Development of Emergent Literacy in Kannada-speaking English Language Learners

Thesis submitted to the University of Mysore
in fulfillment of the requirements for the degree of
Doctor of Philosophy in Speech Language Pathology

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Under the Guidance of Prof. K.S. Prema

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CERTIFICATE

This is to certify that the thesis entitled **'Development of Emergent Literacy in Kannada-speaking English Language Learners'** submitted by Sarika Khurana for the degree of Doctor of Philosophy in Speech Language Pathology to the University of Mysore, was carried out at the All India Institute of Speech and Hearing, Mysore.

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CERTIFICATE

This is to certify that the thesis entitled **‘Development of Emergent Literacy in Kannada-speaking English Language Learners’** submitted by Sarika Khurana for the degree of Doctor of Philosophy in Speech Language Pathology to the University of Mysore, was carried out at the All India Institute of Speech and Hearing, Mysore under my guidance.

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DECLARATION

I declare that this thesis entitled **'Development of Emergent Literacy in Kannada-speaking English Language Learners'** which is submitted herewith for the award of the degree of Doctor of Philosophy in the field of Speech Language Pathology to the University of Mysore, Mysore, is the result of work carried out by me at the All India Institute of Speech and Hearing, Mysore, under the guidance of Dr. K. S. Prema, Professor of Language Pathology, Head, Department of Special Education, All India Institute of Speech and Hearing, Mysore. I further declare that the results of this work have not been previously submitted for the award of any degree.

Place: Mysore Sarika Khurana
Date:

Acknowledgement

I wish to acknowledge that I'm just a medium and I hope I've succeeded in fulfilling the purpose. I acknowledge that the peripheral objectives of my research gain depth and magnitude when attached to the higher purpose. With firm belief in the source I hope that the fruits of my labour will reach those who need them. As I bask in the bliss of renunciation, I admit that this journey has elevated me to levels that transcend mind, intellect and ego. Although it appears like the climactic stage of qualification, I'm enveloped with a feeling that the seed of the ultimate qualification has just germinated.

I confess that my finite expressive abilities and fading memory might fail to do justice to all those who deserve a mention on this page. I tactfully take shelter under the 'lack of time and space' cliché to seek forgiveness for not acknowledging each one of them. ☺

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All through my doctoral fellowship years, my “temporarily-single mother” status never really bothered me because I had a caring mother-in-law (MIL) and two ‘made-to-order’ children. My MIL ensured that I ate a healthy, nutritious diet (loaded with ‘badam’ and ‘desi-ghee-paranthas’!) and my children ensured that I laughed till I was rolling on the floor! ☺

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I do not stake claim to the fruits of my work but I take full proprietorship of any unintentional and unforeseen errors that might come to light.

The tree stakes no claim to its fruits.

I dedicate this fruit to its source.

Abstract

Early exposure to literacy rich environment germinates concepts, skills and knowledge related to reading and writing in children much before they enter formal education. This process called 'emergent literacy' develops in young children during everyday interactions with adults at home and in preschools. Research has indicated that emergent literacy provides a scaffold for later reading skills hence it is important to study the way in which these skills develop in preschool children. The development of emergent literacy is a complex process as it involves the interactive progression of three domains - oral language, print knowledge and phonological processing. In bilingual children, acquisition of literacy in the second language is further complicated by the transfer of linguistic and meta-linguistic insights from the native language.

The present research aimed at studying the development of emergent literacy in Kannada-speaking English Language Learners (ELLs) studying in preschools with English as the medium of instruction, in Mysore city. 95 participants in the age range of 3 – 6 years were selected from preschools with similar literacy environments after a series of three surveys. The emergent literacy skills of the participants were evaluated using the Tool for Emergent Literacy Assessment (TELA), which was developed by the investigator for the purpose of studying the objectives stated for this research. The data obtained was transcribed, scored and subjected to statistical analyses using SPSS and Amos (Version 18.0) software.

Results of the present study revealed some important findings. Firstly, the emergent reading and emergent writing behaviours seen in Kannada-speaking ELLs were similar to the 'emergent literacy' skills reported in literature, however a few exceptions were observed. The developmental pattern of emergent literacy in ELLs was almost parallel to that reported for native English preschoolers; however, differences were observed on oral language and phonological awareness measures. These differences could be attributed to the ELLs' lower proficiency in English and the effect of native language (Kannada) on the development of emergent literacy. Emergent literacy in ELLs showed a non-linear developmental continuity, that is, literacy emerged in spurts and plateaus, which is similar to the studies reported in literature. Another highlight was that the stages of emergent literacy development were not discrete; they followed an

‘overlapping sequence’ of development. The components of emergent literacy domains shared significant intra and inter- relationships among one another, which changed over time.

Structural Equation Modeling (SEM, Amos SPSS, Version 18.0) was used to derive a Model for Emergent Literacy Predictors (MELP), which provided predictors for ‘word recognition’ and ‘emergent writing’. MELP revealed that literate language features, vocabulary, rhyme awareness and rapid automatized naming predicted word recognition while, text discrimination, letter naming, question-answer and word awareness predicted emergent writing. Another important finding of the present study is that the predictors of reading and writing are not confined to a single domain. It is evident that for ELLs all the domains of emergent literacy - oral language, print knowledge and phonological processing play an important role in the acquisition of reading and writing. These domains are most important early in the sequence of learning to read, when the primary task is the development of accurate and fluent decoding skills, which lead to successful reading comprehension.

It is important to note that oral language proficiency plays an important role in the literacy acquisition process of ELLs who acquire reading parallel to the acquisition of English language (unlike the native English speakers). This means that professionals working with preschool ELLs should enhance oral language skills (in English) along with print knowledge and phonological processing in order to facilitate reading acquisition. It is also noteworthy that reading and writing were best predicted by different sets of predictors at different developmental stages of emergent literacy. This means that different emergent literacy components operate at different stages during the development of emergent literacy. Hence it is essential to equip the professionals working with preschool children with the knowledge of emergent literacy predictors so that they function as effective facilitators in the process of acquisition of reading and writing skills.

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Chapter 1: Introduction

Literacy is the ability and willingness to exercise mastery over the processes used in contemporary society to encode, decode and evaluate meanings conveyed by printed symbols (Wray, Bloom, & Hall, 1989). After stepping into this world children are surrounded by patterns, shapes, figures and symbols which represent some aspect of the society around them. As they grow they interact with people and things in their environment and learn to decode these symbols. For children to be a part of this literate society it is important to learn to talk, read and write the language of the people in their environment. For some children this means acquiring the language and literacy skills of more than one communication systems.

The idea of reading readiness was loosely based on a model of psychological development that claimed that children could not or would not learn to read successfully until certain prerequisite skills were established. Further it was suggested that these skills were governed by a process of maturation, and that adult intervention could not speed up that process (Moyle, 1976). It is now widely acknowledged that children growing up in print rich society begin their literacy learning well before they begin formal schooling. So the definition of literacy is no longer restricted to the formal instruction of decoding skills. Instead it encompasses the concepts about print and meaning, the use of different types of texts, and reading and writing behaviours, which scaffold children's first steps at becoming successful readers. This developmental model of reading and writing is called 'emergent literacy' (Clay, 1991; Hall, 1987).

Emergent literacy has been defined by Riley (1996) as the earliest phase of understanding about print that enables the child to generate hypothesis about the nature of reading and writing. The importance of preschool literacy events, the need for adults to model the processes of reading and writing, and the significance of drawing on children's early experience of print strengthen the need for study of emergent literacy skills. Furthermore, latest research has indicated that adults are active participants in emergent literacy rather than passive observers of maturational processes.

Review of literature revealed numerous but complimentary definitions of emergent literacy. According to Sulzby (1989) emergent literacy includes the reading and writing behaviours of young children that precede and develop into conventional literacy. According to Whitehurst and Lonigan (1998) emergent literacy describes the concepts, skills and knowledge that young children have about reading and writing prior to beginning their formal literacy instruction in elementary school. Paul (2001) explained that when adults read books aloud, children begin to develop ideas about how written language works and what it is used for before they actually begin decoding print. Children bring their prior experiences and learning, including their knowledge of oral language to bear on written language.

Gunn, Simmons and Kameenui (1995) reviewed 24 studies on emergent literacy and reported that most researchers agreed that emergent literacy (a) begins during the period before children receive formal reading instruction (Stahl & Miller, 1989; Teale & Sulzby, 1987; van Kleeck, 1990) (b) encompasses learning about reading, writing and print prior to schooling (Sulzby & Kleeck, 1990) (c) is acquired through informal as well as adult-directed home and school activities, and (d) facilitates acquisition of specific knowledge of reading. Emergent literacy differs from conventional literacy as it examines the range of settings and experiences that support literacy, the role of the child's contributions and the relation between individual literacy outcomes and the diverse experiences that precede those outcomes.

Growing body of research evidence highlights the significance of preschool period for the development of critically important emergent literacy skills such as oral language, print knowledge and phonological processing (Snow, Burns, & Griffin, 1998; Teale & Sulzby, 1986; Whitehurst & Lonigan, 1998). The review of literature reveals that the development of emergent literacy skills is not linear. According to the 'Ascendancy Hypothesis' by Scarborough (2003), growth in the components of language consists of spurts and plateaus at particular times rather than steady incremental advances, which means that spurts in language skills occur at different ages.

Oral language skills have a great influence on children's reading development, along with other skills like phonemic awareness, concepts about print, home environment and parental influence (Heilman, Blair, & Rupley, 1998; Snow, Burns, & Griffin, 1998; Pullen & Justice, 2003). Throughout their early years children gradually, and usually quite easily, develop a complex linguistic system. By the time they enter school most children are equipped with innovative, rule-governed language enabling them to verbally communicate their thoughts, feelings, and needs. According to Goldsworthy (2003), learning to read does not begin at the conclusion of oral language development, rather oral language is the foundation from which written language emerges. Vellutino, Scanlon, Small, and Tanzman (1991) strongly suggest that oral language and written language are intrinsically related.

Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, and Poe (2003) propose two approaches- phonological sensitivity approach (PSA) and comprehensive language approach (CLA), about the relationship between oral language and literacy skills. While the PSA emphasizes oral language abilities, vocabulary in particular, the CLA views variety of oral-language skills as critical in emergent literacy and for subsequent reading achievement. However, A number of research reports offer evidence to indicate that the size of a child's vocabulary may play a role in bolstering the emergence of phonological awareness (Goswami, 2001; Metsala, 1999); oral language abilities are closely related to the emergence of print knowledge and phonological ability in kindergarten (Bowey & Patel, 1988); vocabulary and other oral language skills are positively and causally related to reading at all levels of a child's development (Whitehurst & Lonigan, 2003). Dickinson and McCabe (1991) and Scarborough (2001) are of the opinion that distinct abilities in oral language skills are not necessarily developmentally independent.

The developmental studies done in literacy related skills show that when several domains of developing language (phonological, syntactic, lexical, etc.) have been examined within a sample, the successful predictors of future reading abilities usually were not confined to a single linguistic domain (Catts, Fey, Zhang, & Tomblin, 1999; Scarborough, 1989, 1990; Walker, Greenwood, Hart, & Carta, 1994). Further, it was seen that reading outcomes were best predicted by different sets of language variables at different ages within longitudinal samples (Gallagher, Frith, & Snowling, 1999). Scarborough (1990, 1991a) found that before the preschool years, syntactic and speech production abilities played a significant role, while in preschool years, vocabulary and phonological awareness dominated the development of young children. This means that preschool children should be assessed for different emergent literacy skills at different time periods including literate language. The narrative abilities of preschoolers in story retell tasks offer a rich source of information about the complex language abilities such as sentence construction and cohesion. Curenton and Justice (2004) found that literate language features occurred at measurable rates for 3- to 5-year-old children. Literate language features are key indices of later literacy skill (Westby, 1991).

Print knowledge describes children's early discoveries about the orthography of a language. The understanding that print carries meaning emerges between the third and fifth year of life, as demonstrated in Mason's (1980) examination of the development of print literacy in 4-year-old children. Longitudinal studies have shown that word and print awareness serve as key predictors of later reading achievement (Adams, 1990; Badian, 1995) and comprise important elements of the foundation of emergent literacy knowledge (NELP, 2009; Stuart, 1995).

Children who have adequate word concept understand that words are different from letters and letters make up words (Adams, 1990; Lomax & McGee, 1987; Roberts, 1992). Concepts about print (CAP) include the knowledge of print functions, that words convey a message and print convention messages can serve multiple purposes (van Kleeck, 1990). Print serves a broad variety of functions. The scope of print functions ranges from very specific (e.g., making shopping lists, reading product labels, writing cheques, reading street signs, looking up information) to very general (e.g., acquiring knowledge, conveying instructions, and maintaining relationships). Letter knowledge, which is a part of CAP provides the basis for forming connections between the letters in spellings and the sounds in pronunciations in English or any other alphabetic languages. Schickedanz (1982, p. 247) reported that between the age of 3-years and 5-years most children come to understand that "letters and words are different entities". Letter knowledge has been found to be a strong predictor of reading skills not only in English speaking children (Badian, 1995; Ehri & Sweet, 1991) but also in non-English speaking children (Muter & Diethelm, 2001). Children who enter school with more print knowledge are generally more successful with school-based literacy (Purcell-Gates, 1996). Wagner, Torgesen, and Rashotte (1994) reported a causal relation between letter name knowledge in kindergarten and measures of phonological processing abilities in first grade.

Knowledge of Alphabetic principle (thinking of words as having both meanings and sounds, Stahl & Murray, 1998) in children, is evaluated through tasks that tap the relationship between speech sounds and letters (Adams, 1990; Mason & Allen, 1986; Sulzby & Teale, 1991) and is found to be one of the best predictors of early reading ability (Lomax & McGee, 1987; Share, Jorm, Maclean, & Matthews, 1984; Tunmer & Nesdale, 1985). According to Sulzby (1986) children seem to develop an understanding of the relationship between oral and written language at a young age. Children begin writing even before they can form letters, and this early writing developed through observing adults and peers reveals children's early attention to the conventions of written language (van Kleeck, 1990). Hiebert (1988) characterized this as a developmental progression in which early attempts at messages may take the form of scribbles that take on characteristics of the writing system, such as linearity. Eventually, the scribbling is superseded by letter-like forms, which in turn, are replaced by letters, generally familiar ones such as those in the child's name. Children's writing attempts begin with random scribbling and progress into controlled dots, circles, and/or lines (Clay, 1975). Children distinguish between drawing and writing at about two and a half to three years of age (Bloodgood, 1999).

Phonological awareness is an essential skill for learning to read. Research shows that children who come to formal instruction with underdeveloped phonological awareness face great challenges in keeping pace with early reading instruction (Torgesen, Wagner, & Rashotte, 1994). Recognizing that words are made up of syllables occurs at about the same time children realize that speech can be broken into words, usually around four years of age (Lonigan, Burgess, Anthony, & Barker, 1998). Among the phonological awareness skills, Lonigan et al. (1998) found that syllable segmentation ability that did not strongly predict reading was a precursor to identification and manipulation of individual phonemes that were predictive of later reading. Share, Jorm, Maclean, and Mathews (1984) found that phonemic awareness at school entry was the best predictor of reading achievement 2 years later among the 39 measures they employed. They reported that the children who are better at detecting and manipulating syllables, rhymes or phonemes are quicker to learn to read.

Carroll, Snowling, Hulme, and Stevenson (2003) used structural equation models to interpret the results of their longitudinal study on phonological awareness tasks with 3- and 4-year-old children. They concluded that preschool phonological awareness can be divided into an early implicit sensitivity to sound similarity and a later explicit awareness of phonemes and that implicit, large-segment sensitivity skill grows out of normal language development. The later development of the explicit awareness of phonemes appears to build on the foundation of earlier large-segment awareness. They proposed that the development of these two types of phonological awareness reflects the development from global to segmental phonological representations. Bryant, Bradley, Maclean, & Crossland (1989), Maclean, Bryant, & Bradley (1987) indicated that knowledge of nursery rhymes enhanced and predicted children's success in reading and spelling even when other extraneous factors like IQ and social background were controlled and children's initial phonological skills were taken into account. These studies also suggested that sensitivity to rhymes could be an early indicator of children's growing phonological awareness. Wood and Terrell (1998) also found that rhyme detection skills measured in non-reading preschool children were significant predictors of reading skills at school age.

Short term memory and phonological awareness skills play a crucial role in key learning areas for children at the beginning of formal education (Alloway, Gathercole, Adams, Willis, Eaglen, & Lamont, 2005). In most studies, typically developing preschool children and young school-age children's working memory capacities have been assessed using a non-word repetition task in which they were asked to repeat non-words varying in length from one to four or five syllables (Montgomery, 2003). The typical pattern is that children have no difficulty repeating one and two syllable items but by three syllables, repetition accuracy begins to decrease, reflecting the capacity-limited nature of phonological store (Montgomery, 2003). Children with 'greater' phonological working memory capacity than those with less capacity show better accuracy for longer items. They found that abilities such as non-word repetition, rhyme detection, initial consonant detection, reading, writing, speaking and listening correlated significantly with each other.

Rapid Automatized Naming (RAN) that relates closely to phonological access to lexical storage refers to the efficiency of retrieval of phonological codes from long term memory (Wagner & Torgesen, 1987). Lexical access is typically measured as the rate at which an array of objects colours, letters, or digits can be named. Lexical access measures are significant predictors of growth in decoding skills in school-age children (Wagner et al., 1994; Wagner et al., 1997). Torgesen, Wagner, & Rashotte (1999) considered rapid naming to be one of three kinds of phonological processing, along with phonological awareness and phonological memory, to be especially relevant for mastery of written language. Anthony, Williams, McDonald, & Francis (2007) found that in a group of preschoolers (age range- 43 months to 67 months), RAN was found to be a significant predictor of letter knowledge and text discrimination in the younger participants while phonological awareness was found to be a significant predictor for word recognition in older preschoolers. The report by NELP (2009) also suggested that RAN for objects and colours shared a moderate correlation with decoding, reading comprehension and spelling.

Emergent Literacy in India

Literacy research in India, though sparse, is precious. The multilingual, multi-literate, multi-cultural socio-economic milieu of India poses fascinating challenges for researchers in this field. With numerous languages competing for recognition, English has managed to reserve its place in the academic and professional sectors of India. This has changed the direction of literacy research in India. Researchers with ambitions of carrying out studies in literacy are faced with daunting challenges; the prominent ones relate to choices in native-languages, medium of instruction in schools, other languages in the environment, proficiency in English language, socio-economic status, education of parents and teachers, curricular choices in education, lack of a standard curriculum in preschools, lack of standardized assessment tools, and limited resources to name a few. Hence, the researchers who brave these challenges and manage to publish their work in international journals are few in number. Nonetheless, India has made small but significant contributions to the world of literacy research. Some of those, which particularly fall in the purview of this study, are mentioned in the review of literature.

In India, majority of children are exposed to more than one language in their environment. People in the rural parts of India send their children to schools with the native language as the medium of instruction. Due to the fast-paced development in the big cities, more and more people living in the urban parts of India prefer to send their children to schools with English as the medium of instruction. These children enter school without gaining sufficient oral proficiency in the English language, that is, they begin learning ‘how to read and write English’ along with ‘how to understand and speak English’. In other words, oral proficiency in the English language develops along with literacy acquisition. Although this appears like a challenging task, Indian children have done it for decades. There is hardly any research data available to reflect on how emergent literacy develops in these ELL children. The present research attempts to study the development of emergent literacy in Kannada-speaking English Language Learners.

Chapter II
Review of Literature

Traditionally, literacy is defined as the ability to read and write. The definition of literacy has expanded over the past few years. Literacy is no longer perceived as simply a cognitive skill but as a complex and active process with cognitive, social, linguistic and psychological aspects (Teale & Sulzby, 1989). Literacy involves the ability to read, write, speak, listen, view, and think (Cooper, 1997). Functional literacy involves a complex set of skills that include the ability to focus one's attention and to recognize language patterns, knowledge of words and word meanings, holding information in working memory, retrieving and storing information in long-term memory, knowledge about the world and one's culture, and knowledge of emotional expression (Jay, 2003). A failure to successfully engage in any one or more of the above skills, for example, word recognition[1], may result in failure to acquire reading and writing skills, in general, the literacy skills.

The extensive research on the acquisition of literacy by monolingual children has provided an important framework against which the special circumstances of bilingual children can be examined. Despite the ubiquity of bilingual children in the school system, little research has been dedicated to this population. Thus, researchers attempt to extend the existing literature on literacy development with monolinguals to the experiences encountered by children acquiring more than one language. Bilingual children develop the background concepts for learning to read differently from monolingual children and they develop these concepts separately for their two languages, depending on their experience with each (Bialystok & Herman, 1999). A different history in developing the prerequisite concepts, very often lead to a different experience, and possibly different success, in mastering the skill. The present review of literature primarily comprises of research from native English speaking population. Studies on bilingual participants have been reviewed and added wherever necessary.

[1] Word recognition is the ability to identify words automatically.

Research in the last three decades has focused on the critical role of early[2] literacy skills in the development of later literacy skills in children. Dickinson and Neuman (2006) consider early childhood literacy as the single best investment for enabling children to develop skills that will benefit them for a lifetime. Early literacy research has captured the attention of policy makers and educators because of the promise it holds for significantly enhancing the academic success of children. Researchers now agree that years between 3 and 5 are especially important for the development of literacy. They substantiate this claim with developmental research from three broad inter-related domains: early literacy, social and emotional development and brain development (Dickinson, McCabe, & Essex, 2006). These linguistic, cognitive and affective domains are shown to be critical for long-term literacy development.

Literacy development has been explained in terms of a systems perspective (Ford & Lerner, 1992; Nelson, 1996) in which language plays a prominent early role in organizing cognitive and other affective-behavioural systems that support literacy-related activity. Extensive research on early literacy now indicates that "language skills broadly conceived- vocabulary, syntax and discourse, as well as phonemic awareness[3] – are central to early and long-term literacy success and that children reap added rewards when they develop these language and literacy-related capacities in tandem so that interconnections among systems can be fashioned into mutually reinforcing systems" (Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, & Poe, 2003, cited in Dickenson, McCabe, & Essesx, 2006, p 12). Between the ages of 3 and 6, the rapid development of language particularly the development of more advanced language abilities, may play a pivotal role in the initial organization and subsequent functioning of varied linguistic-cognitive-affective systems that underpin literacy (Dickinson et. al., 2003; Nelson, 1996; Tomasello, 2000).

2.1 Emergent Literacy

From late 1800s to 1920s the literature on reading and writing focused only on elementary school years (Teale and Sulzby, 1986). In the 1920s, however, educators

[2] Early literacy and emergent literacy are sometimes used synonymously. Some researchers prefer to use the term 'early literacy' with children at the beginning of grade 1 to the end of grade 3 and the term 'emergent literacy' with children from birth to Kindergarten (Yaden, Rowe, & MacGillivray, 1999).

[3] Phonemic awareness is the ability to attend to and manipulate phonemes, which are the smallest units of sound in a language.

began to recognize the early childhood and kindergarten years as a “period of preparation” for reading and writing. In 1925, The National Committee on Reading published the first explicit reference to the concept of ‘reading readiness’. In reading readiness programs children were considered ready to read when they had met certain social, physical, and cognitive competencies (Morrow, 1997). Starting in the 1970s, researchers began to challenge traditional reading readiness attitudes and practices.

Clay (1966) first introduced the term ‘emergent literacy’ to describe the behaviours used by young children with books and when reading or writing, even though the children could not actually read and write in the conventional sense. According to Strickland and Cullinan (1990) there is no single point where literacy begins; the term ‘emergent’ underscores the fact that young children are in a developmental process. Cheek, Flippo, and Lindsey (1997) explained that the emergent literacy view encompasses experiences in a child’s development, from birth on, which shape the child’s concepts about oral and written language and the use of language forms.

While traditional definitions of literacy refer to mastery of written language forms (reading and writing), the notion of emergent literacy encompasses the developmental and interactional relationship between spoken and written language forms (Goldsworthy, 2003). The term ‘emergent’ denotes the developmental process of literacy acquisition and recognizes numerous forms of early literacy behaviour. Some of these behaviours include learning how to hold a book and turn pages, telling a story from a picture book while pretending to ‘read’ it and using drawings and scribbled letters to ‘write’ messages (Goodman, 1984).

Review of literature revealed numerous but complimentary definitions of emergent literacy. According to Sulzby (1989) emergent literacy includes the reading and writing behaviours of young children that precede and develop into conventional literacy. According to Whitehurst & Lonigan (1998) emergent literacy describes the concepts, skills and knowledge that young children have about reading and writing prior to beginning their formal literacy instruction in elementary school. Paul (2001) explained that when adults read books aloud, children begin to develop ideas about how written language works and what it is used for before they actually begin decoding print.

Children bring their prior experiences and learning, including their knowledge of oral language to bear on written language.

In order to address the issue of differences between emergent literacy and conventional literacy, Gunn, Simmons, and Kameenui (1995) reviewed 24 studies on emergent literacy. They examined the range of settings and experiences that support literacy, the role of the child's contributions and the relation between individual literacy outcomes and the diverse experiences that precede those outcomes. They found that majority of researchers agreed that emergent literacy (a) begins during the period before children receive formal reading instruction, (Stahl & Miller, 1989; Teale & Sulzby, 1987; van Kleeck, 1990), (b) encompasses learning about reading, writing and print prior to schooling (Sulzby & Teale, 1991), (c) is acquired through informal as well as adult-directed home and school activities, and (d) facilitates acquisition of specific knowledge of reading.

Further, the skills and processes in emergent literacy were investigated by Whitehurst and Lonigan (1998). They proposed that emergent and conventional literacy consisted of two interdependent sets of skills and processes, outside-in and inside-out. Outside in skills represents children's understanding of the context in which the target text occurs (e.g., knowledge of the world, semantic knowledge, and knowledge of the written context in which a particular sentence occurs). Inside-out skills represent children's knowledge of the rules for translating the particular writing they are trying to read into meaningful sounds (e.g., letter knowledge, phonological processing skills and vocabulary). Inside-out skills reflect code-related components of reading that are mostly specific to reading, whereas outside-in skills reflect more general abilities, like language and general knowledge that support comprehension. They hypothesized that inside-out (code-related) skills would be most important early in the sequence of learning to read when the primary task is the development of accurate and fluent decoding skills, whereas outside-in (language) skills would become more important later in the sequence of learning to read when the task shifts to comprehension. The thrust that was laid on emergent literacy after 1960's led researchers to explore and understand the process of development of emergent literacy.

2.1.1 Development of emergent literacy

Literacy acquisition is a complex process and requires the integration and coordination of many cognitive, perceptual and linguistic skills and abilities. Literacy acquisition takes place gradually over time and the initial phases of development are occupied with the growth of precursor skills[4] or emerging abilities more than with conventional literacy skills[5]. In order to detail specific sequence of growth and development of early literacy it is first necessary to identify the precursor skills or emerging abilities that appear early in the acquisition of literacy or that predate its acquisition, but that are clearly implicated in later literacy achievement.

Even though children do not start to read and write in a conventional sense until first grade, many prerequisite or foundation skills are required in the years leading up to the time of formal reading instruction. For instance, becoming aware of print and recognizing some letters, drawing and scribbling may be viewed as emergent literacy behaviour. These kinds of early behaviours provide the foundation to build reading and writing skills. It is important to support young children's development of emergent literacy skills because these early accomplishments will help them to become better readers and writers.

From as early as the first two years of life, children's experiences with oral language development and literacy begin to build a foundation for later reading success (Burns, Griffin, & Snow, 1999; Strickland & Morrow, 1988; Weaver, 1988). From two to three years of age, children begin to produce understandable speech in response to books and their early writing experiences. From three to four years of age, children show rapid growth in literacy. They begin to "read" their favorite books by themselves, focusing mostly on telling stories from pictures. Eventually, they progress from telling about each picture individually to weaving a story from picture to picture using language that sounds like reading or written language (Holdaway, 1979; International Reading Association & National Association for the Education of Young Children, 1998; Sulzby, 1991).

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[4] Precursor skills have also been referred to as predictive, foundational, or emergent literacy skills. These are skills that children acquire before the beginning of formal literacy instruction in elementary school. The study sometimes uses, more generally, early literacy skills, which can refer to both precursor skills and the conventional literacy skills of preschool children.

[5] Conventional literacy skills refer to skills such as decoding, oral reading fluency, reading comprehension, writing, and spelling. Conventional skills can be thought of as being more sophisticated, mature, or later-developing manifestations of reading and writing.

At this time, children also experiment with writing by forming scribbles, letter-like forms, and random strings of letters (Barclay, 1991; Clay, 1975; Snow, Burns, & Griffin, 1998; McGee & Richgels, 1996). They also begin to use "mock handwriting" (Clay, 1975) or wavy scribbles (Sulzby, 1985b) to imitate adult cursive writing. Letter-like forms or "mock letters" (Clay, 1975) are the young child's attempt to form alphabetic letters; these forms of writing eventually develop into standard letters (Barclay, 1991). When using various forms of writing, children maintain their intention to create meaning and often "read" their printed messages using language that sounds like reading (Clay, 1975; McGee & Richgels, 1996; Sulzby, 1985b).

Around five, children enter school and begin receiving formal literacy instruction. Most children at the kindergarten level are considered to be emergent readers. They continue to make rapid growth in literacy skills if they are exposed to literacy-rich environments (Burns, Griffin, & Snow, 1999). Children at this age continue to "read" from books they have heard repeatedly. Gradually, these readings demonstrate the intonation patterns of the adult reader and language used in the book. They use pictures to support reading and rely heavily on their knowledge of language (Snow, Burns, & Griffin, 1998).

Children's writing also develops rapidly during the kindergarten year. Just as children's reading acquisition does not occur in a linear path, children's writing skills also reflect an overlapping development. Children continue to use the variety of writing forms developed earlier, but they typically add random letter strings to their repertoire; in effect, they create strings of letters for their written messages without regard for the sounds represented by the letters (Sulzby, 1989, 1992). Children at this stage begin to use invented spelling[6] (phonetic spelling) (Gentry, 1982; McGee & Richgels, 1996; Snow, Burns, & Griffin, 1998; Weaver, 1988). Even though children begin applying phonetic knowledge to create invented spellings, there is a lapse in time before they use phonetic clues to read what they write. Often children try to recall what has been written or use a picture created with the text to reread instead of using the letter clues (Kamberelis & Sulzby, 1988; Snow, Burns, & Griffin, 1998).

[6] Invented spelling typically represents the most dominant sounds in a word, such as the beginning and ending sounds.

At some point during the kindergarten or first grade year, most children move from emergent literacy into conventional literacy. This process is however, gradual. Although all aspects of conventional literacy are developing during the emergent period, they become recognizable in conventional literacy. There is no prescribed grade level for reaching conventional literacy. According to Pinnell (1996b), emergent literacy and conventional literacy are a continuum of learning that varies with the complexity of each individual's development. As children move into conventional literacy, they pass through different periods of development in their efforts to become successful readers, just as they did at the emergent level.

The National Early Literacy Panel (NELP, 2009) conducted a meta-analysis of nearly 500 studies, which summarized correlational data showing the relationships between children's early abilities and later literacy development; experimental data that showed the impact of instructional interventions on children's learning. All of these studies measured children's skills or abilities from birth through kindergarten, and correlated the results of these assessments with later attainment of conventional literacy skills from the end of kindergarten on. Finally, the report stated that to be considered a precursor or early literacy skill, an ability should be measurable through some kind of assessment of the child, the onset of the skill or the ability should predate or come very early in the development of conventional literacy skills, and should be significantly correlated with later conventional literacy learning.

According to NELP (2009) emergent reading and writing skills that are developed in the years from birth to age 5 have a clear and consistently strong relationship with later conventional literacy skills. Additionally, six variables representing early literacy skills or precursor literacy skills had medium to large predictive relationships with later measures of literacy development. These six variables not only correlated with later literacy as shown by data drawn from multiple studies with large numbers of children but also maintained their predictive power even when the role of other variables, such as IQ or socioeconomic status (SES), were accounted for. These six variables include:

- Alphabet Knowledge (AK): knowledge of the names and sounds associated with printed letters

- Phonological Awareness (Ph.A): the ability to detect, manipulate, or analyze the auditory aspects of spoken language (including the ability to distinguish or segment words, syllables, or phonemes), independent of meaning
- Rapid Automatic Naming (RAN) of:
  a) Letters or digits: the ability to rapidly name a sequence of random letters or digits
  b) Objects or colors: the ability to rapidly name a sequence of repeating random sets of pictures of objects (e.g., "car," "tree," "house," "man") or colors
- Writing or writing name: the ability to write letters in isolation on request or to write one's own name
- Phonological memory: the ability to remember spoken information for a short period of time.

An additional five early literacy skills, mentioned by NELP (2009) were also moderately correlated with at least one measure of later literacy achievement but either did not maintain this predictive power when other important contextual variables were accounted for or have not yet been evaluated by researchers. These additional potential variables include:

- Concepts About Print: knowledge of print conventions (e.g., left-right, front-back) and concepts (book cover, author, text)
- Print Knowledge: a combination of elements of AK, concepts about print, and early decoding
- Reading Readiness: usually a combination of AK, concepts of print, vocabulary, memory, and PA
- Oral Language: the ability to produce or comprehend spoken language, including vocabulary and grammar
- Visual Processing: the ability to match or discriminate visually presented symbols.

The eleven variables mentioned above consistently predicted later literacy achievement for both preschoolers and kindergartners. However, these measures were usually more predictive of literacy achievement at the end of kindergarten or beginning of first grade than of later conventional literacy growth.

Researchers have attempted to outline the order of acquisition of the skills required for literacy. Literacy knowledge usually progresses from the development of letter recognition to sensitivity to beginning sounds and their associated letters. As children gain mastery over the relationships of letters and sounds at the beginnings of words, they begin to develop sensitivity to the ending sounds and letters, and then true word reading develops, followed by simple levels of reading comprehension (Shanahan, 2007). This order of growth takes place over approximately a two-year period (Kaplan & Walpole, 2005). Many children know their letter names by the time they enter Grade 1, and most know the sounds of the letters by the middle of Grade 1; rapid naming, phonemic awareness, and word reading skills all continue to develop through first grade (Compton, 2000).

The general ordering or patterning of learning can be explained across some early literacy skills. For example, the development of phonological awareness proceeds from gross auditory distinctions to more refined ones. Specifically, this means children can usually recognize the auditory separations between words and syllables prior to when they can separate onsets or initial phonemes from rimes (the medial vowel and ending), and skill with onsets and rimes precedes full segmentation of words into individual phonemes (Lonigan, 2006). This progression from larger to smaller units of phonological sensitivity seems to be independent of children's instructional experience and may be the result of neural maturation and how brains are organized to learn languages (Shanahan, 2007).

With respect to letter knowledge, children usually learn the names of upper-case letters prior to lower-case ones, but this progression is more attributable to the nature of print exposure (young children see more capitals) and the relative complexity of letters (Adams, 1990; Smythe, Stennett, Hardy, & Wilson, 1971). Children also simultaneously gain speed in their ability to name various stimuli, their knowledge of print concepts such as directionality and word boundaries expand, and their oral vocabularies increase as well; however research has not provided a reliable description of the developmental progressions of these early skills (Shanahan, 2007). There may be fairly consistent sequence of oral vocabulary development, but the specifics of this sequence have not yet been delineated.

In general, it is observed that there is an overlap in the order of acquisition of various early literacy skills as well as within the sub skills necessary for each skill. This means that children make gains in simultaneous learning of skills. For example, phonological development proceeds from gross to specific; but children learn to hear some phonemes as separable while they are still mastering the auditory distinctions among syllables. While it is possible to describe these general sequences of development, there appears to be no set order of acquisition for the specific skills within each of the varied lines of early literacy development (Shanahan, 2007). For instance, there is no defined order in which letters or sounds must be learned, nor is there any evidence suggesting that it would be particularly facilitative to teach certain letters or sounds earlier than others.

Alternatively, Wood (2004) believes that growth in the various precursor skills can be somewhat independent. This means that children can gain sensitivity to sounds without knowing the letter names, or that oral language development can proceed whether or not children are developing an understanding of print or book concepts. However, ultimately, all of these lines of development must be closely integrated and coordinated if literacy is to be fully attained, and these lines of development begin linking up early on in important ways. For example, while perception of gross phonological units does not require any concurrent knowledge of letter names, it appears that knowledge of letters is facilitative, and perhaps even necessary, for more fully-realized phonemic awareness to be achieved (Ehri, Numes, Willows, Schuster, Yaghoub-Zadeh, & Shanahan, 2001; Lonigan, 2007); awareness of individual phonemes develops more quickly when children know letters or when letters are used within phonemic awareness instruction. Oral vocabulary development also may play a causal role in helping to stimulate the development of phonological awareness (Cooper, Roth, Speece, & Schatschneider, 2002), though phonological awareness does not exert any reciprocal impact on vocabulary development (Lonigan, 2007).

In view of the limited research conducted in the area of rapid naming (RAN) abilities and concepts about print (CAP) (Compton, 2003; NELP, 2009), as well as the NELP report, that suggests a moderate correlation with decoding, reading comprehension and spelling, it is difficult to speculate how RAN and CAP fit into the developmental sequence. Yet, it is widely accepted that growth in all of these early literacy skills stimulates conventional literacy learning and that there is a reciprocal relationship between literacy and these skills. Children can begin to learn conventional literacy without fully mastering all of the precursor skills, and can even learn some of these precursor skills from literacy (Burgess & Lonigan, 1998; Compton, 2003). Research has consistently shown that the more children know about language and literacy before they begin formal education, the better equipped they are to succeed in reading (Burns, Griffin, & Snow, 1999). Parents, caregivers, and teachers need to ensure that young children are exposed to literacy-rich environments and receive developmentally appropriate literacy instruction, which will have a profound effect on children's literacy development.

The review of literature reveals that the development of emergent literacy skills is not linear. According to the 'Ascendancy Hypothesis' by Scarborough (2003), growth in the components of language consists of spurts and plateaus at particular times rather than steady incremental advances, which means that spurts in language skills occur at different ages. She further states that when growth of a skill is nonlinear, deficits in that skill will be most readily detectable during periods when normal development undergoes a spurt. According to the ascendancy hypothesis, the milder the language delay, the more transient and domain-specific would be the observed pattern of deficits. A severe delay will be characterized by more persistent deficits that are seen across the board.

Similar developmental studies have been done in literacy related skills, which show that when several domains of developing language (phonological, syntactic, lexical, etc.) have been examined within a sample, the successful predictors of future reading abilities usually were not confined to a single linguistic domain (Catts, Fey, Zhang, & Tomblin, 1999; Scarborough, 1989, 1990; Walker, Greenwood, Hart, & Carta, 1994). Furthermore, it was seen that reading outcomes were best predicted by different sets of language variables at different ages within longitudinal samples (Gallagher, Frith, & Snowling, 1999). Scarborough (1990; 1991a) found that before the preschool years, syntactic and speech production abilities played a significant role, while during preschool years, vocabulary and phonological awareness dominated the development. This emphasizes that preschool children should be assessed for different emergent literacy skills at different time periods in order to get a complete understanding of their emergent literacy behavior.

2.1.1.1 Development of emergent literacy in bilinguals.

Learning to read a second language (L2) can mean different things in different situations and settings. For instance, the situation of a bilingual child learning to read English as a second language is qualitatively different from that of a college student learning to read a second language in a foreign language class. L2 reading, conceptually, refers to literacy in any second language, other than the native language of a child. The term ‘English Language Learners’ is used to refer to the native speakers of a given language, who learn to read and write English. Although in the literature, different terms are used for children who are developing literacy in more than one language, for example, “bilingual students”, “language minority students”, “English-as-a-second-language (ESL) students”, “second-language-learners”, “limited-English-proficient-students” and “limited-English-speaking (LES) students”, the term “English Language Learners (ELLs) is used in the present research.

Although research has been undertaken on emergent literacy in many languages, most of these studies have focused on monolingual children (Clay, 1975: Dyson, 1983; Ferreiro & Teberosky, 1982; Goodman, 1990; Harste, Woodward, & Burke, 1984; Taylor, 1983; Teale & Sulzby, 1986; Tochinsky, 2003; Vernon & Ferreiro, 1999). Compared to the vast data available on monolingual children, there is limited research on literacy development among bilinguals (for example, Kenner, Kress, Hayat, Kam & Tsai, 2004; Reese, Garnier, Gallimore, & Goldenberg, 2000; Romero, 1983; Schwarzer, 2001; Tabors, Paes, & Lopez, 2002). These studies have pointed out that children need to make complex connections between their home and school knowledge when they acquire literacy in two languages. They need continuous support in both languages from parents and teachers if they are to become fluent readers and writers in their two languages.

Literacy itself changes with languages and contexts. Children who are bilingual from a preschool age may initially encounter literacy in either one or both of their two languages. The potential impact of bilingualism on children’s literacy may depend on the educational context. According to Bialystok (2001) two languages may be written in either the same script or in a different script, in the latter case doubling the amount the child needs to learn in order to decode basic text. This difference may be crucial in setting the stage for the competence that can be achieved in eventually mastering the literate uses of both the languages.

On the contrary, for children whose experience with literacy is in only one of the languages, it is likely that the experience is presented through the weaker of the two and not the language of the home. Here the cognitive skills associated with literacy are being learned at the same time as the linguistic system that is encoded in writing. This is the language in which children might be at greatest risk for possessing inadequate grammatical knowledge and insufficient background concepts of literacy, print, and text (Bialystok, 2001). The weight of evidence forces the conclusion that under these circumstances, there will be a cost to literacy (Bialystok, 2001). Children will find it more difficult to acquire the skills and be more restricted in the levels they can achieve. This does not condemn bilingual children to inferior literacy skills if reading is acquired though the weaker language, but it does alert us to the potential difficulty of achieving high levels of competence.

In views that do not take reading to be a natural extension of speaking, children must acquire skills in several areas of competence as preparation for learning to read. Part of these preparatory skills includes the need to build up concepts and experiences about the social, linguistic, and cognitive dimension of reading (Bialystok & Herman, 1999). All these dimensions of experience are different for bilingual children than for monolinguals; the social context is always unique to a specific language; the linguistic insights one derives are crucially dependent on factors such as the structure of language and one's proficiency with it; and the cognitive implications of using language are tied to the purposes for which the language is used. Therefore, not only would bilingual children develop the background concepts for learning to read differently from monolingual children, but they also would develop these concepts separately for their two languages, depending on their experience with each. A different history in developing the prerequisite concepts will lead to a different experience, and possibly different success, in mastering the skill.

Monolingual children require emergent literacy skills such as oral language, print knowledge and phonological processing skills (National Reading Panel, 2000; Snow, Burns, & Griffin, 1998) for successful literacy acquisition. According to Pang and Kamil (2004) these literacy skills are also necessary for L2 reading acquisition but with added complexities of a second language learner's knowledge of two languages. First, there is the complexity of teaching reading when the learner is not proficient in the native language. Since the language of written text maps onto oral language, L2 learners need to develop some proficiency in the target language (Alderson, 1984). Second, the L2 learners have access to knowledge and skills unavailable to the monolingual speakers, including enhanced metalinguistic awareness, code-switching, translation and if the first language (L1) and the second (L2) are linguistically related languages, the advantage is with the additional knowledge of cognates. Third, for learners who are already literate, some skills can transfer to reading in L2. Finally, sociocultural and sociopolitical factors often play a mediating role in the education of L2 learners and their reading development.

Recent research has shown that children can be taught to read in their L2 even as they are developing L2 oral language proficiency (Geva, 1995). Moreover, a measure of oral proficiency alone is often not enough to indicate children's readiness to learn to read. For instance, Durgunoglu, Nagy & Hancin-Bhatt (1993) did not find any relationship between Spanish oral proficiency and Spanish word recognition in beginning readers besides finding no correlation again between English oral proficiency with the number of common English words read. August and Hakuta's (1997) review of literature also concludes that there is insufficient evidence to prove that ESL oral proficiency is a good predictor of reading ability.

Several researchers have studied bilingual children's language and early literacy skills and the transfer of these skills from one language to another. There appears to be a divided opinion on this issue. While a few believe that pre-literacy skills, such as concepts of print, alphabetic principle (if each language is alphabetic), rhyming, syntactic knowledge and extended discourse abilities are transferable from one language to another (Nagy, McClure, & Mir, 1997), a few others believe that only some of these skills are transferable and this transfer depends upon the languages in question. Tabors, Lesaux, and Paez (2005) studied oral language and early literacy skills in Spanish and English bilinguals and monolinguals, from pre-kindergarten to second grade. They conclude that phonological awareness and early literacy skills, as indexed by letter-word identification and dictation, are amenable to instruction, and appear to be transferable no matter which of these two, closely related, languages they are learned in. But, picture vocabulary was found to be the most stable of the language and literacy assessments across time, while it also demonstrated the least transferability.

A related question is the role of L1 literacy in L2 literacy development. Undoubtedly, being literate in L1 is helpful in learning L2 because reading-related knowledge and a number of reading-related skills can be transferred across languages, such as phonological awareness, concepts about print, orthographic knowledge and background knowledge (Nagy, McClure, & Mir, 1997; Tabors, Lesaux, and Paez, 2005). However, what is not clear, particularly for young children, is the question of how much L1 literacy is needed in order for the transfer to occur. Much of the evidence supporting L1 literacy comes from correlational studies that have shown that L1 and L2 literacy are highly correlated, but cannot determine that L1 literacy per se, or specific components of L1 literacy skills, lead to better L2 reading (Pang & Kamil, 2004). Research on adult learners using regression techniques shows the contribution of L1 literacy to be between 14% and 21%, while the influence of L2 ability (grammatical knowledge) is estimated to be about 30% (Bernhardt & Kamil, 1995).

