dil açısından daha zengin deneyimlere sahip oldukları görülmektedir. Ailelerin çocukları ile birlikte nadir olarak kütüphaneleri ziyaret ettikleri görülmektedir. Çocuklar ile birlikte daha fazla anneleri kitap okumakta ve günlük olarak bir saat ve üstü kitap okuma deneyimine sahip olan çocuk sayısının az olduğu gözlenmektedir. Ulusal alanyazında yer alan diğer çalışmalarda da okul öncesi dönem çocukların aileleri ile kitap okuma ve kütüphane ziyaret konusunda benzer sonuçlara ulaşılmıştır (Altun, 2013; Altun ve Tantekin-Erden, 2015; Çakmak ve Yılmaz, 2009). Uluslararası alan yazın ile karşılaştırıldığın çalışma sonuçlarının gelişmiş ülkelere ilişkin ev-içi okuryazarlık ortam verilerinin altında olduğu görülmektedir (Brueggeman, 2008; Korkeamaki, Dreher ve Pekkarinen, 2012; Kuo, Franke, Regalodo ve Halfon, 2004; Miller, Zickuhr, Rainie ve Purcell, 2013). Bu durum, ülkemizdeki düşük okuma alışkanlığı ve sözel kültürün baskın olması ile bağlantılı olduğu düşünülmektedir. Çalışmaya çoğunlukla üst ve orta sosyoekonomik düzeye sahip ailelerin katılmasına rağmen özellikle okuma ve kütüphane ziyaret etme boyutlarında düşük sonuçlara ulaşılmasında toplumsal okuma kültürünün ev-içi okuryazarlık ortamına yansımaları olarak açıklanabilir. Toplumsal okuma kültürü ve ev-içi okuryazarlık ortamı arasındaki ilişkinin daha iyi anlaşılması farklı sosyoekonomik düzeyden geniş sayıda katılımcılı ile yapılacak çalışmalara ihtiyaç duyulmaktadır.

Tablo 8.E

Ev-içi Okuryazarlık Ortamına İlişkin Betimsel İstatistikler

Alt Boyutlar	*Madde sayısı*	*Min*	*Max*	*Faktör X*	*Madde X*
1. Sözel dil kullanımı teşvik etme	11	39	66	57.48	5.22
2. Kitap Okuma, kütüphane – tiyatro-kukla gösterisi ziyareti	8	18	46	33.71	4.21
3. Ortak etkinlikler- sohbet	6	16	36	26.97	4.49
4. Etkileşimli Okuma Etkinlikleri	3	8	18	14.82	4.94
5. Olası-Yakınsal Gelişim Alanı (ZPD) içinde dil gelişimini destekleme	4	8	24	17.94	4.48
Toplam	32	125	185	155.31	4.85

3.1.2 Sınıf-içi Okuryazarlık Ortamı

Sınıf-içi Okuryazarlık Ortamına ilişkin betimsel istatistik sonuçları incelendiğinde, toplam ortalama puanın 70,05, alınan en yüksek puanın 86 ve alınan en düşük puanın 50 olduğu bulunmuştur. Ölçekten alınan puanlar alt boyutlar açısından incelendiğinde ise en yüksek madde ortalaması (X=3.97) sınıf dil ortamına aitken, en düşük madde ortalaması (X=3.43) yazı ve yazı köşesine ait olduğu görülmektedir. Tablo 9.E'e ölçeğe ilişkin detaylı bilgi sunulmuştur.

Çalışma sonuçları incelendiğinde, sınıf içinde sözel dil ile ilgili deneyimlerin daha yüksek puana sahip oldukları görülmektedir. En düşük puanlar ise yazı ve yazı köşesine ait maddelere ait olduğu görülmektedir. Ulusal alanyazında yer alan araştırmalar incelendiğinde benzer sonuçlara ulaşıldığı görülmektedir (Erdoğan, Özen-Altınkaynak ve Erdoğan, 2013; Ergül, Karaman,

Akoğlu, Tufan, Dolunay-Sarica ve Bahap-Kudret, 2014; Gönen vd., 2010; Tuğluk, Kök, Koçyiğit, Kaya, ve Gençdoğan, 2008). Bu çalışma sonuçlarına göre, anasınıflarında okuma yazma hazırlık ve dil etkinliklerinde çoğunlukla kavram öğretimi, sesbilgisel farkındalık ve konuşma etkinliklerine yer verdikleri tespit edilmiştir.