2.1.1.2 Emergent literacy skills and gender.

There is evidence that gender is weakly related to print knowledge and to phonological sensitivity (Dickinson et al., 2003; Hyde & Linn, 1988). These studies reveal that girls perform slightly better than boys on literacy related tasks. Similar results were obtained by Below, Skinner, Fearrington, and Sorrell (2010), who studied children from kindergarten through fifth grade and found that girls in the kindergarten scored significantly higher than boys on the DIBELS (Dynamic Indicators of Basic Early Literacy Skills) measures. They did not find any significant difference in first, second and third grade; in the fourth grade girls outperformed boys, but again in the fifth grade no gender difference was found. Chatterji (2006) found that on tasks assessing oral language, print knowledge and phonological awareness skills in kindergarten and first grade children, the performance of boys was lower than the girls. Camarata and Woodcock (2006) also found that boys performed poorer in reading and writing fluency tasks when compared to the girls from preschool through adulthood.

Based on the review of literature, the emergent literacy skills can be classified broadly into three domains, oral language, print knowledge and phonological processing skills. Research shows that each of these domains can be sub-categorized based on the measures employed to assess them. The following section reviews the studies pertaining to the emergent literacy domains, their sub-components and the measures employed for the assessment of these skills.

2.2 Emergent Literacy Domains and Environment

From birth through preschool, young children begin to acquire basic understanding about reading and writing, and its functions. When researchers talk about emergent literacy, they are usually referring to children from birth to kindergarten; this expansion of the age range includes children as young as one or two who listen to stories being read aloud, focus on objects, recognize sounds, notice labels and environmental print in the world around them, and experiment with crayons, markers, and pencils (May, 1998). Children do not become competent readers automatically; for optimal literacy development, they require some pre-requisite skills and meaningful experiences in the everyday contexts of home, community and school.

Review of literature has revealed some domains of emergent literacy which have been extensively studied by researchers (Ezell & Justice, 2005; Gunn, Simmons, & Kameenui, 1995; National Early Literacy Panel, 2009; Wagner & Torgesen, 1987; Whitehurst & Lonigan, 1998). The emergent literacy domains and their components reported in literature are shown in Figure 1.

2.2.1 Emergent literacy domains.

Development of literacy is a complex process where children require a literacy rich environment and emergent literacy skills to be able to read successfully. Literacy rich experiences facilitate foundation skills, which help children understand the functions of print and how to decode print in order to derive meaning from it. These emergent literacy skills may be classified into three broad domains:

1) Oral Language
2) Print Knowledge
3) Phonological Processing

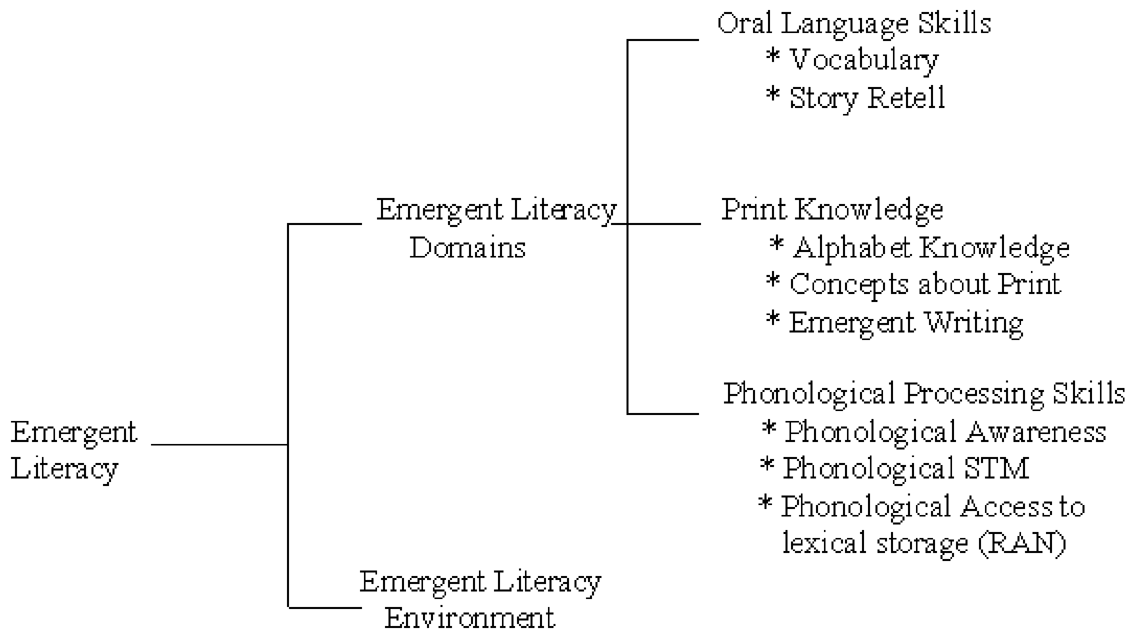

Figure 1. Emergent literacy domains and their components

Oral language refers to the corpus of words in a child's vocabulary as well as his or her ability to use those words to understand and convey meaning (i.e., syntactic and narrative skills). Print knowledge describes children's early understanding of the forms and functions of written language (e.g., letters of the alphabet, the sounds letters make and directionality of print). Phonological processing refers to developing sensitivity to the sound structure of his or her language (e.g., that words are made up of smaller sounds like syllables or phonemes) and the ability to use that information in cognitive processes like memory. Children, who manifest good skills in all the three above domains profit from reading instruction, learn to read sooner, and read better than children who are poor in these domains (Whitehurst & Lonigan, 1998).

2.2.1.1 Oral language. Oral language skills have a great influence on children's reading development, along with other skills like phonemic awareness, concepts about print, home environment and parental influence (Heilman, Blair, & Rupley, 1998; Snow, Burns, & Griffin, 1998; Pullen & Justice, 2003). Throughout their early years children gradually, and usually quite easily, develop a complex linguistic system. By the time they enter school most children are equipped with innovative, rule-governed language enabling them to verbally communicate their thoughts, feelings, and needs. According to Goldsworthy (2003), learning to read does not begin at the conclusion of oral language development, rather oral language is the foundation from which written language emerges. Vellutino, Scanlon, Small, and Tanzman (1991) strongly suggest that oral language and written language are "intrinsically related". Facility in processing and comprehending written language depends directly on factors that allow one to acquire competency in the different domains of oral language. In the developing reader, oral and written language are not parallel systems, rather they are increasingly interactive and convergent systems. Furthermore, reading and writing are not discrete skills isolated from listening and speaking. They are integral parts of general language acquisition, and the development of each skill provides the scaffold for the other.

Although substantial recent research addresses the relationship between oral language and literacy skills (Biemiller, 1999; Catts, Fey, Zang, & Tomblin, 1999; Snow Burns, & Griffin, 1998), researchers have worked from different assumptions about the nature of that relationship. Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg, and Poe (2003) have described two points of view about the relationship between oral language and literacy skills. One point of view, called phonological sensitivity approach (PSA) posits that the general oral language abilities especially vocabulary, provide the critical basis for the emergence of phonological sensitivity, which thereafter is the key language skill. The other view, the comprehensive language approach (CLA), is that a variety of oral-language skills are critical in emergent literacy and continue to play vital roles in subsequent reading achievement. The results of the study by Dickinson et al., (2003) support the CLA, which states that oral language equals or outperforms phonological sensitivity in predicting print knowledge. It is noteworthy that the distinction pertains to the interrelationships among the abilities of children, not to methods of instruction.

A number of research paradigms posit that language acquisition is a complex French braid of abilities, including strands of phonology, semantics, syntax, discourse, reading, and writing that are commenced at various times and woven in with the other strands (Dickinson & McCabe, 1991; Scarborough, 2001). However, these distinct abilities are not necessarily developmentally independent. For example, evidence indicates that the size of a child's vocabulary may play a role in bolstering the emergence of phonological awareness (Goswami, 2001; Metsala, 1999); oral language abilities are closely related to the emergence of print knowledge and phonological ability in kindergarten (Bowey & Patel, 1988); vocabulary and other oral language skills are positively and causally related to reading at all levels of a child's development (Whitehurst & Lonigan, 2003). Dickinson and Tabors (2001) found substantial long-term correlations of oral language with 4th- and 7th-grade decoding and reading comprehension.

Bowey (1994) examined kindergarten-aged children and found evidence for the interrelationships among phonological awareness, letter knowledge, word identification, and several measures of oral language (e.g., receptive vocabulary, sentence imitation). All the measures of oral language were significantly intercorrelated. Other studies also have found that oral language is related to phonological sensitivity in the years prior to direct reading instruction and that language, especially vocabulary, plays an important role in supporting reading during the initial stage when decoding is the primary challenge facing children. Dickinson and Snow (1987) found interrelationships among measures of print knowledge, phonological sensitivity, and oral language. In a longitudinal study, Chaney (1992, 1994, 1998) found that oral language skills such as vocabulary and phonological awareness correlated with literacy at age three. Results also indicated that overall language development at age three was strongly correlated with reading scores at age seven. Children's narrative production, receptive vocabulary, and emergent literacy skills are also found to be significantly intercorrelated in kindergarten (Scarborough, 2001; Tabors, Roach, & Snow, 2001). Also, metalinguistic skills and print knowledge at age three made significant contributions to reading achievement above and beyond that provided by language development.

Catts, Fey, Zhang, and Tomblin (1999) conducted a large-scale study of children followed from kindergarten through second grade and found that over 70% of poor readers had a history of language deficits in kindergarten, further, that most of these had problems in both phonological processing and oral language. Storch and Whitehurst (2002) followed children from Head Start through fourth grade and concluded that reading development is best conceived of as the result of two distinct interacting factors, oral-language skills and code-related skills. The impact of oral-language skills was most apparent in the preschool years and again in third and fourth grades. Scarborough (2001) conducted a meta-analysis of findings from 61 kindergarten research samples examining the impact of many aspects of oral language on subsequent reading abilities. She found that during preschool, most verbal skills are well-correlated with each other. Thus, there is evidence that phonological sensitivity, language skills and print knowledge are interrelated in the years before children begin receiving reading instruction, and there is evidence that these relationships persist as children begin learning to read.

Two kinds of claims about the relation between literacy and oral language have been made. One claims that literacy influences the forms of oral language and the second is that forms of oral language influence literacy acquisition (for details see Watson, 2003). One of the most central and influential claims about literacy is that it creates new conceptions of language in its users (Olson, 1994), in other words, literacy creates a heightened metalinguistic awareness[7]. This claim has been criticized by some researchers who claim that metalanguage is not a unique consequence of literacy. Narasimhan (1991) points out that in India, the ancient Rigveda texts (traditional oral literature) were fixed oral forms, and extensive oral commentaries on them were constructed. While there is strong evidence that orthographies influence conceptions of language, it is difficult to maintain that literacy has a causal role in the emergence of metalanguage. Literacy is too recent, from an evolutionary perspective, to have caused such a fundamental change in the representational capacities of the human brain (Cosmides & Tooby, 1994), and developmentally, young children evidence meta-representational abilities before they are literate (Astington, 1993). Despite these arguments, the components of oral language that are investigated most in the current literature are vocabulary and story-retell abilities in children learning to read and write. The following section summarizes the literature with reference to the above two components.

2.2.1.1.1 Vocabulary. Vocabulary is the knowledge of words and their meanings, which plays an essential role in reading and acquisition of literacy (Bishop & Adams, 1990; Bryant, MacLean & Bradley, 1990; de Jong & van der Leij, 2002; National Early

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[7] The term 'metalinguistic awareness' has been discussed in detail under the heading 'Phonological Processing Skills'.

Literacy Panel Report, NELP, 2009; Torgesen et. al., 1997; Sankaranarayanan, 2003). According to NELP (2009), vocabulary knowledge shares a moderate correlation with decoding, which is the primary focus of beginning reading instruction. Research also indicates that vocabulary is critical for the application of decoding skills to reading for meaning, which is a later acquired reading ability (de Jong & van der Leij, 2002).

Research reveals that vocabulary is also closely related to the emergence of print knowledge and phonological ability in kindergarten (Bowey & Patel, 1988; Scarborough, 2001) and that the size of a child's vocabulary may play a role in bolstering the emergence of phonological awareness (Cooper, Roth, Speece, & Schatschneider, 2002; Goswami, 2001; Metsala, 1999). Stanovich (1986) explained this phenomenon in terms of a Mathew's effect, whereby children who are poorly equipped to acquire reading skills are unlikely to catch up to their peers who are aptly equipped to acquire reading skills. Vellutino, Scanlon, Small, and Tanzman (1991) found that children whose vocabulary was less than optimal had difficulty learning to read and they became increasingly impoverished in vocabulary development, which, in turn, added to their difficulties in reading.

If children are to be fluent readers beyond third grade, they must possess both fluent word-recognition skills and adequate vocabulary knowledge (Pence, Bojczyk, & Williams, 2007). Biemiller (2006) stated that although the presence of these two abilities does not guarantee strong reading comprehension, the lack of either word recognition or vocabulary knowledge almost surely guarantees poor reading comprehension. Early vocabulary delays are one manifestation of risk for later reading disabilities (Scarborough, 1990) and children who enter school with fewer words are at a greater risk for developing reading difficulties than children who enter school with more words.

Research has found that receptive and expressive vocabulary of children as young as 2 years of age predicted onset-rime sensitivity at 4 years of age (Silven, Niemi, & Voeten, 2002). Some researchers (Nittrouer & Crowther, 1998; Walley, 1993) have suggested that increases in children's phonological awareness are closely tied to the development of increasingly segmentalized lexical phonological representations. This "lexical restructuring" theory rests on the idea that children begin by representing words in a holistic manner and subsequently develop the representation of the sounds within words during the preschool and early school years. Phonological awareness is highly dependent on the status of a child's lexical representations because phonological awareness tasks measure a child's knowledge of the sounds within words. If these representations change substantially during the preschool years then this change may provide an explanation for the observed increase in the phonological sensitivity that tends to arise around 4 years of age (Carroll, Snowling, Hulme, & Stevenson, 2003).

Because children acquire the majority of words that serve as the foundation for later reading comprehension in the years prior to formal schooling, it is important for early literacy professionals to assess children's vocabulary upon entry to preschool or kindergarten to determine whether children's vocabulary knowledge is developing in a typical fashion (Pence, Bojczyk, & Williams, 2007). Some studies report that home context was a much larger predictor of a child's vocabulary knowledge at the end of second grade than the school settings (Christian, Morrison, Frazier, & Masetti, 2000; Hart & Risely, 1995). In general, vocabulary growth has been reported to be one of the most stable literacy assessment measures across time. Several longitudinal studies have provided strong evidence of stability in vocabulary growth from kindergarten through middle school (Biemiller, 1999; Cunningham & Stanovich, 1997; Tabors, Paez, & Lopez, 2002; Tabors, Porche & Ross, 2003; Tabors, Snow & Dickinson, 2001; Storch & Whitehurst, 2002). These studies also reveal that vocabulary measured in kindergarten correlates with reading achievement in later years. This strengthens the need for early intervention for vocabulary deficits which is further indicated by the fact that, after children reach third grade, reading difficulties are far less amenable to remediation (Good, Simmons, & Smith, 1998).

Vocabulary in Bilingual Children. There is a strong belief among the researchers of bilingual children that there is a consistent developmental sequence that children follow in acquiring a first language. If the child acquires two languages simultaneously, the stages of development are the same as they are for monolingual speakers of those languages (McLaughlin, Blanchard, & Osnai, 1995). There is a debate over whether bilingualism results in a slower rate of vocabulary development than is true of monolingual children learning either of the same languages. Goodz (1994) reports no delay or retardation, but other researchers have reported lower vocabulary scores for bilingual than for monolingual children in a given language (Bialystok, 1988; Doyle, Champagne, and Segalowitz, 1978). Typically children who are learning two languages simultaneously make unequal progress in the languages. One language is more salient from time to time, either because of the input that the child is receiving from other speakers, or because there are more opportunities to use one language than the other (McLaughlin, Blanchard & Osnai, 1995). However, the relationship between a child's proficiency in each language and the amount of input in that language from caregivers and others is, rather quite complex (Goodz, 1994).

It has been suggested that when the vocabulary scores of tests in both languages of a bilingual child are combined, their vocabulary equals or exceeds that of monolingual children (Bialystok, 1988; Doyle, Champagne, & Segalowitz, 1978; Genesee & Nicoladis, 1995). However, this measure of Total Vocabulary (total scores achieved in L1 + L2) is not sufficient for the examination of differences in vocabulary size of bilinguals and monolinguals in view of the overlap of vocabulary in the two languages. A measure of total unique words or conceptual vocabulary, which is a combination of vocabulary scores in both the languages considering words describing the same concept as one word, provides additional information about bilinguals' vocabulary size with regards to knowledge of concepts. Droop and Verhoeven (2003) reported that although bilingual children may have larger vocabularies overall, they typically have smaller vocabularies in each of their individual languages than do monolingual children. They also tend to have fewer associations between words in their lexicons, reflecting a lack of depth in their vocabulary development. Among English language learners, both L1 vocabulary and L2 vocabulary contribute to achievement in English reading comprehension (Carlisle, Beeman, Davis, & Spharim, 1999; Proctor, Carlo, August, & Snow, 2005).

Studies about conceptual vocabulary of preschool children (Allman, 2005; Pearson, Fernandez, & Oller, 1993) state that bilingual children have conceptual vocabulary that is comparable with their monolingual counterparts. Further, they add that being bilingual does not harm language or conceptual development; balanced bilingualism brings benefits to children by allowing them to access two language communities. These rich linguistic experiences have a positive effect on their vocabulary and cognitive development. Understanding the benefits balanced bilinguals enjoy as a result of their exposure to two languages can assist early educators in developing appropriate curriculum for these children, supporting development in both languages. Organizing vocabulary around a theme facilitates learning and multiple exposures to a word are needed in order for that word to become part of the lexicon (Nagy & Herman, 1987; Zahar, Cobb, & Spada, 2001).

In case of bilinguals, how conceptual and word knowledge (vocabulary) is represented in memory is still not well understood. Young bilingual children growing up in dual-language homes are able to separate their two languages by age 3 (Arnberg & Arnberg, 1992). It is believed that words in each language are stored in separate lexical systems but that concepts are stored in a representation common to both languages (Kroll & Sholl, 1992). Some evidence suggests that vocabulary knowledge does not transfer well for kindergarten students learning dissimilar languages, such as Turkish and Dutch (Verhoeven, 1994). For older Spanish-speaking children (Grades 4-6), Nagy, Garcia, Durgunoglu, and Hancin-Bhatt (1993) found that a knowledge of cognates can facilitate comprehension in the second language.

Several researchers working with bilingual children have stressed the need for the use of native language during familiarizing the participants with the task and for providing instructions during formal testing (Anthony et al., 2007; Kester & Pena, 2002; Tabors et al., 2002). In order to assess vocabulary in young children, researchers have used two assessment formats: standardized measures and experimenter-generated or study-specific measures. The Individual Growth and Developmental Indicators (IGDI, Early Childhood Research Institute on Measuring Growth and Development, 1998a; Missall & McConnell, 2004) was employed in a study by McConnell, Priest, Davis, and McEvoy (2002) on monolingual English-speaking children (3- to 5-year-old). Their results indicate that the relationship between children’s scores and age demonstrated that the picture naming subtest measured vocabulary growth. Spanish-speaking children showed less vocabulary growth on this subtest compared to their English-speaking counterparts (Missal & McConnell, 2004).

2.2.1.1.2 Story Retell. Storytelling is a familiar discourse genre across cultures, including those without a written language. Research has indicated that oral storytelling between young children and their parents facilitate emergent literacy (Burns, Griffin, & Snow, 1999). In fact, many researchers and educators believe that storytelling can contribute significantly to early literacy development (Cooper, Collins, & Saxby, 1992; Glazer & Burke, 1994; Phillips, 1999). Since storytelling is popular with young children all over the world it can be used in the assessment of narrative skills.

Storytelling is clearly a social experience with oral narrative, incorporating linguistic features that display a "sophistication that goes beyond the level of conversation" (Mallan, 1991, p. 4). Such narrative skills are considered the "gateway to reading and writing" (Hirsh-Pasek, Kochanoff, Newcombe, & de Villiers, 2005, p.6). Therefore, storytelling could be used as a task to measure narrative skills. In view of this, researchers have widely used narrative assessments employing story re-tell tasks to evaluate the oral language abilities of very young children (Curenton & Justice, 2004; Gazella & Stockman, 2003; Hewitt, Hammer, Yont, & Tomblin, 2005; Leadholm & Miller, 1992; Miller, Heilmann, Nockerts, Iglesias, Fabiano, & Francis, 2006; O'Neill, Pearce, & Pick, 2004; Schelletter & Parke, 2004). According to the technical definition given by Labov (1972), a narrative must contain a minimum of two sequential independent clauses on the same event or experience. Clauses in the narrative must confine to the same time, space or theme, for example, "I went to the zoo. I saw a baby elephant". Speech samples that contain unrelated utterances such as, 'I went to the zoo. I want water' would not be considered as a narrative according to Labov's definition.

Story Re-tell Task. An oral narrative is a language tool that consists of a child's spoken description of real or fictional events experienced in the past, the present or the future (Curenton & Lucas, 2007). In order to use oral narratives as an assessment tool clinicians use two elicitation techniques, story generation and story retelling. Story generation requires children to invent or recall a narrative using their own words. In story generation tasks children are shown familiar or unfamiliar pictures and asked to make up a story about what they see (Dollaghan, Campbell & Tomlin, 1990; Liles, 1993). This task allows children to be creative and original in their stories. Generating a story for the first time is not the same task as telling a story that one already knows. If speakers were familiar with a story, then asking them to talk about it would be a retelling task (Gazella & Stockman, 2003). In a story retelling task the subject is presented with a novel or a familiar story by the clinician/teacher/researcher and asked to immediately re-tell the story. Presenting a novel instead of a familiar story minimizes the effect of past experiences with the story and allows the examiner to control the stimulus input.

Wordless picture books have been widely used to elicit fictional stories from children. Stories that depict a character that encounters a problem, engages in goal-based actions to solve the problem and resolves the conflict are very popular with preschoolers (Benson, 1997; Pearce, 2003; Shapiro & Hudson, 1991). Research has also indicated that without sequenced illustrations, preschoolers produce short and unelaborated stories (Kadaravek & Sulzby, 2000; Shapiro & Hudson, 1991). Since young children have small attention spans, wordless picture books are used to overcome the role of memory in recalling the characters or the sequence of events in the story. Interesting characters and colourful pictures make story retelling an appealing assessment tool for preschoolers. It can be used to evaluate several features of oral language such as speech intelligibility, grammatical structure, lexical diversity and organizing skills.

Story Re-tell Measures. For the assessment of narratives the story retelling or story generation task should be audio or video recorded and later transcribed verbatim. Computer programs are available for transcription and analysis of narratives (such as, CLAN, Child Language Analysis, McWhinney, 1995; SALT, Systematic Analysis of Language Transcripts, Miller & Chapman, 1993). The transcription rules vary based upon the computer program used. It is acceptable to transcribe only the child's narrative during the story retell task when the examiner only provides consistent non-leading neutral prompts (McCabe, 1997b) such as "What happened next?" or "What do you see in this picture?" Irrelevant comments, unintelligible utterances, false starts and retraces made by the child may be deleted during transcription (Curenton & Justice, 2004).

After a narrative has been transcribed, it must be segmented into meaningful language units. While listening to a child's narrative it is often difficult to determine how to break the stream of speech into meaningful units. Manner in which utterances are segmented is essential because the mean length of the utterance (MLU[8]) depends on the way utterances have been segmented. Researchers have used several techniques for segmentation of narratives. Traditionally, some researchers used pauses and intonation

[8] MLU is the average number of words/morphemes produced by a speaker per utterance, in a narrative.

patterns as cues for segmentation (Miller & Chapman, 1981) while others used word groups resembling a sentence as cues for segmentation (Lund & Duchan, 1993; Owens, 1999). Several other studies report the use of 'Communication- Units' for segmentation of the utterances produced during a narration task (Curenton & Justice, 2004; Hughes, McGillivray, & Schmidek, 1997; Strong and Shaver, 1991).

Communication units (C-units) are a segmentation method that allows a clinician to segment the narrative into grammatical units (Crais & Lorch, 1994; Loban 1976). Research has indicated a significant correlation between average C-unit length and age (Craig, Washington & Thompson-Porter, 1998). C-units are grammatical units that are based on clausal structure (i.e., subject-predicate clause). In a clause the subject is usually the noun and it is the topic of the clause (i.e., what the clause is about). The predicate is the verb phrase part of the clause, and it describes the action of the clause (i.e., what is being done). A C-unit consists of either (a) independent clause or (b) independent clause along with its dependent clause(s).

In case the speech sample is segmented into C-units, the number of words per C-unit constitutes the Mean Length of a C-unit (MLCU). Some researchers segment the speech sample into C-units but continue to use the term 'MLU' to refer to the mean length of C-units (Miller et. al, 2006). The calculation of MLU/MLCU depends critically on how utterances are segmented. Segmentation of utterances is a variable between studies that makes direct comparison of results difficult. Once the narrative is segmented into utterances and the transcripts are fed into the computer, the program analyses the narrative on several measures such as total number of utterances, total number of words, Mean Length of Utterance (MLU), number of different words[9] (NDW) and type token ratio[10] (TTR). Several studies in literature have used measures like MLU, NDW and TTR to evaluate the narrative abilities of preschool children (Gazella & Stockman, 2003; Hewitt et. al., 2005; Leadholm & Miller, 1992; Miller et. al, 2006; O'Neill et al., 2004; Schelletter & Parke, 2004).

Several studies on bilingual children have used words to calculate the mean length of utterance (Miller et. al, 2006; Schelletter & Parke, 2004) because of the differences in

[9] NDW is the number of different words produced by the speaker in a narrative.
[10] TTR is the ratio of NDW versus the total number of words produced by the speaker in a narrative.

the morpheme structure of the languages of bilingual children. MLU (words) is calculated as the average number of words per utterance in a given narrative. These studies show that MLU (words) and NDW can be used to evaluate oral language in young bilingual children. Besides the difference in the unit of measurement of MLU (morphemes/words), the sample size also varies from one study to the other. Most textbooks conform to Miller and Chapman's (1981) recommendation of 50 utterances. However, 25% of Speech Language Pathologists (SLPs) in the Hux, Morris-Friehe, and Sanger (1993) survey and 43% in Loeb, Kinsler, and Bookbinder (2000) survey indicate using samples of fewer than 50 utterances. Eisenberg, Fresko, and Lundgren (2001), report of clinicians who use less than 25 utterances for calculating MLU.

Other popular measures to evaluate oral language in young children are NDW and TTR, which measure the lexical diversity in narratives. Lexical diversity is a measure of expressive vocabulary size (Klee, 1992; Miller, 1991; Watkins, Kelly, Harbers, & Hollis, 1995). Lexical diversity is influenced by the presence of language impairment (Goffman & Leonard, 2000), elicitation procedure (Gazella & Stockman, 2003), and a child's age (Miller, 1991). Several studies suggest that NDW is a better measure of semantic development than TTR (Miller, 1991; Watkins et. al., 1995). Studies also report that NDW is a reliable measure of lexical development not only in preschoolers but even in older children (Owen & Leonard, 2001; Richards & Malvern, 1997). In addition to all the above measures, there is a new thinking among researchers in the recent years that emphasize on the literate language features (LLF) that could serve as one of the potential measures of early literacy.

Literate Language Features. Reading and writing are critical in today's literate world. Literate societies require both formal and informal language, and language form is more specified by context and purpose than by mode (speaking vs. writing) (Benson, 2009). It is widely known that a vital relationship exists between oral language development and learning to read. Whereas oral language is informal and is characterized by concrete, familiar terms and accented by prosodic and nonlinguistic information, literacy demands a denser, more specified lexicon and more complex syntactic forms that must stand alone (Westby, 1991). This denser and more complex lexicon and complex syntax is known as literate language. The most important distinction between written text and oral discourse is the absence of two engaged interlocutors, a speaker and a listener, who share an immediate physical context. This observation has been the basis for claiming that writing has its effect by lifting speech out of its context (Ong, 1982) and thereby turning it into an object of thought and interpretation. This process has been characterized by many as decontextualization.

It has been argued that a number of features of language distinguish a literate or decontextualized genre of discourse. One is the distance or detachment, which can be marked by increased use of passive voice, avoidance of first-person pronoun, and use of abstract subjects (Chafe & Danielewicz, 1987). These features reduce a sense of personal involvement in the discourse. The language of ordinary conversation shows more interpersonal involvement markers whereas literate language focuses on the code and content of the message (Tannen, 1985). The use of relative clauses and subordination also can indicate decontextualization (Ong, 1982).

When children “code-switch”, they often use literate forms in conversational discourse, and oral forms in formal written discourse. It is not the sole acquisition of literate forms that is crucial for the school-age child, but competency in both oral and literate forms. Children actually begin to acquire literacy simultaneous with oral language. The two forms are more appropriately interdependent and interrelated. In moving from oral to literate transition children acquire language skills that allow them to evidence variability and flexibility in their use of formal and informal registers and genre types such as narratives, reports, poetry, and jokes in both oral and written modes (Ravid & Tolchinsky, 2002).

It is important to note that literate language and its corresponding features are not a consequence of using a written modality. Chafe and Danielewizc (1987) show that written letters to a friend contain elements of an “oral” style, whereas spoken formal lectures contain more features of detachment and can be characterized as more “literate”. It is thus not the modality that is used, oral or written, that determines the presence or absence of these features. Rather, it is a pattern of language use, a kind of discourse that can manifest in either oral or written modes of production. A number of scholars have claimed that the characteristics of oral language associated with higher levels of literacy can be orally transmitted (Heath, 1983; Olson, 1994; Wells, 1981). The argument is that the oral language developed in literate cultural traditions is passed on to children in daily interactions.

Definitions of literate language has included the following four features: (a) a metalinguistic aspect involving a focus on meaning, functions and form: (b) the use of language that is abstract or decontextualized; (c) linguistic specificity; and (d) semantic and syntactic forms that are commonly used in written text and instructional discourse (Nelson, 1985; Pellegrinini, 1985; Wallach & Miller, 1988; Westby, 2005). According to Paul (2007) literate language is "the style used in written communication and is typically more complex and less related to the physical context than the language of ordinary conversation" (p. 394). Literate language has been described as an overlapping area between language and literacy. It is taught by both class-room teachers and SLPs because it has both academic and metalinguistic uses (Ukrainetz & Fresquez, 2003).

The unique linguistic features that are used in decontextualized discourse situations are collectively referred to as literate language features. Literate language features increase explicitness and reduce ambiguity during decontextualized discourse. The four structural indices of language that are most commonly associated with literate language are elaborated noun phrases, adverbs, conjunctions, and mental and linguistic verbs (Greenhalgh & Strong, 2001; Pellegrini, 1985). Collectively, these four structures permit the linguistic rendering of meaning in situations with restricted contexts. Some examples of the literate language features provided by Benson (2009) are given below:

- *Elaborated noun phrase.* Noun phrase with two or more modifiers preceding the noun (The big yellow ball is mine), or with qualifiers such as prepositional phrases (My friend Maya, likes swimming), appositives (We saw the girl with long hair), and relative clauses (I don't like people who are mean) following the noun.
- *Conjunction.* Coordinating (excluding '*and' &* 'then') conjunctions such as *but, so, yet* and subordinating conjunctions such as *because, before, after, while, until, if, although*.
- *Adverbs.* All adverbs including those that are structurally in error, such as *here, now, quickly (quick), loudly (loud), soon.*
- *Mental/Linguistic verb.* Verb expressing cognitive and linguistic processes of humans, animals, or fictional characters. Mental verbs: *decided, thought, knew, forgot* and *wished.* Linguistic verbs: *said, yelled, called* and *asked*.

According to Curenton and Justice (2004) elaborated noun phrases, in which general or specific nouns are modified through the addition of determiners (e.g., articles, possessives, demonstratives, and quantifiers) and/or adjectives increase the explicitness of character, object, and event descriptions. Simple and compound adverbs (e.g., almost, now, nowhere, often, quickly, right there) enhance the explicitness of time, manner, and place references. Coordinating (e.g., and, or, but, so) and subordinating conjunctions (e.g., because, since, until, when) organize information into causal and temporal sequences to clarify relationships among story elements. Mental and linguistic verbs (e.g., think, know, tell, call) provide explicit and elaborated information about the mental and linguistic processes of story characters.

Preschool children acquire literate language through literacy experiences both before and during the school years. They learn to recall details from stories, re-telling stories and generating stories. Their narrative abilities offer a rich source of information about the complex language abilities such as sentence construction and cohesion. Curenton and Justice (2004) found that literate language features occurred at measurable rates for 3- to 5-year-old children. Conjunction use was positively associated with the use of complex elaborated noun phrases and adverbs, and the use of complex and simple elaborated noun phrases was inversely related. They did not find any difference between African American and Caucasian children's usage rates. Age-related differences were observed in the use of mental/linguistic verbs and conjunctions.

Literate language features are key indices of later literacy skill (Westby, 1991) and reflect lexical richness and specificity. They are necessary in forming complex sentence constructions that reflect referential, causal, and temporal relationships. Children presumably acquire much of their decontextualized language through interactions with print (Wallach & Butler, 1994); however, other types of verbal interactions also may facilitate acquisition, such as listening to sermons, speeches, or oral stories that refer to events in the past or future. Thus, literacy events, no matter how they manifest in the lives of children, lead to the ability to “think” about language (Francis, 1987).

Thinking about language, known as meta-linguistic awareness, and literacy are intricately interwoven. Olson (1985) found a clear association between the use of cognitive verbs, such as *know, think,* and *remember,* and the development of reading ability. Children who fail to develop higher level language during preschool and early school years are less prepared for the language demands of the literate environments and may be at risk for reading difficulties and school failure (Catts, Fey, Tomblin, & Zang, 2002; Catts & Kamhi, 2005). Thus, it is evident that literate language features show a developmental trend in preschoolers and share a close association with reading.

Torrance and Olson (1985) found that the use of mental and linguistic terms was predictive of good reading. Children with semantic and syntactic deficits have been identified in preschool or kindergarten to have subsequent reading and academic difficulty. Scarborough and Debrich (1990) found that four out of five children with early language delay manifested severe reading difficulty at the end of second grade even when those early language difficulties appeared to resolve. Catts and Kamhi (2005) observed that language deficits are both the cause and the consequence of reading disabilities. Therefore, it is important to identify early language delay in order to minimize its effects on later academic performance.

Story Re-tell Measures in Bilingual Children. Assessments of narratives have been reported frequently in monolingual children and seldom in bilingual children (see Gutierrez-Clellen, 2002). Studies investigating narratives of bilingual children have found them to be less advanced than matched monolingual children on a variety of measures (Shrubshall, 1997). Comparing narratives in both languages of Spanish-English bilinguals, Gutierrez-Clellen (2002) found differences in the recall and comprehension of a story, such that the children showed better performance in the language used in the classroom (L2- English) as opposed to Spanish (L1). Schelletter and Parke (2004) did not find any difference between the English-dominant and the German-dominant groups in terms of MLU and number of word types. The German-dominant group outperformed the English-dominant group in terms of their ability to use synonyms of verbs and in terms of errors. The narrative task employed in the above studies includes narrative re-tells, where the child was given a story model that had to be reproduced, and spontaneous narratives. Studies on bilingual children in India (Patnaik & Mohanty, 1984; Sreedevi & Shyamala, 2005) reported that bilinguals perform better on cognitive, linguistic and meta-linguistic skills as well as show better narrative abilities when compared to monolinguals.

2.2.1.2 Print Knowledge. Print knowledge describes children's early discoveries about the orthography of a language. According to Justice and Ezell (2004), children's earliest print achievement takes place when children develop an interest in print. Experiences with print (through reading and writing) give preschool children an understanding of the functions, conventions and forms of print, which play an integral role in learning to read. In recent years, considerable attention has been directed towards young children's acquisition of phonological awareness. Print awareness, in contrast, has received substantially less attention in the developmental literature. Longitudinal studies have shown that word and print awareness serve as key predictors of later reading achievement (Adams, 1990) and comprise important elements of the foundation of emergent literacy knowledge (NELP, 2009; Stuart, 1995).

The findings of the NELP (2009), which underscore the importance of print knowledge to successful school-age reading performance, converge with those of other literacy researchers. Structural Equation Modeling of precursors to reading showed preschool alphabetic skills to predict 38% of the variance in kindergarten reading ability, with children's knowledge of print comprising the largest factor in the latent variable representing preschool alphabetic skills (Storch & Whitehurst, 2002). The meta-analysis carried out by Hammill (2004), which documented the relationship between pre-reading skills and later reading abilities identified print skills to be the most robust predictors of later reading competence. These data confirm that children cannot learn to read without having some knowledge of print, and further, that those children who arrive to reading instruction with well-developed knowledge about print will make relatively better progress than those youngsters with underdeveloped knowledge about print.

The understanding that print carries meaning emerges between the third and fifth year of life, as demonstrated in Mason's (1980) examination of the development of print literacy in 4-year-old children. Mason has asserted that at this time, children undergo a striking transformation in which independent and self-motivated interactions with print exponentially increase; for example, children begin to use print as a communication device, to recite the alphabet, and to recognize letters and words occurring in print.

Development of such skills within the preschool period is an important predictor of later reading achievement (Adams, 1990; Stuart, 1995).

Denton and colleagues (Denton & West, 2002; West, Denton, & Germino-Hausken, 2000) reported statistics on a general sample of 22,000 children from kindergarten through fifth grade. Clear relations were found between specific skills related to reading and later word decoding skills. At kindergarten entry, 66% of the children could name upper- and lowercase letters of the alphabet; 29% recognized the beginning sounds of words; 17% recognized ending sounds; and 1% to 2% could read sight words or words in context. Children who were proficient in identifying letters at kindergarten entry showed stronger skills at the end of kindergarten and in first grade on measures of phonological processing and word reading compared to children who were not proficient.

Storch and Whitehurst (2001) found that 55% of the differences in reading ability at the end of first grade for a large group of Head Start children could be directly predicted from their knowledge of print and phonological awareness at the end of kindergarten. Whitehurst and Massetti (2004, p. 252) claimed that "Head Start children who had begun to learn about print, sounds, and writing during the pre-school period were more likely to be ready to read at the end of kindergarten and more likely to be reading successfully in elementary school". Lynch (2008) found that children learned about the concepts of print when families read stories from the Bible. Similarly in India, elders in the family read-aloud stories from holy-books that instill values and morals in young children. This form of storybook reading might also create print awareness in children, although there is no research report from India to support this premise

Senechal, LeFevre, Thomas, and Daley (1998), claim that in their study, parents do not focus on the print when reading storybooks with children and when parents claimed to read the alphabet to children, it often involved pointing out letters in environmental print, such as street signs, or directly teaching the alphabet by writing and reading the alphabet with children. According to Lynch (2008) parents who engaged in labeling words and writing letters of the alphabet, helped children develop alphabetic knowledge and left–right line directionality.

The print knowledge skills have been broadly grouped into alphabet knowledge, concepts about print and writing skills. The following section gives a detailed review of studies reported in literature on the above three components of print knowledge.

2.2.1.2.1 Alphabet Knowledge. Knowing the alphabet and its related sounds is associated with the emergence of literacy. Letter knowledge provides the basis for forming connections between the letters in spelling and the sounds in pronunciations (Whitehurst & Lonigan, 1998). Research indicates that fluency in letter naming is a strong predictor of later reading skills (Badian, 1995; Ehri & Sweet, 1991; Walsh, Price, & Gillingham, 1988). Letter knowledge has been found to be a strong predictor of reading skills not only in English speaking children but also in non-English speaking children (Muter & Diethelm, 2001). Children who are proficient in identifying letters in kindergarten entry show stronger skills at the end of kindergarten and in first grade on measures of phonological processing and word reading, compared to children who are not proficient (West, Denton, & Germino Hansken, 2000; Denton & West, 2002).

Badian (1995) found that preschool letter naming was a consistently significant predictor of reading vocabulary, reading comprehension, and spelling at each grade level, but the preschool orthographic task contributed most to reading comprehension and spelling at the higher grades. Conversely, the contribution of the first grade phonemic awareness measures to reading skills dropped sharply after third grade, although they continued to contribute to spelling prediction. When preschool precursors of phonological processing were examined, letter naming was found to be a predictor of first and third grade phonemic awareness. Badian's findings confirm the importance of letter naming as a predictor and of the role of phonemic awareness in early reading acquisition.

Speece, Mills, Ritchie, and Hillman (2003) found letter-name fluency to be a valid measure of early reading and poor reader status. Scarborough (1998a) reviewed 24 studies that used letter-name knowledge as a predictor of later reading ability. The mean correlation coefficient between the letter-name knowledge and future reading achievement was 0.52, with letter-name knowledge accounting for nearly a third of the variance in reading in Grades 1 through 3. Lomax and McGee (1987) assessed the letter knowledge of children for all the 26 upper case and lower case letters. The mean performance rate of 81 children in the age range of three to six years (from middle-income homes) was 76% accuracy. Children at 3 years performed with 42% accuracy whereas children at 5 years of age performed at 93% accuracy.

In comparison to letter-name knowledge, letter-sound knowledge requires children to understand the grapheme-phoneme relationships. McCormick, Stoner, and Duncan (1994) found that letter-sound identification skills in Kindergarten predicted first-grade reading achievement (r = 0.60), and Compton (2000) reported that a letter-sound task contributed a unique variance to word reading growth and end-of-year-word-reading skill in first grade. Research also indicates that teaching letter identification skills explicitly does not result in improvements in early reading skills (Gibson & Levin, 1975; Tunmer, 1991), especially if the focus is exclusively on letter names alone rather than including letter sounds (Ehri, 1983).

The development of letter knowledge skills has been found to relate to the background characteristics of children. West et al. (2000) reported that children whose mothers had less education and children whose families had low levels of income had fewer letter naming skills in the preschool period, which placed them at risk for low achievement in reading. Bowey (1995) reported that 5-year-olds from low-SES homes could name half as many letters as children from higher SES homes (5.72 vs. 11.09). These scores are consistent with Badian's (1995) report that 5-year-old children from a broad range of SES homes had an average letter naming score of 8.4. However, not all children whose parents had less education or low income had poor letter knowledge skills. For example, Brady, Fowler, Stone, and Winbury (1994) reported average letter naming scores for two groups of 5-year-old children in inner-city kindergarten programs as 9.12 and 9.86 in the fall and 17.60 for both groups in the spring. Some of the differences in findings across studies could be due to the different ways in which letter knowledge skills were assessed (e.g., identification of upper- and lowercase letters, producing letter names and letter sounds).

Researchers have reported a relation between letter knowledge skills and phonological processing skills in the preschool period and subsequent reading skills at school age. However, there are disagreements about whether one skill facilitates the development of the other or whether the development of one or both skills is needed for the development of subsequent reading skills. For example, Wagner, Torgesen, and

Rashotte (1994) reported a causal relation between letter name knowledge in kindergarten and measures of phonological processing abilities in first grade. Muter and Diethelm (2001) reported that kindergarten letter knowledge and phonological processing skills were both predictive of first grade reading while Badian (1995) reported that letter naming skills in kindergarten were the most consistent predictors of reading in Grades 1 to 6. In a study that specifically targeted non-reading preschool children, Johnston, Anderson, and Holligan (1996) reported that children who could identify few or no letter names had difficulty on phonological processing tasks compared to children who knew an average of 8 letters.

Burgess and Lonigan (1998) reported that letter name knowledge and phonological processing skills were reciprocally related in non-reading preschool children, with each skill effective in predicting growth in the other skill. Burgess and Lonigan did not find a relation between letter name knowledge and rhyme detection, but Wood and Terrell (1998) reported that rhyme detection skills measured in non-reading preschool children were significant predictors of reading skills at school age. Other researchers (Johnston et al., 1996; Riley, 1996) have linked letter naming skills to environmental print skills, although there is considerable disagreement about the role of environmental print as a component in the development of word-level reading skills (Cronin, Farrell, & Delaney, 1999; Share & Gur, 1999). Although the manner in which specific skills were measured in these studies varied to some extent, which may account for some of the differences in findings, it is clear that letter knowledge, phonological processing, and possibly rhyme detection skills and environmental print play a role in the development of reading skills.

Word recognition and Alphabetic Principle. Research with monolingual readers has revealed that skilled word reading involves a combination of visual and phonological processes (Seidenberg & McClelland, 1989). Visual processes initiate word identification and trigger other important processes such as decoding processes that require the reader to identify the correct sound-letter correspondence (the correspondence between the sounds of a language and the printed letters). The greatest variance in reading comprehension is accounted by the accuracy and speed of single-word reading (Perfetti, 1985). If a child has difficulty with word reading, these will have a negative impact on reading comprehension. Children's word reading must be characterized by automaticity in order to gain meaning from text (Kame'enui & Simmons, 2001). Children with highly automatized word recognition abilities are able to allocate more resources to text comprehension (Adams, 1990). The process of context-free word recognition clearly differentiates good and poor readers (Stanovich, 1986), and for the majority of individuals with reading difficulty, their difficulties stem from deficits in basic word-level skills, which ultimately impede effective reading comprehension and vocabulary development (Shankweiler, 1989).

Before children can make sense of written language, it is necessary that they learn to read. Reading words includes recognizing the correct pronunciations of words, as well as their meanings and roles in spoken language. In English orthography, the spellings of spoken words are governed largely by the "alphabetic principle", the notion that the written symbols (letters and graphemes) systematically represent the smallest meaningful speech elements (phonemes) that make up the pronunciation of a word (Scarborough, 2003). When children are unable to understand that spoken words consist of phonemes, they are unable to grasp the alphabetic principle; without phonemic awareness they cannot truly understand what letters stand for (Liberman, 1973).

Sometimes children have phoneme awareness and letter knowledge, but still they fail to see how they are related to each other. Children who do not understand the alphabetic principle do not understand what a "long" word is, nor do they understand that mature readers do not memorize words as wholes (Wren & Watts, 2002). Children's natural tendency is to memorize the shape of words, or memorize some salient features within words, but when they develop an implicit understanding of the alphabetic principle, they realize that to be a mature reader, they have to learn how to break words apart and sound them out. One way to assess the alphabetic principle is by saying a word and asking the child to point to one out of two words placed in front of the child (Abecedarian Reading Assessment, Wren & Watts, 2002). In this assessment the child is not expected to read the word; the child only needs to decide which word is longer or shorter and match it with the spoken word. A child with the concept of the alphabetic principle will be able to do this task.

Researchers have attempted to assess the alphabetic principle by evaluating the relationship between speech sounds and letters in young children (Adams, 1990; Mason & Allen, 1986; Sulzby & Teale, 1991). Studies have found that one of the best predictors of early reading ability is a child's understanding that written words are made up of letters that represent sounds in speech (Lomax & McGee, 1987; Share, Jorm, Maclean, & Matthews, 1984; Tunmer & Nesdale, 1985). This means that children must learn to think of words as having both meanings and sounds in order to understand the Alphabetic Principle (Stahl & Murray, 1998). Research indicates that explicit instruction of the alphabetic principle is necessary for some children and is better than relying on the students to discover it for themselves (Adams, 1990).

Knowledge of alphabet letters and some sound-to-symbol matches provide important tools for children's development of phoneme awareness, as do their vocabulary (Liberman & Shankweiler, 1991; McGuinness, McGuinness, & Donohue, 1995; Share, Jorm, Maclean, & Matthews, 1984). By examining known pairings (e.g., /m/ in Maggi, mommy) and verifying results with new evidence (e.g., man, mouse), children reinvent the alphabetic principle for themselves (Henderson, 1990; Read, 1975). Young children easily learn to associate words with concepts and ideas, which lead to word recognition. Wren and Watts (2002) state that the mere recognition of words does not mean that children are decoding words; decoding words involves sounding them out and arriving at a pronunciation that mature readers agree with. Furthermore, it is necessary that this decoding process should not be laborious because if children spend much of their energy concentrating on sounding out words in text, they will not have enough cognitive resources left for comprehension of the word meaning. Studies show that children who recognize words readily are able to focus more attention on the meaning of words (Chall, 1996; Ehri, 1995).

The course of development in learning to read words has been described as a series of phases (Ehri, 1999), where each phase is labeled to reflect the involvement of alphabetic knowledge in the connection-forming process. The 'pre-alphabetic phase' refers to the earliest period, when children lack sufficient letter knowledge and phonemic awareness to form alphabetic connections to read words. They might resort to memorizing visual and contextual cues associated with words but they are unable to read without these cues. In the ‘partial alphabetic phase’ children learn letter names or sounds and some phonemic awareness, which they use to make partial connections in memory. At this stage they can connect beginning and ending letters to sounds in pronunciations but not the middle letters. They are unable to decode words or read by analogy but they can guess the word using partial cues and context.

The ‘full alphabetic phase’ emerges when children acquire segmentation and blending skills and learn the grapheme-phoneme correspondences for major vowels and consonants. They can use this to connect spellings fully to their pronunciations in memory. The ‘consolidated alphabetic phase’ occurs when children form connections out of larger spelling patterns, including syllables and morphemes. These spelling patterns are learned as children acquire a sight vocabulary. They learn the spellings of whole words, as well as rime, syllable, and affix spellings that recur in different words. These spellings become consolidated into units that become available for forming connections. In the last phase, a child is able to recognize even novel words automatically, using stored knowledge of orthographic patterns (Adams, 1990; Ehri, 1999)

Ehri and Roberts (2006) report that children might apply one of the following strategies to read words: (1) Decoding- Decoding involves sounding out letters and blending them to form recognizable spoken words. (2) Analogy- Reading words by analogy involves applying parts of known words to read new words, for example, reading *bin* by analogy to *pin.* (3) Prediction- Predicting words involves combining cues from the surrounding context and partial letter cues in spellings to anticipate the identity of words. It is seen that readers apply these strategies to figure out unknown words, but they read familiar words by accessing them from memory, which is referred to as reading words by sight (Ehri, 1992).

Sight word reading requires readers to form connections between letters in spellings and sounds in pronunciations, to retain words in memory. When readers encounter an unfamiliar word, they might identify the word by decoding, or using analogy or predicting or by asking someone for the correct pronunciation. When the word is seen and pronounced, connections are activated between spelling and sounds, along with meanings. Reading a word a few times this way secures it in memory so that it can be read by sight (Reitsma, 1983; Share, 2004b). Acquiring reading skill consists of building a very large store of sight words in memory.

2.2.1.2.2. Concepts about Print. Concepts about print include the knowledge of print functions and print conventions. Print serves a broad variety of functions. The scope of print functions ranges from very specific (e.g., making shopping lists, reading product labels, writing cheques, reading street signs, looking up information) to very general (e.g., acquiring knowledge, conveying instructions, and maintaining relationships). Children understand the purpose of print when they realize that words convey a message whereas, they understand the function of print when they realize that messages can serve multiple purposes (van Kleeck, 1990). Children who enter school with more print knowledge are generally more successful with school-based literacy (Purcell-Gates, 1996). Justice, Bowles and Skibbe (2006) found that children from lower socio-economic status and children with language impairment had poor concepts about print when compared to their typically developing peers.

When children develop knowledge of print functions, it creates awareness of environmental print such as street signs, logos and product labels. Knowledge of these functions varies considerably in preschool children, since all children are not exposed to the same range of print-related experiences. Lynch (2008) suggests that schools may want to consider developing literacy lessons for children around the environmental print that many children from low-income backgrounds were exposed to in the out-of-school context. Cronin, Farrell, & Delaney (2002) found that environmental print and logo knowledge facilitated word reading.

Young children are exposed to signs and labels in their environment very frequently. Findings indicate that even though children might be able to read environmental print, this capability does not appear to promote letter learning. Masonheimer, Drum, and Ehri (1984) selected preschoolers who were experts at reading environmental labels and signs accompanied by their logos, for example, PEPSI appearing on its red, white and blue background. They altered one letter in the label, for example, XEPSI, and showed it to the children. Most failed to recognize the change and continued to read it as “Pepsi” even when they were cautioned that something might be wrong. This shows that the children had not learned to read the signs by paying attention to letters, they were responding mainly to the labels that contained more memorable non alphabetic cues involving colours and eye-catching designs.

In another study, Cardoso-Matins, Rodrigues, and Ehri (2003) worked with illiterate Brazilian adults who already knew many letters but were nonreaders. They were asked to read familiar environmental signs printed with single letters replaced, like the XEPSI example above. Even these adults failed to notice the alterations. This shows that even those who have sufficient knowledge of letters and extensive exposure to the signs pay more attention to the visual cues and less to the individual letters in the environmental signs. Thus environmental labels and signs do not afford much opportunity for informal letter learning. As a result of interacting with and observing adults in their environment using print, preschool children also understand the vocabulary of reading in instructional contexts such as ‘read’, ‘write’, ‘draw’, ‘page’, and ‘story’ (Morgan cited in Weir, 1989; van Kleeck, 1990).

Print conventions refer to the way in which language is organized. The knowledge about the conventions of print enables children to understand the physical structure of written language. Children learn about print from a variety of sources, and in the process come to realize that although print differs from speech, it carries messages just like speech (Morrow et. al. 1990). As preschool children listen to stories they learn not only how stories are structured semantically in terms of ideas but also visually in terms of their appearance on the printed page. That is, text begins at the top of the page, moves from left to right, and carries over to the next page when it is turned (Ehri & Sweet, 1991). During storybook reading, children also acquire book handling skills such as how to hold the book right side up, how to turn pages one at a time, the beginning and the end of the book.

While reading storybooks, when adults point to individual letters in a word, or to whole words in a sentence, children learn how language is represented in print. When English is seen in print form, each letter is a distinct visual form, and each word is distinct due to the spaces between the words (Mason & Allen, 1986). Children who have adequate word concept understand that words are different from letters and letters make up words (Adams, 1990; Lomax & McGee, 1987; Roberts, 1992). Schickedanz (1982, p. 247) reported that between the age of 3-years and 5-years most children come to understand that “letters and words are different entities”. A few other researchers (e.g. Roberts, 1992) have asserted that an explicit awareness of concept of word as it pertains to written language may well not be established until formal literacy instruction begins. Other physical characteristics of print which children learn at later stages include indentation, punctuation, and capitalization.

Experts view concept of a word in text to be a fundamental understanding that children must grasp to progress as readers (Bear, Invernizzi, Templeton, & Johnston, 2004; Morris, Bloodgood, Lomax, & Perney, 2003). Concept of word in text also involves the phonological skill of parsing the oral speech stream into word segments and recognizing that there are spaces between words. In addition, concept of word requires letter-sound knowledge, at least at the level of beginning consonants in words, to accurately match speech to print. Morris et al. (2003) suggest that a stable concept of word in text facilitates children’s ability to segment a word into its individual sounds.

Anthony, Williams, McDonald, and Francis (2007) studied text discrimination abilities of preschoolers by evaluating their ability to distinguish printed letters and printed words from non-alphabetic characters and illustrations. More specifically, for each item, examiners presented children with an array of four choices and then asked, “Which is a letter/word?” or “Point to a letter/word?” Correct response choices were single letters, strings of letters, or individual words (e.g., C, SMK, CAR). Incorrect response choices were strings of numbers, symbols, or illustrations (e.g., 589, **Ω**, picture of a car). The results of their study show that text discrimination, letter knowledge and word recognition skills were uniquely related to the phonological processing abilities of the participants. This shows that text discrimination abilities of preschool children are indicative of their emergent literacy skills.

2.2.1.2.2 Emergent Writing. Children seem to develop an understanding of the relationship between oral and written language at a young age (Sulzby, 1986). They learn about writing through observing adults and peers engaging in writing. Children begin writing even before they can form letters, and this early writing reveals children's early attention to the conventions of written language (van Kleeck, 1990). Hiebert (1988) characterized this as a developmental progression in which early attempts at messages may take the form of scribbles that take on characteristics of the writing system, such as linearity. Eventually, the scribbling is superseded by letter-like forms, which in turn, are replaced by letters, generally familiar ones such as those in the child's name. Children’s writing attempts begin with random scribbling and progress into controlled dots, circles, and/or lines (Clay, 1975).

Children acquire oral language quite naturally but this is not true for written language. Acquisition of written language requires greater motor and cognitive development (Bloodgood, 1999). Researchers believe that literacy learners must comprehend and gain control of a second level of abstraction as they come to understand that written symbols stand for the spoken word that represents the concrete item or action. In alphabetic languages the system is obscured at the levels of alphabet, phoneme, and word. Beginning readers and writers must determine how to parse the spoken text and decide what units align with the written form.

The alphabetic system, designed to maximize versatility with a limited number of letter symbols, does not permit easy access to its code. The English alphabet is a less than precise match for the sounds it represents; there are two or more forms for each letter, and several letters vary from one another only in directionality (e.g., *b*, *d*; *M*, *W*) (McGee & Richgels, 1989). Because the phoneme is an abstract unit further hidden from disclosure by coarticulation (i.e., individual phonemes are intertwined with and influenced by those immediately before and after them), children must sift through several hypotheses and layers of language complexity to uncover the sound-to-symbol match (Ferreiro, 1990).

For young children, writing is a means of gestural play where they use any material available, be it paper and pencil or wall and mom’s favorite lipstick. At some point in their experimentation, children differentiate between purely illustrative designs or drawings and communicative scribbles. As fine motor control improves, scribbles become more linear and culture specific in imitation of adult models; drawings are made to which identifications are attached; and, ultimately, drawings are planned (Clay, 1975; Dyson, 1982; Harste et al., 1984). Children distinguish between drawing and writing at about 2 and a half to 3 years of age (Bloodgood, 1999). They scribble or draw pictures and make lines or letter-like forms separate from the picture to label their drawings (Barclay, 1992; Ferreiro, 1984).

As Clay (1975) and Ferreiro and Teberosky (1982) described, children manipulate a number of literacy theories before coming to a sound-to-letter hypothesis (e.g., daddy's name should be longer than mine because he's bigger; three kittens should be represented by something like 'cat' written three times). Between the ages of 3 and 4, children's concepts of writing become more sophisticated (Springate, 1983; Sulzby, 1985b). They have greater awareness of the multiple functions of writing and the elements of its form (e.g., variable units, linearity, and orthography). They recognize the communicative role of written language, realizing that print, not the picture, carries the message. As children experiment with representation of their names and other known words (e.g., *mom*, *cat*, and *love*), environmental print, and labels for drawings, they begin to grasp the relationship between oral language and the written code (Dyson, 1989; Ferreiro & Teberosky, 1982).

One's own name, the first word that most children know they can read, adds a new dimension to discussions of reading and writing. Children may view name as a static entity that, because of its personal importance, has little connection to other written forms. Some children may actively explore their name as a tool to develop greater understanding of other literacy concepts, including alphabet, sound-letter matches, and concept of word. As youngsters begin to explore written language, their name becomes a natural focus. Since the word young children encounter most meaningfully in print is their name, this is often the word they first attempt to write (Clay, 1975). Bloodgood (1999) suggests that name writing ability serves as a mirror reflecting not only a child's level of mastery of form, but also awareness of function and perception of literacy. Form includes the ability to produce recognizable letters; function involves understanding basic concepts and uses of print; perception relates to metacognitive and metalinguistic knowledge. Children's experience with name allows understanding of how literacy works. "Although the hypotheses constructed for identification and writing of name may not be immediately applied to other print, the analysis of name events does provide a window into early literacy strategies" Villaume and Wilson (1989, p. 284).

Clay (1975, 1991) examined children's name-writing competence, focusing on the form and function of print evidenced by the way children produced their names. First signatures were perceived by the children as signs, where only initial letters have distinct meaning; later, name became a logogram produced exactly as learned (Clay, 1977; Villaume & Wilson, 1989). Springate (1983) investigated preschool children's functional understanding of print and found a generalized progression of name-writing proficiency and literacy abilities with age. For young children, written names and particularly first letters are personal possessions and in turn function to represent ownership (Ferreiro, 1986; McGee & Richgels, 1989). Name letters may be rearranged by slightly more sophisticated children to represent other written words (Clay, 1975; Sulzby, 1985).

Hildreth (1936) and Stanley and Pershin (1978) used the form of children's signatures as an indicator of physical and cognitive development. In Hildreth's sample of 3- to 7-year-olds, the younger children managed only a scribble in the center of the page when asked to produce their name. Children's increasing age and mental sophistication resulted in a progression from scribbles to linear forms to mock letters to letters in random order to accurate representations. Comparing children's drawings and signatures, Stanley and Pershin found a "significant correlation between writing, drawing-a-person and age [that] supports the notion that preschool name-writing writing levels are indicators of developmental maturity" (p. 189). Ferguson (1975) found children's name-writing ability at the beginning of kindergarten a reliable predictor of reading ability and a valuable method for evaluating written language acquisition.

Saracho (1990; Fox & Saracho, 1990) outlined five levels of writing development: scribbling, horizontal scribbling, discrete units, letters, and correct spelling of the children's names. These phases roughly parallel the writing progression developed by Sulzby (1985b). Those children making the fastest progress in name production showed the most interest and actively explored literacy activities. Fox and Saracho (1990) found evidence of phonemic awareness in children who had the most complete and sophisticated signatures; when asked to spell four words, they could represent initial and final consonants as well as medial vowels. It has been documented through the use of structural equation modeling that name writing and drawing a person are associated with code related skills in preschool children (Storch & Whitehurst, 2002). Treiman and Broderick (1998) found that children acquire knowledge of letters in their own name prior to other letters.

Social and cultural factors strongly influence children as they develop their knowledge of written language. Davies (1987) addressed the role of children's names in literacy acquisition within a preschool environment. She concluded that 3- to 5-year-olds' name-writing skill developed as a result of teacher modeling and instruction rather than as part of a self-initiated, psychogenic process. Studies have shown that some environments are more conducive to this development than others (Dyson, 1989; Purcell-Gates, 1995; Teale & Sulzby, 1986). These studies indicate the importance of a supportive social environment where literacy materials are available, exploration is encouraged, and functional purposes for written communication are examined.

Lynch (2008) found that parents engaged in more reading activities with their children than writing activities. This finding reflects other research that reports that people, in general, engage in fewer writing practices than reading (e.g. Purcell-Gates, Degener, Jacobson, & Solar, 2002). The results of Lynch's study suggest that, generally, parents felt that children did not need to know how to write words, except their name, before beginning formal schooling. Research indicates that many middle-class children engage in writing by composing with parents or older siblings before formal schooling (Taylor, 1998). It is important to make parents aware that all of these interactions around print may help children's literacy development. When children engage in writing activities, these help to reinforce their knowledge about reading, since the reading and writing process are strongly connected (Clay, 2001). Since emergent literacy embraces skills that are developmental precursors to reading and writing, the developmental progression of writing abilities should be included as a part of an emergent literacy evaluation (Teale & Sulzby, 1986). However, few studies include measures of emergent writing also as part of an emergent literacy assessment battery.

With reference to bilingual children's understanding of print awareness, Bialystok (1997) and found that bilingual learners were better than monolingual children in understanding the general symbolic properties of written English. Bialystok studied bilingual (French-English and Chinese-English) 4- and 5- year olds and compared them with monolingual English speakers of the same age on their understanding of how print relates to language. The bilingual children were found to understand the general symbolic representation of print specifically the invariance with which a print label represents an object better than the English monolinguals. They were also aware of the fact that the meaning of the print label does not change with context. The report suggests the importance of examining print knowledge in bilingual children as a measure of emergent literacy.

2.2.1.3 Phonological Processing. The third domain of emergent literacy development is phonological processing, which refers to the use of the sound structure of oral language in processing oral and written information. According to Lonigan (2006), phonological processing refers to the activities that require sensitivity to, or manipulation of, the sounds in words. There is considerable evidence that phonological processing skills play a key role in the acquisition of reading and spelling in alphabetic languages. Research with a variety of population and using diverse methods has converged on the finding that there is a link between normal acquisition of reading and an individual's ability on tasks designed to measure phonological processing (Adams, 1990; Wagner & Torgesen, 1987).

Research with school-age children has identified three interrelated phonological processing abilities that are important for reading and writing: phonological awareness, phonological memory, and the efficiency of phonological access to lexical storage (Wagner & Torgesen, 1987). These three phonological processes are related strongly to subsequent word decoding abilities, and in the absence of intervention, they show highly stable individual differences from the late preschool period forward (Burgess & Lonigan, 1998; Lonigan, Burgess, & Anthony, 2000; Wagner, Torgesen, Laughon, Simmons, & Rashotte, 1993; Wagner et al., 1994; Wagner et al., 1997).

Numerous correlational and longitudinal studies demonstrate that phonological processing skills such as phonological awareness, phonological short term memory (STM), and rapid automatized naming (RAN) are reliable predictors of reading achievement (Wagner et al., 1994; Stone and Brady, 1995; Wagner et al., 1997). Anthony, Williams, McDonald, and Francis (2007) studied the convergent, discriminant and predictive validity of the three phonological processing skills in 389, 3- to 5-year-old children. They found that each phonological processing skill was separate from each other and from general cognitive ability. They also found that older preschoolers had better developed latent phonological processing abilities than younger preschoolers and phonological awareness was uniquely associated with word reading skills in older preschoolers. RAN was uniquely associated with letter knowledge and text discrimination. General cognitive ability was indirectly associated with emergent literacy via phonological processing abilities in the early literacy development of English-speaking preschool children.

Some researchers have conducted comprehensive studies in the area of phonological processing skills in languages like English, Dutch and Latvian (Wagner et al., 1997; de Jong and van der Leij, 1999; Sprugevica & Hoien, 2004). Their research indicates that the influence of phonological processing on literacy development appears to be greatest during the first few years of formal schooling when children are learning to read and write. The most reliable evidence till date has come from the meta-analysis carried out by NELP (2009) which indicates that phonological processing skills such as phonological awareness, STM and RAN are predictors of decoding, reading comprehension and spelling.

Researchers have reported a link between phonological processing skills and letter knowledge (Anthony et al., 2007; Burgess & Lonigan, 1998; Wagner et al., 1994). However, there are disagreements about whether one skill facilitates the development of other skills or whether the development of one or both skills is needed for the development of subsequent reading skills. For example, Wagner, Torgesen, and Rashotte (1994) reported a causal relation between letter name knowledge and measures of phonological processing abilities in first grade. Letter name knowledge and phonological processing skills are reciprocally related in non-reading preschool children, with each skill effective in predicting the growth in the other skill (Burgess and Lonigan, 1998). Muter and Diethelm (2001) reported that kindergarten letter knowledge and phonological processing skills were both predictive of first grade reading. Children who could identify few or no letter names had difficulty on phonological processing tasks compared to children who knew an average of eight letters (Johnston, Anderson, & Holligan, 1996).

Children with poor phonological processing skills have difficulty cracking the alphabetic code that connects the graphemes in written language to the phonemes in spoken language. Such children do not have an effective strategy for decoding unfamiliar words when they are encountered in print. These children tend to rely too heavily on contextual clues to guess the unfamiliar word rather than using knowledge of phonics to decode it. As a consequence of using an ineffective strategy, attempts to decode unfamiliar words results in many word-reading errors. Reading grade-level material is difficult for these children and many of them begin to develop negative attitudes about reading, resulting in reduced opportunities to practice reading (Oka & Paris, 1986).

Fluent decoding appears to depend heavily on a well-developed sight-word repertoire (i.e., words that are processed quickly based on stored spelling patterns, rather than decoding of the individual sound patterns represented by letters), which is built through repeated accurate readings of a word (Ehri, 1998; Torgesen, Rashotte, & Alexander, 2001). Consequently, children with poor phonological processing skills have difficulty developing the large body of sight-words required to become a fluent reader both because of inaccurate readings of words and because of reduced exposure to print associated with low motivation (Lonigan, 2006).

Gray and McCutchen (2006) explored the relationship between beginning reader's phonological awareness and other aspects of phonological processing, specifically as manifested in short-term memory and comprehension tasks. Correlational analyses revealed relationships among phonological processing, phonological memory and word reading. However phonological processing in sentence comprehension was not related to other types of phonological processing indicating that although phonological processing plays a role during comprehension, it may not be as limiting a factor in comprehension as in word reading. Literature on phonological processing is extensive with studies on phonological awareness, STM and RAN that are detailed below.

2.2.1.3.1 Phonological Awareness. Of all the areas of literacy knowledge developed during the preschool years, none has been studied as extensively or related as directly to early reading as phonological awareness (van Kleeck, 1990). Phonological awareness refers to the ability to detect and manipulate the sounds of spoken language, independent of meaning (Lonigan, 2006; Wagner & Torgesen, 1987). Schuele, Skibbe, and Rao (2007) state that phonological awareness relates to awareness of sounds in speech and it is distinct from print decoding knowledge (e.g., alphabetic principle, letter sounds, and phonics). It includes awareness of not only the individual phonemes but also several other larger sound units, including syllables and words. This skill is strongly related to the acquisition of reading, even after accounting for other factors affecting reading ability, such as intelligence, receptive vocabulary, memory skills, and social class (Perfetti, Beck, Bell, & Hughes, 1987; Wagner, Torgesen, & Rashotte, 1994). By the late 1970s and 1980s, it was generally known that lack of phonological awareness might be the most important barrier to reading acquisition (Gough & Hillinger, 1980). Studies conducted by Ehri (1979, 1980, 1984) showed that reading promotes phonological awareness.

Majority of research in the field of phonological awareness has been conducted with school-age children. Some studies have indicated that even preschool-age children are capable of successfully completing phonological awareness tasks. Lonigan, Bugess, Anthony, and Barker (1998) tested 238 preschoolers and found that although their average performance was low, there was evidence that a number of the 2- and 3-year-old children demonstrated phonological sensitivity at all levels of linguistic complexity. MacLean, Bryant, & Bradley (1987) also found that 3-year-olds demonstrated above chance levels of performance on their measures of rhyme oddity and elision oddity. Storch and Whitehurst (2002) found that reading skill during the early elementary period was determined primarily by children's code–related skills (print knowledge and phonological awareness), and that reading comprehension in later elementary school was significantly influenced by children's oral language skills.

Despite the empirical evidence supporting the importance of phonological awareness, the construct underlying phonological skill is not simple. Lonigan et al. (1998) used the term 'phonological sensitivity' to refer to the whole range of phonological abilities demonstrated by young children, and they reserved the term 'phonological awareness' for insights at the level of individual phonemes. Carrillo (1994), and Manrique and Signorini (1998) referred to two levels of phonological awareness: basic metaphonological skills and segmental awareness. The former include rhyming, syllable awareness and sound matching, which children often learn indirectly as they master speech sounds and are exposed to songs, word games etc. With formal literacy instruction, children develop more sophisticated segmental awareness skills, such as sound-letter identification, blending, phoneme segmentation and manipulation, spelling and reading.

Goswami and Bryant (1990) stated that during the preschool and early school years, children progress through three levels of phonological awareness: from awareness of syllables to awareness of onsets and rime and finally to phoneme awareness. A different conceptualization was proposed by Gombert (1992) who suggested that phonological awareness could be separated into two types: epilinguistic awareness and metalinguistic awareness. Epilinguistic awareness consists of a global sensitivity to similarities between speech sounds, and metalinguistic awareness consists of a conscious awareness of phonological segments within words, normally phonemes. Carroll, Snowling, Hulme, and Stevenson (2003) used structural equation models to interpret the results of their longitudinal study on phonological awareness tasks with 3- and 4-year-old children. They concluded that preschool phonological awareness can be divided into an early implicit sensitivity to sound similarity and a later explicit awareness of phonemes. Implicit, large-segment sensitivity is a skill that grows out of normal language development. It seems to interact closely with receptive lexical knowledge and might therefore be better considered a part of normal linguistic, rather than of metalinguistic development. The later development of the explicit awareness of phonemes appears to build on the foundation of earlier large-segment awareness and to depend, in addition, on the child's articulation skills. They proposed that the development of these two types of phonological awareness reflects the development from global to segmental phonological representations.

Phonological awareness is a specific auditory skill which is of crucial importance to reading ability in an alphabetic system. In an alphabetic writing system such as English, beginning readers must use the alphabetic code to understand the link between the sounds of speech and the signs of letters (Mason & Allen, 1986; Sulzby & Teale, 1991). Since research has established a co-relational, if not causal relation between phonological awareness and reading (Ehri & Sweet, 1991; Mason & Allen, 1986; Sulzby & Teale, 1991; van Kleeck, 1990), phonological awareness plays an important role in early childhood literacy education (Sulzby & Teale, 1991). Sulzby and Teale (1991) noted that while phonological awareness has long been tied to research and practice in the teaching of phonics and other decoding skills, it has been neglected in emergent literacy due to the tendency to view phonological awareness research as traditional and bottom-up in theory. Despite this perspective, some researchers have argued that the ability to deal with the codes of alphabetic language does not automatically arise out of environmental print awareness. Instead, they suggested that young children must be helped to notice that words encode sounds as well as meaning (Dickinson & Snow; Mason; Masonheimer, Drum, & Ehri, cited in Sulzby & Teale, 1991).

Morais (1989) viewed phonological awareness as a bridge between language and literacy. When children begin reading, they need to be able to decode words. Decoding requires an ability to look at words and "unlock" their meaning and pronunciation by applying the alphabetic code (Ezell & Justice, 2005). In order to apply the alphabetic code children must determine the relationship between sounds and letters, which is known as phoneme-grapheme correspondence. In decoding, children retrieve the sounds represented by the letters and then blend these sounds to create the words. However, before children are able to use phoneme-grapheme correspondence, they must have awareness and knowledge of sounds. Specifically, this awareness or sensitivity constitutes phonological awareness, without which children might have an extraordinarily difficult time with decoding. Children who come to reading instruction with underdeveloped phonological awareness have great challenges keeping up with early reading instruction (Wagner et al, 1994).

Evidence suggests that development of phonological awareness is both a cause and a consequence of learning to read (Perfetti, Beck, Bell, & Hughes, 1987; Wagner et al., 1994; Wagner et al. 1997). Wagner et al. (1994; 1997) reported the results of a longitudinal study that explicitly tested the influence of letter knowledge on subsequent phonological awareness development. They found that individual differences in kindergarten and first grade letter knowledge were significantly related to measures of phonological sensitivity 1 and 2 years later. In another longitudinal study of preschool children, Burgess and Lonigan (1998) found that preschool children's letter knowledge was a unique predictor of growth in phonological awareness across one year period. Conversely, initial phonological awareness predicted growth in letter knowledge. Share (2004b) found a similar effect of phonological awareness on growth in letter knowledge in an experimental study on the effects of teaching children letter names and sounds.

Several studies (Adams, 1990; Goswami & Bryant, 1990) suggest a developmental conceptualization of phonological awareness in which phonological awareness appears to develop along two dimensions - linguistic complexity and cognitive operations. In terms of linguistic complexity, children progress from sensitivity to larger linguistic units (i.e. words and syllables) to smaller abstract linguistic units (i.e. phonemes). In terms of cognitive operations, development allows increasingly complex operations and an increasing number of operations on phonological information. Anthony, Lonigan, Driscoll, Phillips, and Burgess (2003) provided direct support for this developmental conceptualization of phonological awareness. Children were able to perform word-level phonological skills before syllable-level phonological skills, followed by onset-rime level phonological skills and phoneme level phonological skills respectively. Children could *detect* manipulations of phonological information before they were able to *perform* manipulations of phonological information, and children learned to *blend* phonological information before they learned to *elide* phonological information. The results also suggested that children's acquisition of these skills followed a temporally overlapping sequence i.e. development of multiple levels simultaneously.

van Kleeck, (1990) found that phonological awareness skills such as rhyming and alliteration can emerge in informal contexts before school, and are seen in young children who can neither read nor spell. A general order for the emergence of other phonological awareness abilities typically begins when children divide sentences into semantically meaningful word groups. The ability to segment sentences into words emerges next, followed by the more phonologically based skill of segmenting words into syllables. The ability to segment words into phonemes comes last. This order of emergence of phonological awareness skills is supported by several researchers (for details see van Kleeck, 1990).

Liberman and Shankweiler (1985) reported that 4-year-old children were unable to segment phonemes and about 50% could segment syllables. In 5-year-olds, 17% could segment phonemes and about 50% could segment syllables. In 6-year-olds, 70% could segment phonemes and 90% could segment syllables. They reported a developmental continuum of phonological skills from simple to complex. Ehri, Nunes, Willows, Schuster, Yaghoub-Zadeh, and Shanahan (2001) have described various stages of phonological development towards deep phonemic awareness as follows:

- Recognition that sentences are made up of words
- Recognition that words can rhyme.
- Recognition that words can be broken down into syllables.
- Recognition that words can be broken down into onset and rhymes.
- Recognition that words can begin with the same sound.
- Recognition that words can end with the same sound.
- Recognition that words can have the same medial sound.
- Recognition that words can be broken down into individual phonemes.
- Recognition that sounds can be deleted from words to make new words.
- Ability to blend sounds to make words.
- Ability to segment words into constituent sounds.

According to review of literature by Ezell and Justice (2005), phonological awareness is thought to include the following:

a. Word Awareness: Awareness of the boundaries between words in spoken sentences or phrases.
b. Syllable Awareness: Awareness of the boundaries between syllables in spoken words.
c. Rhyme Awareness: Ability to produce and comprehend rhyme patterns across words.
d. Alliteration Awareness: Ability to produce and comprehend shared phonemes across words and syllables, particularly when the common sound appears in the initial position.
e. Phoneme Awareness: Awareness of individual sounds within words.

Word Awareness. Word awareness refers to recognizing spoken words as discrete phonological units, for example, the sentence, "My cat is white" consists of four separate words. This skill allows children to know where one word stops and another begins so that word boundaries are recognized. When producing oral language, individuals provide a variety of phonological units, including words, syllables, onsets, rimes and phonemes. Relative to the other phonological units, words are the largest segment and are usually recognized by children earlier than smaller units. Being sensitive to the larger units of phonology is considered shallow (or more concrete) phonological sensitivity, whereas the later developing sensitivity to smaller units of phonology is called deep (or more abstract) phonological sensitivity (Stanovich, 2000).

Children's phonological awareness typically moves from shallow levels during the preschool years to deep awareness in the kindergarten and the first grade when reading instruction begins. An explicit level of word awareness, as identified through specific tasks, may be seen in three- and four-year olds. But by the age of five, these skills are usually well established. Still, six-year-olds may misunderstand spoken words sometimes when word boundaries cannot be distinguished (Ezell & Justice, 2005). An ability to recognize word boundaries improves children's comprehension of oral language, which in turn, may help them identify and map the sounds onto written words when reading instruction begins.

Most studies examining preschool children's word awareness have focused on children's concept of word within oral contexts. Enquiries have addressed, for example, children's ability to handle word-referent discrimination (Bowey, Tunmer, & Pratt, 1984; Chaney, 1992), to understand the meaning of the term *word* (Bowey *et al.*, 1984), and to segment orally presented strings of words (Tunmer, Bowey, & Grieve, 1983; Chaney, 1992, 1994). Such studies have shown that preschool children readily make sophisticated metalinguistic judgments about words, including the ability to discriminate words from sounds and the ability to segment spoken utterances into their respective word elements (Tunmer et al., 1983; Chaney, 1992; Bowey et al., 1984).

Syllable Awareness. Syllable awareness is an ability to identify syllable boundaries of spoken words. An example would be recognizing that the word 'elbow' has two syllables or parts (i.e. el-bow), butterfly has three parts (i.e. but-ter-fly), and 'helicopter' has four parts (i.e. hel-i-cop-ter). Recognizing that words are made up of syllables occurs at about the same time children realize that speech can be broken into words, usually around four years of age (Lonigan, Burgess, Anthony, & Barker, 1998). Syllable awareness helps children recognize word parts, which will complement their phoneme-grapheme correspondence skills when learning to read. Lonigan et al. (1998) found that syllable segmentation did not strongly predict reading, but were precursors to other phonological insights (e.g. identification and manipulation of individual phonemes) that were predictive of later reading.

Carroll, Snowling, Hulme, and Stevenson (2003) longitudinally studied several phonological awareness skills in preschool children such as syllable/phoneme matching, rime matching, syllable/phoneme completion and phoneme deletion. The results of their study indicate that development progresses from awareness of large units (syllables and rimes) to awareness of small units (phonemes).

Rhyme Awareness. Rhyme awareness is an ability to produce and recognize rhyming patterns across words. Although recognizing that words rhyme, is a form of phonological awareness, it is not generally understood how important rhyming is. Children begin their rhymes when their parents read poems and rhyming books and around three or four years of age children may start producing rhymes in their play and other literacy activities. This skill sets the stage for being able to identify sounds within words, to recognize similar sounds across words, and to understand how to move sounds from one word to another. By developing mastery of these skills, children progress one step closer to acquiring phoneme-grapheme correspondence.

Pioneering research (Bryant, Bradley, Maclean, & Crossland, 1989; Maclean, Bryant, & Bradley, 1987) has indicated that knowledge of nursery rhymes enhanced and predicted children's success in reading and spelling even when other extraneous factors like IQ and social background were controlled and children's initial phonological skills were taken into account. These studies also suggested that sensitivity to rhymes could be an early indicator of children's growing phonological awareness. Wood and Terrell (1998) also found that rhyme detection skills measured in non-reading preschool children were significant predictors of reading skills at school age. Carillo (1994) found that rhyming was correlated with reading level in kindergarten but not in first grade. She suggested that rhyming may simply become less relevant once children are introduced to more advanced tasks; nonetheless, it is one of the easiest tasks and is developmentally appropriate for young children. She further added that stimulus words containing one or two syllables and three to five phonemes are appropriate for phonological awareness tasks for young children.

Several researchers such as Morais, Bertelson, Carry, and Alegria (1986) reported that when general cognitive demands of the tasks (such as counting/deleting the units) are controlled, preliterate and illiterate participants were able to perform syllabic tasks but failed in segmental analysis, suggesting that rhyming ability does not facilitate phonemic awareness. This finding is supported by several researchers (Carroll et al., 2003; Hoienm

Lundberg, Stanovich, & Bjaalid, 1995; Muter, Hulme, Snowling, & Taylor, 1998) who found that rhyme awareness and phoneme awareness are separate skills. Foy and Mann (2001) also found that these skills correlate differently with a range of language reading measures; rhyme awareness correlated with speech perception and short-term memory measures, whereas phoneme awareness correlated with reading and letter knowledge.

Chaney (1994) suggested that rhyming skills do not correlate strongly with later reading success but children's awareness of rhyme shows that they are beginning to notice the phonological structure of words. Similarly, Lonigan, Burgess, Anthony, and Barker (1998) also found that rhyming skills did not strongly predict reading, but were precursors to other phonological insights (e.g. identification and manipulation of individual phonemes) that were predictive of later reading. Prakash, Rekha, Nigam, and Karanth (1993) in their review of literature emphasized that although sensitivity to rhymes precedes literacy acquisition, rhyming ability is grouped separate from phonemic awareness (Morais, 1991; Morais et al., 1986).

Early studies on Portuguese illiterates (Morais, Carry, Alegria & Bertelson, 1979) and subsequent studies (Morais et al., 1986; Read, Yun-Fei, Hong-Yin, & Bao-Qing, 1986) have provided strong evidence that forms of speech manipulation such as rhyme recognition and syllable segmentation are developed spontaneously, whereas phonemic awareness is linked not to literacy in general but to alphabetic literacy in particular.

Alliteration Awareness. Alliteration is another phonological awareness skill that develops in early childhood. Alliteration simply means that two words or syllables share a common sound, usually the initial sound as in "big ball", "my mother", or "two tigers". Children begin to be aware of alliterative patterns as early as three years of age (Chaney, 1994). Several researchers (Carroll et al., 2003; Lonigan et al., 1998) have demonstrated that children develop syllable awareness and onset-rime awareness earlier than phoneme awareness. Alliteration awareness promotes the development of phoneme-grapheme correspondence in that it helps children develop an early familiarity with how language is organized phonologically.

Several studies in other languages besides English (such as Spanish) have indicated that initial phoneme matching is indicative of reading ability (Carillo, 1994; Cisero & Royer, 1995; Durgunoglu et al., 1993; Jimenez, 1997; Manrique & Signorini, 1998), final phoneme matching has not been used by many researchers to study the phonological awareness in young children (except Cisero & Royer, 1995).

Phoneme Awareness. Phoneme awareness refers to the ability to recognize the individual sounds in a word. After word- and syllable- awareness skills are established, children are able to do some basic phoneme-level analysis when asked to focus on a sound in a specific position of a word. Children who are four or five years old may be able to answer a question such as "What is the first sound in the word 'pat'?" or "Tell me the last sound you hear in the word 'dog'" (Ezell & Justice, 2005). Since phoneme awareness tasks require greater refinement and are more difficult for young children than recognizing single words, children have greater challenges with these tasks when words are longer or when they contain consonant clusters as in the word 'stripe', which is a single-syllable word that begins with a consonant cluster containing three consonants (i.e. /s/, /t/, and /r/; Treiman, 1985). Multi-syllabic words or those that contain consonant clusters pose a more difficult challenge and are not typically accomplished until a year or two later.

It is not until six or seven years of age that children are able to identify the complete phoneme structure of simple words (Ezell & Justice, 2005). This skill is further bolstered during early reading instruction when children focus a great deal of attention on thinking about how sounds and letters go together to decode words. Tunmer and Nesdale (1985) reported that children lacking in segmental (phonemic) awareness could not read pseudo-words (nonsense words), thus emphasizing its role in the decoding process. Several studies have found that phonemic awareness is strongly related to reading. Share, Jorm, Maclean, and Mathews (1984) found that phonemic awareness at school entry was the best predictor of reading achievement 2 years later among the 39 measures they employed. Children who are better at detecting and manipulating syllables, rhymes or phonemes are quicker to learn to read.

Carroll et al., (2003) carried out a short-term longitudinal study on a group of 67 preschool children in the age range of 3-years 2-months to 4-years 5-months from a wide range of socioeconomic circumstances. The children were evaluated on measures of syllable, rime and phoneme awareness, speech and language skills and letter knowledge. In general, children's rime skills developed earlier than their phoneme skills. Structural equation models showed that articulatory skills and syllable and rime awareness predicted later phoneme awareness.

Thus, consensus has emerged from over three decades of research on early literacy that difficulty with the mental processing of phonological information is a core deficit that accounts for many children's difficulties in learning to read. Studies have also indicated that phonological awareness correlates well with oral language and print knowledge and is one of the best predictors of early literacy skills.

Phonological awareness skills in bilinguals. Critchley (1970) speculated that bilingualism may be a factor that adds to the difficulties of the poor reader. One study reported that bilingual poor readers were more seriously impaired in reading than their monolingual peers (Novoa, 1988). However, according to a developmental perspective, bilingualism per se should not pose a risk, especially during the early stages of reading when the child is acquiring the mechanics of reading (Chall, 1996). A study measuring the EEG activity of bilinguals in a language recognition task reported greater left hemispheric involvement in bilinguals who had acquired a second language during childhood compared to late bilinguals who exhibited more right hemispheric involvement (Genesee, Hamers, Lambert, Mononen, Seitz, & Starck, 1978).

The influence of bilingualism on metalinguistic development has received mixed support. Some studies have noted that learning a second language promotes word awareness (Oren, 1981). On the other hand no differences in lexical awareness between bilinguals and monolinguals have been reported (Rosenblum & Pinkers, 1983). A few studies have addressed the association between phonological awareness and bilingualism. One study reported that English-French bilinguals had higher phonological awareness skills than their monolingual English-speaking peers (Rubin & Turner, 1989).

Phonological awareness has been found to be one of the strongest predictors of the speed and efficiency of reading acquisition (Scarborough, 1989). For English Language Learners (ELL's), some studies have shown that phonological awareness skills transfer from the first to the second language (Chiappe & Siegel, 1999; Cisero & Royer, 1995). Some studies have found that phonological awareness in the native language (L1) predicts successful literacy acquisition in both L1 and in a second language (L2) (August & Hakuta, 1997; Durgunoglu, Nagy, & Hancin-Bhatt, 1993; Quiroga, Lemos-Britton, Mostafapour, Abbott, & Berninger, 2001). In other words, phonological awareness skills developed in L1, transfer to L2 and facilitate L2 literacy development.

Gottardo (2002) explored this connection between native language phonological skills and second language reading in a study with 92 Spanish-speaking first graders. She found that the strongest predictors of English word reading ability were L1 and L2 phonological processing, L1 reading, and L2 vocabulary. The ability of phonological awareness skills to transfer from one language to another presents advantages that are readily apparent; however, transfer can also bring disadvantages. Sometimes L2 learners inappropriately generalize their first language's rules of syntax, spelling, phonology, or pragmatics to their second language. This tendency, commonly referred to as negative transfer, or interference, can have an adverse effect on L2 literacy acquisition (Bialystok, 2002; Brice & Roseberry-McKibbin, 2001; Francis, 1998).

Chiappe and Siegel's (1999) studied the reading and phonological awareness skills of 50 English-speaking Canadian and 38 Punjabi-speaking children (mean age 78.4 months) who had been exposed to English only, since Kindergarten. The results indicated that the Punjabi-speaking children who had only been exposed to English since attending Kindergarten displayed comparable phonological awareness skills (when assessed in English) to the Canadian children for whom English was a first language. It was also found in both the groups that those who were good readers showed high levels of phonological awareness, whereas the poor readers demonstrated low levels of phonological awareness.

Hamilton and Gillon (2006) investigated the phonological awareness skills of Samoan children (aged between 5;06 and 7;03) who were bilingual in Samoan and English. The results indicated that at a group level, the participants' phonological awareness skills at the phoneme level were comparable in both the languages and suggested that phoneme awareness skills learned in English following formal literacy instruction transferred to their development of phonological awareness in Samoan. The results also indicated that when compared to a normative database of similarly aged British children, the participant's phonological awareness skills in English fell within the ranges expected for their ages.

Much of the research on phonological awareness and phonological transfer suggests that overall bilingual children may have more highly developed meta-linguistic skills than monolingual children (Bialystok, 2002; García, 2000; Lundberg, 2002; Vernon-Feagans, Hammer, Miccio, & Manlove, 2002). As Lundberg (2002) notes, "the early confrontation with a new language seems to stimulate a meta-linguistic attitude; the child starts to think about linguistic form rather than content" (p. 173). Effective literacy programs take advantage of the ELLs increased ability to attend to form in language by making use of explicit instruction in phonological awareness and phonics (August, 2002; August & Hakuta, 1997; García & Beltrán, 2003; Lundberg, 2002; Muter & Diethelm, 2001; Quiroga et al., 2001; Slavin & Cheung, 2003, 2004).

Phonological awareness skills are known to develop in a predictable pattern, which is the same from one language to another (i.e., from larger to smaller units of sound - from word to syllable to onset-rime to phoneme). Also, phonological awareness skills developed in one language can transfer to another language, even while those skills are still in the process of being developed (Cisero & Royer, 1995). An important factor here may be the type of phonological skill in question. As Durgunoglu (2002, p. 192) notes, "there are certain literacy concepts and strategies that can be universal and operate across languages. These insights and skills need to be acquired only once and apply in all languages of LLs. However, there are also language-specific concepts and knowledge; for example, orthographic patterns that are specific to a language".

The closer the phonologies of L1 and L2, the greater the likelihood that transfer of skills will be positive rather than negative because children are more adept at manipulating the sounds and patterns that exist in their native language (Bialystok, 2002). For example, if both L1 and L2 are alphabetic languages, transfer will be facilitated, although positive transfer has also been documented between languages with very different orthographies, such as Cantonese and English (Gottardo, Yan, Siegel, & Wade-Woolley, 2001).

In a comparison of Spanish-English bilinguals and Chinese-English bilinguals on the phonological test, Bialystok, Majumdar, and Martin (2003), found no benefits in English phonological awareness skills of children who spoke Chinese at home; although some advantages were found for children whose first language was Spanish. The reason for these differences may reside in either the degree of similarity in the sound systems of the two languages, the use of an alphabetic writing system that places a premium on individual phonemes, or both.