Tablo 9.E

Erken Dil ve Okuryazarlık Sınıf Gözlem Aracına İlişkin Betimsel İstatistikler

Alt Boyutlar	*Madde Sayısı*	*Min*	*Max*	*X*	*Madde X*
a) Sınıf Yapısı-Düzeni	4	10	19	15.25	3.81
b) Eğitim Programı	3	10	13	11.30	3.76
1. Boyut: Sınıf Ortamının Genel Yapısı	*7*	*20*	*32*	*26.55*	*3.79*
c) Sınıf Dil Ortamı	4	11	19	15.90	3.97
d) Sınıf Kitaplığı ve Kitap Okuma	5	12	23	17.30	3.46
e) Yazı ve Yazı Köşesi	3	7	12	10.30	3.43
2. Boyut: Dil ve Okuryazarlık	*12*	*30*	*54*	*43.50*	*3.62*
Toplam	*19*	*50*	*86*	*70.05*	*3.68*

Çalışma grubunda yer alan bütün sınıflarda kitap köşesi bulunurken, bu köşenin dizaynı, kitap çeşitliği ve sınıf ortamında uygun konumda bulunması gibi açılarından problemler bulunmaktadır. Sınıfların büyük bir çoğunluğunda çevresel yazılıma yeterince yer verilmemiştir. Sınıfların hiçbirinde yazma köşesi bulunmamaktadır. Tarım (2015) çalışmasında da okul öncesi sınıflarda kitap köşesi ve çevresel yazılıma yer verme konularında benzer problemler tespit edilmiştir.

Çalışmanın verileri özel okullardan toplanmıştır. Özel okulların maddi olanaklar açısından daha zengin kaynaklara sahip olmasına rağmen yazı, yazı köşesi, çevresel yazılımlar konusunda yaşanan problemlerin okul öncesi eğitim programı ile ilişkili olduğu düşünülmektedir. Ulusal çapta uygulanan okul öncesi

eğitim programı, anasınıflarında harf öğretilmemesini tavsiye etmektedir. Bununla birlikte ilk defa 2013 programı ile birlikte motor gelişim alanı altında kalemin doğru tutabilme ve kontrolü konusunda yazı gelişimi ile ilgili bir kazanım eklemiştir (MEB, 2013). Okul öncesi eğitim programında yazı gelişimine ve yazı köşesine yer verilmemesinin sınıf-içi okuryazarlık ortamının düzenlenmesinde etkili olduğu düşülmektedir.

3.2 Kelime Bilgisi

Bu çalışma kapsamında ev-içi okuryazarlık ortamının ve anne eğitim düzeyinin, okul öncesi dönem çocuklarının güz dönemi alıcı ve ifade edici kelime bilgileri üzerine yordayıcı ilişkilerini araştırmak için iki ayrı çoklu regresyon analizi yapılmıştır. Analiz sonuçlarına göre ev-içi okuryazarlık ortamı ve anne eğitim düzeyi, alıcı kelime bilgisinin %46'sını açıklarken, ifade edici kelime bilgisinin %40'ını açıklamaktadır.

Bahar dönemi kelime bilgileri ile ev-içi okuryazarlık ortamı, anne eğitim düzeyi, güz dönemi kelime bilgileri ve sınıf-içi okuryazarlık ortamı arasındaki ilişki çok düzeyli modelle ile analiz edilmiştir. MLM sonuçları bahar dönemi kelime bilgileri açısından sınıflar arasında varyasyonun olduğunu göstermiştir. Analiz sonuçları, çocuk düzeyinde, anne eğitim düzeyinin yüksek olması, zengin ev-içi okuryazarlık ortamına sahip olma, güz dönemi kelime bilgisinin yüksek olması ve sınıf-içi zengin okuryazarlık ortamına sahip olmasının bahar dönemi kelime bilgisi ile pozitif olarak ilişkili olduğunu göstermektedir. Alanyazında yer alan çalışmalarda anne eğitim düzeyinin çocuk ile kurulan etkileşim ve konuşmanın niteliği ve niceliği ile ilişkili olduğunu göstermektedir (örn. Dickson, McCabe, Anastasopoulos, Peisner-Feingbers ve Poe, 2003; Hoff, 2003; Pan vd., 2005; Westerlund & Lagerberg, 2008). Çocuğa sunulan sık ve zengin sözel dil deneyimlerinin kelime repertuarlarını beslemektedir. Ayrıca, bazı çalışmalar anne eğitim düzeyinin, çocuğun bilişsel gelişimi ile bağlantılı olduğunu