Some languages have more consistent letter-sound relationships than English and regular syllabic structure such as Greek, Spanish, Italian, and German. These languages are less difficult to read using a phonological strategy therefore they may not require the same level of phonological awareness skills as English (Mayringer & Wimmer, 2000). In contrast, languages that have a more complex structure and less transparent orthography may require a higher level of phonological awareness. Durgunoglu and Oney (1999) compared Turkish-speaking children with English-speaking American children on a range of phonological awareness and letter-knowledge tasks. They found that Turkish-speaking children outperformed the English-speaking children on the decoding, syllable segmentation, phoneme segmentation and phoneme deletion tasks. The authors concluded that the complexities of Turkish led to a greater ability to manipulate phonemes in phonological awareness tasks.

The majority of research studies investigating the relationship between phonological awareness skills and literacy achievement have shown that children learning alphabetic languages who are struggling to acquire adequate literacy skills often have poor phonological awareness skills, particularly at the phoneme level. Further, intervention studies have consistently demonstrated that intervention to improve phonological awareness skills results in positive outcomes for reading and spelling (Ehri et al., 2001).

Research indicates that children learning two languages develop comparable levels of phonological awareness in both languages, regardless of proficiency level, and that these skills transfer across languages (Chiappe & Siegel, 1999; Cisero & Royer, 1995; English, Leafstedt, Gerber, & Villarus, 2001). Comeau, Cormier, Grandmaison, and Lacroix (1999) examined the relationship between phonological awareness and reading in both languages for 122 Canadian children in French immersion classes. They found that the participants demonstrated comparable phonological awareness skills in both their first and second language. Further, phonological awareness in English predicted word recognition ability in both English and French. Similarly, phonological awareness skills in French predicted word recognition skills in French and English.

Phonological awareness skills are said to be strongly related to printed word recognition than for oral language proficiency even for beginning readers of a second language. Durgunoglu et al. (1993) studied Spanish-dominant beginning readers (Mean age 85.3 months) to examine factors affecting English word recognition. The results demonstrated that the children's phonological awareness in Spanish and their Spanish word-recognition skills predicted both their word recognition in English and their ability to decode pseudowords. Oral language proficiency in English or Spanish was not related to word recognition in either language.

Tabors, Lesaux, and Paes (2005) conducted a five-year longitudinal research project to identify factors that influence the course of English literacy development for young Spanish-speaking children with mean age of 4 years. They evaluated both the languages separately on skills such as phonological awareness, vocabulary and letter-word recognition. Results demonstrated different levels of transfer across the two languages depending upon the areas assessed; phonological awareness and early literacy skills (letter-word identification and dictation) were amenable to instruction, and were transferable no matter which of these two, closely related languages they were learned in. Results revealed that language abilities particularly vocabulary was low in both the languages when compared to monolingual children of the same age. Picture vocabulary was the most stable measure across time and was highly correlated with memory for sentences. Phonological awareness tests showed that many of the four-year-olds were just beginning to grasp the concepts being assessed; however, cross-linguistic results showed no differences.

Another study analyzed the specific influence of the two languages of bilinguals on the development of phonological awareness (Bruck & Genesee, 1995). English-French bilingual children in kindergarten had greater proficiency in phonological awareness compared to English monolinguals. However, in grade one, monolingual children exhibited greater phonological awareness at the phonemic level, while the performance of bilinguals was superior at the syllabic level. The explanation given for this was that the syllable is a more salient unit in French than English; hence, bilingual children were able to transfer their awareness of syllables to English. In contrast monolingual children had stronger grapheme-phoneme associations in English compared to bilingual children who were learning to read in French and did not have orthographic representations for English sounds. This finding indicated that the linguistic environment influenced the development of phonological awareness.

2.2.1.3.2 Phonological short term memory. Children's ability to store and manipulate information in short-term memory is closely associated with scholastic attainments over the school years. Phonological short-term memory (STM) is the capacity of the mind to hold a small amount of information in an active, readily available state for a short period of time. STM is characterized by its limited capacity and quick loss of information. When rehearsal or active maintenance is prevented, the capacity of short-term memory is around 7 to 9 elements. In contrast, long term memory indefinitely stores a seemingly unlimited amount of information. Phonological material held in the STM is subject to decay within about two seconds (Baddeley, Thomson, & Buchanan, 1975). The duration of storage can be prolonged by sub-vocal rehearsal of the contents of the phonological store. Sub-vocal rehearsal involves covert articulation in real time of information held in the phonological store.

Baddeley (1986, 2000) explained phonological memory in his working memory model. According to him, working memory is a multi-component, capacity-limited system that comprises of a controlling 'central executive' that is linked directly with three other subsystems: the phonological loop, the visuo-spatial sketchpad, and the episodic buffer. The central executive is thought to regulate information flow within WM, retrieval of information from other memory systems, and the processing and storage of information. The central executive is supplemented by the verbal storage system, the phonological loop, which is composed of a short-term phonological store subject to rapid decay plus a sub-vocal rehearsal process that can be used to restore decaying representations within the store (Baddeley, 1986). The ability to temporarily store novel material gives the listener the opportunity to create long-term phonological representations of that material (Baddeley, Gathercole, & Papagno, 1998). This phonological short-term store is referred to as the 'short-term memory' (STM) or ‘phonological memory’ by several researchers (Anthony et al., 2007; Montgomery, 2003).

Information in the short term memory is generally lost quickly but it can be manipulated and rehearsed before being transferred to long-term memory (or forgotten). According to Baddeley (1986) the phonological loop is used to rehearse verbal information to keep it in the STM. Verbal information is anything that can be spoken like a word, a digit, or a phoneme. The phonological loop can be divided into two parts, the inner ear and the inner voice (Baddeley, 1986). For example, if the numbers “1, 2, 3” are repeated to oneself several times without saying them aloud, one can hear the numbers being spoken, although no sound is being made. In this case the inner voice is saying the numbers and the inner ear is hearing them. Often when people want to remember verbal information, they rehearse it using the phonological loop.

This phonological loop comprises the phonological Short Term Memory (STM), which is utilized during all cognitive tasks that involve processing of verbal information. Individual’s phonological STM capacity is often tapped by auditory span tasks like digit span. One can store a sequence of about 7 (5 to 9) digits in STM. But research indicates that, when tested on digit tasks, patients with semantic dementia have relatively preserved STM capacities when compared to other linguistic materials, suggesting that digits are processed differently from other semantic categories in the STM (Jefferies, Bateman & Ralph, 2005). Another problem is raised by the use of lexical items in pSTM tasks. Using words involves the recruitment of long term memory, which biases the pSTM performance (Cowan, 2001).

Owing to the limitations of digits and lexical items, non-word repetition task is considered as a better measure of the processes of the phonological loop (Gathercole, Willis, & Baddeley, 1991). Non-word repetition tasks involve the subject being asked to listen to and repeat strings of phonemes that produce linguistically possible words that have no meaning. Gathercole et al. (1991) suggest that this is a better measure of the phonological memory as it avoids the potential to use lexical or semantic cues that may influence scores in tasks involving known lexical items. Gathercole and Adams (1994) suggest that this procedure can be used with children as young as two years old, to determine short term memory capacity.

In most studies, typically developing preschool children and young school-age children's working memory capacities have been assessed using a non-word repetition task in which they were asked to repeat non-words varying in length from one to four or five syllables (Montgomery, 2003). The typical pattern is that children have no difficulty repeating one and two syllable items but by three syllables, repetition accuracy begins to decrease, reflecting the capacity-limited nature of phonological store (Montgomery, 2003). Children with 'greater' phonological working memory capacity than those with less capacity show better accuracy for longer items. The logic behind the task is that poor performance reflects a basic language-related processing ability that should be critical to the processing and learning of language. Several studies report a positive relation between children's phonological working memory and word learning (Gathercole & Baddeley, 1989, 1990b; Gathercole, Hitch, Service, & Martin 1997; Gathercole, Willis, & Baddeley, 1992) and expressive skills (Adams & Gathercole, 1995).

In the last couple of decades researchers have begun to examine the potential role of working memory on language learning and processing abilities of children with specific language impairments (SLI) (Montgomery, 2002). Gathercole and Baddeley (1990a) were the first to study the phonological working memory abilities of children with SLI and to propose the notion of a causal link between phonological working memory and language impairment. Many children with SLI demonstrate deficits in the areas of verbal working memory and language learning/processing (Montgomery, 2003). Gathercole and Baddeley (1990a) found that children with SLI had significantly greater difficulty repeating three and four syllable nonwords than two groups of typically developing children, suggesting that children with SLI have reduced phonological working memory capacity. The weight of evidence points towards the possibility of using deficient working memory as a clinical marker of SLI (Montgomery, 2003).

Links have been found between the working memory abilities and attainments in the areas of reading (De Jong, 1998; Swanson, 1994) and language comprehension (Nation, Adams, Bowyer-Crane, & Snowling, 1999; Seigneuric, Rhrlich, Oakhill, & Yuill, 2000). Measures of working memory at school entry have also been found to provide excellent predictors of children's success in assessments of scholastic abilities up to 3 years later (Gathercole, Brown, & Pickering, 2003). Report of the NELP (2009) suggests that phonological STM had significantly stronger relationships with decoding outcomes when they were measured in preschool children than when they were measured in kindergarteners. It also reports that STM shares a moderate relationship with spelling and reading comprehension. Results of studies by Wagner and colleagues (1994; Wagner et al., 1997) indicate that phonological memory is a significant correlate of growth in decoding skills but that it does not provide unique predictive variance to growth in decoding beyond that provided by phonological awareness for school age children.

Smythe, Everett, Gyarmathi, Suk-Han Ho, and Groeger (2003) found that children with evidence of poor literacy acquisition of an alphabetic script (i.e. English and Hungarian) performed worse than their able peers on a measure of short-term recall of novel phoneme strings (non-word repetition). They also indicated that alphabetic scripts are more likely to load onto phonological decoding processes, whereas the logographic elements of a script such as Chinese, which requires children to learn large numbers of visually distinguishable characters, is more likely to load onto visual memory processes to support learning.

Gathercole and Pickering (2001) suggest that poor working memory capacity may be useful as an identifier of children at risk of low school achievement. McLoughlin, Fitzgibbon, and Young (1994) have suggested that children who experience difficulties with retaining sounds in short-term memory are likely to have problems with the acquisition of vocabulary and the development of stable associations between visual symbols and units of speech sounds, which are vital for the acquisition of literacy skills. Similarly, Catts (1989) showed that dyslexics have greater difficulty than non-dyslexics in the areas of short-term recall of letters, words, digits and sentences. Short term memory deficits have also been identified among dyslexics learning to speak and read languages other than English and hence may provide a literacy deficit sensitive task that can be used across languages (Wimmer, Mayringe, & Landerl, 1998).

Literature review points towards a strong association between measures of verbal short-term memory and phonological awareness (Siegal & Linder, 1984; Stanovich, Cunningham, & Freeman, 1984). According to one view, phonological memory and awareness measures tap a common phonological processing substrate (Bowey, 1996; de Jong, Seveke, & van Veen, 2000; Dufva, Niemi, & Voeten, 2001; Garlock, Walley, &

Metsala, 2001; Griffiths & Snowling, 2002; Metsala, 1999). This view received some support from findings from a large cohort of 5-year-old children demonstrating that a single latent construct accounted for individual differences for working memory span tasks and phonological analysis tasks (Wagner et al. 1993; Wagner et al., 1987). An alternative account is that although verbal short-term memory and phonological awareness tasks are constrained by the efficiency of phonological processing, they reflect distinct cognitive systems (Anthony et al., 2007; Gathercole, Willis, & Baddeley, 1991; Hecht, Torgesen, Wagner, & Rashotte, 2001; Muter & Snowling, 1998).

The study by Alloway, Gathercole, Willis, and Adams (2004) supported the multi-component working memory system consisting of a central executive, phonological loop, and episodic buffer with close connections with a separable phonological awareness construct. This multi-component model was based on the revised model of the working memory given by Baddeley (2000). It has been suggested that phonological short term memory may play a role in learning letter-sound correspondences and in storing generated phonological sequences prior to blending and output during phonological recoding (Gathercole & Baddeley, 1993). Phonological awareness, in contrast, may be crucial in segmenting phonological representations of words to be spelled (Goswami & Bryant, 1990). This view that the two phonological skills can make separable contributions to reading is supported by Wagner et al. (1994).

The findings by Alloway, Gathercole, Adams, Willis, Eaglen, and Lamont (2005) indicate that short term memory and phonological awareness skills play a crucial role in key learning areas for children at the beginning of formal education. They found that abilities such as non-word repetition, rhyme detection, initial consonant detection, reading, writing, speaking and listening correlated significantly with each other. These results are supported by several other studies that show strong correlations between reading and short term memory skills (Alloway et al., 2004; Gathercole et al., 1991; 2003; Gray & McCutchen, 2006; Hulme, Hatcher, Nation, Brown, Adams, & Stuart, 2002; Swanson & Howell, 2001).

The cognitive underpinnings of writing abilities in relation to short term memory have not been studied widely. In a classroom–based observational study of young children, writing was found to represent one of the most significant areas of difficulty for children with low complex memory scores (Gathercole, Lamont, & Alloway, 2006). These children made frequent errors, such as skipping and repeating letters and words, indicating that they frequently lost track of their place in the hierarchical structure of the task. The authors speculate that these failures may have reflected poor central executive capacities that make the representation of task structure and updating progress within the task liable to errors. Their findings of specific links between complex memory performance and writing abilities at school entry suggests that the same constraints may also be operating at the earliest stage of writing.

Further support for this proposal that resources allocated to monitoring and processing information contribute to early writing skills can be drawn from the finding that these skills were also uniquely associated with phonological awareness (Alloway et al., 2005). It has been suggested that the processing component of the central executive is involved in the encoding and storage of phonemes in phonological awareness tasks (Hecht et al., 2001). It is possible that the executive memory function, also linked with performance in phonological awareness tasks, contributes to individual differences in writing.

The speaking and listening abilities of young children have been uniquely linked with phonological short-term memory (Alloway et al., 2005). This reinforces evidence for the specific role of the phonological loop in supporting the long-term learning of the phonological forms of new words in the course of vocabulary acquisition (Baddeley, Gathercole, & Papagno, 1998). The authors argue that the absence of correspondingly specific association between speaking and listening and phonological awareness is consistent with the interpretation of the relationship in terms of a specific role for the phonological loop in learning (Baddeley et al., 1998) rather than a more general contribution of a common phonological processing substrate (e.g. Bowey, 1996; Metsala, 1999).

2.2.1.3.3 Phonological access to lexical storage (Rapid Automatized Naming). Phonological access to lexical storage refers to the efficiency of retrieval of phonological codes from long term memory (Wagner & Torgesen, 1987). In older children, lexical access typically is measured as the rate at which an array of letters, digits, or colours can be named. Lexical access measures are significant predictors of growth in decoding skills in school-age children (Wagner et al., 1994; Wagner et al., 1997) and appear to have an independent effect on growth in decoding above that of phonological sensitivity and phonological memory, consistent with the double-deficit hypothesis (Bowers & Swanson, 1991; Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004). As a phonological skill, efficiency in lexical access might influence the ease with which a child can retrieve the phonological information associated with letters, word segments, and whole words and increase the likelihood that he or she can use phonological information in decoding.

Phonological access is tapped by performance on rapid automatic naming (RAN) tasks, in which individuals verbally identify common objects, letters, or numbers as quickly as possible. Rate of access for phonological information refers to children's ability to easily and rapidly access phonological information that is stored in long term memory (Catts & Kamhi, 1999). Because naming speed and reading both require the reader to automatically retrieve a verbal match for an abstract visual form, Wolf (1999) found that naming speed uses the same visual, auditory, and motor processes used in reading but in a less complex fashion. Naming and reading, therefore, represent "two levels of rapid, precise integration of cognitive systems, a basic level and a more complex level" (Wolf, 1997, p. 85). Problems in the more basic system, naming speed, are suggestive of potential weakness in the later developing system, reading, possibly even causing the reading problem (Wolf, 1997).

Torgesen, Wagner, and Rashotte (1999) considered rapid naming to be one of three kinds of phonological processing, along with phonological awareness and phonological memory, to be especially relevant for mastery of written language. The degree to which the reader can efficiently retrieve phonemes corresponding with the printed letters (graphemes), coupled with efficiency of word and word-part pronunciations will affect how phonological information facilitates decoding print. In this single-deficit hypothesis dyslexic readers are considered to possess adequate semantic representations of words they know but their representations of phonological forms of words are impoverished (Snowling, 2000). Another point of view was raised by researchers who suggested that phonology and naming speed are two independent contributors to developmental reading problems (Bowers & Swanson, 1991). Their work revealed that phonological awareness contributed significantly to word attack skills in reading, whereas naming speed contributed more to the orthographic aspects in word identification (Wolf, 1999).

Frost (1998) asserted that lexical access activates a word's phonological representation, regardless of whether the input is spoken or written. Perfetti, Zhang, and Berent (1992) argued that phonological activation during reading holds across languages and writing systems- at the sub-word level for alphabetic and syllabic systems, and at the word level for logographic systems. Aarnoutse, van Leeuwe, and Verhoeven (2005) studied children from kindergarten, first and second grade, to determine which emergent literacy skills were essential for the development of word recognition, reading comprehension and spelling. They found the following early literacy skills determined the development of:

- Word Recognition - Rapid naming of letters and knowledge of letters
- Reading Comprehension – Vocabulary, rapid naming of letters, letter knowledge and phoneme awareness
- Spelling – Rapid naming of numbers and letters, and phoneme awareness.

Anthony, Williams, McDonald, and Francis (2007) found that in a group of preschoolers (age range- 43 to 67 months), RAN was found to be a significant predictor of letter knowledge and text discrimination in the younger participants while phonological awareness was found to be a significant predictor for word recognition in older preschoolers. The report by NELP (2009) suggested that RAN for objects and colours shared a moderate correlation with decoding, reading comprehension and spelling. Thus, it is evident that RAN is an important phonological processing task that must be evaluated while assessing preschool children for emergent literacy skills.

Although RAN is studies fairly extensively in monolingual children, the relation between speed of naming various stimuli and reading ability in bilinguals has not been studied extensively. Novoa (1988) found that the speed of naming letters, numbers, objects and colours in English and Spanish differentiated average and poor bilingual readers in both languages. Further, bilingual children were reported to show longer naming latencies and lower reading scores than their monolingual peers.

2.2.2 Emergent literacy environment.

Development of literacy is a long and complicated process where the environment plays an important role. A child's literacy depends upon the bigger environment (such as country) and the immediate environment (such as home and community). The practices and beliefs of people in these environments have an impact on the child's literacy development. Research indicates that these experiences form a basis for a child's success in reading and writing. Several studies have documented a positive relationship between children's literacy experiences at home and the ease with which children transition to school (Copeland & Edwards, 1990; Mason & Allen, 1996; van Kleeck, 1990).

Literacy is so interwoven into the experiences of a young child's daily life that we do not see it until we focus our attention on it. Young children's emergent and early literacy development is affected by the presence of supports for literacy in the home environment, and the degree to which literacy is part of family activities (Zucker & Grant, 2007). In a literacy rich environment, children learn the functions and purpose of print. For example, when parents engage in activities like making a shopping list, writing a letter, reading newspapers, signs, logos, names of television channels and reading aloud storybooks, they facilitate print awareness. A print rich environment means that there are opportunities for the child to engage in the literary process. The mere presence of literacy materials is not sufficient for a literacy rich experience but it is essential that children interact with print and are given opportunities to use these materials (Zucker & Grant, 2007).

Investigations of shared storybook reading (Morrow, 1990; Teale & Sulzby, 1987) indicate that it is an effective way of improving a child's oral language (vocabulary and narrative skills) and creating print awareness (alphabet knowledge and concepts about print). An awareness of print is developed in children when parents read-aloud storybooks. The concept of words and the idea that meaning is transferred through words is achieved when adults point to words while reading or encourage children to trace a finger under the words being read. Storybook reading is more effective if it is carried out in an interactive manner, where parents read with feelings and expressions, ask questions, and encourage children to retell stories or complete sentences for them (Whitehurst et al., 1988). Such activities encourage children to develop oral language skills like vocabulary and narrative skills. Vocabulary skills are essential for the development of reading comprehension and research indicates that early vocabulary delays are one of the manifestations of risk for later reading disabilities (Scarborough, 1990).

Children's parents, caregivers and early childhood educators play an important role in ensuring that children successfully progress in their literacy development. Children's literacy efforts are best supported by adults' interactions with children through reading aloud and conversation and by children's social interactions with each other (McGee & Richgels, 1996). Anderson, Hiebert, Scott, and Wilkinson (1985) state that the single most important activity for building the knowledge required for eventual success in reading is reading aloud to children. This is especially so during the preschool years. Young children's emergent literacy experiences are facilitated when adults provide opportunities for them to discuss the stories that they hear (Snow, Griffin, & Burns, 1999). Reading aloud to children facilitates development in four areas that are important to formal reading instruction: oral language, cognitive skills, concept about print and phonemic awareness (Allington & Cunningham, 1996; Hall & Moats, 1999; Holdaway, 1979).

In preschools, children are exposed to literacy rich experiences, which facilitate their physical, intellectual, emotional, and social development. Preschools use nursery rhymes, drawing, colouring, storytelling and story reading as part of the curriculum. An important factor in the literacy experiences of young children is the quality and types of books available to them (Burns, Griffin, & Snow, 1999). Ezell and Justice (2005) suggest that three features should be considered when selecting books for preschool children: the narrative content, the print features and the physical characteristics. For a literacy rich classroom, preschools should have high quality literacy materials, a physical arrangement that encourages reading and writing, the use of assessment to guide instruction, use of a variety of instructional methods, presence of high quality verbal input and high levels of adult responsiveness (Wiggins, Marshall, & Friel, 2007).

When children enter school, a key question for preschool literacy experiences is the extent to which teachers' educational qualifications affects classroom quality. Barnett (2004) found that child development outcomes are higher when teachers have a bachelor's degree. According to Abt-Perkins and Rosen (2000), research on culturally relevant and responsible instruction clearly indicates that knowledge of students' family, community and socio-ethnic cultures, their languages, literacy practices, and values can help teachers build on the skills of their students.

Research on Emergent Literacy in India

Most of the research done in India in the field of literacy has been carried out with school-age children. Very few studies have explored the development of emergent literacy in preschoolers. Research on acquisition of literacy in an alphabetic language such as English has indicated that the reading proficiency of children is significantly dependent on phonological awareness. Research in the Indian context has shown that children from non-English-speaking homes are slower than those from English-speaking backgrounds in the acquisition of reading skills in English (Loomba, 1995; Thomas, 1996). Loomba (1995) investigated the sequential progression of English reading skills in Indian children studying in grade one through grade eight. The sequence of progression of reading skills was in consonance with acquisition of reading by native speakers of English. However, a lag was observed in all the skills, which was attributed to the fact that participants were exposed to English after they entered school.

Majority of literacy research in the Indian context has focused on phonological awareness skills of young children. These studies have demonstrated that phonemic awareness, which is often said to be crucial for alphabetic languages, is not so crucial in learning to read Indian languages like Kannada, Hindi and Oriya, which are syllabic in nature (Karanth & Prakash, 1996; Prakash, 1987; 1994; 1999; Prakash, Rekha, Nigam, & Karanth, 1993; Prema, 1997). The results of these studies can be justified by the fact that Indian languages are fairly transparent hence they do not depend on the acquisition of phonemic awareness for successful reading.

Studies in India have repeatedly found that syllable manipulation can be developed without any specific reading instruction whereas phonemic awareness requires instruction or experience with the alphabetic orthography (Nigam, 1988; Malini, 1996). The study by Nigam (1988) also indicated that segmentation abilities improve with reading instruction. Malini (1996) examined the unique situation of congenitally blind children learning to read Kannada through Bharathi Braille, which follows alphabetic principles. The performance of these children on phonological awareness tasks including phonemic awareness tasks was superior to that of the control group of normal children. In fact, the performance of blind children was equivalent to the performance described in studies of native English-speakers.

The sequence of acquisition of segmentation abilities in Kannada-speaking children from grade 1 and 2 indicated that syllable segmentation was the easiest followed by word segmentation; phoneme level segmentation tasks were reported to be more challenging than syllable and word level tasks (Ramkishan, 1990). This supports the fact that phonemic awareness is crucial in alphabetic literacy as it is an important component of the alphabetic principle. These findings reveal that with the development of advanced phonemic awareness skills children are well-equipped to acquire literacy skills of alphabetic languages such as English.

Some interesting findings come to light from the study conducted by Pragna (1992), who compared Gujarati-speaking children studying in schools with Gujarati as the medium of instruction with children studying in schools with English as the medium of instruction. Results of this study revealed that participants from both schools (ranged from Upper Kindergarten through grade 2), showed no significant difference in speech and the segmentation ability. Results also indicated that word reading and speech segmentation skills were highly co-related for children with English as the medium of instruction, supporting the role of the alphabetic principle in the acquisition of English literacy. Children with Gujarati as the medium of instruction showed low to moderate correlation or in some instances negative correlation between word reading and speech segmentation skills, indicating that Gujarati literacy was not dependent on phonological manipulation skills.

Another unique study that explored biliteracy in India was carried out by Shanbal and Prema (2010) on Kannada-speaking children learning English in school, studying in grade 5 to 7. Although the participants in this study were conventional readers, the findings of this study are of interest. This study highlighted the influence of phonological awareness skills in reading Kannada and English, however, the influence on reading English was greater than reading Kannada. Further, their results revealed that bilingual children acquiring literacy in both English and Kannada employ a holistic approach to reading in both languages, that is, for decoding words they depend upon factors such as language experience and knowledge about words and their meanings (lexical-semantic route). Another important finding of this study was that phoneme blending was acquired much earlier than syllable blending although phoneme deletion and segmentation were acquired after syllable deletion and segmentation. These findings indicate that processes underlying reading are unique to the language and literacy backgrounds of the participants.

Besides phonological awareness Indian researchers have attempted to study print knowledge skills that might influence literacy. One such study that explored the developmental trend of logographic reading skills in preschoolers was conducted by Jagadish (1991). Native Kannada-speaking preschool children in the age range of 2-years to 5.6-years were shown pictures of familiar television advertisements and their responses were recorded. The results revealed the presence of logographic reading skills in preschool children, which showed a clear developmental trend, indicating the development of print awareness abilities of preschool children. Another study carried out by Yeshoda (1994) revealed that writing skills for copying begin to emerge around 3 – 4 years of age while other skills such as writing to dictation and sentence completion are acquired with increasing age, indicating that emergent writing skills show a developmental trend.

Research has indicated that the literacy acquisition of ELLs is similar to that of native English speaking children. In a rare study (Sankaranarayanan, 2003) that compared literacy skills of Indian children with their native English-speaking counterparts in Boston (Sankaranarayanan & Kagan, in press), Sankaranarayanan reported that the profiles of children in India were generally similar to those of the American children. This study compared skills such as letter identification, word recognition, reading text, rhyming, elision, RAN, rapid alternating stimulus, STM for digits and vocabulary. The Indian children had a mean age of 7 years and the Boston children had a mean age of 7.3 years. The best predictors of reading ability for the Indian sample were speed of naming letters, vocabulary and phonological awareness. The low scores of Indian children on vocabulary could be attributed to the fact that English was their second language. Performance on the elision test was the best predictor of reading ability in the American sample. Further, good and moderate Indian readers were faster than their American counterparts in naming speed tasks. These findings show that although the literacy development in ELLs parallels that of native English speaking children, there are some unique differences, which could be attributed to the unique circumstances of acquisition of the two languages.

When children enter school with gaps in language or literacy related skills, there is a cost to academic performance. Research in India has also attempted to evaluate children who exhibit difficulties in reading acquisition. An extensive review of literature by Prema, Shanbal, & Khurana (2010) reveals that majority of literacy failures in Indian school children might be related to language and socio-cultural factors and may not be reading disability in the real sense. Swaroopa (2001) developed a checklist to identify children with language based reading difficulties. Participants were native Malayalam-speakers in the age range of 3- to 5-years. Rhyming, alliteration, rapid-naming, language expression, listening skills and non-verbal imitation were identified as potential variables to identify language based reading difficulties. The results also indicated that rhyming and alliteration were highly correlated and showed a clear developmental trend.

Indian studies have also contributed to research on training of literacy related skills. Several studies have evaluated the efficacy of phonological awareness training for children by parents, teachers or other professionals besides Speech Language Pathologists (Ponnumani & Prema, 2008; Prema, Mekhala, & Devika, 2010; Shilpashree & Prema, 2008). Such studies have suggested that with systematic training protocol and adequate periodic monitoring mechanism, training would be effective irrespective of the qualifications of the trainer, provided the trainer is imparted with sufficient knowledge and skill in administration of training program. Studies have also attempted to evaluate the effect of print knowledge training on oral language skills and the results have revealed that oral language skills (in English) which are treated as precursors to literacy emerge as a consequence of print awareness in children acquiring English as a second Language (Lakshmish & Prema Rao, 2010).

Need for the Study

Literacy development is a continuum where children first decipher the codes of oral language and then learn to decode the written language. Acquisition of oral language is a natural phenomenon and most children start speaking without any extra effort. But this is not true for written language. Learning to read and write does not come naturally to children. These skills are dependent on the environment and the literacy experiences of children. An extensive review of literature has revealed that to acquire literacy successfully, children need stimulating literacy rich experiences and emergent literacy skills like oral language, print knowledge and phonological processing skills (Mason & Allen, 1986; van Kleeck, 1990; Morrow, 1990; Ehri & Sweet, 1991; Sulzby & Teale, 1991; Dickinson & Tabors, 1991; Heilman, Blair, & Rupley, 1998; Snow et al., 1998; Pullen & Justice, 2003). Children efficient in these skills profit more from reading instruction, learn to read sooner, and read better than do children with less of these skills (Whitehurst & Lonigan, 1998).

Majority of research in the area of early literacy has been done in the West and research is skewed towards bilingual children from native English speaking environments. But researchers caution against generalizing the results of these studies to children from other language backgrounds. Therefore, there is a need to study early literacy skills of bilingual children from countries like India, where the native language is spoken at home and in the environment, yet these children acquire literacy in English when they enroll in schools where English is the medium of instruction. Most of these children have limited knowledge of spoken English as English is one of the many languages spoken in a multilingual country like India. Since research indicates that oral language is the foundation from which written language emerges (Goldsworthy, 2003), it would be interesting to investigate how children in India utilize their limited oral language skills (in English) to acquire literacy in English.

Review of research on early literacy in India shows that very few studies have dealt with the areas of emergent literacy. The studies done in this area have mainly dealt with phonological awareness with a lacuna in the area of print knowledge. Another important factor is that majority of studies have evaluated native Indian languages and hardly any research has been done in the acquisition of literacy in ELLs. Since millions of Indian children acquire literacy in English, it is important to study the development of early literacy skills in English.

All language learning including literacy learning is a part of a continuous process that begins at birth. It is clear that reading acquisition in pre-school is a valid concern for

Speech-Language Specialists (van Kleeck, 1990). Since the Speech-Language Specialists work most directly with children who have developmental language impairments, they are best positioned to identify and remediate the problems these students exhibit in phonological awareness, semantics, syntax and metalinguistic abilities. Training in phonetics, language acquisition, language disorders and clinical experience qualify the Speech-Language Specialist as a member of the educational team treating language-based reading disabilities.

Research in early literacy development of preschool children is essential for understanding the emergence and developmental patterns of literacy. Review of literature also suggests that children's reading achievement in later grades can be predicted by evaluating their emergent literacy skills in the preschool period. While evaluating the emergent literacy skills, children 'at risk' for reading difficulties in later grades can be identified and intervention programs facilitating emergent literacy skills can be recommended.

Objective of the Study

The objective of this research was to study the development of emergent literacy in Kannada-speaking English Language Learners in the age range of three to six years. The objective was carried out in the following phases:

- Survey of emergent literacy experiences of preschool children by assessing the literacy environment at home, in the classroom and the quality of books available to them.
- Development of a Tool for Emergent Literacy Assessment (TELA).
- Assessment of emergent literacy skills by evaluating the oral language, print knowledge and phonological processing skills of preschool children using TELA.
- Study of the relationships among the emergent literacy skills.

Hypothesis

Two hypotheses are posed for the present study:

1) Emergent literacy domains such as Oral language, Print knowledge and Phonological processing show a developmental pattern from three to six years.
2) Emergent literacy domains such as Oral language, Print knowledge and Phonological processing share inter-relationships with one another.

Chapter III
Method

The objective of this research was to study the development of emergent literacy in Kannada-speaking English Language Learners in the age range of three to six years. The objective was carried out in the following phases:

- Survey of emergent literacy experiences of preschool children by assessing the literacy environment at home, in the classroom and the quality of books available to them.
- Development of a Tool for Emergent Literacy Assessment (TELA).
- Assessment of emergent literacy skills by evaluating the oral language, print knowledge and phonological processing skills of preschool children using TELA.
- Study of the relationships among the emergent literacy skills.

The development of emergent literacy in Kannada-speaking English Language Learners (ELLs) was studied by employing a cross-sectional descriptive research design. Native speakers of Kannada language studying in preschools with English as the medium of instruction were selected on the basis of a stratified random sampling procedure.

Participants

The participants for the present study were selected from ten preschools that participated in a survey on emergent literacy experiences. The details of the survey are discussed in the following sections. Based on the results of the survey three schools with similar literacy environments were selected for the study. 95 participants who were native speakers of Kannada (Table 3.1) studying in Pre-Kindergarten (PKG), Lower Kindergarten (LKG) and Upper Kindergarten (UKG) were selected from the ten 'English medium' schools that were randomly selected for the study. The participants were sequential bilinguals[1], that is, they were native speakers of Kannada, who started acquiring English around the time they entered preschool. It must be stressed that in order to control the variables that might affect the literacy outcome of the participants, they

[1] Although they were native Kannada-speaking ELLs, it is possible that they might have been exposed to other languages in their immediate environment. The nature and effect of these languages was not explored in the present study.

were selected from schools with similar literacy environments hence random sampling was not possible.

The participants did not have a history of developmental delay, language delay, and/or significant health problems as per the school records, which were further verified by administering the WHO Ten-Questions disability screening checklist (Cited in Singhi, Kumar, Prabhjot, & Kumar, 2007). The selected participants were evaluated using the Tool for Emergent Literacy Assessment (TELA), developed by the investigator to investigate the objectives of the present study. The data was subjected to statistical analyses to study the development of emergent literacy in Kannada-speaking ELLs.

Table 3.1
Demographic Details of Participants

Groups	N	Gender	Age Range (in months)	Mean Age (in months)
PKG	32	M = 17, F = 15	40-53	46.60
LKG	30	M = 15, F = 15	51-66	57.40
UKG	33	M = 15, F = 18	60-76	66.60
Total	95	M = 47, F = 48	40-76	56.80

Note. N = No. of Participants, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten, M = Males, F = Females

The study was conceptualized and conducted in three phases:

Phase I: Survey

Phase II: Development of the Tool for Emergent Literacy Assessment (TELA)

Phase III: Administration of TELA followed by data analyses and report generation

3.1 Phase I: Survey

The objective of the survey was to study the emergent literacy experiences of preschool children as well as for selection of participants for the study. With this objective in mind a survey was conducted in ten preschools[2] (with English as a medium of instruction), which were selected on a random basis from Mysore city. The participants of the survey comprised of teachers and parents of children who were Kannada-speaking English Language Learners studying in the preschools selected for the survey. Three questionnaires were developed specifically for studying the emergent literacy experiences of preschool children. They were:

[2] For the present study 'preschool' is operationally defined as schools which cater to three grades of children: Pre-Kindergarten (PKG), Lower Kindergarten (LKG) and Upper Kindergarten (UKG).

1. The Questionnaire for Parents (QP), which investigated the emergent literacy experiences of preschool children at home.
2. The Questionnaire for Teachers (QT), which investigated the emergent literacy experiences of preschool children in the classroom.
3. The Questionnaire on Books (QB), which investigated the quality of books available to children in preschools.

Development of Questionnaires for the Survey.

A pilot survey was conducted to assess the questionnaire design, format and comprehensibility. 15 parents of preschool children participated in the pilot survey. Responses to questionnaire items were recorded in terms of frequency: 'most of the time', 'sometimes' and 'rarely'. Since, majority of parents reported confusion in judging the question in terms of frequency of response, a simpler 'yes/no' response pattern was used, which is similar to the True/false pattern followed by the Classroom/Home Literacy Environment Checklists (www.GetReadytoRead.org).

The content, comprehensibility and format of the questionnaires were rated by three speech language pathologists, four special educators and four preschool teachers. They suggested that the language used in the questionnaires should be simple and informal, which is understood by the parents and the teachers with ease. They also suggested that since the questionnaires evaluate emergent literacy, they should include questions on pre-writing endeavours of children. The comments and suggestions given by the speech language pathologists, special educators and preschool teachers were incorporated into the questionnaires and the revised questionnaires were employed for the final survey.

The investigator distributed a total of 196 questionnaires to 10 preschools in Mysore city. Each school was given a set of questionnaires for each grade- PKG, LKG and UKG. Preschool teachers responded to the questionnaire for teachers (QT) and the questionnaire on books (QB), while the questionnaire for parents (QP) was sent home requesting parents to answer the questionnaire. Out of a total of 196 questionnaires, 162 (82.65%) completed questionnaires were received; 83.92% of teachers and 82.14% of parents completed the questionnaires.

Table 3.2
Percentage of Participants who responded to the Questionnaires

Participants	Questionnaires	Number of questionnaires distributed	Number of participants who responded	Percentage of response to ques.	Percentage of participants who responded
Parents	QP	140	115	82.14%	82.14%
Teachers	QT	28	24	85.71%	83.92%
	QB	28	23	82.14%	
Total		196	162	82.65%	82.65%

Note. QP- Questionnaire for Parents, QT- Questionnaire for Teachers, QB- Questionnaires on Books

Table 3.2 provides the details of the number of questionnaires distributed and the number of participants who responded to the questionnaires.

3.1.1 Questionnaire for Parents. The initial part of the questionnaire for parents (QP) was designed with questions on demographic data such as name of the child, age, sex, mother tongue, medium of instruction, educational qualification of parents, occupation of parents and number of hours spent with the child (Refer to the questionnaire given in the Appendix for more details). The demographic questions on parents' education and occupation were designed to assist the investigator in assessing the credibility of the information reported in the survey. The latter part of the questionnaire was designed with 28 questions grouped under seven categories (4 questions in each):

i. *Books available (BA)*. This section comprised of questions on whether children were exposed to storybooks, books on rhymes, letters of the alphabet, numbers, drawing and colouring.

ii. *Storybook Reading (SR)*. This section comprised of questions regarding whether the parents read to their children, taught them to hold the book, point to words while reading and interact by encouraged the child to ask questions.

iii. *Storytelling (ST)*. This section comprised of questions on whether parents preferred storytelling or storybook reading, whether they modified their voice or facial expressions while telling a story and asked children to retell the story and what they learnt from it.

iv. *Print Awareness (PrA).* This section comprised of questions on whether children saw parents read books, newspapers or magazines, saw parents make shopping lists, identified familiar logos and company names such as ‘Colgate’ and ‘Maggi’, and identified signs on doors such as ‘EXIT’ and ‘TOILET’.

v. *Letter Knowledge (LK)*. This section comprised of questions on whether parents encouraged children to identify letter names and sounds, scribbled or could write letters and match spoken word to the written word.

vi. *Oral Language (OL)*. This section comprised of questions on whether parents encouraged children to learn new words, talk about their experiences using complete sentences and have detailed conversations with them.

vii. *Language Use (LU)*. This section comprised of questions about the approximate percentage of time parents used English or Kannada (native language) with their child for daily conversation, storytelling, reading storybooks, and other reading/writing activities.

3.1.2 Questionnaire for Teachers. The initial part of the questionnaire for teachers (QT) was designed with questions on demographic data such as, name, age, sex, educational qualification and number of years of teaching experience (see Appendix for details). The demographic questions on teacher’s education, training and experience were designed to assist the investigator in assessing the credibility of the information reported in the survey. The latter part of the questionnaire was designed with 28 questions grouped under the following categories (4 questions in each category[3]):

i. *Book handling skills (BHS)*. This section comprised of four questions on whether the child was aware that a book has a front and back cover, a book is held right side up, pages are turned one at a time and a book is read from left to right.

ii. *Storybook Reading (SR)*. This section comprised of four questions on whether the teacher read storybooks, encouraged the child to retell the story in his/her own words, sent home books that children could read themselves and books that parents could read to them.

iii. *Letter Knowledge (LK)*. This section comprised of four questions on whether the teacher engaged children in activities to teach the difference between letter names/sounds, encouraged children to match letter names/sounds, write letters of the alphabet and write small words such as their names.

[3] *Questions on print awareness and oral language comprised of 2 questions each*

iv. *Phonological Awareness (PA)*. This section comprised of four questions on whether the teacher created an awareness of rhymes, syllables and phonemes by teaching that words can be broken down into sound parts (syllables) or sounds (phonemes) and some words have the same beginning or ending sounds.

v. *Print Awareness (PrA)* and *Oral Language (OL)*. This section comprised of questions on print awareness and oral language. Print awareness comprised of two questions on whether children were encouraged to recognize important signs such as 'TOILET' and 'STOP'. Oral Language comprised of two questions on whether children were encouraged to talk in complete sentences and talk about their everyday experiences.

vi. *Reading Skills (RS)*. This section comprised of four questions on whether the teacher encouraged children to read using letter names or letter sounds, pointed to words while reading and matched spoken words to the written words.

vii. *Language Use (LU)*. This section comprised of four questions about the approximate percentage of time teachers used English or Kannada (native language) with children for daily conversation, storytelling, reading storybooks, and other reading/writing activities.

3.1.3 Questionnaire on Books (QB). The initial part of the questionnaire consisted of questions on demographic data such as, name, age, sex, address and occupation (See Appendix for details). The latter part of the questionnaire consisted of 25 questions grouped under the following categories (5 questions in each category):

i. *Genres of Books (GB)*. This section comprised of five questions on whether children were exposed to storybooks which describe a fantasy or familiar experiences, books for teaching concepts like alphabet, numbers, colours, shapes and informational books such as types of fruits, vegetables and transportation.

ii. *Child-Friendly Books (CFB)*. This section comprised of five questions on whether books were attractive, easy to handle, laminated, durable and free of hazards like sharp edges and toxic printing material.

iii. *Quality of Books (QB)*. This section comprised of five questions on whether the books were graded according to the theme, size of print, vocabulary, amount of text and complexity of text.

iv. *Quality of Illustrations (QI)*. This section comprised of five questions on whether the illustrations were colourful and attractive, descriptive of text, incorporated text in the form of speech bubbles or labels, and were appropriate to socio-cultural environment of the child.

v. *Type of Books (TB)*. This section comprised of five questions on whether children were exposed to board books, cloth books, touch and feel books, interactive books and electronic books (CD-ROM).

Scoring.

The questions were designed to elicit a 'Yes/No' response, such as "Do you read storybooks to your child?" Some questions also required a response in terms of approximate percentages, for example, 'Specify the approximate percentage of time you use English/Kannada (native language) with your child' (Refer to the questionnaires given in the Appendix for more details). A Scoring key was developed, which was used to score the responses made by the participants. Responses were scored '1' or '0' based on the nature of response, accurate responses were scored '1', while inaccurate responses were scored '0'. For example, if the response for the question, 'Do you read storybooks to your child?' was 'Yes', the question received '1' and if the response was 'No' the question received '0'. The QP and QT consisted of 28 questions divided into seven categories with four questions in each category while QB consisted of 25 questions that were divided into 5 categories. For all the questions, 'yes' response received a score of '1' and a 'no' response received a score of '0'except question 3.a in QP and question 4.c in QB, in which case if the response was 'no' it scored '1'. The responses of all four questions in a category were added to give a total score for that category. The total score for the questionnaire was the sum of scores in each category. The maximum score on the QP and the QT was 28 and the maximum score for the QB was 25.

The last category in the QP and QT probes the use of English and Kannada language in the child's environment (Language Use), 'Specify the approximate percentage of time you use English/Kannada (native language) with your child?' Since the present research aimed at studying the emergent literacy development of English Language Learners, a score of '1' was given if English was used 50% of the time (or more) and a score of '0' was given if English was used less than 50% of the time. In case a question was left unanswered or if the response was not clear it received a score of '0'. The scores for each questionnaire were calculated and the responses were analyzed to examine the emergent literacy experiences of preschool children in the sample.

3.2 Phase II: Development of the Tool for Emergent Literacy Assessment (TELA)

Children from diverse backgrounds enter school with different literacy experiences hence it cannot be presumed that they will learn to read and write in the same manner. It is essential to evaluate each child individually in order to determine his/her emergent literacy abilities. The Tool for Emergent Literacy Assessment (TELA) was developed to study the development of emergent literacy in preschool children studying in schools with English as the medium of instruction. TELA was designed as an individually administered tool, which evaluates the three domains of emergent literacy:

1. Oral Language
2. Print Knowledge
3. Phonological Processing

The components underlying each of these domains were assessed via several measures. Table 3.3 shows the domains, components and measures employed in TELA along with the maximum scores. For some tests a maximum score could not be pre-determined because the scores were dependent upon the participants' response/time taken to respond and hence, an upper limit could not be fixed. For example, maximum number of words uttered by children in the Story Re-tell task and the maximum time taken by children in RAN could not be pre-determined.

Since the participants in the present study were children in the age range of three to six years, colourful pictures were developed for TELA. Black and white line drawings taken from the project, "With a little bit of help" (Karanth, Manjula, Geetha, & Prema, 1999) were scanned and coloured by a trained professional using Adobe Photoshop Version CS2. The colourful pictures were then printed on thick laminated cards to reduce wear and tear. The size of the cards (21 x 15 cm, 29 x 10 cm and 10 x 10 cm) was selected based on the number of pictures (or text) printed on the card. For example, for the vocabulary task, pictures were printed individually on 21 x 15 cm cards; for the rhyme awareness task, three pictures were printed on a single card measuring 29 x 10 cm; for the Word Recognition task, monosyllabic CVC words were printed individually on a

10 x 10 cm card. The details of the administration and scoring guidelines are given in the 'Instruction Manual for TELA' provided in the Appendix.

Table 3.3

Domains, Components and Measures in the Tool for Emergent Literacy Assessment (TELA)

Emergent Literacy Domains	Emergent Literacy Components	Emergent Literacy Measures	Maximum Score (MS)
Oral Language (OL) Skills*	Vocabulary (MS =120)	No. of Words in English (NEW-V)	120
		No. of Words in Kannada (NKW-V)	80
		No. of Semantically Related Words (SRW)	40
	Story Re-tell*	No. of English Words* (NEW-SR)	-
		No. of Kannada Words* (NKW-SR)	-
		No. of Proper Nouns* (NPN)	-
		Mean Length of Utterance* (MLU)	-
		No. of Different Words* (NDW)	-
		Type Token Ratio* (TTR)	-
		Literate Language Features* (LLF)	-
Print Knowledge (PK) Skills (MS = 160)	Concepts about Print (MS = 25)	Book Handling Skills (BHS)	9
		Text Discrimination (TD)	10
		Environmental Print (EP)	6
	Alphabetic Knowledge (MS = 125)	Letter Names (LN)	52
		Letter Sounds (LS)	52
		Alphabetic Principle (AP)	1
		Word Recognition (WR)	20
	Emergent Writing (MS=10)	Emergent Writing	10
Phonological Processing (PP) Skills*	Phonological Awareness (MS = 95)	Word Awareness (WA)	55
		Rhyme Awareness (RA)	10
		Syllable Awareness (SA)	10
		Alliteration Awareness (AA)	10
		Phoneme Awareness (pA)	10
	Short Term Memory (MS = 20)	Short Term Memory (STM)	20
	Rapid Automatic Naming*	RAN Object* (RANO)	-
		RAN Size* (RANS)	-

* The Maximum Score (MS) could not be pre-determined for these measures since it varies with each participant

3.2.1 Oral Language.

Children acquire oral language before they learn how to read and write. There are two key components to read successfully. One is the ability to identify with accuracy and fluency the individual words in print (decoding), and the second is good general language comprehension skills (Torgesen, 2002a). Research indicates that code-related skills such as Phonological Processing and Print Knowledge are important for the acquisition of decoding whereas both oral language and code-related skills are important for developing good reading comprehension (Lonigan, Burgess, & Anthony, 2000; Senechal & LeFevre, 2002; Shantil & Share, 2003; Storch & Whitehurst, 2002). Report of the National Early Literacy Panel (2009) suggests that oral language skills have a moderate correlation with decoding, which makes the evaluation of oral language skills essential for the study of emergent literacy. The Oral Language domain was assessed via two components: Vocabulary and Story Retell.

3.2.1.1 Vocabulary. Although vocabulary knowledge is moderately related with decoding achievement, which is the primary focus of beginning reading instruction, it is critical for the application of decoding skills to reading for meaning, a later acquired reading ability (deJong & van der Leij, 2002; National Early Literacy Panel, 2009; Torgesen, Wagner, Rashotte, Burgess, & Hecht, 1997). In other words, as children progress through elementary school they require sufficient vocabulary knowledge along with adequate word recognition skills to comprehend what they read. The National Early Literacy Panel (2009) also reported that expressive vocabulary correlates with decoding skills. Hence, it is essential to evaluate the expressive vocabulary of preschool children in order to study the development of their emergent literacy skills.

The Vocabulary component of the oral language skills was measured using an expressive vocabulary task in TELA. The design of the vocabulary assessment in TELA is similar to the picture naming subtest of IGDI (The Individual Growth and Development Indicators, Missall & McConnell, 2004). The vocabulary assessment in TELA comprises of 40 pictures selected from various lexical categories like animals, birds, colours, body parts, clothes, vegetables, fruits, vehicles, utensils, professions, insects, actions, household articles and nature. Words for the vocabulary assessment were selected from preschool books to ensure that they were part of preschool children's vocabulary. The vocabulary assessment comprised of 10 pictures for 'practice trials[4]' and 40 pictures for assessment.

The pictures were presented one at a time for 1 minute and the participants were asked to name each picture. The participants were free to respond in either of the languages (English or Kannada). The measures employed to assess vocabulary were

[4] In the present study 'Practice Trials' refers to attempts made by the examiner to familiarize the participant with the task. The practice trials were not scored or timed and corrective feedback was provided to participants during practice trials.

Number of English Words-Vocabulary (NEW-V), Number of Kannada Words-Vocabulary (NKW-V) and Number of Semantically Related Words[5] (SRW). Since the present study aimed to evaluate the emergent literacy skills of English Language Learners, NEW was given more weight (a score of 3) than NKW (a score of 2) followed by SRW (a score of 1).

3.2.1.2 Story re-tell. Researchers have widely used narrative assessments such as story re-tell to evaluate the oral language abilities of very young children (Curenton & Justice, 2004; Gazella & Stockman, 2003; Hewitt, Hammer, Yont & Tomblin, 2005; Leadholm & Miller, 1992; Miller, Heilmann, Nockerts, Iglesias, Fabiano & Francis, 2006; O'Neill, Pearce & Pick, 2004; Schelletter & Parke, 2004). In the story retell task the participants were presented with a novel story by the investigator and asked to immediately re-tell the story. Since young children have small attention spans, a wordless picture book was used to overcome the role of memory in recalling the characters or the sequence of events in the story. Stories that depict a character that encounters a problem, engages in goal-based actions to solve the problem and resolves the conflict are very popular with preschoolers (Benson, 1997; Pearce, 2003; Shapiro & Hudson, 1991). In the present study story retelling was used to evaluate the grammatical structure and lexical diversity of preschool children. Interesting characters and colourful pictures were designed by the investigator to make story retell an appealing assessment tool for preschoolers.

The story retell assessment evaluated the narrative abilities of preschool children using a colourful wordless picture book titled 'Mini and Kitty'. The story depicted a young girl called 'Mini' and her cat 'Kitty'. The story had a simple storyline taking into consideration the concepts of very young children and it revolved around two characters, a girl and her cat. Since the story was narrated in English, which was the second language of the participants, simple sentences were used for story narration. Care was taken to ensure that the words chosen for narration were within the vocabulary of preschool children. The pictures in the storybook were big in size, colourful and descriptive. The

[5] Semantically Related Words (SRW): Words from the same semantic category such as 'table' and 'chair'. If the participant used a SRW instead of the target word, the response was scored as '1' point.

storybook contained eight pages (30cm x 20cm) including the title page and was spiral bound for ease of handling.

The assessment required the investigator to narrate the story in English using the wordless picture book. Then, the participant was asked to retell the story with the help of the wordless picture book. The participants were not instructed to retell the story particularly in English hence they were free to use their native language (Kannada) whenever necessary. The participant's responses for the story retell task were audio recorded using the Olympus Digital Voice Recorder WS 100. The audio responses were transcribed and analyzed using the SALT software (Systematic Analysis of Language Transcripts, Miller & Chapman, 1993).

The story retell assessment was used to evaluate the expressive and comprehensive abilities of preschool children. The narrative measures employed to evaluate the expressive abilities were NEW-SR (Number of English Words- Story Retell), NKW-SR (Number of Kannada Words- Story Retell), NPN (Number of Proper Nouns), LLF[6] (Literate language Features), MLU[7] (Mean Length of Utterance), NDW[8] (Number of Different Words) and TTR[9] (Type Token Ratio). The narrative measure employed to evaluate the comprehension abilities was QAS (Question-Answer Score).

The scoring pattern used in the story retell task is similar to the one employed in the Clinical Evaluation of Language Fundamentals- Preschool 2nd Edition (CELF-P2; Wiig, Secord, & Semel, 2004). Since the story narration was in English and children in the sample were acquiring literacy in English, responses in English were assigned a score of '3', in Kannada a score of '2' and Proper Nouns such as 'Mini' and 'Kitty', were assigned a score of '1'. The scores were calculated for NEW-SR, NKW-SR and NPN. Narrative measures such as LLF, MLU, NDW and TTR were evaluated based on the raw scores and these measures were not subjected to the scoring pattern.

3.2.2 Print knowledge.

Theories of emergent literacy identify print knowledge as a key domain of preschool literacy development (Whitehurst & Lonigan, 1998). Experiences with print

[6] Literate Language is "the style used in written communication and is typically more complex and less related to the physical context than the language of ordinary conversation" (Paul, 2007, p. 394).
[7] MLU is the average number of words per utterance produced by a speaker in a narrative.
[8] NDW is the number of different words produced by a speaker in a narrative.
[9] TTR is the ratio of NDW divided by the total number of words produced by a speaker in a narrative.

give preschool children understanding of the functions, conventions and forms of print, which play an integral role in learning to read. For preschool and kindergarten children print knowledge skills are consistently reported to be among the better predictors of later reading success, particularly in the area of decoding (Badian, 2000; Hammill, 2004; Scarborough, 1998). The National Early Literacy Panel (2009) also confirmed that measures of print knowledge provide useful and positive predictors of later literary success, which makes the evaluation of print knowledge skills essential for the study of emergent literacy. The print knowledge components assessed in TELA were: concepts about print, alphabet knowledge and emergent writing.

3.2.2.1 Concepts about print. The concept of print refers to children's understanding about the conventions and units of print. Knowledge of print concepts reflects children's growing awareness that print is systematic, following its own rule system, and is different from other visual patterns, such as pictures (Adams, 1990). Concepts about print were assessed using the following measures:

1. Book Handling Skills (BHS)
2. Text Discrimination (TD)
3. Environmental Print (EP)

3.2.2.1.1 *Book handling skills.* Book handling skills refers to the children's knowledge of how to handle books, such as holding the book upright, finding the title, opening the book from left to right, and turning pages within the book. The task for book handling skills was designed similar to the Preschool Word and Print Awareness Assessment Tool (PWPA; Justice, Bowles, & Skibbe, 2006 cited in Cabell, Mcginty, & Justice, 2006). In this task the examiner presented the participant with the storybook, 'Mini and Kitty' (which was designed for the story retell task) and said, "Show me how you read a book" or "Show me the front of the book" or "Show me the name of the book" or "Where does the story begin?". The participant was expected to respond according to the requests made by the instructor. Each correct response was scored '1' and each incorrect response was scored '0'.

3.2.2.1.2 *Text discrimination.* Text discrimination refers to children's ability to distinguish printed letters and printed words from non-alphabetic characters and illustrations. The text discrimination task in TELA is similar to the text discrimination task specified in the Print Awareness Subtest of the Preschool Comprehensive Test of Phonological and Print Processing (PCTOPP; Lonigan, Wagner, Rashotte, 2002 cited in Anthony, Williams, McDonald & Francis, 2007). This was a multiple-choice task where the examiner presented four choices (for example- ? % P +) and asked the participant to "Point to the letter". The four choices were printed on a thick laminated card measuring 29x10 cm. The participant was expected to point to the correct choice. In the above example the correct response would be 'P'. Each correct response was scored '1' and each incorrect response was scored '0'.

3.2.2.1.3 *Environmental print.* Young children begin to notice print in their environment and begin to identify or "read" familiar print seen around them from a very early age. While research has shown that children are able to derive meaning of text within context, studies have not been able to establish or support a direct causal relationship between the ability to read environmental print and later word identification (Whitehurst & Lonigan, 1998). While recognition of environmental print is a developmental accomplishment of literacy acquisition (Snow, Burns, & Griffin, 1998), it has not been found to be strongly related to later reading (Whitehurst & Lonigan, 1998; National Literacy Panel, 2009). Although environmental print is not strongly related to later reading, it gives an insight into how children understand that print carries meaning. Thus, evaluating children's awareness of environmental print provides cues on whether they have started noticing and identifying print around them.

The environmental print task in TELA comprised of six pictures of common objects and signs such as, "Cadbury's Dairy Milk Chocolate", "Colgate Toothpaste", "Parle-G Biscuits", "Maggi Noodles", "STOP" sign and a toilet sign that read "MEN" and "WOMEN". The participants were shown 21x15 cm. cards with scanned pictures of the above mentioned objects/signs and asked to identify the picture. Each correct response was scored '1' and each incorrect response was scored '0'.

3.2.2.2 Alphabet knowledge. Alphabet knowledge is one of the most important print knowledge skills, which describes the child's knowledge of individual letter names, including both the upper- and lowercase forms. Children must learn to associate these letters with their written symbols and their corresponding sounds. Progress from print knowledge to alphabet knowledge shows that, children's focus is moving from broad concepts of print to specific units of print within a word (letters of the alphabet). The alphabet knowledge in preschool children was assessed using the following components:

1. Letter-sound Knowledge (LK)
2. Alphabetic Principle (AP)
3. Word Recognition (WR)

3.2.2.2.1 Letter-sound knowledge. Alphabet knowledge is considered to be causally related to later reading achievement through its facilitation of letter sound knowledge (McBride-Chang, 1999; Treiman & Broderick, 1998). Children entering school with adequate knowledge of letter-names (LN) and letter-sounds (LS) are in a better position to acquire reading than those children who have poor letter knowledge. Hence it is essential to evaluate the letter-sound knowledge of preschool children. The Alphabet Knowledge assessment in TELA evaluates letter-sound knowledge by testing all the 26 letters of the English alphabet in the upper- and the lowercase. The assessment design is similar to the Abecedarian Reading Assessment (Wren & Watts, 2002). The examiner presents six letters printed on a card measuring 29x10 cm. to the participant and asks him/her to read the letters printed on it. The examiner places a finger below the letter and the child is expected to read it. If the child is unable to read the letter, the examiner reads that letter and progresses to the next letter. The participant's response is recorded on a response sheet.

3.2.2.2.2 Alphabetic principle. Along with the knowledge of letters and their corresponding sounds children also develop phoneme awareness, which refers to the understanding that the words are made up of smaller sounds (phonemes). Phoneme awareness is essential for the development of the 'alphabetic principle', which states that the sounds (phonemes) in speech are represented by letters in text. Children should develop the alphabetic principle by understanding that in order to develop as a mature reader they have to break long words into smaller parts and sound them out (Wren & Watts, 2002). This knowledge forms the cornerstone on which reading is built.

The task for alphabetic principle in TELA is similar to the task in Abecedarian Reading Assessment (Wren & Watts, 2002). The alphabetic principle task in TELA required the participant to look at two words, one long and the other short. The pair of words was printed on a 29 x 10 cm card and placed in front of the participant. The investigator read one of the words from the pair and the participant was instructed to point to the word read aloud. The words, which were read aloud (Target Words), were the same for all the participants. Responses were recorded on the TELA Score Sheet and scored based on the accuracy of response. Since this task is high on probability, i.e., by being an 'all or none' phenomenon[10]. For a total of 10 word pairs, each participant received a score of '1' if all the 10 words were correct and a score of '0' in case any response was incorrect.

3.2.2.2.3 *Word recognition.* Word recognition refers to linking the printed representation of a word with its meaning (Stanovich, 1991). Higher order reading skills such as comprehension, vocabulary development, and purposeful, enjoyable reading and writing are dependent on accurate word recognition (Stanovich, 1991). Research indicates that word recognition is central to reading acquisition (Daneman, 1991; Juel, 1991; Stanovich, 1991) and hence should be evaluated at the beginning stages to study the emergence of word recognition in preschoolers. Young children can recognize "familiar" words but that does not necessarily mean that they are "decoding" them. Decoding words involves sounding them out and arriving at a pronunciation that other mature readers agree with (Wren & Watts, 2002). Hence for preschool children, a word recognition task must contain regular words that are familiar to the child and those that do not require complex decoding strategies.

The word recognition task in TELA comprised of 20 three-letter (CVC) monosyllabic words, which were selected from preschool books. For example, 'pen', 'cat', 'bus', 'lid' and 'top'. The words were printed on a 10 x 10 cm card which was placed in front of the child. The examiner presented one word at a time and asked the child to read the word. The responses were recorded verbatim on the TELA Score Sheet. The responses were scored '1' if the word was read correctly and '0' if the participant read the word incorrectly. If the child named the letters in the word and did not blend the sounds to say the whole word, it was considered as an incorrect response.

3.2.2.3 Emergent writing. Children start scribbling, drawing, using letter-like forms and writing random letters much before they begin writing in the conventional sense

[10] It is reported that once children acquire the knowledge of alphabetic principle, they apply the knowledge on any given task and hence, it is treated as 'all or none' phenomenon in a child's preliteracy acquisition (Karanth & Prakash, 1996)

(Bear, Invernizzi, Templeton & Johnson, 2004). Early writing performance is significantly associated with knowledge in other literary domains, including knowledge of the alphabet and phonological awareness (Welsch, Sullivan & Justice, 2003). National Early Literacy Panel (2009) has reported that emergent writing is a strong predictor of later reading success. Thus in order to study the development of emergent literacy it is important to evaluate emergent writing skills of preschool children. The emergent writing task in TELA required the participants to write their name on a blank sheet of paper. In case the child was unable to write his/her name, the examiner asked him/her to write anything that s/he wishes to write. The responses were analyzed based on directionality and the formation of letters.

3.2.3 Phonological processing.

Phonological processing refers to the skills required to use the sound structure of oral language in processing oral and written information. Research has identified three interrelated phonological processing components that are important for reading and writing: Phonological Awareness, phonological Short Term Memory, and efficiency of phonological access to lexical storage (Rapid Automatized Naming; RAN) (Wagner & Torgesen, 1987). Report of the National Early Literacy Panel (2009) indicates that phonological processing skills are strong predictors of reading abilities in preschool children. Hence assessment of phonological processing skills during the preschool years is essential for studying the development of emergent literacy skills.

The phonological processing components assessed in TELA were: phonological awareness, phonological short term memory and phonological access to lexical storage (Rapid Automatized Naming- RAN).

3.2.3.1 Phonological awareness. Phonological awareness is an essential skill for learning to read (Wagner, Torgesen, & Rashotte, 1994). It relates to the awareness of sounds in speech and is distinct from print decoding knowledge (e.g., alphabetic principle, letter sounds, and phonics) (Schuele, Skibbe, & Rao, 2007). It includes awareness of larger sound units such as syllables and words, and smaller units such as individual phonemes. Recent studies have used pictures to assess phonological awareness skills in preschool children (Anthony, Williams, McDonald, & Francis, 2007). The use of picture is justified because phonological awareness tasks require manipulation of sound units, which need to be retained in the working memory of the child. If the task is supported with pictures, children can retain sound units in their working memory long enough to complete the manipulation task. The assessment of phonological awareness in TELA comprised of tasks that required phonological operations such as matching, blending and segmentation. These tasks used pictures to evaluate the following phonological awareness measures:

1. Word Awareness (WA)
2. Rhyme Awareness (RA)
3. Syllable Awareness (SA)
4. Alliteration Awareness (AA)
5. Phoneme Awareness (pA)

Each task was preceded by two practice trials that were followed by correction, explanation and re-administration in case of an incorrect response. The phonological awareness measures are described below.

3.2.3.1.1 Word awareness. To assess the word awareness ability, the investigator said a sentence and showed an appropriate picture (for example, "He is playing football"). The participant was given a few plastic coins and s/he was asked to segment the sentence into smaller units (words/syllables) and place one coin for each unit. In the above example, the sentence could be segmented into /he/, /is/, /playing/, /football/, which would fetch the participant a score of 4 (1 for each unit). In case the participant segments the units further into syllables, /he/, /is/, /play/, /ing/, /foot/, /ball/, the participant would score 6. The responses were recorded on the TELA Score-sheet. The word awareness task consisted of 10 sentences and the total score was the sum of the scores for all 10 sentences.

3.2.3.1.2 Rhyme awareness. To assess the rhyme awareness ability, the participant was required to identify one of the three pictures in response to a phonological stimulus. For example, the participant was provided with a card (29 x 10 cm) with three colorful pictures, 'carrot', 'table' and 'horse'. The investigator pointed to each picture and named them. Then the investigator asked the participant to point to the picture that rhymed with the word 'parrot'. The participant was expected to point to the picture of 'carrot'. The responses were recorded on the TELA Score-sheet. A correct response was scored '1' and an incorrect response was scored ‘0’. The task consisted of 10 items and the total score was the sum of scores for all 10 items.

3.2.3.1.3 Syllable awareness. To assess the syllable awareness, the participant was required to identify one of the three pictures in response to a phonological stimulus. This task was divided into two parts, ‘initial syllable deletion’ and ‘final syllable deletion’ with five items in each. For the ‘initial syllable deletion’ task the participant was provided with a card (29 x 10 cm) with three colorful pictures printed on it, for example, ‘dog’, ‘flower’ and ‘cock’. The investigator asked the participant to point to the picture that matched with the word, which was remaining after deleting the initial syllable from the word ‘peacock’. The participant was expected to point to the picture of ‘cock’. Similarly the participant was asked to delete the final syllable and point to the picture that matched with the remaining word. The responses were recorded on the TELA Score-sheet. A correct response was scored ‘1’ and an incorrect response was scored ‘0’. The total score for this task was the sum of the scores for all the ten items.

3.2.3.1.4 Alliteration awareness. To assess the alliteration ability, the participant was provided with a card (29 x 10 cm) with three colorful pictures printed on it, for example, ‘balloon’, ‘table’ and ‘sun’. The investigator asked the participant to point to the picture that matched with the word that had the same initial syllable as the stimulus word, ‘bat’. In this example the participant was expected to point to the picture of ‘balloon’ since it shares the same initial syllable, /b/. The responses were recorded on the TELA Score-sheet. A correct response was scored ‘1’ and an incorrect response was scored ‘0’. This task consisted of 10 items and the total score was the sum of the scores for all the ten items.

3.2.3.1.5 Phoneme awareness. To assess the phoneme awareness ability, the participant was provided with a card (29 x 10 cm) with three colorful pictures printed on it, for example, ‘pen’, ‘goat’ and ‘cow’. The investigator asked the participant to point to the picture that matched with the word, which was formed when the phonemes, /g/, /o/, and /t/ were blended together. In this example the participant was expected to point to the picture of ‘goat’. A correct response was scored ‘1’ and an incorrect response was scored ‘0’. This task consisted of 10 items and the total score was the sum of the scores for all the ten items.

3.2.3.2 ***Short term memory.*** Phonological short term memory (STM) is utilized during all cognitive tasks that involve processing of verbal information. Individual's STM capacity is often tapped by auditory span tasks like digit span. One can store a sequence of about 7 (5 to 9) digits in STM. But research indicates that, when tested on digit tasks, patients with semantic dementia have relatively preserved STM capacities when compared to other linguistic materials, suggesting that digits are processed differently from other semantic categories in the STM (Jefferies et al., 2005). Consequently, the issue of employing items with digits vs. lexical items for STM tasks was investigated. Cowan (2001) reported that using words involves the recruitment of long term memory, which biases the STM performance. Hence, owing to the limitations of digits and lexical items, non-word repetition task is proposed as a better measure of the processes of the phonological loop (Gathercole, Willis, & Baddeley, 1991). In non-word repetition tasks, the subject is asked to listen and repeat strings of phonemes that produce linguistically possible words that have no meaning. Gathercole et al. (1991) suggest that this is a better measure of the phonological memory as it avoids the potential to use lexical or semantic cues that may influence scores in tasks involving known lexical items. Gathercole and Adams (1994) suggest that this procedure can be used with children as young as two years old, to determine short term memory capacity.

The STM task in TELA consisted of 20 non-words (5 monosyllabic, 5 bi-syllabic, 5 tri-syllabic and 5 multi-syllabic), which were developed by the investigator to evaluate the phonological short-term memory of the participants. A set of 20 non-words was created based on the phono-tactic rules of English. Words of different syllable length were selected from the English language and the position of phonemes/syllables was interchanged to create non-words. For example, in the monosyllabic word 'boon', the initial and the final phonemes were interchanged to make the non-word /nu:b/. In case of bi-syllabic, tri-syllabic and multi-syllabic words, the position of the syllables was interchanged to form non-words. For example, the position of syllables in the bi-syllabic word 'sofa' was interchanged to form the non-word, /fo:sa/.

The investigator said a non-word and the participants were instructed to repeat what they heard. The STM task was preceded with four practice trials that were followed by corrective feedback. The responses were recorded on the TELA Score-sheet. A correct response (nonwords repeated in the same sequence as the target word) was scored ‘1’ and an incorrect response (non words repeated with a different sequence from that of the target word) was scored ‘0’. This task consisted of 20 items and the total score was the sum of the scores for all the 20 items.

3.2.3.3 ***Phonological access to lexical storage (Rapid Automatized Naming, RAN).*** Phonological access to lexical storage is tapped by performance on rapid automatic naming (RAN) tasks. RAN refers to the efficiency of retrieving phonological codes from memory. Individual differences in RAN are evaluated by tasks in which individuals verbally identify common objects, letters, or numbers as quickly as possible. Rate of access for phonological information refers to “children’s ability to easily and rapidly access phonological information that is stored in long term memory” (Catts & Kamhi, 1999). Because naming speed and reading both require the student to automatically retrieve a verbal match for an abstract visual form, Wolf (1999) found that naming speed uses the same visual, auditory, and motor processes used in reading but in a less complex fashion. Therefore, it is essential to evaluate RAN in order to study the emergent literacy skills of preschool children.

The RAN task used in TELA comprised of two measures, ‘rapid object naming’ and ‘rapid size naming’. In the first task the investigator presented the participant with a card (29 x 10 cm) with four colorful pictures printed on it, ‘bus’, ‘cap’, ‘sun’ and ‘fan’. Five sets of these pictures were developed with the pictures in a different sequence in each set. To ensure that the words were present in the participant’s vocabulary, the examiner pointed to the pictures and named them. Then the participant was presented with the first sequence and asked to name the pictures as fast as possible. The response was timed using a stop-watch. The RAN task was preceded with two practice trials that were followed by corrective feedback. The time required to complete each set was recorded on the TELA Score-sheet.

Pilot study.

Pilot study was conducted on five Kannada-speaking children enrolled in PKG, LKG and UKG in preschools with English as the medium of instruction. The pilot study was conducted with the following objectives:

- To get familiarized with the administration procedure

- To evaluate the appropriateness of instructions
- To evaluate the appropriateness of the scoring pattern
- To test the quality of audio recording
- To ascertain the sequence of assessments in TELA
- To ascertain the duration of testing

Based on the performance of the participants in the pilot study, it was established that the test instructions, scoring pattern and quality of recording were appropriate. After the completion of the pilot study, the investigator was well versed with the test materials and the administration procedure of TELA. The sequence of assessments was ascertained after the pilot study and the Oral Language assessment was done in the beginning to help the investigator develop rapport with the participant. The Print Knowledge assessment was carried out next followed by Phonological Processing assessment, which was administered in the end since it was more demanding for the participant than the other assessments. Hence, if required, the Phonological Processing assessment was done after a break or in a subsequent session. The sequence of tasks in the Phonological Awareness subtest was ascertained as follows: Syllable Awareness, Phoneme Awareness, Rhyme Awareness, Word Awareness and Alliteration Awareness. The average duration of a testing session was found to be 30-60 minutes depending upon the age and grade of the participant. On an average, the complete assessment could be carried out in 1-2 sessions. Since the sample size was small, statistical analysis could not be carried out on the pilot sample.

Content validity.

The content validity of TELA was established by three Speech Language Pathologists who were doctoral candidates at the All India Institute of Speech and Hearing, Mysore. They were asked to critically evaluate the assessment tool for design, format, content, and suggest changes wherever necessary. They reported that the measures employed to assess the components of emergent literacy were valid and appropriate for the socio-linguistic background of the participants. They also reported that the tasks employed in TELA were appropriate for preschool children and suggested that the assessment should be carried out in two sessions or the participants could be given frequent breaks during assessments. They suggested that tangible rewards would be more effective with very young children hence, chocolates and stickers were used as rewards.

Ethical considerations.

The study was conducted with the understanding and consent of the parents and the teachers. Due permission was also sought from the Heads of schools. They were provided information on the aims, method and approximate duration of testing. All the participants were assured that the testing was harmless, and that there was no financial benefit. They were assured of confidentiality of personal and assessment information. Informed consent form was duly signed by the teachers and parents. Informed consent was obtained from the school authorities and parents before administering TELA. The research proposal of the present study was approved by the Ethics Committee of All India Institute of Speech and Hearing, Mysore.

3.3 Phase III: Administration of TELA followed by data analyses and report generation

The participants were tested one-on-one basis in a quiet area of the preschool. The testing session ranged from 30-60 minutes depending upon the child's ability and attention to the tasks. The test was completed in 1-2 sessions and tangible rewards such as chocolates and stickers were used as reinforcement at the end of each session. The responses were recorded on the TELA Score Sheet. Since the participants had limited knowledge of English, the investigator also provided instructions in the native language (Kannada) during the administration of TELA.

Review of literature reveals that the literacy skills of bilingual children have been assessed by evaluating each language separately (August & Hakuta, 1997; Durgunoglu et al., 1993; Nagy et al., 1993). In the present study, the participants were preschool children (native Kannada-speakers) who did not have sufficient oral language proficiency in English. Hence, during the oral language testing, the participants were not asked to respond in English, they were free to respond in either English or Kannada. The language sample was analyzed for the English responses as well as the native language (Kannada) responses.

Statistical analyses.

The data was coded and subjected to appropriate statistical procedures using SPSS (Statistical Package for Social Sciences) Version 18.0 and SPSS- Amos Version 18.0.

Reliability measures.

Reliability measures were done in order to establish the reliability of the TELA. Two types of reliability measures were employed.

Test-retest reliability. This was carried out on 10% of the data from each of the three Grades, PKG, LKG and UKG. TELA was re-administered on these children within two weeks of the first assessment. The scores obtained were subjected to statistical analysis, the reliability co-efficient alpha was calculated and was found to be in the range of 0.74 to 0.95 for PKG, LKG and UKG. This shows that there is a high reliability between the first and the second assessments.

Inter-rater reliability. This was carried out on 10% of data from PKG, LKG and UKG on the Story Retell task. Two judges, who were Speech Language Pathologists (Post Graduates) by profession and were matched for gender, education and work experience analyzed the data. They were aware of the purpose of the study and were given instructions on the scoring and analysis of the data. Scores of both the investigator and the judges were tabulated for statistical analysis. Reliability coefficient alpha was calculated, which revealed that inter rater reliability (including that from the investigator) for the measures in the story retell task was in the range of 0.82 to 0.89. This shows that there was high reliability among the raters including the investigator in scoring and analysis.

The details of results, analyses and discussion are presented in the following chapter.

Chapter IV
Results and Discussion

The objective of this research was to study the development of emergent literacy in Kannada-speaking English Language Learners in the age range of three to six years. The objective was carried out in the following phases:

- Survey of emergent literacy experiences of preschool children by assessing the literacy experiences at home, in the classroom and the quality of books available to them.
- Development of the Tool for Emergent Literacy Assessment (TELA).
- Assessment of emergent literacy skills by evaluating the oral language, print knowledge and phonological processing skills using TELA.
- Study of the relationships among emergent literacy skills.

The following analyses were carried out for the purpose of examining the objective set for the study. The statistical analyses were carried out using the software SPSS 18.0 (Statistical Package for Social Sciences, version 18.0) and SPSS- Amos Version 18.0.

1. *Survey of emergent literacy environment*: Descriptive statistics were carried out on the data obtained from the questionnaires to study the emergent literacy experiences of preschool children at home and in the classroom.
2. *Development of emergent literacy skills*: Descriptive statistics were carried out on the data obtained from TELA to derive the mean scores for the emergent literacy measures - oral language (vocabulary and story retell), print knowledge (concepts about print, alphabet knowledge and emergent writing), and phonological processing skills (phonological awareness, short term memory and rapid automatized naming). Two-way MANOVA was employed with grade and gender as the independent variables and emergent literacy measures as the dependent variables. Independent t-test was used to check for the gender effect for each of the emergent literacy measures.

Since the skills assessed in the present study were just emerging (as evidenced from the scores derived on emergent literacy measures) a high standard deviation was obtained for a few measures (such as Letter Names, Letter Sounds, Word Recognition, Word Awareness, Rhyme Awareness, Syllable Awareness, Alliteration Awareness and Phoneme Awareness). Hence, median was calculated to provide a better representation of the data. Also, non-parametric statistics (Kruskal Wallis and Mann Whitney U test) were employed for these measures and the results were compared with those derived from MANOVA.

3. *Correlation among the emergent literacy measures*: Correlational analysis was carried out on data obtained from TELA to examine the associations between the measures of emergent literacy skills. Spearman's rho was used to calculate the correlations between the skills as the standard deviation was high for a few measures.
4. *Predictors for word recognition and emergent writing:* Hierarchical multiple regression analysis was carried out on data obtained from TELA to extrapolate the contribution of emergent literacy measures with reference to 'word recognition' and 'emergent writing'.
5. *Discriminant functions of emergent literacy*: Discriminant function analysis was carried out on data obtained from TELA to derive the discriminant functions of emergent literacy.
6. *Emergent literacy model derivation:* Structural Equation Modelling was employed using SPSS- Amos Version 18.0 on the data obtained from TELA to derive a model for emergent literacy.

4.1 Survey of Emergent Literacy Environment

A survey was carried out to assess the emergent literacy experiences of preschool children at home and in school. Parents and teachers of children studying in preschools participated in the survey by responding to three questionnaires: Questionnaire for parents, questionnaire for teachers and questionnaire on books (Refer to the Appendix). The results of the survey are discussed in the following sections.

4.1.1 Questionnaire for parents.

A total of 140 parents of children studying in 10 preschools from Mysore city participated in the survey. Out of 140 parents, 115 (82.14%) responded to the questionnaire and 25 (17.86%) did not respond. The initial part of the questionnaire comprised of questions seeking demographic information and the latter part comprised of 28 questions regarding the emergent literacy experiences, which were grouped under seven categories[1] (4 questions in each). The results of the questionnaire are described under two sections: demographic factors and emergent literacy related factors.

4.1.1.1 Demographic factors. Analysis of the survey data was done using SPSS Version 18.0 software. The demographic data was analyzed on several aspects such as the preschoolers' native language, parental education and time spent with the child.

i) Native language. Data on preschoolers' native language revealed that 78.3% of preschoolers were native speakers of Kannada language while 21.7% were native speakers of other languages such as Hindi, Tamil, Malayalam, Telugu, Konkani and Coorgi.

ii) Parental education. Information on educational qualification of parents (Table 4.1.1, Figure 4.1.1) revealed that 18.3% of mothers had a Masters degree, 53% had a bachelor's degree and 28.7% did not graduate. The information on father's education revealed a similar pattern, where 21.1% had a Master's degree, 55.3% had a bachelor's degree and 23.6% did not graduate.

Table 4.1.1
Parental Education

Qualification	Mothers	Percentage Mothers	Fathers	Percentage Fathers
Below Graduation	33	28.7%	27	23.7%
Bachelor's Degree	61	53%	64	55.3%
Master's Degree	21	18.3%	24	21%
Total	115	100%	115	100%

iii) Time spent with the child. Data on time spent with the child (Table 4.1.2, Figure 4.1.2) revealed that 41.73% of mothers spent around 7-12 hours in a day with the child and 53.5% of fathers spent 0-6 hours with their child. Results also show that 60% of mothers in the sample were housewives and 40% of mothers were working. Information on other adults at home was not available in case of 73.04% participants. From the

[1] BA = Books Available; SR = Storybook Reading; ST = Storytelling; PA = Print Awareness; LK = Letter Knowledge; OL = Oral Language; LU = Language Use

information available, 14.03% of participants reported that other adults at home (such as grandparents) spent 7-12 hours with the child.

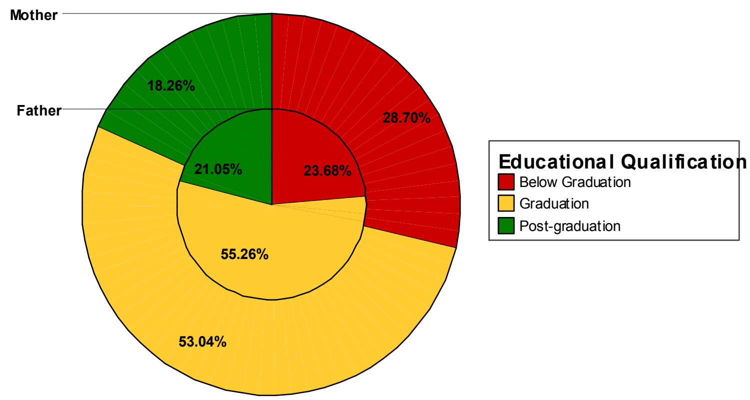

Figure 4.1.1. *Parental education*

Table 4.1.2
Time Spent with the Child

Hours	Mothers		Fathers		Other adults at home	
	Mothers	Percentage Mothers	Fathers	Percentage Fathers	Other Adults	Percentage Other Adults
Info. NA	4	3.48%	15	13.91%	84	73.04%
0-6 Hours	27	23.48%	61	53.04%	6	5.22%
7-12 Hours	48	41.74%	31	26.96%	16	13.91%
13-18 Hours	19	16.52%	7	6.09%	4	3.48%
19-24 Hours	17	14.78%	0	0	5	4.35%
Total	115	100%	115	100%	115	100%

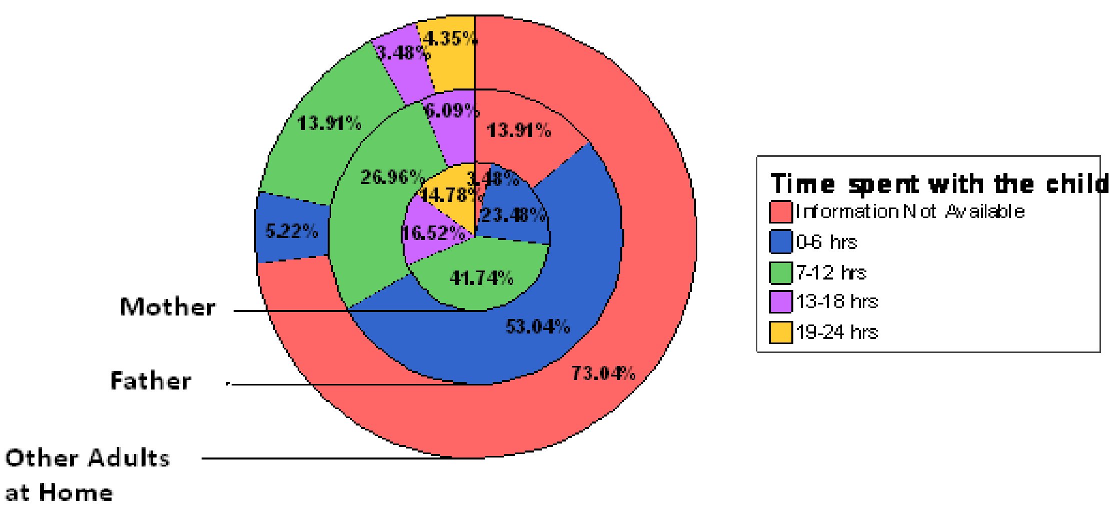

Figure 4.1.2. Time spent with the child

4.1.1.2 Emergent literacy related factors. Besides the demographic data, the questionnaire consisted of 28 questions which elicited responses regarding the quality of the literacy environment at home. Out of a total of 140 parents, 115 (82.14%) parents responded while 25 (17.86%) parents did not respond to the questionnaire. In order to analyze the sample, the total score received by parents (maximum score = 28) was grouped into four levels: 0-6 (0-24%), 7-13 (25-49%), 14-20 (50-74%), 21-28 (75-100%). Responses of 115 parents showed that 69.6% of parents received a score from 21-28 (75-100%), 27.8% of parents scored from 14-20 (50-74%), 2.6% of parents scored from 7-13 (25-49%), while none of the parents scored below 25% (Table 4.1.3). Considering scores above the 75% as good scores, it is evident that 69.6% of parents in the sample received good scores.

Table 4.1.3
Emergent Literacy Experiences at Home

Percentage of parents who scored	No. of parents	Percentage parents
75-100%	80	69.6%
50-74%	32	27.8%
25-49%	3	2.6%
0-24%	0	0%
Total	115	100%

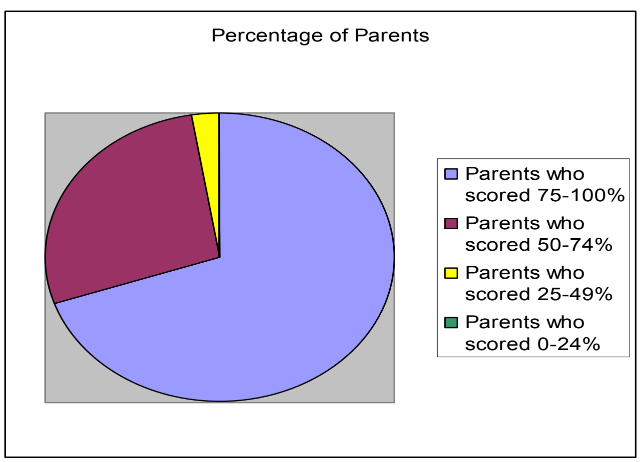

Figure 4.1.3. Emergent literacy experiences at home[2]

[2] Since none of the parents scored below 25%, Figure 4.1.3 does not show the percentage of parents who scored from 0-24%.

Emergent literacy experiences at home. The responses in the questionnaire were analyzed based on the following categories. Results of emergent literacy experiences of preschool children at home are summarized in Table 4.1.4 and Figure 4.1.4.

i) Books Available (BA). Results show that 99 parents (86.1%) received a maximum score of '4' and 11 parents (9.6%) received a score of '3' indicating that 95.7% parents scored 75% and above, while 4.3% of parents scored less than 75% on questions pertaining to the books available to preschool children.

ii) Storybook Reading (SR). Results show that 79 parents (68.7%) received a maximum score of '4' and 21 parents (18.3%) received a score of '3' indicating that 87% of parents scored 75% and above on questions pertaining to storybook reading.

iii) Storytelling (ST). Results show that 5 parents (4.4%) received a maximum score of '4' and 86 parents (74.8%) received a score of '3', which shows that 79.2% of parents in the sample received a score of 75% and above on questions pertaining to storytelling.

iv) Print Awareness (PrA). Results show that 47 (40.9%) parents received a maximum score of '4' and 38 (33.1%) parents received a score of '3', which indicates that 74% of parents scored 75% and above on questions pertaining to print awareness.

v) Letter Knowledge (LK). Results show that 46 parents (40%) received a maximum score of '4' and 39 parents (33.9%) received a score of '3', which indicates that 73.9% of parents scored 75% and above on questions pertaining to letter knowledge.

vi) Oral Language (OL). Results show that 99 parents (86.1%) received a maximum score of '4' and 13 parents (11.3%) received a score of '3', which indicates that 97.4% of parents received a score of 75% and above on questions pertaining to oral language.

vii) Language Use (LU). Results show that 12 parents (10.4%) received a maximum score of '4' and 26 parents (22.6%) received a score of '3', which indicates that 33% of parents scored 75% and above, and 67% of parents scored below 75% on questions pertaining to language use. The results also reveal that 54% of parents used Kannada for daily conversation and storytelling while 46% parents used English. The results also indicated that 66% of parents used English for storybook reading and other reading and writing activities while 34% of parents used Kannada.

The questions in the Parent's Questionnaire were grouped under seven categories. Each category had 4 questions and each question scored '0' or '1' based on the responses.

Thus, each category received a score from 0 to 4. In Figure 4.1.4, the X-axis depicts the parents' scores from 0 to 4 on each of the 7 categories of emergent literacy experiences at home while Y-axis depicts the percentage of parents who scored from 0 to 4 on each category.

Table 4.1.4
Parents' Scores on Emergent Literacy Experiences at Home

Score	Number of Parents (with Percentage)						
	BA	SR	ST	PrA	LK	OL	LU
0 (0%)	0 (0%)	1 (0.9%)	2 (1.7%)	2 (1.7%)	1 (0.9%)	1 (0.9%)	36 (31.3%)
1 (25%)	3 (2.6%)	5 (4.3%)	6 (5.2%)	9 (7.8%)	10 (8.7%)	0 (0%)	24 (20.9%)
2 (50%)	2 (1.7%)	9 (7.8%)	16 (13.9%)	19 (16.5%)	19 (16.5%)	2 (1.7%)	17 (14.8%)
3 (75%)	11 (9.6%)	21 (18.3%)	86 (74.8%)	38 (33.1%)	39 (33.9%)	13 (11.3%)	26 (22.6%)
4 (100%)	99 (86.1%)	79 (68.7%)	5 (4.4%)	47 (40.9%)	46 (40%)	99 (86.1%)	12 (10.4%)
Total	115 (100%)	115 (100%)	115 (100%)	115 (100%)	115 (100%)	115 (100%)	115 (100%)

Note. BA = Books Available, SR = Storybook Reading, ST = Storytelling, PrA = Print Awareness, LK = Letter Knowledge, OL = Oral Language, LU = Language Use

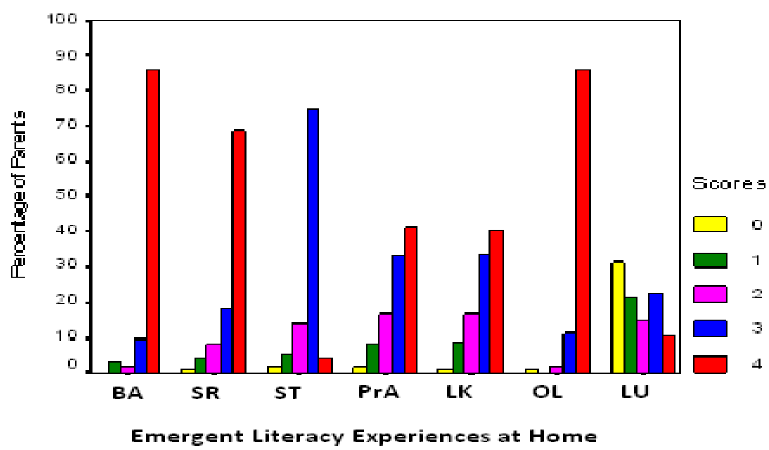

Figure 4.1.4. Parents' scores on emergent literacy experiences at home. BA = Books Available, SR = Storybook Reading, ST = Storytelling, PrA = Print Awareness, LK = Letter Knowledge, OL = Oral Language, LU = Language Use

4.1.2 Questionnaire for teachers.

The questionnaire for teachers probed the emergent literacy experiences of preschool children in the classroom. From a total of 28 teachers, 24 (85.71%) teachers responded to the questionnaire while 4 (14.29%) teachers did not respond. The results of the questionnaire are discussed under two sections: demographic factors and emergent literacy factors.