belirtmektedirler (Patra, Greene, Patel ve Meier, 2016; Schady, 2011; Sullivan, Ketende ve Joshi, 2013; Zhang, 2013). Bu nedenle anne eğitim düzeyi, çocuğa sunulan sözel dil uyarıcıları ile doğrudan ve bilişsel gelişim üzerinden dolaylı olarak çocukların kelime edinimlerini destekleyebilir.

Ev-içi okuryazarlık ortamında edinilen zengin deneyimlerin çocukların kelime bilgileri ile ilişkisi birçok araştırma tarafından tespit edilmiştir (örn. DeTemple & Snow, 2003; 00 Kim, Im, & Kwon, 2015; Kotaman, 2013; Raikes vd, 2006; Rodriguez vd., 2009). Kelime bilgisinin kümülatif bir şekilde geliştiği düşünüldüğünde güz döneminde sahip oldukları kelime bilgilerinin önemli olduğu görülmektedir.

Sınıf düzeyindeki değişken olan sınıf-içi okuryazarlık ortamı incelendiğinde, zengin okuryazarlık ortamına sahip olan çocukların bahar dönem kelime bilgisi puanlarının daha yüksek olduğu bulunmuştur. Benzer sonuçlar önceki çalışmalar tarafından da rapor edilmiştir (örn. Harris, Golinkoff ve Hirsh-Pasek, 2011; Guo vd., 2010; Hindman vd., 2010; Xu vd., 2014).

3.3. Sesbilgisel Farkındalık

Ev-içi okuryazarlık ortamının ve anne eğitim düzeyinin, okul öncesi dönem çocuklarının güz dönemi sesbilgisel farkındalık becerileri üzerine yordayıcı ilişkilerini araştırmak için çoklu regresyon analizi yapılmıştır. Analiz sonuçlarına göre ev-içi okuryazarlık ortamı ve anne eğitim düzeyi, sesbilgisel farkındalık becerisinin %36'sını açıklamaktadır.

Bahar dönemi sesbilgisel farkındalık becerileri ile ev-içi okuryazarlık ortamı, anne eğitim düzeyi, güz dönemi sesbilgisel farkındalık becerileri ve sınıf-içi okuryazarlık ortamı arasındaki ilişki çok düzeyli modelle ile analiz edilmiştir. MLM sonuçları göre bahar dönemi sesbilgisel farkındalık becerileri açısından

sınıflar arasında varyasyonun bulunmuştur. Analiz sonuçları, çocuk düzeyinde, anne eğitim düzeyinin yüksek olması, zengin ev-içi okuryazarlık ortamına sahip olma, güz dönemi sesbilgisel farkındalık becerileri yüksek olması ve sınıf-içi zengin okuryazarlık ortamına sahip olmasının bahar dönemi sesbilgisel farkındalık becerileri ile pozitif olarak ilişkili olduğunu göstermektedir.

Anne eğitim düzeyi ile çocukların sesbilgisel farkındalık becerileri arasında benzer ilişki önceki çalışmalarda da belgelenmiştir **(**Dickinson, Bryant, Peisner–Feinberg, Lambert ve Wolf, 1999; Leppanen, Niomi, Aunota ve Nurmi, 2006; Puolakanaho vd., 2007). Eğitim düzeyi daha yüksek anneler, çocukları ile daha fazla etkileşim kurup konuştuğu için çocuklara sunulan bu zengin sözel dil deneyimlerinin sesleri fark etme, ayırt etme ve manipüle etmelerine yardımcı olduğu düşünülmektedir (Goswami, 2001; Senechal, Quellette ve Rodney, 2006; Walley, Metsala ve Garlock, 2003).

Ev-içi okuryazarlık ortamları ile çocukların sesbilgisel farkındalık becerileri arasında ilişki bulunduğu tespit edilmiştir. Bu sonuç ilgili alanyazın ile uyumlu olduğu görülmektedir (Burgess, 2002; Foy ve Mann, 2003; Hood, Conlon ve Andrews, 2008; Senechal ve LeFevre, 2002; Turan ve Akoğlu, 2014). Ev ortamında sunulan okuryazarlık deneyimlerinin ve ebeveynlerin çocukların dil gelişime destek olan davranışlarının sesbilgisel farkındalık becerilerine de olumlu katkı sağladığı görülmektedir.

Çocukların güz döneminde sahip oldukları sesbilgisel farkındalık becerilerinin önemi Stanovich'in (1986) Mathew etkisi ile açıklanabilir. Başlangıçta daha iyi sesbilgisel farkındalık becerilerine sahip çocuklar okulda sunulan okuryazarlık ortamından daha fazla yararlanarak bu başlangıç avantajlarını sürdürebilirler.

Sınıf-içi okuryazarlık ortamının sesbilgisel farkındalık becerilerine olumlu katkısı literatürdeki diğer çalışmalar ile uyumlu olduğu görülmektedir (Bus ve van IJzendoorn, 1999; Landry, Swank, Smith, Assel ve Gunnewig, 2006; Phillips, Clancy-Menchetti ve Lonigan, 2008). Sınıf ortamında doğrudan sesbilgisel farkındalığı geliştirme aktivitelerinin ve diğer dil etkinlikleri ve günlük etkileşimlerin çocukların bu becerilerini desteklediği düşünülmektedir.

3.3 Yazı Kavramları

Bu çalışma kapsamında son olarak ev-içi okuryazarlık ortamının ve anne eğitim düzeyinin, okul öncesi dönem çocuklarının güz dönemi yazı kavramları üzerine yordayıcı ilişkilerini araştırmak için çoklu regresyon analizi yapılmıştır. Analiz sonuçlarına göre ev-içi okuryazarlık ortamı ve anne eğitim düzeyi, alıcı kelime bilgisinin %34'ünü açıklamaktadır.

Bahar dönemi yazı kavramları ile ev-içi okuryazarlık ortamı, anne eğitim düzeyi, güz dönemi kelime bilgileri ve sınıf-içi okuryazarlık ortamı arasındaki ilişki çok düzeyli modelle ile analiz edilmiştir. MLM sonuçları bahar dönemi yazı kavramları bakımından sınıflar arasında varyasyonun bulunduğunu göstermiştir. Analiz sonuçları, çocuk düzeyinde, anne eğitim düzeyinin yüksek olması, güz dönemi kelime bilgisinin yüksek olması ve sınıf-içi zengin okuryazarlık ortamına sahip olmasının bahar dönemi kelime bilgisi ile pozitif olarak ilişkili olduğunu göstermektedir. Ev-içi okuryazarlık ortamı ile bahar dönemi yazı kavramları arasında anlamlı bir ilişki bulunamamıştır.

Anne eğitim düzeyi ile çocukların yazı kavramları arasında ilişki olduğu bulunmuştur. İlgili alanyazında yer alan çalışmalar anne eğitim seviyesi ile annenin okuryazarlık inançları ve çocuğunun okuryazarlık gelişiminde rolü hakkında bağlantı olduğunu göstermektedir (örn. Curenton ve Justice, 2008; Skibbe, Justice, Zucker ve McGinty, 2008; Weigel, Martin ve Bennett, 2006b).

Eğitim düzeyi yüksek olan anneler, çocuklarının okuryazarlık gelişiminde daha çok rolü olduğuna inanmaktadır. Weigel vd. (2006b) anne okuryazarlık inançları ile çocukların yazı farkındalıklarının bağlantılı olduğunu tespit etmişlerdir.

Ev-içi okuryazarlık ortamının bahar dönemi yazı farkındalık puanları ile ilişkili olmamasında, yazı ile ilişkili maddelerin en düşük ortalamaya sahip olması ve ailelerin evde çocukları ile yazı ile ilgili etkinliklere nadir yer vermelerinden kaynaklandığı düşünülmektedir.