4.1.2.1 Demographic factors. The demographic data from the questionnaire revealed that 75% of teachers had undergone teacher's training while 25% did not undergo teacher's training. The educational background of preschool teachers (Figure 4.1.6) revealed that 28% of teachers were undergraduates (education below Bachelor's degree), 50% of teachers were graduates (had a Bachelor's degree or equivalent), 12.5% of teachers were post-graduates (had a Master's degree or equivalent) and information was not available for 8.33% of teachers. This indicates that 62.5% of teachers in the sample had a degree greater than or equivalent to a Bachelor's degree. Teaching experience of preschool teachers ranged from 1 to 20 years (Figure 4.1.5). Responses revealed that 33.33% teachers had around 5 years of experience, 33.33% teachers had 6-10 years experience, 25% teachers had 11-15 years experience and 8.34% teachers had around 20 years of experience. Hence it is evident that majority of teachers (66.67%) had more than 5 years of teaching experience. The demographic data also revealed that children in PKG, LKG and UKG ranged from 2; 6 to 6 years of age and the number of children in each class ranged from 12 to 50 children per class.

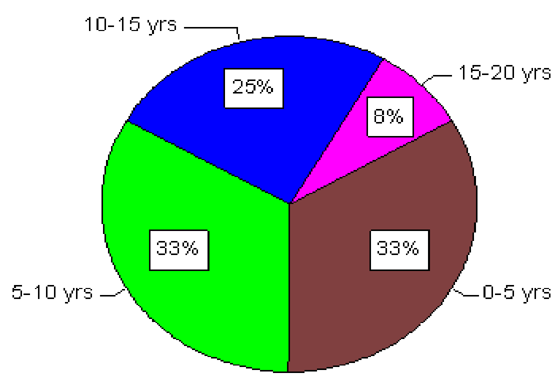

Figure 4.1.5. Teaching experience of preschool teachers

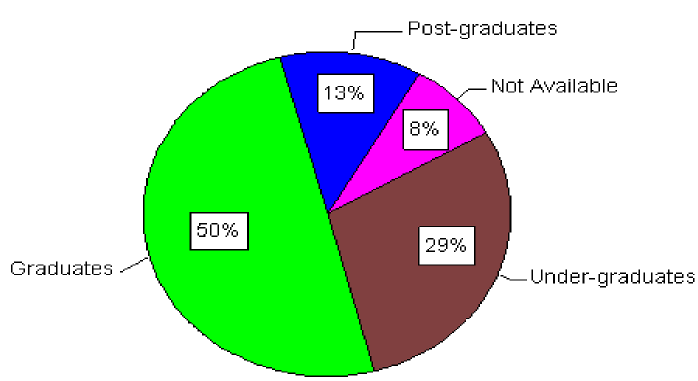

Figure 4.1.6. Educational background of preschool teachers

4.1.2.2 Emergent literacy related factors. Besides the demographic data, the teachers' questionnaire consisted of 28 questions which elicited responses regarding the quality of the literacy experiences in the classroom. The Questionnaire for Teachers consisted of questions that were grouped under seven categories: 1- Book Handling Skills (BHS), 2- Storybook Reading (SR), 3- Letter Knowledge (LK), 4- Phonological Awareness (PA), and 5(a, b)- Print Awareness (PrA), 5(c, d)- Oral Language (OL), 6- Reading Skills (RS) and 7- Language Use (LU). Each category had 4 questions except Print Awareness and Oral Language, which had 2 questions each. Each question scored '0' or '1' based on the responses. Thus, each category received a score from 0 to 4 except Print Awareness and Oral Language, which received a score from '0' to '2'.

The data from the questionnaire was subjected to descriptive statistics (Table 4.1.5) which showed that the mean for all the emergent literacy experiences such as Book Handling Skills (BHS), Letter Knowledge (LK), Phonological Awareness (PA), Print Awareness (PrA), Oral Language (OL), Reading Skills (RS) and Language Use (LU) were greater than 3 (75%), except storybook reading, which is 2.9 (73%). Also, mean for the total score was 23.33 (83.32%) which indicates that the children in the sample were exposed to rich emergent literacy experiences in the classroom.

Table 4.1.5

Descriptive Statistics for Questionnaire for Teachers (N=24)

Emergent literacy experiences in the classroom	Mean	Range		Standard Deviation
		Minimum	Maximum	
1. Book Handling Skills (BHS)	3.42	1	4	0.78
2. Storybook Reading (SR)	2.92	1	4	0.97
3. Letter Knowledge (LK)	3.13	0	4	1.26
4. Phonological Awareness (PA)	3.29	0	4	1.00
5.a. Print Awareness (PrA)*	1.71	0	2	0.62
5.b. Oral Language (OL)*	1.96	1	2	0.20
6. Reading Skills (RS)	3.12	0	4	1.23
7. Language Use (LU)	3.79	2	4	0.51
Total Score	23.33	9	28	4.35

Note. *Maximum score for PrA and OL (combined) was 4.

For further analysis, the total score received by teachers on the questionnaire (maximum score = 28) was grouped into four level[3]: 0-6 (0-24%), 7-13 (25-49%), 14-20 (50-74%), 21-28 (75-100%). Responses from 24 teachers indicate that 79.17% of

[3] *Since the total numbers of questions were 7 and the maximum score was 28, the scores were divided into four equal levels, 0-6, 7-13, 14-20 and 21-28.*

teachers scored 21-28 (75-100%), 16.67% of teachers scored 14-20 (50-74%), and 4.16% of teachers scored 7-13 (25-49%), while none of the teachers scored below 25% (Table 4.1.6). Considering scores greater than 75% as good scores, it is evident that 79.17% of teachers in the sample received good scores.

Table 4.1.6
Teachers' Scores on Questionnaire for Teachers

Teachers' Scores	Number of Teachers	Percentage of Teachers
Teachers who scored 75-100%	19	79.17%
Teachers who scored 50-74%	4	16.67%
Teachers who scored 25-49%	1	4.16%
Teachers who scored 0-24%	0	0%
Total	24	100%

Emergent literacy experiences in the classroom. Table 4.1.7 provides the number of teachers (and percentage) who scored from '0' to '4' on the seven categories of emergent literacy experiences in the classroom.

i) Book Handling Skills (BHS). Results indicate that 54.2% of teachers received a score of '4' (100% score), 37.5% received a score of '3' (75% score), 4.2% received a score of '2' (50% score) and 4.2% received a score of '1' (25% score) on questions pertaining to book handling skills. Thus, it is evident that 91.7% of teachers received a score greater than 75%.

ii) Storybook Reading (SR). Results indicate that 33.3% of teachers received a score of '4' (100% score), 33.3% received a score of '3' (75% score), 25% received a score of '2' (50% score) and 8.3% received a score of '1' (25% score) on questions pertaining to storybook reading. Although, 66.6% of teachers received a score greater than 75%, further analysis was carried out to find out why only 33.3% teachers scored 100%. Detailed analysis indicated that 95.83% of teachers read storybooks and encouraged children to retell stories in their own words. 62.5% of teachers sent home books (from the library) that parents could read aloud to children, while only 33.3% of teachers sent home books that preschool children could read on their own.

iii) Letter Knowledge (LK). Results indicate that 58.3% of teachers received a score of '4' (100% score), 16.7% received a score of '3' (75% score), 8.3% received a score of '2' (50% score) and 12.5% received a score of '1' (25% score) on questions pertaining to letter knowledge. Thus, 75% of teachers received a score greater than 75%.

iv) Phonological Awareness (PA). Results indicate that 54.2% of teachers received a score of ‘4’ (100% score), 29.2% received a score of ‘3’ (75% score), 12.5% received a score of ‘2’ (50% score) and 12.2% received a score of ‘0’ (0% score) on questions pertaining to phonological awareness. Thus, it is evident that 83.4% of teachers received a score greater than 75%.

v) Print Awareness (PA). Results indicate that 79.2% of teachers received a score of ‘2’ (100% score), 12.5% received a score of ‘1’ (50% score) and 8.3% received a score of ‘0’ (0% score) on questions pertaining to print awareness. Thus, it is evident that majority of teachers (79.2%) received a score of 100%.

vi) Oral Language (OL). Results indicate that 95.8% of teachers received a score of ‘2’ (100% score) and 4.2% received a score of ‘1’ (50% score) on questions pertaining to oral language. Thus, it is evident that majority of teachers (95.8%) received 100%.

vii) Reading Skills (RS). Results indicate that 54.2% of teachers received a score of ‘4’ (100% score), 20.8% received a score of ‘3’ (75% score), 16.7% received a score of ‘2’ (50% score) and 8.3% received a score of ‘0’ (0% score) on questions pertaining to reading skills. Thus, it is evident that 75% of teachers received a score greater than 75%.

viii) Language Use (LU). Results indicate that 83.3% of teachers received a score of ‘4’ (100% score), 12.5% received a score of ‘3’ (75% score) and 4.2% received a score of ‘2’ (50% score) on questions pertaining to language use. Thus, 95.8% of teachers received a score greater than 75%, indicating that majority of teachers use English in classrooms for conversation, storytelling, storybook reading, and other reading and writing activities.

Table 4.1.7

Emergent Literacy Experiences in the Classroom

Score	Number of Teachers (with Percentage)							
	BHS	SR	LK	PA	PrA	OL	RS	LU
0 (0%)	0	0	1 (4.2%)	1 (4.2%)	2 (8.3%)	0	2 (8.3%)	0
1 (25%)	1 (4.2%)	2 (8.3%)	3 (12.5%)	0	3 (12.5%)	1 (4.2%)	0	0
2 (50%)	1 (4.2%)	6 (25%)	2 (8.3%)	3 (12.5%)	19 (79.2%)	23 (95.8%)	4 (16.7%)	1 (4.2%)
3 (75%)	9 (37.5%)	8 (33.3%)	4 (16.7%)	7 (29.2%)	-	-	5 (20.8%)	3 (12.5%)
4 (100%)	13 (54.2%)	8 (33.3%)	14 (58.3%)	13 (54.2%0	-	-	13 (54.2%0	20 (83.3%)
Total	24 (100%)	24 (100%)	24 (100%)	24 (100%)	24 (100%)	24 (100%)	24 (100%)	24 (100%)

Note. BHS = Book Handling Skills, SR = Storybook Reading, LK = Letter Knowledge, PA = Phonological Awareness, PrA = Print Awareness, OL = Oral Language, RS = Reading Skills, LU = Language Use

In Figure 4.1.7, the X-axis depicts the teachers' scores (from '0' to '4') on each of the eight categories of 'emergent literacy experiences in the classroom' while the Y-axis depicts the percentage of teachers who scored from 0 to 4 on each category.

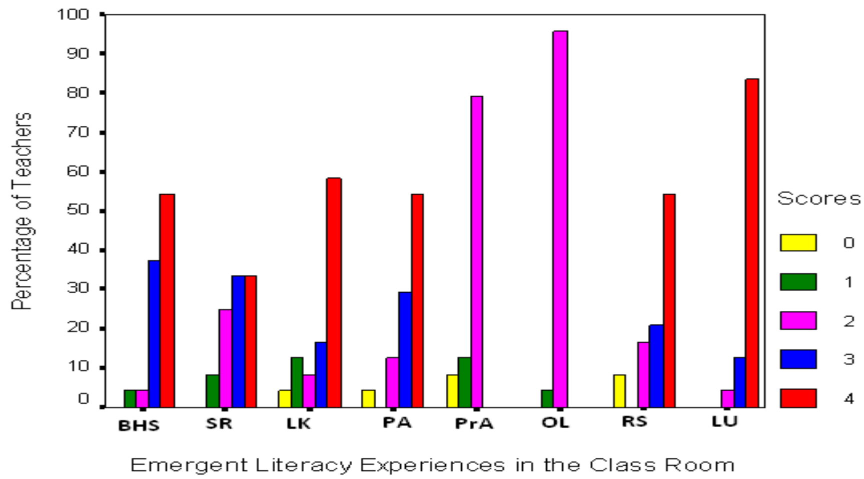

Figure 4.1.7. Emergent literacy experiences in the classroom

4.1.3 Questionnaire on books.

The questionnaire on books probed the quality and variety of books available in the school to preschool children. Out of 28 teachers, 23 (82.14%) responded to the questionnaire while 5 (17.86%) teachers did not respond. The results of the questionnaire are described under two sections: demographic factors and emergent literacy related factors.

4.1.3.1 Demographic factors. Analysis of the demographic data revealed that the responses on the questionnaire varied considerably, for example, teachers reported that the number of books available to preschoolers ranged from 6 to 150. From a total of 23 teachers 15 teachers responded to the question on percentage of books available in different languages (such as English, Kannada and Hindi). Their responses revealed that majority (60% to 90%) of books available to preschoolers were in English, followed by books in Kannada (which is the native language of the participants), and in Hindi (which is the national language). Results also revealed that 43.47% of teachers developed reading material (such as story books and charts) to enhance oral language and print knowledge skills.

4.1.3.2 Emergent literacy related factors. Besides the demographic data, the questionnaire on books consisted of 25 questions which elicited responses regarding the quality and variety of books available to preschool children in schools. The data from the QB was subjected to descriptive statistics (Table 4.1.8) and the results revealed that the mean score was above 4 (above 80%) for each category: Genre of Books (GB), Child-friendly Books (CFB), Quality of Books (QB) and Quality of Illustrations (QI). The mean for Types of Books (TB) was 1.96 (39.2%) and the mean for total score was 19.39 (77.56%).

Table 4.1.8
Descriptive Statistics for Questionnaire on Books (N=23)

Emergent Literacy Experiences with Books	Mean	Range		Standard Deviation
		Minimum	Maximum	
Genre of Books (GB)	4.52	3	5	0.67
Child-friendly Books (CFB)	4.39	2	5	1.08
Quality of Books (QB)	4.26	1	5	0.96
Quality of Illustrations (QI)	4.26	3	5	0.75
Types of Books (TB)	1.96	0	5	1.66
Total Score	19.39	13	25	3.35

For further analysis, the total score received by teachers on the questionnaire (maximum score = 25) was grouped into five levels[4]: 0-5 (0-20%), 6-10 (20-40%), 11-15 (40-60%), 16-20 (60-80%) and 21-25 (80-100%). Response from 23 teachers indicated that 47.83% of teachers scored 21-25 (80-100%), 30.43% of teachers scored 16-20 (60-80%), 21.74% of teachers scored 11-15 (40-60%) while none of the teachers scored below 40% (Table 4.1.9). Considering scores greater than 80% as good scores, it was evident that 47.83% of teachers in the sample provided good quality, child friendly books with appropriate text and illustrations.

Table 4.1.9
Teachers' Scores for Questionnaire on Books

Teachers' Scores	Number of Teachers	Percentage of Teachers
Teachers who scored 80-100%	11	47.83%
Teachers who scored 60-80%	7	30.43%
Teachers who scored 40-60%	5	21.74%
Teachers who scored 20-40%	0	0
Teachers who scored 0-20%	0	0
Total	23	100%

[4] Since the total numbers of questions were 5 and the maximum score was 25, the scores were divided into five equal levels, 0-5, 6-10, 11-15, 16-20 and 21-25.

Emergent literacy experiences with books. The Questionnaire on Books consisted of questions that were grouped under five categories: Genre of Books (GB), Child-friendly Books (CFB), Quality of Books (QB), Quality of Illustrations (QI) and Types of Books (TB). Each category had 5 questions and each question scored '0' or '1' based on the responses. Thus, each category received a score from 0 to 5 based on the number of responses that scored '1'.

i) Genre of Books (GB). Results indicate that 60.9% of teachers[5] received a score of '5' (100% score), 30.4% received a score of 4 (80% score) and only 2% received a score of 3 (60% score) on questions pertaining to genre of books. Thus, it is evident that 91.1% of teachers received a score greater than 80%.

ii) Child-friendly Books (CFB). Results indicate that 69.6% of teachers received a score of '5' (100% score), 13% received a score of 4 (80% score), 4.3% received a score of 3 (60% score) and 13% received a score of 2 (40% score) on questions pertaining to child-friendly books. Thus, it is evident that 82.6% of teachers received a score greater than 80%.

iii) Quality of Books (QB). Results indicate that 47.8% of teachers received a score of '5' (100% score), 39.1% received a score of 4 (80% score), 8.7% received a score of 3 (60% score) and 4.3% received a score of 2 (40% score) on questions pertaining to the quality of books. Thus, it is evident that 86.9% of teachers received a score greater than 80%.

iv) Quality of Illustrations (QI). Results indicate that 43.5% of teachers received a score of '5' (100% score), 39.1% received a score of 4 (80% score) and 17.4% received a score of 3 (60% score) on questions pertaining to the quality of illustrations. Thus, it is evident that 84.6% of teachers received a score greater than 80%.

v) Types of Books (TB). Results indicate that 4.3% of teachers received a score of '5' (100% score), 17.4% received a score of 4 (80% score), 21.7% received a score of 3 (60% score), 13% received a score of 2 (40% score) and 13% received a score of 1 (20%

[5] It needs to be stressed here that the teachers have reported the quality and variety of books available to preschool children in the Questionnaire on Books. The score assigned to the teachers (in questionnaire on books) does not indicate the teachers' ability or contribution in this regard, since the decision of quality and variety of books is predominantly determined by the availability of books in school.

score) on questions pertaining to the type of books. Thus, it is evident that only 21.7% of teachers received a score greater than 80%.

In Figure 4.1.8, the X-axis depicts the teachers' scores from '0' to '5' in the five categories of emergent literacy experiences with books while the Y-axis depicts the percentage of teachers who scored from '0' to '5' on each category.

Table 4.1.10
Emergent Literacy Experiences with Books

	Number of Teachers (with Percentage)				
Score	Genre of Books	Child-friendly Books	Quality of Books	Quality of Illustrations	Types of Books
0 (0%)	0	0	0	0	7 (30.4%)
1 (20%)	0	0	0	0	3 (13%)
2 (40%)	0	3 (13%)	1 (4.3%)	0	3 (13%)
3 (60%)	2 (8.7%)	1 (4.3%)	2 (8.7%)	4 (17.4%)	5 (21.7%)
4 (80%)	7 (30.4%)	3 (13%)	9 (39.1%)	9 (39.1%)	4 (17.4%)
5 (100%)	14 (60.9%)	16 (69.6%)	11 (47.8%)	10 (43.5%)	1 (4.3%)
Total	115 (100%)	115 (100%)	115 (100%)	115 (100%)	115 (100%)

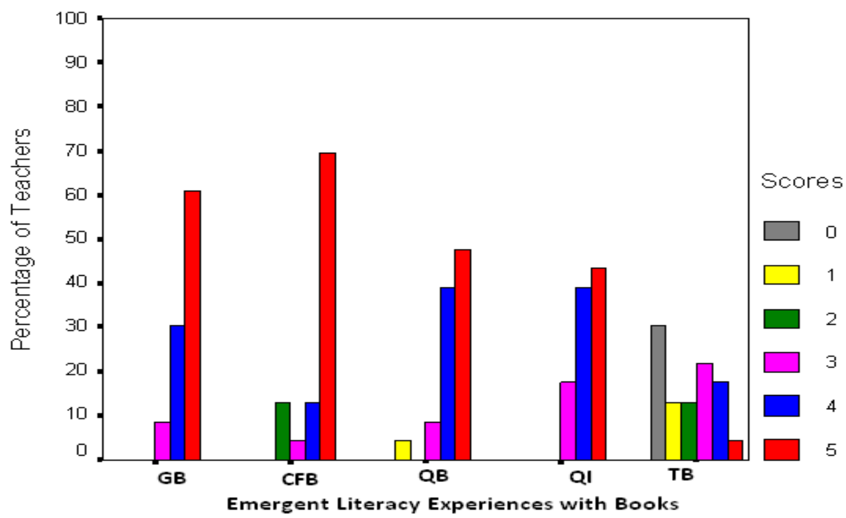

Figure 4.1.8. Emergent literacy experiences with books. GB = Genre of Books, CFB = Child Friendly Books, QB = Quality of Books, QI = Quality of Illustrations, TB = Types of Books

Discussion

In India's diverse socio-economic milieu, children enter preschools with varying levels of exposure to print. Factors such as literacy experiences at home, quality of education in school and lack of a standardized preschool curriculum add to the complexity of emergent literacy experiences of children in India. In order to study the development of emergent literacy skills in Indian preschoolers it is essential to evaluate their emergent literacy environment. With this objective, the investigator carried out a survey to explore the literacy environment of preschoolers at home and in school, and to assess the variety of books available to them. Based on the results of the survey, children with similar literacy environments were selected as participants for this study.

In a multicultural and multilingual country like India, where children are exposed to diverse literacy environments, hardly any research has been carried out to study the nature of these environments and their effect on the literacy development of preschool children. The present study explored the emergent literacy experiences of preschoolers at home and in the classroom environment via the questionnaire method. Parents and teachers of preschool children participated in the survey and the study showed significant findings. Firstly, majority of parents who participated in the survey reported that they provided literacy rich experiences to children at home. Secondly, teachers reported that preschools in the sample facilitated emergent literacy skills through activities that enhanced oral language, print knowledge and phonological awareness skills. Thirdly, teachers reported that majority of preschools in the sample provided good quality and child friendly books with appropriate text and illustrations.

Findings of the present study are encouraging for parents, educators and speech language pathologists who are concerned about the emergent literacy experiences of children in the Indian preschools. It must be stressed at this stage that the results of the present study are limited to Kannada-speaking preschoolers from the urban areas of Mysore city studying in schools with English as the medium of instruction. Since the sample group is self selected, by virtue of the fact that only parents from urban areas send their children to preschools, where English is the medium of instruction, these results might not be applicable to children from sub-urban or rural areas and to children from other linguistic or literacy backgrounds.

The results of the survey will be discussed under the following headings: questionnaire for parents, questionnaire for teachers and questionnaire on books.

Questionnaire for Parents

The results of the demographic data reveal that majority of children in preschools from Mysore city were exposed to Kannada at home. Since Kannada was the regional language, it was expected that majority of children in the sample would be native speakers of Kannada. This is in consonance with the findings by Shanbal and Prema (2007), which report that 67.9% of children studying in schools with English as the medium of instruction in Mysore city were native speakers of Kannada.

Analysis of the educational background of parents revealed that 71.3% of mothers and 74.3% of fathers had a qualification equivalent to a Bachelor's degree or above indicating that preschoolers in the sample had parents with good educational background, which strengthens the credibility of their survey reports. Analysis of the questions on emergent literacy experiences of preschoolers at home revealed that participants in the sample were exposed to literacy rich environments at home (Table 4.1.4, Figure 4.1.4), which shows that children of parents with good educational background are likely to receive literacy rich experiences at home. Results also reveal that mothers and grandparents spend maximum time with preschoolers at home therefore it is important to encourage them to provide literacy rich experiences to children, which would facilitate skills for literacy acquisition. Several studies have documented a positive relationship between children's literacy experiences at home and the ease of transition to school (Copeland & Edwards, 1990; Mason & Allen, 1996; van Kleeck, 1990).

The results of the survey reveal that majority of parents provided their children with a variety of books such as, books on rhymes, alphabet, numbers, drawing, colouring and storybooks. Results also show that majority of parents read to their children, taught them book handling skills, pointed to words while reading and encouraged them to ask questions. Review of literature indicates that storybook reading facilitates the development of print awareness skills in young children (Whitehurst et al., 1988). Results reveal that the majority of children were exposed to environmental print in the form of newspapers, magazines, logos and company names on products used at home. Considering the good educational background of the parents in the sample it is probable that children might be exposed to literacy materials at home which would enhance print awareness skills. Results reveal that parents also encouraged children to identify letter names/sounds, scribble or write letters and match spoken word to the written word.

Although majority of parents reported that they encouraged storybook reading at home, when asked if they preferred storytelling over storybook reading, 91.3% of parents reported that they preferred storytelling to storybook reading. This finding is in consonance with the socio-cultural practices in India; parents and grandparents use storytelling as a means to educate children on the culture, traditions, morals and values of society. Storytelling in India is also used as a means to impart religious knowledge and preaching of Holy Scriptures. Further it was seen that parents encouraged children to learn new words and use complete sentences. They encouraged children to talk about their experiences and engaged them in detailed conversations. These findings indicate that the literacy experiences of preschool children depend upon the cultural practices of the family and the immediate environment.

Results show that parents preferred Kannada for oral language activities such as daily conversation and storytelling. Since the native language of parents in the sample was Kannada it was likely that they would use Kannada for oral language activities. Results also showed that parents preferred to use English more often than Kannada for reading storybooks and other reading and writing activities. This finding shows that when parents enrol their children in schools with English as the medium of instruction, they make efforts to engage their children in activities to enhance literacy acquisition in the English language. Also, since majority of parents in the sample were well educated, it is likely that they pay attention to literacy related activities at home.

Review of literature (Badian, 1995; Ehri & Sweet, 1991; Scarborough, 1998; Snow, Burns, & Griffin, 1998; Teale & Sulzby, 1987; Zucker & Grant, 2007) indicated that preschool children who were exposed to rich emergent literacy experiences acquired adequate reading abilities in later grades. Results of the survey corroborate with the results of TELA (presented in later sections), which indicate that preschoolers in the sample showed significant development in their emergent literacy skills from PKG through UKG.

Questionnaire for Teachers

The results of the demographic data reveal that that majority of teachers were qualified with a Bachelor's degree or above and had undergone teachers' training programs. Further, majority of teachers had over 5 years of teaching experience, indicating that majority of preschools in the sample had employed teachers with good credentials. The studies carried out by Barnett (2004), and Abt-Perkins and Rosen (2000) show that teachers who were qualified with a bachelor's degree facilitated better literacy outcomes. This indicates that the teachers in the present sample were well qualified, which strengthens the credibility of their survey reports. Results also show that majority of teachers used English most of the time for conversation and for reading and writing activities. This shows that preschoolers were provided with opportunities to enhance their English language and literacy acquisition.

Results of the emergent literacy related factors in the teacher's questionnaire (Table 4.1.7, Figure 4.1.7) revealed that majority of teachers carried out activities such as storybook reading to facilitate oral language and print awareness skills. Research review suggests that reading aloud to children facilitates development in four areas that are important to formal reading instruction: oral language, cognitive skills, concept about print and phonemic awareness (Allington & Cunningham, 1996; Anderson, Hiebert, Scott, & Wilkinson, 1985; Hall & Moats, 1999; Holdaway, 1979). It was interesting to note that majority of teachers in the sample read storybooks to children in classrooms but chose not to send storybooks home. One likely explanation for this could be the fact that preschools in the sample had limited books in the library hence their circulation was limited. Secondly, schools probably might be sceptical of preschool children damaging books if they were not supervised by the parents.

Teachers report that they engaged children in activities that enhanced the knowledge of letters and encouraged children to write simple words (such as their names). Letter knowledge, which provides the basis for forming connections between the letters in spellings and the sounds in pronunciations, has been identified as a strong predictor of reading success (Badian, 1995; Ehri & Sweet, 1991). Teachers report that they carried out activities to enhance the awareness of rhymes, syllables and phonemes, which is an essential skill for learning to read. Children who come to formal instruction with underdeveloped phonological awareness face great challenges keeping up with early reading instruction (Torgesen, Wagner & Rashotte, 1994). Thus, it is important for preschool teachers to include activities that facilitate phonological awareness in children.

Preschoolers in the sample were exposed to environmental print in the form of newspapers, magazines, logos and company names on products. Majority of teachers report that they encouraged children to identify important signs such as TOILET, STOP, IN and OUT. It has been reported in literature that children understand the purpose of print when they realize that words convey a message and they understand the function of print when they realize that messages can serve multiple purposes (van Kleeck, 1990).

Hence, the results of the questionnaire for teachers indicate that children in the sample are exposed to literacy rich experiences in oral language, print awareness and phonological awareness skills in the preschool environment. These results corroborate with the results obtained on TELA (presented in later sections), which shows that preschoolers in the sample showed significant development in emergent literacy skills from PKG through UKG.

Questionnaire on Books

The demographic data from the questionnaire on books indicated that the number of books available to preschool children varied considerably, which could be due to the lack of a standardized curriculum for preschools in India (standard curriculum is available for children studying in first grade and above). Hence, each preschool customized the curriculum according to the needs to the children enrolled in their school, which in turn determined the number and type of books available to children. Also, majority of the preschools in India are run by private organizations, so the number and quality of books available to children also depends upon the availability of funds.

The results also indicate that majority of books in the preschools were in English, followed by Kannada and Hindi respectively. This might be due to the fact that the medium of instruction in these schools was English therefore they acquired maximum books in English. The presence of books in other languages such as Kannada and Hindi indicated that preschoolers were exposed to a multilingual literacy experience.

The teachers in the sample were motivated and took initiative to improve the literacy experiences of preschool children, which is evident from the fact that majority of teachers responded to the questionnaire. Also, nearly half of the teachers reported that they developed learning aids such as picture charts and storybooks to make their classroom teaching more effective. Further, teachers reported that besides English they used Kannada (whenever required) to explain concepts and clarify word meanings, indicating that they were sensitive to the needs of bilingual children and took necessary initiatives to facilitate meaningful literacy acquisition in the second language.

Another important finding of the present study was that preschoolers in the sample were exposed to books with good quality text and illustrations, which were developmentally appropriate. Ezell & Justice (2005) suggest that factors such as the complexity of text and quality of illustrations play an important role because a book that is too advanced would be counterproductive and the material will not be understood by preschoolers. When that occurs children are not motivated and may terminate the reading session prematurely. Since preschool children have short attention spans, the amount of text is an important consideration while choosing a book (Ezell & Justice, 2005). Books for preschool children should have simple, easy to comprehend sentences. Compound sentences, which have too many clauses, might be too demanding for preschool children.

Results of the present study indicate that children were exposed to different genre of books in their classroom. Result of the parents' questionnaire also reveals that preschool children were exposed to various genres of books in the home environment, indicating that preschoolers had access to a variety of books both at home and in school. Research review suggests that it is important to ensure that children are exposed to various genres of books like storybooks which describe a fantasy or adventure, concept books that teach numbers, alphabets, colours, rhymes and books with familiar experiences that a child can relate to (Ezell & Justice, 2005).

It is important to note that although preschoolers were exposed to different genres of books they were not exposed to different types of books such as cloth books, board books, touch and feel books, interactive books and CD-ROMs. The probable reason behind this finding could be the lack of sufficient funds (since these books are relatively more expensive than regular books) and the lack of awareness amongst preschool teachers. Since the education system in India is conventional in many ways, majority of schools use regular books to teach children.

The findings of the present study are encouraging and it is evident from the results that besides the limited resources, parents and teachers are making efforts to provide literacy rich experiences to preschool children. These findings corroborate with the results of TELA (presented in later sections), which showed that preschoolers in the sample exhibited significant development in emergent literacy skills from PKG through UKG.

4.2 Results for TELA: Development of Emergent Literacy Skills

Descriptive statistics were carried out to derive the mean scores for oral language, print knowledge and phonological processing skills. Two-way MANOVA was employed to find out the effect of grade and gender on the scores. Duncan's post hoc tests were employed to analyze the significant difference in performance across grades.

The present study employed box plots to depict the distribution of the sample for each emergent literacy measure. Each figure depicts three box plots, the first one represents PKG, the second one LKG and the third box plot represents UKG. The 'box' in the figures contained 50% of the data. The upper end of the box to the upper whisker contained the upper quarter of the data and the lower end of the box to the lower whisker contained the lower quarter of the data. The size of the box and the distance of the whiskers show the distribution of the values. The position of the median inside the box indicates whether there are more values towards the upper quartile or the lower quartile. The box plot also shows the outliers, which are those values that are far away from most of the other values. In the present study the outliers depict those participants that performed exceptionally above or below the group.

4.2.1 Performance on oral language.

The Oral Language (OL) scores were derived by adding the scores of the oral language sub-skills- Vocabulary and Story Retell. Table 4.2.1 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the for OL scores. Two-way MANOVA was carried out to find out the effect of grade and gender on the OL scores. The results indicate that there was a significant difference in performance between grades {$F(2, 89) = 20.16$, $p < .001$} but no significant difference between gender {$F(1, 89) = 0.30$, $p > .05$}. Also, no significant interaction was seen between gender and grade {$F(2, 89) = .26$, $p > .05$}. Duncan's post hoc tests indicate a significant difference in performance from PKG through UKG, indicating a developmental trend for the OL scores. The results show no significant difference in performance across gender. Figure 4.2.1 shows the box plot for OL scores.

Table 4.2.1

*Descriptive Statistics for Oral Language Scores**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	102.60	98.00	67	151	25.10
	Boys	17	115.12	109.00	64	179	34.81
	Total	32	109.25	103.00	64	179	30.83
LKG	Girls	15	151.93	156.00	70	238	52.50
	Boys	15	148.80	132.00	79	267	54.57
	Total	30	150.37	141.50	70	267	52.64
UKG	Girls	18	173.22	181.50	109	236	40.47
	Boys	15	178.33	175.00	123	259	42.99
	Total	33	175.55	181.00	109	259	41.05
Total	Girls	48	144.50	141.50	67	238	49.95
	Boys	47	146.04	132.00	64	267	50.86
	Total	95	145.26	134.00	64	267	50.14

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
*Oral Language task does not have a maximum score in the TELA

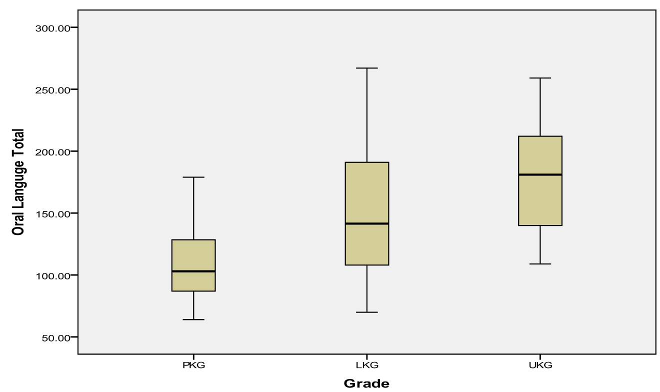

Figure 4.2.1. Box plot for oral language scores

4.2.1.1 Performance on Vocabulary. The Vocabulary (Voc.) scores were derived by adding the scores of the measures[6] employed to assess vocabulary. Table 4.2.2 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the Voc. scores. Two-way MANOVA indicates a significant difference in performance between grades {$F(2, 89) = 21.03$, $p < .001$} but no significant difference between gender {$F(1, 89) = 0.12$, $p > .05$}. Results also show no significant interaction between gender and grade {$F(2, 89) = 0.85$, $p > .05$}. Duncan's post hoc test indicates a significant difference in performance from PKG through UKG, indicating a

[6] Number of English Words- Vocabulary (NEW-V), Number of Kannada Words- Vocabulary (NKW-V), Number of Semantically Related Words (SRW)

developmental trend in vocabulary scores. The results show no significant difference in performance across gender. Figure 4.2.2 shows the box plot for Voc. scores.

Table 4.2.2
*Descriptive Statistics for Vocabulary Scores**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	50.73	49.00	26	78	16.61
	Boys	17	46.53	44.00	25	76	12.86
	Total	32	48.50	44.00	25	78	14.65
LKG	Girls	15	67.20	66.00	26	105	25.46
	Boys	15	62.27	57.00	42	96	17.24
	Total	30	64.73	61.50	26	105	21.51
UKG	Girls	18	74.33	73.00	45	108	17.80
	Boys	15	79.67	80.00	55	103	13.35
	Total	33	76.76	75.00	45	108	15.93
Total	Girls	48	64.73	63.50	26	108	22.13
	Boys	47	62.13	58.00	25	103	19.81
	Total	95	63.44	63.00	25	108	20.94

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
*Vocabulary task does not have a maximum score in the TELA.

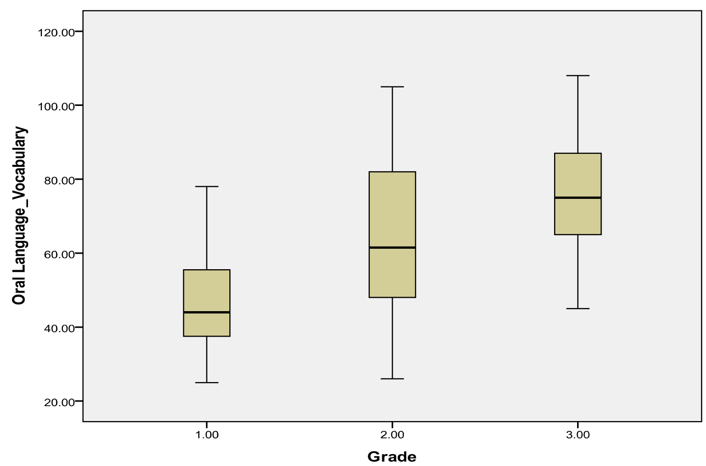

Figure 4.2.2. Box plot for vocabulary scores
1 = PKG, 2 = LKG, 3 = UKG

Tables 4.2.3, 4.2.4, 4.2.5 and Figures 4.2.3, 4.2.4, 4.2.5 show the distribution of participants with respect to grade and gender, and the descriptive statistics for the Voc. measures- Number of English Words- Vocabulary (NEW-V), Number of Kannada Words- Vocabulary (NKW-V), and Semantically Related Words (SRW) respectively. Two-way MANOVA was carried out to find out the effect of grade and gender on NEW-V, NKW-V and SRW scores. The results indicate a significant difference in performance between grades for NEW-V {$F(2, 89) = 26.15$, $p < .001$}, NKW-V {$F(2, 89) = 11.80$, p

< .001} and SRW {F (2, 89) = 17.02, p < .001}. However, no significant difference was seen between gender for NEW-V {F (1, 89) = 0.20, p > .05}, NKW-V {F (1, 89) = 0.60, p > .05} and SRW {F (1, 89) = 1.50, p > .05} Also, no significant interaction was seen between grade and gender for NEW-V{F (2, 89) = 0.46, p > .05}, NKW-V {F (2, 89) = 1.19, p > .05}, and SRW {F (2, 89) = 2.22, p > .05}.

Duncan's post hoc tests were carried out to analyze the significant difference in performance across grades for NEW-V, NKW-V and SRW. The results indicate a significant difference in performance from PKG through UKG for all the skills, indicating a developmental trend for the Voc. measures. The results show no significant difference in performance across gender.

Table 4.2.3

*Descriptive Statistics for Number of English Words- Vocabulary (NEW-V)**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	42.20	36.00	24	75	17.51
	Boys	17	38.82	36.00	15	72	14.13
	Total	32	40.40	36.00	15	75	15.63
LKG	Girls	15	64.00	63.00	24	105	27.13
	Boys	15	58.60	57.00	27	96	20.37
	Total	30	61.30	60.00	24	105	23.74
UKG	Girls	18	73.17	72.00	45	108	18.32
	Boys	15	76.60	78.00	48	102	15.91
	Total	33	74.73	72.00	45	108	17.09
Total	Girls	48	60.63	61.50	24	108	24.58
	Boys	47	57.19	57.00	15	102	22.83
	Total	95	58.93	60.00	15	108	23.67

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
* Number of English Words- Vocabulary (NEW-V) does not have a maximum score in the TELA.

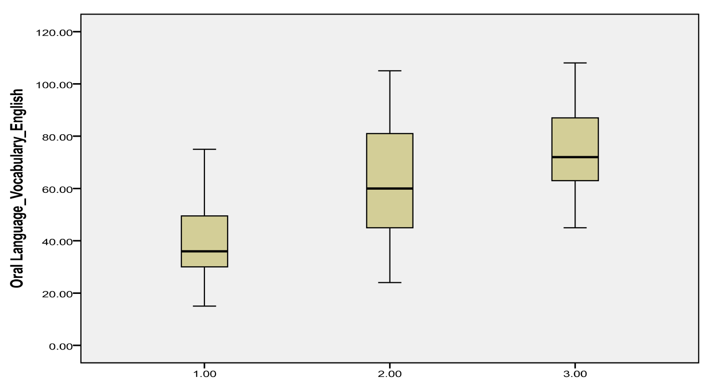

Figure 4.2.3. Box plot for Number of English Words- Vocabulary (NEW-V)
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.4

*Descriptive Statistics for Number of Kannada Words- Vocabulary (NKW-V)**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	6.40	6	0	18	5.51
	Boys	17	4.94	4	0	12	3.33
	Total	32	5.63	5	0	18	4.47
LKG	Girls	15	2.13	2	0	8	2.45
	Boys	15	3.07	0	0	14	4.46
	Total	30	2.60	1	0	14	3.57
UKG	Girls	18	.78	0	0	8	1.96
	Boys	15	1.87	0	0	12	3.58
	Total	33	1.27	0	0	12	2.82
Total	Girls	48	2.96	0	0	18	4.25
	Boys	47	3.36	2	0	14	3.94
	Total	95	3.16	2	0	18	4.08

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
* Number of Kannada Words- Vocabulary (NKW-V) does not have a maximum score in the TELA.

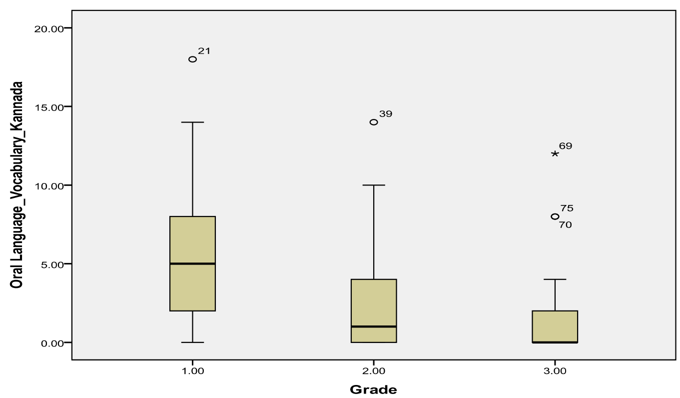

Figure 4.2.4. Box plot for Number of Kannada Words- Vocabulary (NKW-V)
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.5

Descriptive Statistics for Semantically Related Words (SRW)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	2.13	2	0	4	1.64
	Boys	17	2.76	3	0	6	1.48
	Total	32	2.47	3	0	6	1.57
LKG	Girls	15	1.07	0	0	5	1.44
	Boys	15	.60	0	0	3	.99
	Total	30	.83	0	0	5	1.23
UKG	Girls	18	.39	0	0	1	.50
	Boys	15	1.20	1	0	5	1.42
	Total	33	.76	0	0	5	1.09
Total	Girls	48	1.15	1	0	5	1.43
	Boys	47	1.57	1	0	6	1.60
	Total	95	1.36	1	0	6	1.52

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
* Semantically Related Words (SRW) does not have a maximum score in the TELA

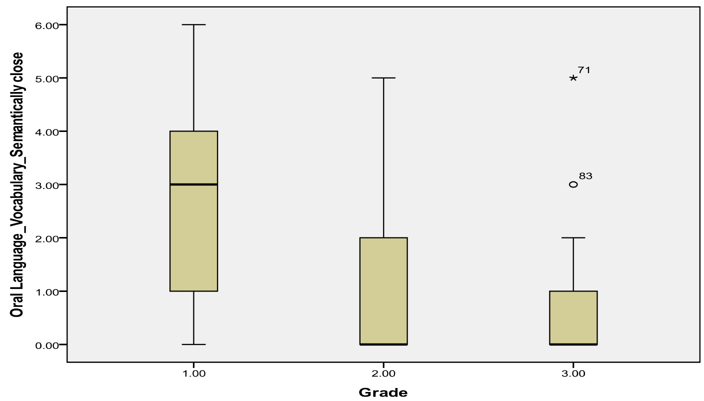

Figure 4.2.5. Box plot for Semantically Related Words (SRW)
1 = PKG, 2 = LKG, 3 = UKG

4.2.1.2 Performance on Story Retell. The story retell (SR) scores were derived by adding the measures[7] employed to assess the story retell ability. Table 4.2.6 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the SR scores. Two-way MANOVA indicates a significant difference in performance across grades {F (2, 89) = 10.85, p < .001} however, no significant difference was seen between gender {F (1, 89) = 0.77, p > .05}. Also, no significant interaction was seen between grade and gender {F (2, 89) = 0.60, p > .05}. Figure 4.2.6 shows the box plot for SR scores.

Table 4.2.6
*Descriptive Statistics for Story Retell (SR) Scores**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	51.87	50.0	31	82	15.25
	Boys	17	68.59	56.0	28	137	31.96
	Total	32	60.75	51.5	28	137	26.54
LKG	Girls	15	84.73	84.0	24	170	36.51
	Boys	15	86.53	68.0	13	171	48.99
	Total	30	85.63	82.5	13	171	42.46
UKG	Girls	18	98.89	110.5	46	144	29.10
	Boys	15	98.67	95.0	49	163	32.82
	Total	33	98.79	101.0	46	163	30.35
Total	Girls	48	79.77	73.5	24	170	34.19
	Boys	47	83.91	73.0	13	171	39.67
	Total	95	81.82	73.0	13	171	36.86

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
* Story Retell (SR) Score does not have a maximum score in the TELA.