Çocukların güz dönemi yazı kavramları puanları, diğer erken okuryazarlık becerilerinde olduğu gibi önemli olduğu görülmektedir (Dobbs-Oates, 2011; Guo vd., 2010). Bu becerilerin gelişimsel süreç içinde kümülatif bir şekilde kazanıldığı düşünüldüğünde, bu sonuçlar anasınıfına giriş becerilerinin önemini göstermektedir.

Sınıf-içi okuryazarlık ortamı doğrudan harf öğretimi, kitap okuma etkinlikleri ve diğer sınıf içi etkinlikler yoluyla çocukların yazı farkındalıklarını desteklediği düşünülmektedir. Alanyazında yer alan çalışmalarda benzer sonuçlara ulaşılmıştır (Dobbs-Oates, 2011; Guo et vd., 2010; Justice, 2006; Justice, Kaderavek, Fan, Sofka ve Hunt, 2009).

Bu çalışma kapsamın okul öncesi dönem çocuklarının öncelikle ev ve sınıf içi okuryazarlık ortamları incelenmiştir. Her iki okuryazarlık ortamında da sözel dil becerilerine ilişkin maddelerin daha yüksek ortalamalara sahip olduğu görülmektedir. Bu sonuçlarda, sözlü kültürün yazılı kültürden daha baskın olması ve okul öncesi eğitim programının okuma yazma ile ilgili kazanımları ile bağlantılı olduğu düşülmektedir.

Çocukların erken okuryazarlık becerilerinin okuryazarlık ortamları açısından ele alan araştırma sonuçlarına göre anne eğitim düzeyi, ev-içi

okuryazarlık ortamı, güz dönemi erken okuryazarlık becerileri ve sınıf-içi okuryazarlık ortamı bu becerilerin gelişimi ile ilişkilidir. Sadece bahar dönemi yazı kavramları ile ev-içi okuryazarlık ortamı arasında bir ilişkiye rastlanmamıştır. İlişkiye rastlanmamasında çalışma grubunun ev-içi okuryazarlık ortamlarının sınırlı yazı ile ilgili etkinliklerine yer vermesi ile ilgili olduğu düşünülmektedir.

Bu çalışma özel okulda öğrenim gören okul öncesi dönem çocukları ile yürütülmüştür. Gelecek çalışmalar, hem devlet hem de özel okul öncesi kurumlarda öğrenim gören daha geniş katılımcı ile daha detaylı araştırılabilir. Bu çalışma kapsamın ev-içi okuryazarlık ortamı verileri ailelerin doldurduğu ölçek yardımı ile toplanmıştır. İleri ki çalışmalar, ev-içi gözlem ve ailelerle görüşme gibi farklı veri toplama yollarını kullanarak daha ayrıntılı incelenebilir. Son olarak, sınıf-içi okuryazarlık ortamı sınıf düzeyinde genel bir okuryazarlık ortamının kalitesi hakkında bilgi sunmaktadır. Sınıf-içi okuryazarlık ortamı yanında çocukların bu ortamdan ne kadar faydalanabildiği gösteren bireysel verilerde analizlere dâhil edilebilir.

Appendix D:

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü ☐

Sosyal Bilimler Enstitüsü ■

Uygulamalı Matematik Enstitüsü ☐

Enformatik Enstitüsü ☐

Deniz Bilimleri Enstitüsü ☐

YAZARIN

Soyadı : ALTUN
Adı : Dilek
Bölümü : İLKÖĞRETİM

TEZİN ADI : A Multilevel Analysis of Home And Classroom Literacy Environments in Relation to Preschoolers' Early Literacy Development

TEZİN TÜRÜ : Yüksek Lisans ☐ Doktora ■

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. ☐
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. ☐
3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz. ■

TEZİN KÜTÜPHANEYE TESLİM TARİHİ:

Appendix E:

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: ALTUN, Dilek
Nationality: Turkish (TC)
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EDUCATION

Degree	Institution	Year of Graduation
MS	Middle East Technical University Early Childhood Education	2013
BS	Gazi University Primary Teaching	2008

WORK EXPERIENCE

Year	Place	Enrollment
2009- Present	METU, Department of Elementary Education	Research Assistant

PUBLICATIONS

1. **Altun, D.,** & Tantekin Erden, F. (2016). Okul Öncesi Öğretmen Adaylarının Erken Okuryazarlık ile İlgili Görüşleri ve Staj Uygulamaları, *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi, 17(1), 241-261.*

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