[7] Number of English Words- Story Retell (NEW-SR), Number of Kannada Words- Story Retell (NKW-SR), Number of Proper Nouns (NPN), Literate Language Features (LLF), Mean Length of Utterance (MLU), Type Token Ratio (TTR), Number of Different Words (NDW), Question Answer Score (QAS)

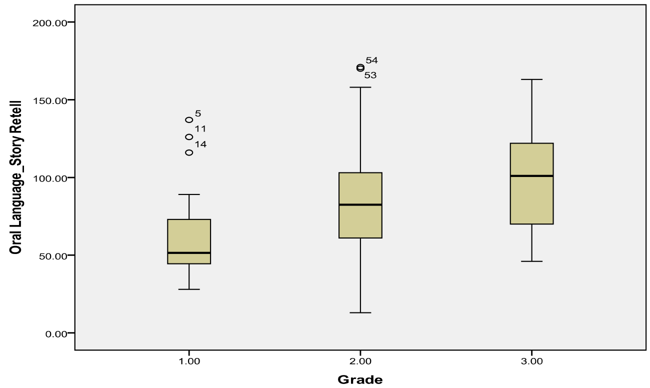

Figure 4.2.6. Box plot for Story Retell (SR) scores
1 = PKG, 2 = LKG, 3 = UKG

Duncan's post hoc test indicated a significant difference in performance from PKG to LKG, but no significant difference in performance from LKG to UKG. The results show no significant difference in performance across gender.

Tables 4.2.7, 4.2.8, 4.2.9, 4.2.10, 4.2.11 and Figures 4.2.7, 4.2.8, 4.2.9, 4.2.10, 4.2.11 show the distribution of subjects with respect to grade and gender, and the descriptive statistics for the SR measures- NEW-SR, NKW-SR, NPN, QAS and LLF respectively. Two-way MANOVA results indicated a significant difference in performance between grades for NEW-SR {$F (2, 89) = 13.11$, $p < .001$}, QAS {$F (2, 89) = 15.60$, $p < .001$} and LLF {$F (2, 89) = 6.02$, $p < .01$} but no significant difference between grades for NKW-SR {$F (2, 89) = 0.99$, $p > .05$} and NPN {$F (2, 89) = 2.82$, $p > .05$}. Results indicate no significant difference between gender for NEW-SR {$F (1, 89) = 0.01$, $p > .05$}, NKW-SR {$F (1, 89) = 1.45$, $p > .05$}, NPN {$F (1, 89) = 0.49$, $p > .05$}, QAS {$F (1, 89) = 0.13$, $p > .05$} and LLF {$F (1, 89) = 1.08$, $p > .05$}. Results also indicate no significant interaction between grade and gender for NEW-SR {$F (2, 81) = 0.16$, $p > .05$}, NKW-SR {$F (2, 81) = 0.97$, $p > .05$}, NPN {$F (2, 81) = 0.51$, $p > .05$}, QAS {$F (2, 89) = 1.60$, $p > .05$} and LLF {$F (2, 89) = 0.28$, $p > .05$}.

Tables 4.2.12, 4.2.13, 4.2.14 and Figures 4.2.12, 4.2.13, 4.2.14 show the distribution of participants with respect to grade and gender, and the descriptive statistics for the frequently used SR measures- MLU, NDW and TTR respectively. Results indicate that that there was a significant difference in performance across grades for NDW {$F (2, 89) = 4.01$, $p < .05$} but no significant difference across grades for MLU {$F (2, 89) = 1.2$, p > .05} and TTR (2, 89) = 0.81, p > .05}. Results indicate no significant difference between gender for MLU {$F (1, 89) = 1.30, p > .05$}, TTR {$F (1, 89) = 0.37, p > .05$} and NDW {$F (1, 89) = 0.06, p > .05$}. Also, results show no significant interaction between grade and gender for MLU {$F (2, 89) = 1.16, p > .05$}, TTR {$F (2, 89) = 1.63, p > .05$} and NDW {$F (2, 89) = 0.59, p > .05$}. Duncan's Post hoc tests indicate a significant difference in performance from PKG through UKG for QAS, from PKG to LKG but not from LKG to UKG for NEW-SR, from PKG to UKG for NPN, LLF, NDW and no significant difference in performance for NKW-SR, MLU and TTR. The results show no significant difference in performance across gender.

Table 4.2.7

*Descriptive Statistics for Number of English Words- Story Retell (NEW-SR)**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	20.00	21.0	6	42	11.26
	Boys	17	23.12	18.0	3	75	20.12
	Total	32	21.66	18.0	3	75	16.39
LKG	Girls	15	50.80	45.0	6	159	42.01
	Boys	15	44.60	33.0	6	156	37.02
	Total	30	47.70	36.0	6	159	39.03
UKG	Girls	18	64.00	61.5	6	138	41.30
	Boys	15	64.60	54.0	9	150	38.20
	Total	33	64.27	57.0	6	150	39.30
Total	Girls	48	46.13	33.0	6	159	39.08
	Boys	47	43.21	33.0	3	156	36.07
	Total	95	44.68	33.0	3	159	37.45

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
* Number of English Words- Story Retell (NEW-SR) does not have a maximum score in the TELA.

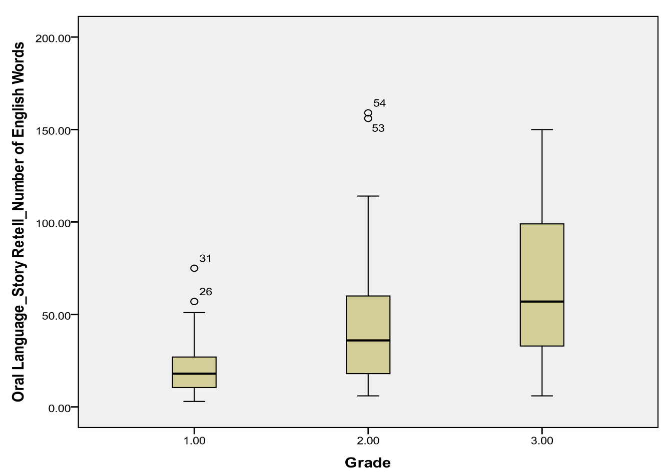

Figure 4.2.7. Box plot for Number of English Words- Story Retell (NEW-SR)
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.8

*Descriptive Statistics for Number of Kannada Words- Story Retell (NKW-SR)**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	25.07	22	14	54	10.58
	Boys	17	39.29	36	2	112	31.26
	Total	32	32.63	25	2	112	24.64
LKG	Girls	15	25.20	20	0	72	22.71
	Boys	15	32.93	32	0	102	31.46
	Total	30	29.07	22	0	102	27.24
UKG	Girls	18	25.00	15	0	78	27.93
	Boys	15	21.87	16	0	68	20.28
	Total	33	23.58	16	0	78	24.43
Total	Girls	48	25.08	21	0	78	21.66
	Boys	47	31.70	22	0	112	28.63
	Total	95	28.36	22	0	112	25.43

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
*Number of Kannada Words- Story Retell (NKW-SR) does not have a maximum score in the TELA.

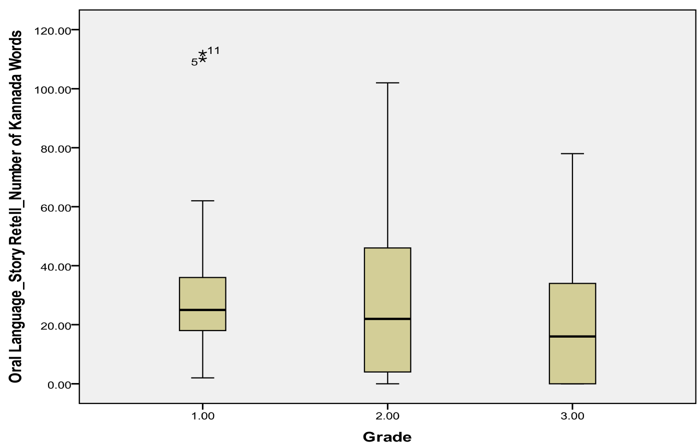

Figure 4.2.8. Box plot for Number of Kannada Words- Story Retell (NKW-SR)
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.9

*Descriptive Statistics for Number of Proper Nouns (NPN)**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	2.47	1	0	13	3.44
	Boys	17	2.59	2	0	10	2.83
	Total	32	2.53	2	0	13	3.08
LKG	Girls	15	3.67	3	0	11	3.96
	Boys	15	3.53	2	0	10	3.78
	Total	30	3.60	2	0	11	3.80
UKG	Girls	18	3.89	4	0	10	3.18
	Boys	15	5.47	5	0	12	4.58
	Total	33	4.61	4	0	12	3.90
Total	Girls	48	3.38	3	0	13	3.50
	Boys	47	3.81	2	0	12	3.87
	Total	95	3.59	3	0	13	3.67

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
* Number of Proper Nouns (NPN) does not have a maximum score in the TELA.

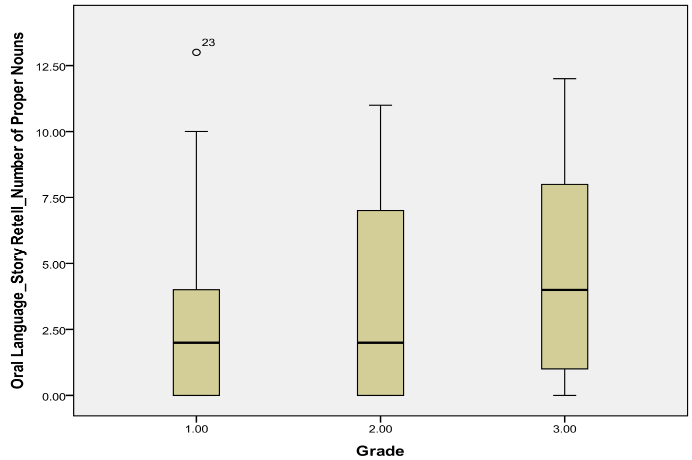

Figure 4.2.9. Box plot for Number of Proper Nouns (NPN)
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.10
Descriptive Statistics for Question Answer Score (QAS) (Max. Score- 8)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	4.33	5	1	7	1.84
	Boys	17	3.59	3	1	8	1.80
	Total	32	3.94	4	1	8	1.83
LKG	Girls	15	5.07	6	2	8	2.09
	Boys	15	5.47	6	2	8	1.81
	Total	30	5.27	6	2	8	1.93
UKG	Girls	18	6.00	6	3	8	1.64
	Boys	15	6.73	7	5	8	1.03
	Total	33	6.33	7	3	8	1.43
Total	Girls	48	5.19	5	1	8	1.94
	Boys	47	5.19	6	1	8	2.05
	Total	95	5.19	5	1	8	1.99

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

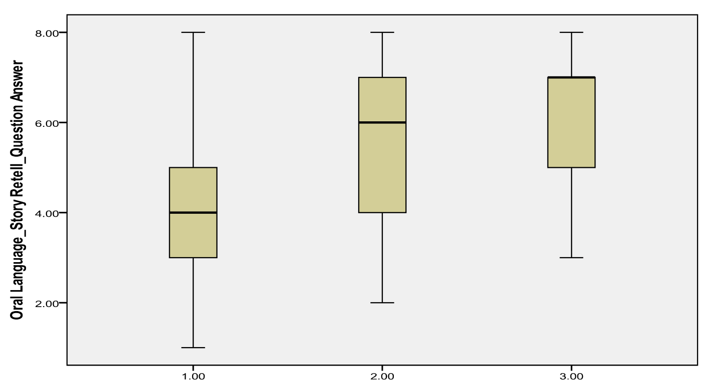

Figure 4.2.10. Box plot for Question Answer Score (QAS)
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.11

*Descriptive Statistics for Literate Language Features (LLF)**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	3.93	4	0	8	2.74
	Boys	17	6.35	6	0	23	5.81
	Total	32	5.22	5	0	23	4.72
LKG	Girls	15	7.27	7	0	16	4.85
	Boys	15	8.13	7	0	20	6.33
	Total	30	7.70	7	0	20	5.56
UKG	Girls	18	38.50	14	1	150	49.87
	Boys	15	45.93	13	4	159	55.55
	Total	33	41.88	13	1	159	51.82
Total	Girls	48	17.94	7	0	150	34.20
	Boys	47	19.55	7	0	159	36.01
	Total	95	18.74	7	0	159	34.93

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
* Literate Language Features (LLF) does not have a maximum score in the TELA.

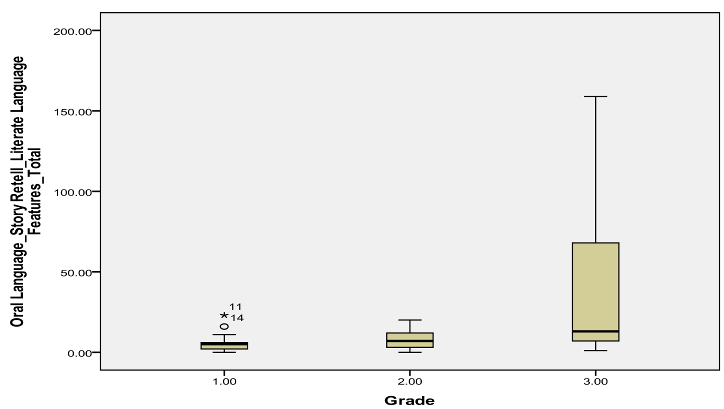

Figure 4.2.11. Box plot for Literate Language Features (LLF)
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.12

*Descriptive Statistics for Mean Length of Utterance (MLU)**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	2.00	1.83	1.06	3.45	0.73
	Boys	17	2.14	1.91	1.54	3.20	0.59
	Total	32	2.07	1.89	1.06	3.45	0.65
LKG	Girls	15	9.73	3.23	1.00	104	26.11
	Boys	15	2.61	2.57	1.00	5.10	1.18
	Total	30	6.17	2.71	1.00	104	18.52
UKG	Girls	18	3.68	3.94	1.29	5.63	1.30
	Boys	15	3.31	3.30	1.64	6.88	1.41
	Total	33	3.51	3.42	1.29	6.88	1.35
Total	Girls	48	5.04	2.70	1.00	104	14.65
	Boys	47	2.66	2.38	1.00	6.88	1.18
	Total	95	3.87	2.57	1.00	104	10.46

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
* Mean Length of Utterance (MLU) does not have a maximum score in the TELA.

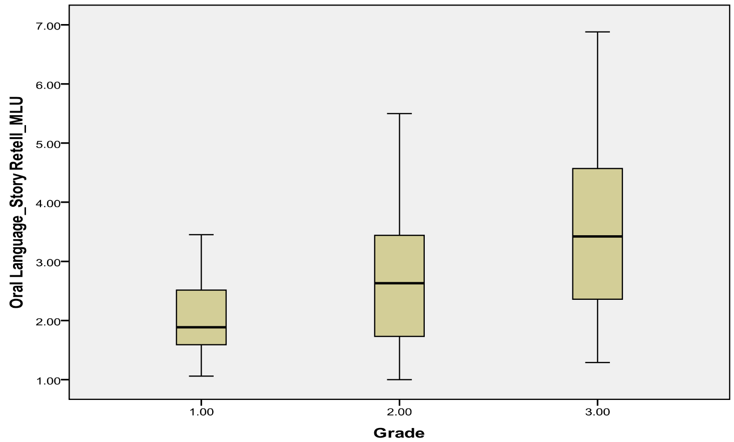

Figure 4.2.12. Box plot for Mean Length of Utterance (MLU)
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.13
*Descriptive Statistics for Type Token Ratio (TTR)**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
	Girls	15	.72	.71	.50	.92	.1
PKG	Boys	17	.66	.67	.41	.94	.15
	Total	32	.69	.70	.41	.94	.14
	Girls	15	.65	.64	.45	.88	.10
LKG	Boys	15	.71	.72	.50	.92	.13
	Total	30	.68	.68	.45	.92	.12
	Girls	18	.68	.70	.41	.83	.11
UKG	Boys	15	.63	.66	.35	.90	.16
	Total	33	.65	.67	.35	.90	.14
	Girls	48	.68	.68	.41	.92	.11
Total	Boys	47	.67	.68	.35	.94	.15
	Total	95	.67	.68	.35	.94	.13

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
* Type Token Ratio (TTR) does not have a maximum score in the TELA.

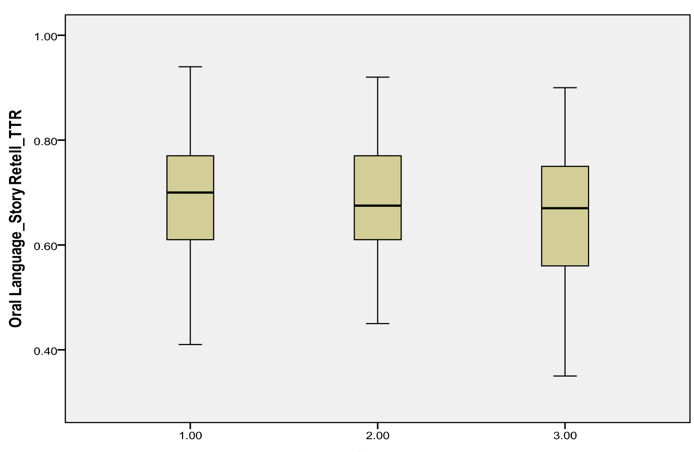

Figure 4.2.13. Box plot for Type Token Ratio (TTR)
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.14

*Descriptive Statistics for Number of Different Words (NDW)**

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	17.53	15.0	11	37	7.41
	Boys	17	19.06	16.0	9	38	8.45
	Total	32	18.34	15.5	9	38	7.89
LKG	Girls	15	21.27	20.0	4	38	7.87
	Boys	15	23.40	20.0	4	46	12.43
	Total	30	22.33	20.0	4	46	10.28
UKG	Girls	18	25.56	26.0	9	42	8.21
	Boys	15	23.27	23.0	12	37	7.62
	Total	33	24.52	25.0	9	42	7.91
Total	Girls	48	21.71	20.5	4	42	8.39
	Boys	47	21.79	20.0	4	46	9.69
	Total	95	21.75	20.0	4	46	9.01

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten
* Number of Different Words (NDW) does not have a maximum score in the TELA.

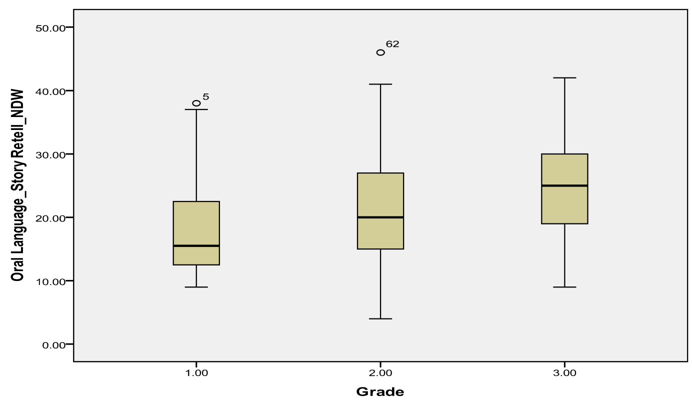

Figure 4.2.14. Box plot for Number of Different Words (NDW)
1 = PKG, 2 = LKG, 3 = UKG

4.2.1 Performance on print knowledge.

Print knowledge (PK) scores were derived by adding the scores of the print knowledge sub-skills- Concepts about Print, Alphabet Knowledge and Emergent Writing. Table 4.2.15 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the PK scores. Two-way MANOVA indicates a significant difference in performance between grades {$F(2, 89) = 159.27$, $p < .001$} but no significant difference between gender {$F(1, 89) = 0.32$, $p > .05$}. Results also show no significant interaction between grade and gender {$F(2, 89) = 0.16$, $p > .05$}. Duncan's post hoc test shows a significant difference in performance from PKG through UKG, indicating a developmental trend for the PK scores. The results show no significant difference in performance across gender. Figure 4.2.15 shows the box plot for PK scores.

Table 4.2.15

Descriptive Statistics for Print Knowledge (PK) Scores (Max. Score- 160)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	37.67	31.0	10	71	18.16
	Boys	17	34.94	37.0	7	79	22.17
	Total	32	36.22	32.5	7	79	20.11
LKG	Girls	15	83.53	76.0	64	126	20.06
	Boys	15	78.20	79.0	43	114	17.72
	Total	30	80.87	77.0	43	126	18.79
UKG	Girls	18	130.11	139.5	87	159	24.53
	Boys	15	130.73	134.0	88	155	22.80
	Total	33	130.39	138.0	87	159	23.39
Total	Girls	48	86.67	77.0	10	159	43.91
	Boys	47	79.32	79.0	7	155	44.89
	Total	95	83.03	79.0	7	159	44.31

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

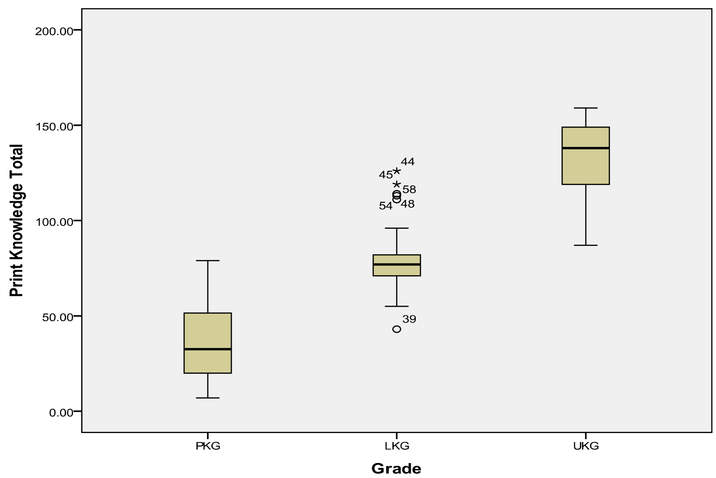

Figure 4.2.15. Box plot for Print Knowledge (PK) scores
1 = PKG, 2 = LKG, 3 = UKG

4.2.1.1 Performance on concepts about print. The Concepts about Print (CAP) scores were derived by adding the measures[8] employed to assess concepts about print. Table 4.2.16 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the CAP scores. Two-way MANOVA was carried out to find out the effect of grade and gender on the CAP scores. The results indicate a significant difference in performance between grades {$F (2, 89) = 42.26, p < .001$} but no significant difference between gender {$F (1, 89) = 0.04, p > .05$}. Results also show no significant interaction between gender and grade {$F (2, 89) = 1.30, p > .05$}.

[8]Book Handling Skills: BHS, Alphabet Knowledge: AK, Environmental Print: EP

Table 4.2.16

Descriptive Statistics for Concepts about Print (CAP) Scores (Max. Score- 25)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	16.47	16	9	21	3.74
	Boys	17	15.06	16	4	21	5.12
	Total	32	15.72	16	4	21	4.51
LKG	Girls	15	20.40	21	15	22	1.64
	Boys	15	20.67	21	17	23	1.59
	Total	30	20.53	21	15	23	1.59
UKG	Girls	18	21.67	21	20	24	1.14
	Boys	15	22.47	22	21	25	1.19
	Total	33	22.03	22	20	25	1.21
Total	Girls	48	19.65	21	9	24	3.23
	Boys	47	19.21	21	4	25	4.56
	Total	95	19.43	21	4	25	3.93

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

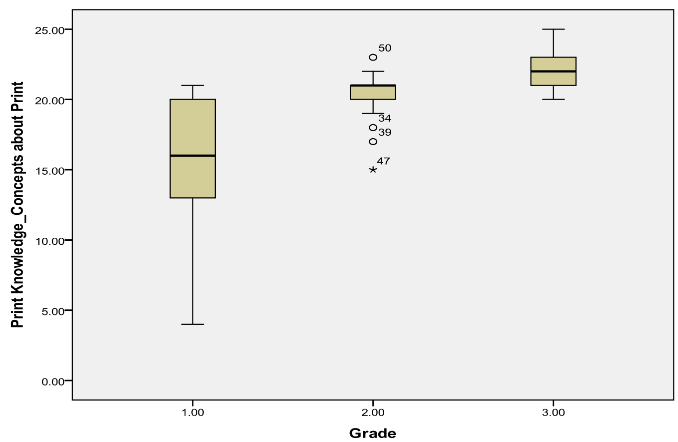

Figure 4.2.16. Box plot for Concepts about Print (CAP) scores

1 = PKG, 2 = LKG, 3 = UKG

Duncan's post hoc test indicates a significant difference in performance from PKG through UKG, indicating a developmental trend for the CAP scores. The results also show no significant difference in performance across gender. Figure 4.2.16 shows the box plot for CAP scores.

Table 4.2.17, 4.2.18 4.2.19 and Figures 4.2.17, 4.2.18, 4.2.19 show the distribution of participants with respect to grade and gender, and the descriptive statistics for the CAP measures- BHS, TD and EP. Results of the Two-way MANOVA indicate a significant difference in performance between grades for BHS {F (2, 89) = 14.236, p < .001}, TD {F (2, 89) = 32.97, p < .001} and EP {F (2, 89) = 26.35, p < .001}. Results indicate no significant difference between gender for BHS {F (1, 89) = 3.113, p > .05}, TD {F (1, 89) = 0.003, p > .05} and EP {F (1, 89) = 3.26, p > .05}. Results also show no significant interaction between grade and gender for TD {F (2, 89) = 0.002, p > .05} and EP {F (2, 89) = 1.74, p > .05} however, results indicate a significant interaction between grade and gender for BHS {F (2, 89) = 6.357, p < .05}.

Duncan's Post hoc tests indicate a significant difference in performance from PKG to LKG but not from LKG to UKG for BHS and TD, and a significant difference in performance from LKG to UKG but not from PKG to LKG for EP. The results show no significant difference in performance across gender for TD and EP but an interaction effect between grade and gender for BHS.

Table 4.2.17

Descriptive Statistics for Book Handling Skills (BHS) Scores (Max. Score- 9)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	7.67	8	7	8	.49
	Boys	17	6.29	7	1	8	1.76
	Total	32	6.94	7	1	8	1.48
LKG	Girls	15	7.93	8	7	9	.59
	Boys	15	7.93	8	5	9	1.10
	Total	30	7.93	8	5	9	.87
UKG	Girls	18	8.11	8	7	9	.68
	Boys	15	8.40	8	7	9	.63
	Total	33	8.24	8	7	9	.66
Total	Girls	48	7.92	8	7	9	.61
	Boys	47	7.49	8	1	9	1.56
	Total	95	7.71	8	1	9	1.19

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

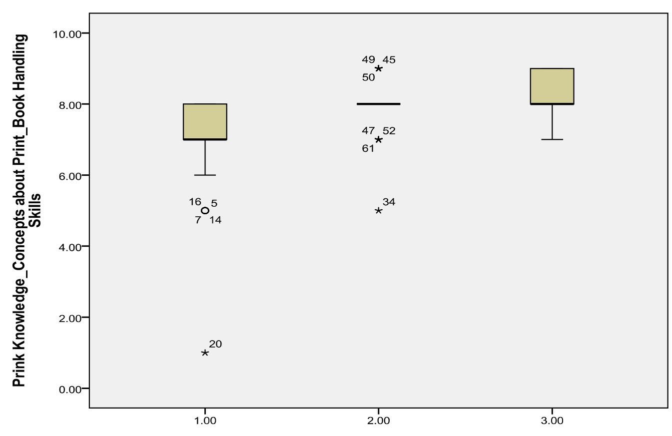

Figure 4.2.17. Box plot for Book Handling Skills (BHS) scores

1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.18

Descriptive Statistics for Text Discrimination (TD) Scores (Max. Score- 10)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	5.93	6.0	0	10	3.49
	Boys	17	5.94	7.0	0	10	3.80
	Total	32	5.94	6.5	0	10	3.60
LKG	Girls	15	9.67	10.0	5	10	1.29
	Boys	15	9.73	10.0	6	10	1.03
	Total	30	9.70	10.0	5	10	1.15
UKG	Girls	18	10.00	10.0	10	10	.00
	Boys	15	10.00	10.0	10	10	.00
	Total	33	10.00	10.0	10	10	.00
Total	Girls	48	8.63	10.0	0	10	2.74
	Boys	47	8.45	10.0	0	10	2.10
	Total	95	8.54	10.0	0	10	2.86

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

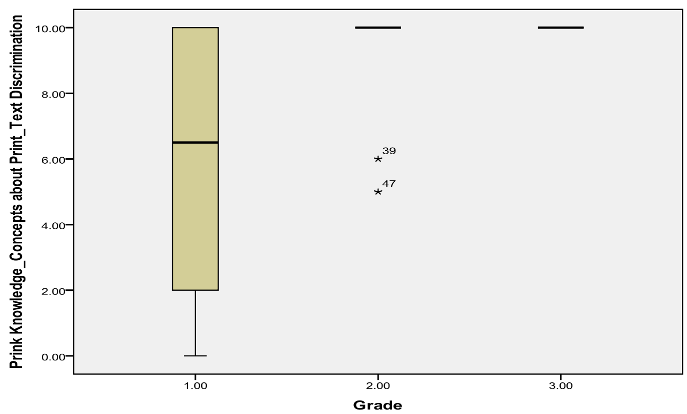

Figure 4.2.18. Box plot for Text Discrimination (TD) scores
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.19

Descriptive Statistics for Environmental Print (EP) Scores (Max. Score- 6)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	2.87	3	2	4	.52
	Boys	17	2.82	3	2	4	.53
	Total	32	2.84	3	2	4	.51
LKG	Girls	15	2.80	3	2	3	.41
	Boys	15	3.00	3	2	4	.38
	Total	30	2.90	3	2	4	.40
UKG	Girls	18	3.56	3	3	5	.70
	Boys	15	4.07	4	3	6	.88
	Total	33	3.79	4	3	6	.82
Total	Girls	48	3.10	3	2	5	.66
	Boys	47	3.28	3	2	6	.83
	Total	95	3.19	3	2	6	.75

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

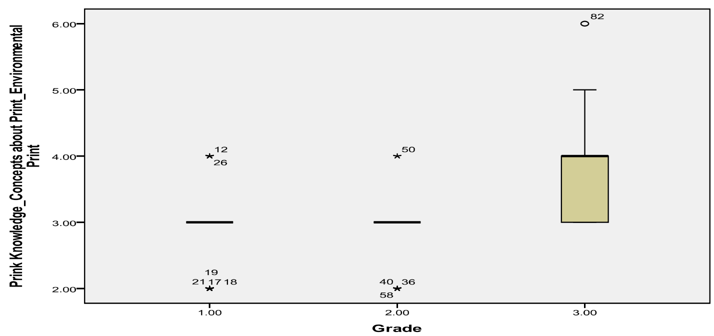

Figure 4.2.19. Box plot for Environmental Print (EP) scores
1 = PKG, 2 = LKG, 3 = UKG

4.2.1.2 Performance on alphabet knowledge tasks. The Alphabet Knowledge (AK) scores were derived by adding the scores of the measures[9] employed to assess alphabet knowledge. Table 4.2.20 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the AK scores. Two-way MANOVA indicates a significant difference in performance between grades {$F(2, 89) = 150.666$, $p < .001$} but no significant difference between gender {$F(1, 89) = 0.305$, $p > .05$}. Results also show no significant interaction between grade and gender {$F(2, 89) = 0.190$, $p > .05$}. Duncan's post hoc test indicates a significant difference in performance from PKG through UKG, indicating a developmental trend for the AK scores. The results show no significant difference in performance across gender. Figure 4.2.20 shows the box plot for AK scores.

Table 4.2.20
Descriptive Statistics for Alphabet Knowledge (AK) Scores (Max. Score- 125)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	16.73	13.0	0	44	15.74
	Boys	17	15.94	16.0	0	49	16.50
	Total	32	16.31	14.0	0	49	15.89
LKG	Girls	15	55.67	47.0	38	99	19.31
	Boys	15	50.00	49.0	20	84	16.37
	Total	30	52.83	49.0	20	99	17.82
UKG	Girls	18	99.44	108.0	58	125	23.68
	Boys	15	99.33	104.0	56	123	21.97
	Total	33	99.39	106.0	56	125	22.56
Total	Girls	48	59.92	49.5	0	125	39.84
	Boys	47	53.43	49.0	0	123	39.16
	Total	95	56.71	49.0	0	125	39.43

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

[9]Letter Names = LN, Letter Sounds = LS, Alphabetic Principle = AP, Word Recognition = WR

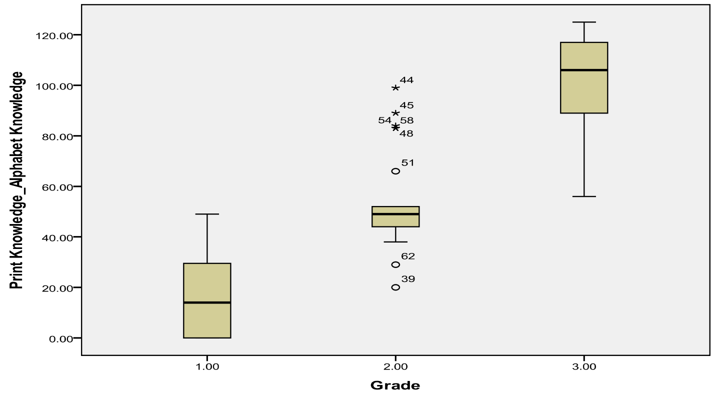

Figure 4.2.20. Box plot for Alphabet Knowledge (AK) scores
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.21, 4.2.22, 4.2.23, 4.2.24 and Figures 4.2.21, 4.2.22, 4.2.23, 4.2.24 show the distribution of participants with respect to grade and gender, and the descriptive statistics for LN, LS, AP and WR. Two-way MANOVA results indicated a significant difference between grades for LN {F (2, 89) = 102.690, p < .001}, LS {F (2, 89) = 0.597, p < .001}, AP {F (2, 89) = 19.22, p < .001} and WR {F (2, 89) = 481.93, p < .001}. Results showed that there was no significant difference between gender for LN {F (1, 89) = 0.090, p > .05}, LS {F (1, 89) = 0.124, p > .05, AP {F (1, 89) = 0.48, p > .05}, and WR {F (1, 89) = 1.42, p > .05}. Also, no significant interaction was seen between grade and gender for LN {F (2, 89) = 0.002, p > .05}, LS {F (2, 89) = 0.491, p > .05}, AP {F (2, 89) = 1.57, p > .05} and WR {F (2, 89) = 1.01, p > .05}.

Table 4.2.21
Descriptive Statistics for Letter Names (LN) Scores (Max. Score- 52)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	16.73	13	0	44	15.74
	Boys	17	15.94	16	0	49	16.50
	Total	32	16.31	14	0	49	15.89
LKG	Girls	15	45.73	46	38	51	3.81
	Boys	15	45.27	49	20	52	9.18
	Total	30	45.50	47	20	52	6.91
UKG	Girls	18	50.50	51	47	52	1.69
	Boys	15	49.87	50	47	52	1.73
	Total	33	50.21	50	47	52	1.71
Total	Girls	48	38.46	47	0	52	17.38
	Boys	47	36.13	48	0	52	18.99
	Total	95	37.31	47	0	52	18.14

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

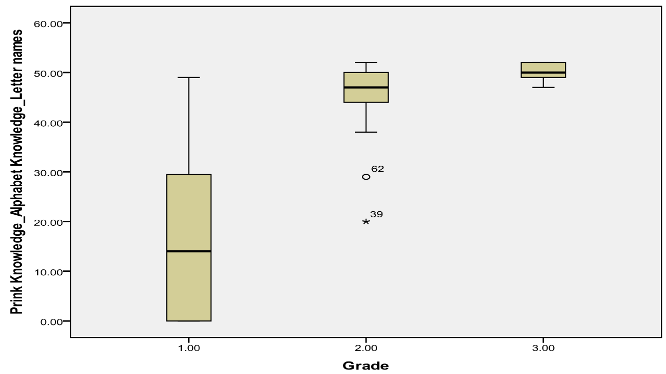

Figure 4.2.21. Box plot for Letter Name (LN) scores
1 = PKG, 2 = LKG, 3 = UKG

Duncan's Post hoc tests indicate that there was a significant difference in performance from PKG to LKG but not from LKG to UKG for LN, and a significant difference in performance from LKG to UKG but not from PKG to LKG for LS, AP and WR. The results show no significant difference in performance across gender.

Table 4.2.22
Descriptive Statistics for Letter Sounds (LS) Scores (Max. Score- 52)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	0	0	0	0	0
	Boys	17	0	0	0	0	0
	Total	32	0	0	0	0	0
LKG	Girls	15	9.27	0	0	43	16.18
	Boys	15	4.33	0	0	36	11.51
	Total	30	6.80	0	0	43	14.03
UKG	Girls	18	31.44	41.5	0	52	20.71
	Boys	15	33.33	38	0	50	18.14
	Total	33	32.30	40	0	52	19.31
Total	Girls	48	14.69	0	0	52	20.47
	Boys	47	12.02	0	0	50	19.01
	Total	95	13.37	0	0	52	19.70

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

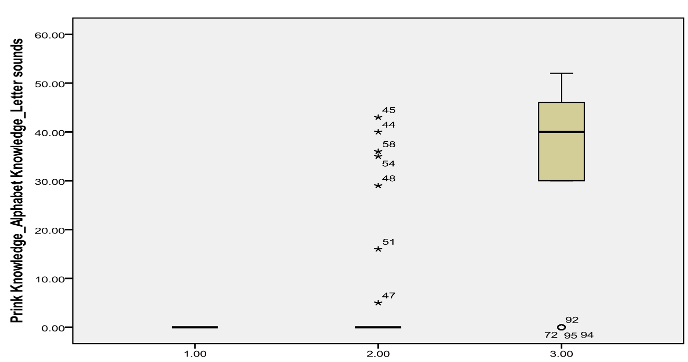

Figure 4.2.22. Box plot for Letter Sound (LS) scores
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.23

Descriptive Statistics for Alphabetic Principle (AP) Scores (Max. Score- 1)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	0	0	0	0	.00
	Boys	17	0	0	0	0	.00
	Total	32	0	0	0	0	.00
LKG	Girls	15	.07	0	0	1	.26
	Boys	15	.00	0	0	0	.00
	Total	30	.03	0	0	1	.18
UKG	Girls	18	.33	0	0	1	.49
	Boys	15	.53	1	0	1	.52
	Total	33	.42	0	0	1	.50
Total	Girls	48	.15	0	0	1	.36
	Boys	47	.17	0	0	1	.38
	Total	95	.16	0	0	1	.37

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

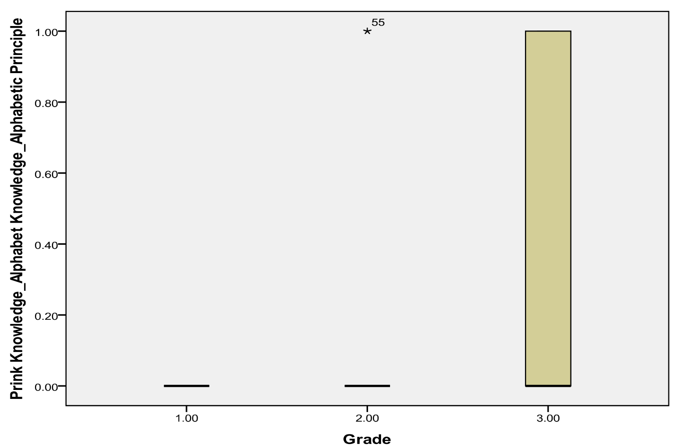

Figure 4.2.23. Box plot for Alphabetic Principle (AP) scores
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.24

Descriptive Statistics for Word Recognition (WR) Scores (Max. Score- 20)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	0	0	0	0	0
	Boys	17	0	0	0	0	0
	Total	32	0	0	0	0	0
LKG	Girls	15	.60	0	0	9	2.32
	Boys	15	.40	0	0	6	1.55
	Total	30	.50	0	0	9	1.94
UKG	Girls	18	17.17	18	9	20	3.15
	Boys	15	15.60	17	9	20	4.12
	Total	33	16.45	17	9	20	3.65
Total	Girls	48	6.66	0	0	20	8.56
	Boys	47	5.11	0	0	20	7.66
	Total	95	5.87	0	0	20	8.12

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

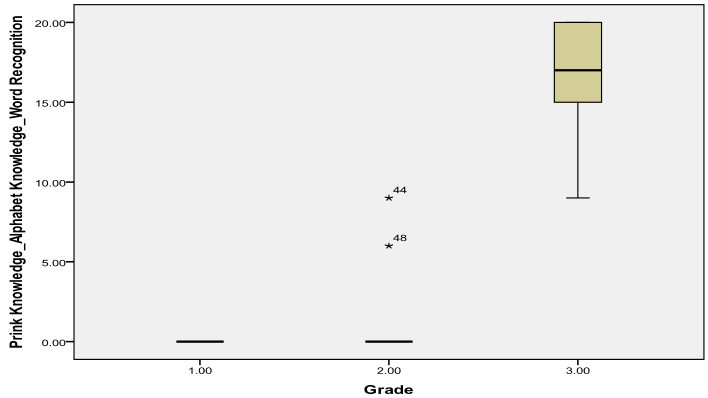

Figure 4.2.24. Box plot for Word Recognition (WR) scores
1 = PKG, 2 = LKG, 3 = UKG

4.2.1.3 Performance on emergent writing task. Table 4.2.25 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the Emergent Writing (EW) scores. Two-way MANOVA was carried out to find out the effect of grade and gender on EW scores. The results indicated a significant difference in performance between grades {$F (2, 89) = 79.837$, $p < .001$} but no significant difference between gender {$F (1, 89) = 0.303$, $p > .05$}. Also, no significant interaction was seen between grade and gender {$F (2, 89) = 0.316$, $p > .05$}. Duncan's post hoc test indicates a significant difference in performance from PKG through UKG, indicating a developmental trend for the EW scores. The results show no significant difference in performance across grades. Figure 4.2.25 shows the box plot for EW scores.

Table 4.2.25
Descriptive Statistics for Emergent Writing (EW) Scores (Max. Score- 10)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	4.47	5.0	1	7	1.81
	Boys	17	3.94	4.0	1	9	2.25
	Total	32	4.19	4.5	1	9	2.04
LKG	Girls	15	7.47	8.0	6	9	1.36
	Boys	15	7.53	8.0	5	9	1.41
	Total	30	7.50	8.0	5	9	1.36
UKG	Girls	18	9.00	9.0	7	10	1.03
	Boys	15	8.93	9.0	7	10	1.03
	Total	33	8.97	9.0	7	10	1.02
Total	Girls	48	7.10	7.5	1	10	2.35
	Boys	47	6.68	8.0	1	10	2.71
	Total	95	6.89	8.0	1	10	2.53

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

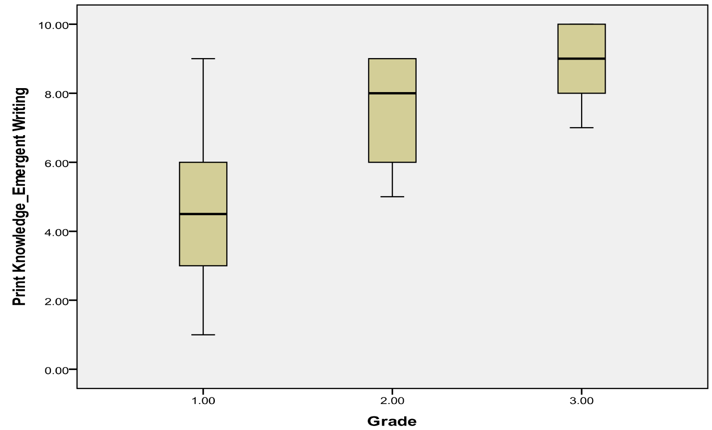

Figure 4.2.25. Box plot for Emergent Writing (EW) scores
1 = PKG, 2 = LKG, 3 = UKG

4.2.3 Performance on Phonological Processing Skills.

The Phonological Processing (PP) scores were derived by adding the scores of the phonological processing sub-skills- Phonological Awareness (PA), Short Term Memory (STM) and Rapid Automatized Naming (RAN). Table 4.2.26 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the PP scores. Two-way MANOVA results indicate a significant difference in performance between grades {$F(2, 89) = 92.243$, $p < .001$}, no significant difference between gender {$F(1, 89) = 0.672$, $p > .05$} and no significant interaction between grade and gender {$F(2, 89) = 0.828$, $p > .05$}. Duncan's post hoc tests indicate a significant difference in performance from PKG through UKG, indicating a developmental trend for PP scores. The results show no significant difference in performance across gender. Figure 4.2.26 shows the box plot for PP scores.

Table 4.2.26
Descriptive Statistics for Phonological Processing Scores (Max. Score- 123)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	33.93	33.0	8	63	16.19
	Boys	17	28.59	25.0	10	90	17.67
	Total	32	31.09	28.0	8	90	16.94
LKG	Girls	15	67.87	79.0	11	113	36.42
	Boys	15	58.13	43.0	22	99	25.53
	Total	30	63.00	48.0	11	113	31.30
UKG	Girls	18	102.61	107.5	65	118	14.60
	Boys	15	106.67	111.0	78	120	12.69
	Total	33	104.45	110.0	65	120	13.71
Total	Girls	48	70.29	78.5	8	118	37.07
	Boys	47	62.94	43.0	10	120	37.72
	Total	95	66.65	63.0	8	120	37.38

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

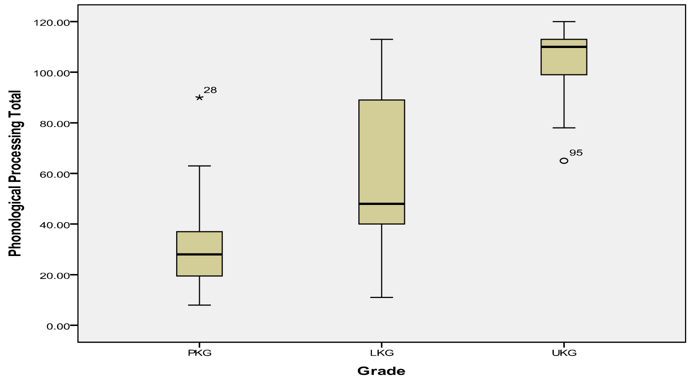

Figure 4.2.26. Box plot for Phonological Processing (PP) scores
1 = PKG, 2 = LKG, 3 = UKG

4.2.3.1 Performance on Phonological Awareness Skills. Phonological Awareness (PA) scores were derived by adding the scores of the measures[10] employed to assess phonological awareness skills. Table 4.2.27 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the PA scores. Results for Two-way MANOVA indicate that there was a significant difference in performance between grades {F (2, 89) = 96.792, p < .001} but no significant difference between gender {F (1, 89) = 0.651, p > .05}. Also, no significant interaction was seen between gender and grade {F (2, 89) = 1.132, p > .05}.

Table 4.2.27
Descriptive Statistics for Phonological Awareness (PA) Scores (Max. Score- 95)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	13.60	10.0	0	39	12.69
	Boys	17	10.24	9.0	0	65	15.61
	Total	32	11.81	10.0	0	65	14.19
LKG	Girls	15	46.20	56.0	0	90	33.45
	Boys	15	35.33	20.0	0	77	25.31
	Total	30	40.77	25.5	0	90	29.67
UKG	Girls	18	78.50	82.5	45	93	12.94
	Boys	15	82.80	86.0	59	94	11.24
	Total	33	80.45	84.0	45	94	12.20
Total	Girls	48	48.13	56.0	0	93	34.31
	Boys	47	41.40	20.0	0	94	35.33
	Total	95	44.80	43.0	0	94	34.79

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

[10] Word Awareness (WA), Rhyme Awareness (RA), Syllable Awareness (SA), Alliteration Awareness (AA), Phoneme Awareness (pA)

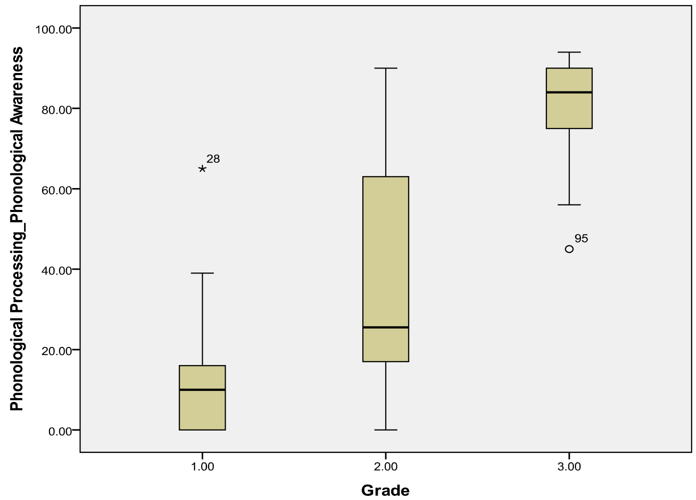

Figure 4.2.27. Box plot for Phonological Awareness (PA) scores
1 = PKG, 2 = LKG, 3 = UKG

Duncan's post hoc test indicates a significant difference in performance from PKG through UKG, indicating a developmental trend for PA scores. The results show no significant difference in performance across gender. Figure 4.2.27 shows the box plot for PA scores.

Table 4.2.28, 4.2.29, 4.2.30, 4.2.31, 4.2.32 and Figures 4.2.28, 4.2.29, 4.2.30, 4.2.31, 4.2.32 show the distribution of participants with respect to grade and gender, and the descriptive statistics for the PA measures- WA, RA, SA, AA and pA. Results of Two-way MANOVA indicate a significant difference in performance between grades for WA {$F(2, 89) = 92.246$, $p < .001$}, RA {$F(2, 89) = 42.822$, $p < .001$}, SA {$F(2, 89) = 9.595$, $p < .001$}, AA {$F(2, 89) = 23.043$, $p < .001$} and pA {$F(2, 89) = 38.237$, $p < .001$}. Results show no significant difference in performance across gender for WA {$F(1, 89) = 0.053$, $p > .05$}, RA {$F(1, 89) = 2.427$, $p > .05$}, SA {$F(1, 89) = 0.195$, $p > .05$}, AA {$F(1, 89) = 1.056$, $p > .05$} and pA {$F(1, 89) = 0.703$, $p > .05$}. Also, no significant interaction was seen between gender and grade for WA {$F(2, 89) = 1.928$, $p < .05$}, RA {$F(2, 89) = 0.974$, $p > .05$}, SA {$F(2, 89) = 0.846$, $p > .05$}, AA {$F(2, 89) = 0.535$, $p > .05$} and pA {$F(2, 89) = 0.405$, $p > .05$}.

Duncan's post hoc tests indicate a significant difference in performance from PKG through UKG for WA, RA, AA, pA and significant difference in performance from PKG and LKG but not from LKG to UKG for SA. Results show no significant difference in performance across gender.

Table 4.2.28

Descriptive Statistics for Word Awareness (WA) Scores (Max. Score- 55)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
	Girls	15	0	0	0	0	.00
PKG	Boys	17	2.65	0	0	45	10.91
	Total	32	1.41	0	0	45	7.95
	Girls	15	23.20	31.0	0	55	23.11
LKG	Boys	15	14.87	0	0	42	19.05
	Total	30	19.03	0	0	55	21.24
	Girls	18	44.28	44.0	30	54	6.70
UKG	Boys	15	48.07	50.0	30	54	7.00
	Total	33	46.00	46.0	30	54	7.00
	Girls	48	23.85	33.5	0	55	22.73
Total	Boys	47	21.04	0	0	54	23.29
	Total	95	22.46	30.0	0	55	22.93

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

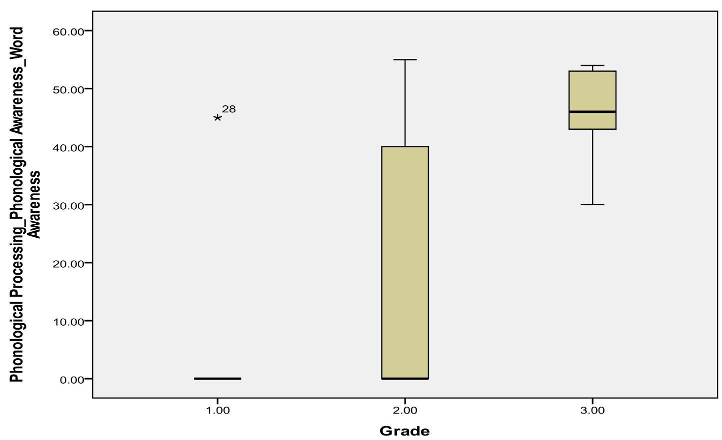

Figure 4.2.28. Box plot for Word Awareness (WA) scores
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.29

Descriptive Statistics for Rhyme Awareness (RA) Scores (Max. Score- 10)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
	Girls	15	2.27	0	0	10	3.94
PKG	Boys	17	.00	0	0	0	.00
	Total	32	1.06	0	0	10	2.88
	Girls	15	3.07	0	0	10	4.59
LKG	Boys	15	2.33	0	0	10	3.58
	Total	30	2.70	0	0	10	4.06
	Girls	18	8.22	10	0	10	2.69
UKG	Boys	15	8.13	9	0	10	2.72
	Total	33	8.18	10	0	10	2.66
	Girls	48	4.75	6	0	10	4.58
Total	Boys	47	3.34	0	0	10	4.25
	Total	95	4.05	0	0	10	4.46

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

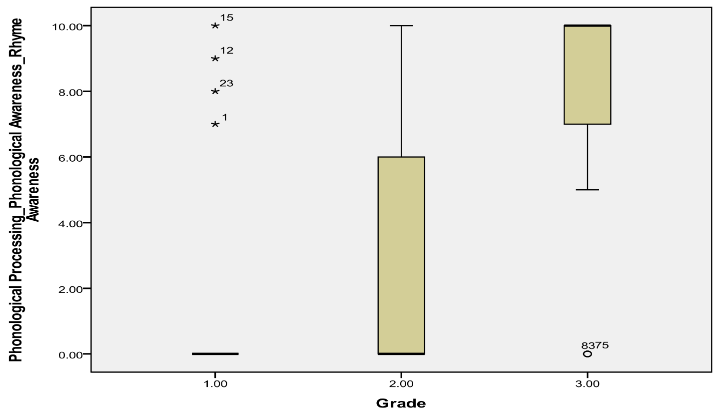

Figure 4.2.29. Box plot for Rhyme Awareness (RA) scores
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.30
Descriptive Statistics for Syllable Awareness(SA) Scores (Max. Score- 10)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	7.20	10	0	10	4.51
	Boys	17	5.71	9	0	10	4.95
	Total	32	6.41	10	0	10	4.73
LKG	Girls	15	8.33	10	0	10	3.50
	Boys	15	8.93	10	0	10	2.79
	Total	30	8.63	10	0	10	3.12
UKG	Girls	18	10.00	10	10	10	.00
	Boys	15	10.00	10	10	10	.00
	Total	33	10.00	10	10	10	.00
Total	Girls	48	8.60	10	0	10	3.33
	Boys	47	8.11	10	0	10	3.79
	Total	95	8.36	10	0	10	3.56

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

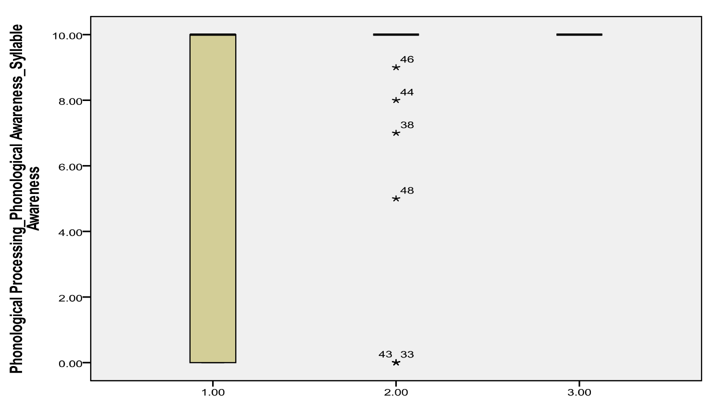

Figure 4.2.30. Box plot for Syllable Awareness (SA) scores
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.31

Descriptive Statistics for Alliteration Awareness (AA) Scores (Max. Score- 10)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	1.33	0	0	10	3.52
	Boys	17	0	0	0	0	.00
	Total	32	.63	0	0	10	2.46
LKG	Girls	15	3.67	0	0	10	4.75
	Boys	15	2.40	0	0	9	3.62
	Total	30	3.03	0	0	10	4.20
UKG	Girls	18	6.56	8.5	0	10	4.08
	Boys	15	6.87	8.0	0	10	3.81
	Total	33	6.70	8.0	0	10	3.90
Total	Girls	48	4.02	0	0	10	4.61
	Boys	47	2.96	0	0	10	4.09
	Total	95	3.49	0	0	10	4.37

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

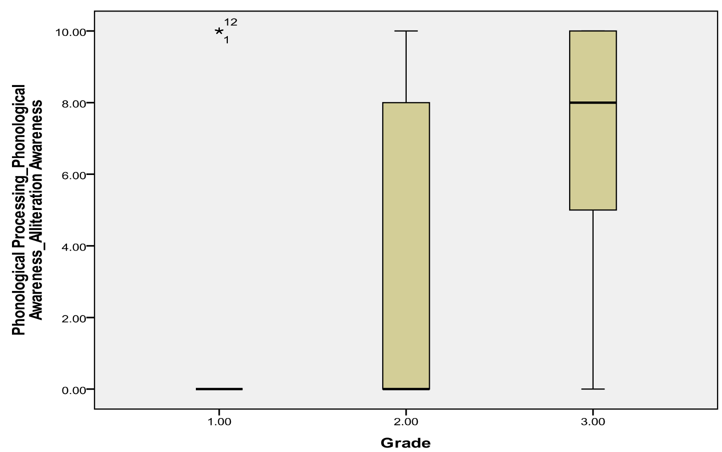

Figure 4.2.31. Box plot for Alliteration Awareness (AA) scores

1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.32

Descriptive Statistics for Phoneme Awareness (pA) Scores (Max. Score- 10)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	2.80	0	0	10	4.26
	Boys	17	1.88	0	0	10	3.64
	Total	32	2.31	0	0	10	3.91
LKG	Girls	15	7.93	10	0	10	3.58
	Boys	15	6.80	10	0	10	4.51
	Total	30	7.37	10	0	10	4.04
UKG	Girls	18	9.44	10	0	10	2.36
	Boys	15	9.73	10	8	10	.70
	Total	33	9.58	10	0	10	1.79
Total	Girls	48	6.90	10	0	10	4.41
	Boys	47	5.96	9	0	10	4.69
	Total	95	6.43	10	0	10	4.55

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

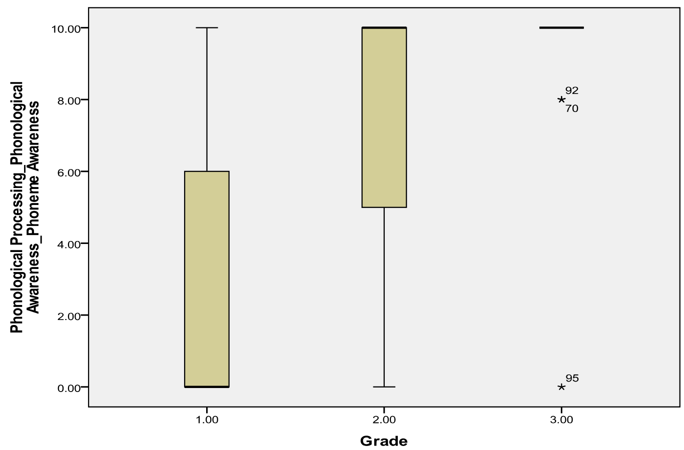

Figure 4.2.32. Box plot for Phoneme Awareness (pA) scores

1 = PKG, 2 = LKG, 3 = UKG

4.2.3.2 Performance on short term memory task. Table 4.2.33 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the Short Term Memory (STM) scores. Results of Two-way MANOVA indicated a significant difference in performance between grades {$F(2, 89) = 9.133$, $p < .001$} however results showed no significant difference between gender {$F(1, 89) = 0.180$, $p > .05$} and no significant interaction between grade and gender {$F(2, 89) = 1.502$, $p > .05$}. Duncan's post hoc test indicated a significant difference in performance from PKG to LKG but no significant difference in performance from LKG to UKG. The results show no significant difference in performance across gender. Figure 4.2.33 shows the box plot for STM scores.

Table 4.2.33

Descriptive Statistics for Short Term Memory (STM) Scores (Max. Score- 20)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	16.27	18.0	6	20	3.84
	Boys	17	14.71	15.0	9	20	3.37
	Total	32	15.44	16.5	6	20	3.6
LKG	Girls	15	16.80	18.0	5	20	4.36
	Boys	15	17.80	18.0	14	20	1.57
	Total	30	17.30	18.0	5	20	3.26
UKG	Girls	18	18.67	19.0	16	20	1.46
	Boys	15	18.47	19.0	15	20	1.41
	Total	33	18.58	19.0	15	20	1.41
Total	Girls	48	17.33	18.0	5	20	3.46
	Boys	47	16.89	17.0	9	20	2.85
	Total	95	17.12	18.0	5	20	3.17

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

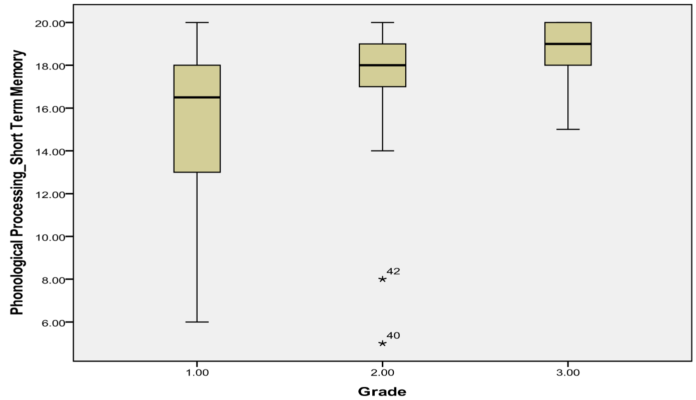

Figure 4.2.33. Box plot for Short Term Memory (STM) scores
1 = PKG, 2 = LKG, 3 = UKG

4.2.3.3 Performance on rapid automatized naming (RAN) task. The Rapid Automatized Naming (RAN) scores were derived by adding the scores of the measures[11] employed to assess rapid automatized naming. Table 4.2.34 shows the distribution of participants with respect to grade and gender, and the descriptive statistics for the RAN scores. Two-way MANOVA indicated a significant difference in performance between grades {F (2, 89) = 14.950, p < .001} and no significant difference between gender {F (1, 89) = 0.376, p > .05}. Also, no significant interaction was seen between grade and gender {F (2, 89) = 0.097, p > .05}.

Table 4.2.34
Descriptive Statistics for Rapid Automatized Naming (RAN) Scores (Max. Score- 20)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	16.39	14.4	10.4	25	4.85
	Boys	17	18.43	16.8	12.8	34.4	5.65
	Total	32	17.47	15.2	10.4	34.4	5.31
LKG	Girls	15	13.95	13.0	10.8	22	3.09
	Boys	15	13.49	14.0	9.8	17	2.43
	Total	30	13.7	13.7	9.8	22	2.74
UKG	Girls	18	12.19	12.0	8.6	19	2.79
	Boys	15	12.48	12.6	8.6	18.6	2.99
	Total	33	12.32	12.2	8.6	19	2.83
Total	Girls	48	14.05	12.9	8.6	25	3.97
	Boys	47	14.95	14.0	8.6	34.4	4.77
	Total	95	14.50	13.6	8.6	34.4	4.38

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

[11] Rapid Automatized Naming- Object (RAN-O), Rapid Automatized Naming- Size (RAN-S).

Duncan's Post hoc tests indicated a significant difference in performance from PKG to LKG, but not from LKG to UKG. The results show no significant difference in performance across gender. Figure 4.2.34 shows the box plot for RAN scores.

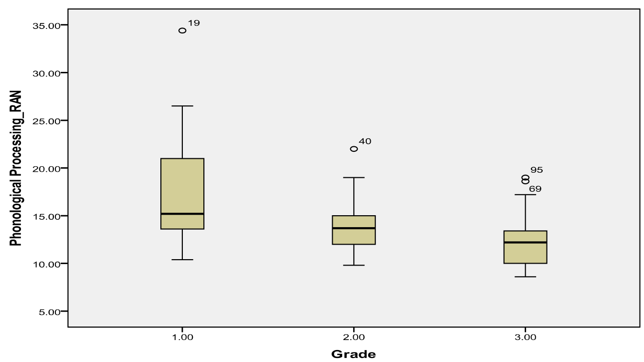

Figure 4.2.34. Box plot for Rapid Automatized Naming (RAN) scores
1 = PKG, 2 = LKG, 3 = UKG

Tables 4.2.35 and 4.2.36 and Figures 4.2.35 and 4.2.36 show the distribution of participants with respect to grade and gender, and the descriptive statistics for the Rapid Automatized Naming- Object (RANO) and Rapid Automatized Naming- Size (RANS scores, respectively. Two-way MANOVA indicated a significant difference in performance between grades for RANO {$F(2, 89) = 9.021$, $p < .001$} and RANS {$F(2, 89) = 13.041$, $p < .001$} however, no significant difference between gender was seen for RANO {$F(1, 89) = 1.821$, $p > .05$} and RANS gender {$F(1, 89) = 0.147$, $p > .05$}. Also, no significant interaction was seen between grade and gender for RANO {$F(2, 89) = 1.380$, $p > .05$} and RANS {$F(2, 89) = 0.548$, $p > .05$}.

Table 4.2.35
Descriptive Statistics for Rapid Automatized Naming- Object (RANO) Scores (Max. Score- 10)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	5.37	5.6	3.4	7.6	1.09
	Boys	17	6.44	6.4	4.0	10.2	2.07
	Total	32	5.94	5.6	3.4	10.2	1.74
LKG	Girls	15	4.81	4.4	3.2	7.4	1.16
	Boys	15	4.94	4.6	3.0	6.5	1.14
	Total	30	4.88	4.4	3.0	7.4	1.13
UKG	Girls	18	4.46	4.1	2.4	7.4	1.53
	Boys	15	4.44	4.6	3.0	6.6	1.09
	Total	33	4.45	4.2	2.4	7.4	1.33
Total	Girls	48	4.85	4.4	2.4	7.6	1.32
	Boys	47	5.32	5.0	3.0	10.2	1.73
	Total	95	5.09	4.8	2.4	10.2	1.55

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

Duncan's Post hoc tests indicated a significant difference in performance from PKG to LKG, but not from LKG to UKG for both RANO and RANS. The results show no significant difference in performance across gender.

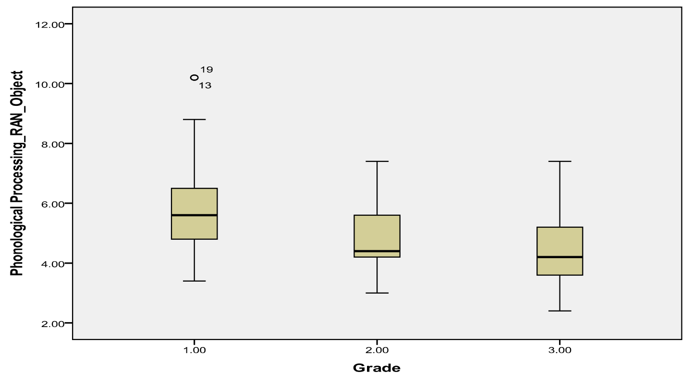

Figure 4.2.35. Box plot for Rapid Automatized Naming- Object (RANO) scores
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.36
Descriptive Statistics for Rapid Automatized Naming- Size (RANS) Scores (Max. Score- 10)

Grade	Gender	N	Mean	Median	Min.	Max.	SD
PKG	Girls	15	11.01	9.4	6.0	20.0	4.36
	Boys	17	11.99	10.4	8.8	24.2	4.09
	Total	32	11.53	10.3	6.0	24.2	4.18
LKG	Girls	15	9.13	8.4	6.4	14.6	2.33
	Boys	15	8.55	8.4	5.6	11.2	1.78
	Total	30	8.84	8.4	5.6	14.6	2.06
UKG	Girls	18	7.73	7.7	4.8	12.0	1.63
	Boys	15	8.04	8.0	5.0	12.0	2.20
	Total	33	7.87	7.8	4.8	12.0	1.89
Total	Girls	48	9.20	8.3	4.8	20.0	3.18
	Boys	47	9.63	9.0	5.0	24.2	3.40
	Total	95	9.41	8.6	4.8	24.2	3.28

Note. N = Number of participants, Min. = Sample Minimum, Max. = Sample Maximum, SD = Standard Deviation, PKG = Pre-Kindergarten, LKG = Lower Kindergarten, UKG = Upper Kindergarten

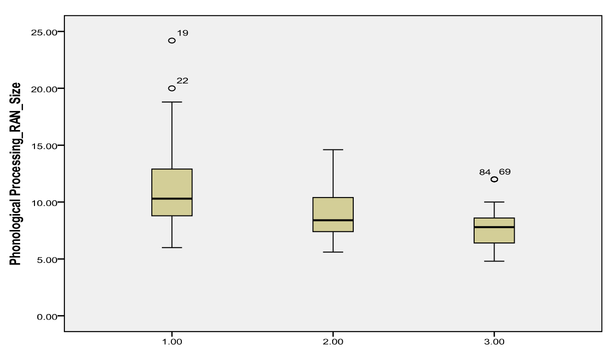

Figure 4.2.36. Box plot for Rapid Automatized Naming- Size (RANS) scores
1 = PKG, 2 = LKG, 3 = UKG

Table 4.2.37

Findings of Duncan's Post hoc Test for Emergent Literacy Measures

EL Domains	EL Compo-nents	EL Measures	Significant from **PKG to LKG**	Significant from **LKG to UKG**	Significant from **PKG to UKG**	**Not Significant** From PKG through UKG
OL	Voc	NEW-V	✓	✓	✓	-
		NKW-V	✓	✓	✓	-
		SRW	✓	✓	✓	-
	SR	NEW-SR	✓	-	✓	-
		NKW-SR	-	-	-	✓
		NPN	-	-	✓	-
		MLU	-	-	-	✓
		NDW	-	-	✓	-
		TTR	-	-	-	✓
		LLF	-	-	✓	-
PK	CAP	QAS	✓	✓	✓	-
		BHS	✓	-	✓	-
		TD	✓	-	✓	-
		EP	-	✓	✓	-
	AK	LN*	✓	-	✓	-
		LS*	-	✓	✓	-
		AP	-	✓	✓	-
		WR	-	✓	✓	-
	EW	EW	✓	✓	✓	-
PP	PA	WA	✓	✓	✓	-
		RA*	✓	✓	✓	-
		SA*	✓	-	✓	-
		AA	✓	✓	✓	-
		pA	✓	✓	✓	-
	STM	STM	✓	-	✓	-
	RAN	RANO	✓	-	✓	-
		RANS	✓	-	✓	-

Note. EL = Emergent Literacy, OL = Oral Language, PK = Print Knowledge, PP = Phonological Processing, NEW-V = Number of English Words- Vocabulary, NKW-V = Number of Kannada Words- Vocabulary, SRW = Semantically Related Words, NEW-SR = Number of English Words- Story Retell, NKW-SR = Number of Kannada Words- Story Retell, NPN = Number of Proper Nouns, QAS = Question Answer Score, LLF = Literate Language Features, MLU = Mean Length of Utterance, TTR = Type Token Ratio, NDW = Number of Different Words, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print, LN = Letter Names, LS = Letter Sounds, AP = Alphabetic Principle, WR = Word Recognition, EW = Emergent Writing, WA = Word Awareness, RA = Rhyme Awareness, SA = Syllable Awareness, AA = Alliteration Awareness, pA = Phoneme Awareness, STM = Short Term Memory, RANO = Rapid Automatized Naming- Object, RANS = Rapid Automatized Naming- Size

*LN: Mann Whitney U test shows significant difference in performance from LKG to UKG

*LS: Mann Whitney U test shows significant difference in performance from PKG to LKG

*SA: Mann Whitney U test shows significant difference in performance from LKG to UKG

*RA: Mann Whitney U test shows **no** significant difference in performance from PKG to LKG

The results of the Duncan's post hoc tests (Figure 4.2.37) for the emergent literacy measures indicate a significant difference in performance from PKG through UKG for NEW-V, NKW-V, SCW, QAS, EW, WA, RA, AA and pA. A significant difference was seen from PKG to LKG for NEW-SR, BHS, TD and from LKG to UKG for EP, LS, AP, and WR. No significant difference was seen from PKG to LKG or from LKG to UKG but only from PKG to UKG for NPN, LLF and NDW. No significant difference was seen from PKG through UKG for NKW-SR, MLU and TTR.

Discussion

Majority of reading acquisition research in India has been done with school age children, which explains why a tool for assessment of literacy skills in preschool children was not available. Also, as majority of preschools in India have English as the medium of instruction, children who enrol in these preschools would become English Language Learners (ELLs) by the time they enter formal school. Consequently, assessment of literacy skills in ELLs during preschool years would provide insights that would facilitate literacy acquisition in the formal school years. These observations led the investigator to develop an assessment tool specifically designed to achieve the objectives of the present study. The Tool for Emergent Literacy Assessment (TELA) was developed with the purpose of measuring oral language, print knowledge and phonological processing skills of preschool children (age range of 3- to 6-years) acquiring literacy in English.

The participants were studying in preschools with English as the medium of instruction, where all the literacy related activities were carried out in English. Other languages such as Kannada (the regional language) and Hindi (the national language) were introduced when children entered UKG/grade 1 or sometimes as late as grade 2 or 3. Since the participants had limited knowledge of English when they entered preschool, the investigator provided instructions in the native language (Kannada) during the administration of TELA. Several researchers working with bilingual children have stressed the use of native language for familiarizing the participants with the task and for providing instructions during formal testing (Anthony et al., 2006; Kester & Pena, 2002; Tabors et al., 2002).

Review of literature reveals that the literacy skills of bilingual children have been assessed by evaluating each language separately (August & Hakuta, 1997; Durgunoglu et al., 1993; Nagy et al., 1993). The participants in the present study had limited English proficiency hence during the assessment of oral language the investigator did not restrict the usage of Kannada. The participants were free to respond either in Kannada or English. The language sample was analysed and scored for responses in both languages.

It is important to note that the results of the present study have been compared with emergent literacy research from the native English-speaking population. Research on bilingual population has been mentioned wherever necessary. Comparison of results across studies is confounded by the use of different tasks for the assessment of emergent literacy skills. Some researchers prefer to use standardized tests while others develop research tools for the purpose. In the present study, in the absence of a standardized test battery, an assessment tool (TELA) was developed. Another factor that confounds comparison across studies is the age of the participants. Review of literature has revealed that emergent literacy research has been carried out in children as young as two years and as old as six years. The diversity in the emergent literacy domains being assessed, the participant characteristics, the procedure, the statistical analyses and the range of objectives make comparison of results difficult. Despite these factors, an effort has been made to compare the results of the present study with emergent literacy research done in the past.

The present study shows that preschool children from Mysore city demonstrated reading and writing behaviours in the years prior to formal reading instruction. These behaviours were similar to the 'emergent literacy skills' reported in literature, which were acquired through informal as well as adult-directed activities at home and in school. (Allington & Cunningham, 1996; Burns, Griffin, & Snow, 1999; Clay, 1991; Gunn et al., 1995; Hall & Moats, 1999; Holdaway, 1979; NELP, 2009; Snow, Burns & Griffin, 1998; Stahl & Miller, 1989; Sulzby & Kleeck, 1990; Teale & Sulzby, 1986, 1987; van Kleeck, 1990). Results also indicate that emergent literacy skills facilitated the acquisition of reading and writing, which developed around the same time.

The results of the entire sample revealed that there was a significant difference in performance from Pre-Kindergarten (PKG) through Upper-Kindergarten (UKG) for the three major domains of emergent literacy assessed using TELA: Oral Language (OL) (Table 4.2.1), Print Knowledge (PK) (Table 4.2.2) and Phonological Processing (PP) (Table 4.2.3). This indicates that there is a developmental progression of the emergent literacy domains from PKG through UKG. This is in consonance with several cross-sectional and longitudinal studies (Anthony et al., 2007; Carroll et al., 2003; Dickinson et al., 2003; Gunn et al., 1995; Lonigan et al., 2000; Molfese et al., 2006; NELP, 2009; Nelson, 1996; Tomasello, 2000), which found a developmental continuity of OL, PK and PP in children from three to six years, indicating that these skills provide a vital scaffold for later reading success.

It was interesting to note that the assessment of the emergent literacy domains and their components was entirely dependent on the measures employed to assess them. The results of the emergent literacy domains and components demonstrated a cumulative effect, which did not give a clear picture about the developmental trend of the measures and their relationship with one other. The results of the individual measures on the other hand gave a clear indication of the developmental pattern and the complex associations between them. This indicates that in order to assess the developmental pattern of emergent literacy domains it is essential that individual measures are discussed independently. Furthermore, the results indicate that different measures were significant for different grades, indicating that all measures need not be assessed for all preschoolers.

The box plots depicted the median and the distribution of the sample for each emergent literacy measure. It was observed that the scores of majority of participants fell within the box plots except a few outliers, which depict those participants that performed exceptionally above or below the sample average. The presence of a few outliers in the present sample indicates that although the development of majority of participants follows the group pattern, there are some exceptions. The discriminant function analysis (described in the later sections) provides more information on the predicted group membership of participants from PKG through UKG (Tables 4.5.4, 4.5.11, 4.5.15 and 4.5.19).

The results of the emergent literacy domains and their components will be discussed in detail in the following sections.

Oral Language

In the present study OL was assessed by evaluating the Voc and SR abilities of the participants. The results indicate that both Voc and SR abilities show a developmental trend in preschoolers. While Voc shows a significant development from PKG through UKG (Figure 4.2.2), SR shows a significant development from PKG to LKG but not from LKG to UKG (Figure 4.2.6). The probable reason for this finding could be the story used for the SR task, which was designed keeping in mind the entire sample of ELLs (3-6 years). It is possible that the simple structure of the story was insufficient to assess the developmental progression in the narrative abilities of older preschoolers. The results of the OL components, Voc and SR will be discussed in detail in the following sections.

Vocabulary.

Vocabulary is considered as the most stable measure of literacy across time and hence several researchers have stressed the need for assessing vocabulary in preschool children (Biemiller, 1999; Cunningham & Stanovich, 1997; Tabors, Paez, & Lopez, 2002; Tabors, Porche, & Ross, 2003; Tabors, Snow, & Dickinson, 2001; Storch & Whitehurst, 2002). In the present study the expressive vocabulary of preschoolers was evaluated as the ability to label pictures of common objects in one minute. The results indicate that vocabulary skills of preschoolers show a significant growth from PKG through UKG (Figure 4.2.2). The results are in consonance with other studies (McConnell, Priest, Davis, & McEvoy, 2002; Missall & McConnell, 2004), which found that expressive vocabulary that was assessed using a one minute picture naming task is a good measure of its growth.

Majority of studies reported in literature have assessed vocabulary in bilingual children separately for both the languages and have drawn comparisons between the bilingual vocabulary score and the monolingual vocabulary score. These studies report that the mean vocabulary in bilingual children was lower than the monolingual speakers of that language; also that the bilinguals were at par with monolinguals in their native language vocabulary (Harley, 1992; Umbel, Pearson, Fernandez & Oller, 1992). In the present study the participants were not instructed to use any particular language to label the pictures; they were free to use the language of their choice. The responses were recorded and scored according to the accuracy of response and the language used. Since the objective of the present study was to evaluate the development of emergent literacy in ELLs, responses in English were given more weight when compared to native language responses.

A detailed analysis of the responses showed that in PKG the participants chose to label pictures predominantly in Kannada. This was an expected result since the participants used Kannada majority of the time in their home environment. This trend changed as they progressed from LKG to UKG, where they increasingly used English to label the pictures. One probable explanation for this developmental trend is that with increase in exposure to English at school, the participants improved their vocabulary in English and therefore responded predominantly in English. Also, since the participants were enrolled in schools with English as the medium of instruction, parents and teachers motivated the participants to use English. The decrease in the number of responses in Kannada may be attributed to increase in proficiency of English language rather than to poor abilities in Kannada language.

The inaccurate responses in the vocabulary task were analysed to find out if they were semantically-related to the target response. It was found that a few participants who did not label the stimulus correctly used a label from the same lexical category as the target response. For example, they labelled a ‘tomato’ as ‘apple’ or a ‘table’ as ‘chair’. The results revealed that with increase in grade the semantically-related responses decreased. This resulted in a negative correlation of the semantically-related responses with majority of the emergent literacy skills. It is interesting to note that all the semantically-related responses were in the second language and not in their native language. This shows that when participants were not sure of the accurate response they either used a word from their native language or a semantically-related word to label it. With advancing age, better knowledge of the English language facilitated reduction in the use of Kannada labels and semantically related responses.

It is evident from the results of the present study that in case of bilingual speakers who acquire literacy in the second language, exposure to the second language in school plays a major role in the acquisition of vocabulary in that language. Research has also revealed that monolingual speakers’ home context serves as a much larger predictor of a child’s vocabulary knowledge at the end of second grade than instruction that took place in the school settings (Christian, Morrison, Frazier, & Masetti, 2000; Hart & Risely, 1995).

The results of this study strengthen the view that vocabulary development forms an essential part of the emergent literacy process. As reported in literature (Tabors et al., 2005) picture vocabulary is the most stable of the language and literacy assessments across time. Studies have indicated that majority of words that children acquire in the years prior to formal schooling form a foundation for later reading comprehension (Pence, Bojczyk, & Williams, 2007). Hence it is important for early literacy professionals to assess children's vocabulary upon entry to preschool or kindergarten to determine whether children's vocabulary knowledge is developing appropriately.

Story re-tell.

Researchers agree that narratives of preschool children provide a wealth of information about oral language and emergent literacy (Chaney, 1998; Paris & Hoffman, 2004; Paris & Paris, 2003). The results of the present study show a significant difference in performance across grades from PKG through UKG (Figure 4.2.6) indicating that a story re-tell (SR) task can be used to study the development of narrative skills in preschool children. This is in consonance with several other studies reported in literature (Curenton & Justice, 2004; Gazella & Stockman, 2003; Hewitt, Hammer, Yont & Tomblin, 2005; Leadholm & Miller, 1992; Miller, Heilmann, Nockerts, Iglesias, Fabiano & Francis, 2006; O'Neill, Pearce & Pick, 2004; Schelletter & Parke, 2004).

A detailed analysis of the data revealed that when children entered PKG, their narratives were dominated by the native language Kannada (Figure 4.2.8), which was spoken at home and in their immediate environment. But, in LKG and UKG, narratives showed a significant increase in English (Figure 4.2.7), which could be a reflection of exposure to English provided by the preschools. The decrease in the number of responses in Kannada may be attributed to increase in proficiency of English language rather than to poor abilities in Kannada language. Thus, it is evident that the school environment plays an important role in the development of oral language in bilingual children acquiring literacy in a second language. However, this may not be case with monolingual children who acquire literacy in their native language. Studies conducted on monolingual children have found that the home environment contributed more to the oral language abilities than the school environment (Christian, Morrison, Frazier, & Masetti, 2000; Hart & Risely, 1995).

The present study shows that narratives in the form of a SR task can be used as an efficient tool for assessing the comprehension abilities of preschoolers. Question-answers are the easiest means to assess the extent to which a child has understood the story. It was seen that comprehension plays a vital role in the literacy development of ELLs, who have limited oral language proficiency in the second language. The responses obtained in the question-answer task were bilingual in nature ranging from single words to small phrases, to complete sentences. Since it was a comprehension task, the responses were scored based on the accuracy of the response and not on the length or complexity of the response.

The question-answer score (QAS) shows an increase in comprehension abilities across groups indicating an improvement in English comprehension as children move from PKG through UKG (Table 4.2.10). It is evident that with increased exposure to the English language, comprehension abilities show a significant development. This finding supports the use of a SR task for assessing the comprehension abilities of preschool children.

The descriptive statistics reveals a wide range of scores in the SR task (Table 4.2.6), which is similar to other studies that have used story re-tell tasks (Gazella & Stockman, 2003; Hewitt et. al., 2004). The wide range of scores within groups observed in the present study could be attributed to the differences in English proficiency and the age difference within subjects in each group. Due to the lack of a strict age-criterion in the preschools, each group (PKG, LKG and UKG) had an overlapping age range. For example, the maximum age in the LKG group is 66 months and the mean of the UKG group is 67 months; which accounts for the high variability in performance of the LKG group. Another probable factor that could explain the diversity in the length and complexity of responses is the fact that participants were free to use either of the languages (Kannada or English) to re-tell the story, which led to a range of mixed responses.

Majority of studies that evaluate the narratives of bilingual children elicit and record the narrative task separately in each language (Gutierrez-Clellen, 2002; Schelletter

& Parke, 2004). Children in these studies were instructed by the investigators to use ‘one language only’ while re-telling the story, which might have inhibited their natural narration ability. In the present study an effort was made to investigate bilingual utterances ‘as a whole’ instead of narrations in two separate languages. The responses were bilingual in nature with vocabulary and syntax of both Kannada and English. The analysis of data reveals that the participants had limited knowledge of the English language in PKG (Figure 4.2.7), which is indicated by the frequent use of Kannada (Figure 4.2.8) in the story re-tell task. As oral language proficiency in English increased, their narratives showed a significant shift from the Kannada to English.

The overall story re-tell scores showed a significant development across groups but measures such as MLU and TTR (Tables 4.2.12, 4.2.14) did not show a significant developmental trend across groups, which can be attributed to the small number of utterances in the language sample. Some researchers have considered MLU for samples less than 25 utterances (Gazella & Stockman, 2003) but Miller & Chapman (1981) recommend at least 50 utterances in a sample for measures such as MLU to be reliable. Since the participants in the present study had limited English proficiency, they produced small narratives that were telegraphic in nature. It was noticed that although the participants were not asked to retell the story in English, they tried to narrate the story in English since the story they heard was in English. This is clearly observed in the results with increase in the scores in English (Table 4.2.7) and decrease in the scores in Kannada (Table 4.2.8) from PKG through UKG. Thus, the small size of the samples in the present study could have led to the lack of significant developmental trend for measures such as MLU and TTR. Also, it has been reported in literature that TTR is not as reliable as NDW to evaluate the lexical diversity of preschoolers (Miller, 1991; Watkins et. al., 1995). Hence, while analyzing preschoolers’ bilingual language samples, measures such as MLU and TTR should be used with caution.

Another probable reason for the above finding could be that in the present study the language analysis was done for words and not for morphemes. Morphemic analysis would have provided a detailed picture of the syntactic rules used by preschoolers, which might have been more sensitive to the developmental changes in the narratives. For example, the Kannada utterance “kitty snana aithu” (“cat had bath”) has an MLU (words) of 3 words. If we compare it with another utterance “kittyge snana madsidlu” (“She gave Kitty a bath”) which also has an MLU of 3 words, we see that although the second utterance has the same number of words as the first one, it is syntactically far more developed than the first one as it includes the PNG (Person-Number-Gender) markers. The MLU-morphemes for the first utterance is 3 whereas for the second utterance is 7. Thus if the language analysis was done morphemically the results might have been significantly different for the three groups. It was noted that MLU-morphemes would have been a more suitable measure for Kannada-English bilingual language samples.

Although measures such as MLU and TTR did not show a developmental trend in the present study, other measures such as the Number of English Words- Story Retell (NEW-SR), LLF and NDW (Tables 4.2.7, 4.2.11, 4.2.13) were sensitive to developmental changes in the participants’ repertoire. Results reveal that NEW-SR showed a developmental trend from PKG to LKG but not from LKG to UKG. Results indicate that LLF and NDW showed a significant development from PKG to UKG but not from PKG to LKG and LKG to UKG. This shows that LLF and NDW are slow developing skills that show significant differences in performance after almost two years.

The results of LLF (Figure 4.2.11) are in consonance with the study by Curenton and Justice (2004), which found that literate language features (LLF) occurred at measurable rates for 3- to 5-year-old children. Although their study was with native English-speakers, its findings are consistent with ELLs. The results of the present study show that LLF start emerging in ELLs around the PKG and show a developmental progression through the later preschool years. In UKG, participants showed a variety of literate language features such as elaborated noun phrases, conjunctions, adverbs, and mental and linguistic verbs.

Studies on bilingual narrative analysis are very few and the ones cited in the present study have evaluated both the languages separately. Children in these studies were either asked to narrate the story in two separate sittings with a gap of one week (Gutierrez-Clellen, 2002) or were asked to narrate half of the story in one language and the other half in the other language (Schelletter & Parke, 2004) in the same sitting. It is difficult to compare studies on narrative assessment because they differ in several parameters such as (a) native language of subjects (b) language of instruction (c) age of the subjects (d) nature of the narratives -story retelling/story generation (e) sample size- greater than or less than 50 utterances (f) unit of utterance length- morphemes/words (g) segmentation of transcripts (h) computer program used to analyze the transcripts (i) statistical procedures used for analysis and (j) cross-sectional /longitudinal study. Thus, the heterogeneous nature of studies reported in literature makes it difficult to generalize developmental trends in narratives of preschool children.

Print Knowledge

Print Knowledge (PK) was the second domain of emergent literacy skills that was assessed using TELA. Results indicate that the participants show a significant developmental trend in their PK skills from PKG through UKG (Table 4.2.15). A closer look at Figure 4.2.15 reveals that PK skills emerged around PKG and were significantly well developed by UKG. In LKG, children showed a developmental progression, which was characterized by a wide range of scores. Some outliers were also seen in LKG indicating the heterogeneity in the scores during this period. It is evident that as children progress from PKG through UKG their PK skills show a significant development.

Print knowledge was assessed via three components: Concepts about Print (CAP), Alphabet Knowledge (AK) and Emergent Writing (EW). The results reveal that the components of print knowledge show a significant developmental trend (Figure 4.2.15) from PKG through UKG and they share significant correlations (Table 4.3.3) among one another. Similar results have been reported by several studies in the past (Hiebert, 1981; Justice & Ezell, 2001; Lomax, & McGee, 1987), which indicate that preschool children show a developmental progression in their print awareness skills.

This finding comes as a ‘pat on the back’ of preschool teachers who prepare young ELLs for a smooth transition to formal education. Review of literature has revealed that the preschool period is essential for the development of print knowledge skills, which eventually lead to successful reading achievement. The findings of the present study reveal that preschool children in the present sample were developing print knowledge skills that are essential for reading acquisition in later years. The results of each PK component will be discussed separately in the following section.

Concepts about print.

The scores for Concepts about Print (CAP) were derived by adding the scores of the measures employed to assess CAP such as Book Handling Skills (BHS), Text Discrimination (TD) and Environmental Print (EP). The results for the entire sample indicate that CAP scores show a developmental trend from PKG through UKG and correlate with all the emergent literacy components (Table 4.2.16). Figure 4.2.16 reveals that CAP scores show a developmental progression in PKG and fairly well developed CAP in UKG, but the scores in LKG showed a range of responses with several outliers indicating heterogeneity in the LKG group.

Results of the components of CAP revealed that preschool children had frequent interactions with print in school and at home, which led to realizations that print carries meaning. Studies in the past have expressed the need for preschool children to be exposed to literacy related materials (Ehri & Sweet, 1991; Morrow et al., 1990). Results of this study showed that BHS such as holding the book upright, turning pages and pointing to the beginning and the end of a book emerged around PKG (Figure 4.2.17) and were fairly well developed by UKG.

Results show that in PKG, preschoolers began to discriminate the linguistic symbols (letters and words) from other symbols such as numbers, figures and drawings. The results show an encouraging trend for TD skills, which were found to be fairly well developed by UKG. The present results support the findings of Schickedanz (1982, p. 247), who reported that between the age of 3-years and 5-years most children come to understand that “letters and words are different entities”.

Results show that there was a significant development from PKG to LKG but not from LKG to UKG for BHS and TD. This finding indicates that these literacy skills emerged around three-to-four years of age and were fairly developed by the time children reached the age of five-to-six years. This is in consonance with the study by Mason (1980), which reported that between the third and the fifth year of life children begin to understand that print carried meaning.

Results of BHS revealed that girls performed marginally better than boys in prekindergarten. This gender difference disappeared by the time they reached lower and upper kindergarten. Several studies in the past have reported that girls perform slightly better than boys in oral language, print knowledge and phonological awareness skills (Below, Skinner, Fearrington & Sorrell, 2010; Camarata & Woodcock, 2006; Chatterji, 2006; Dickinson et al., 2003; Hyde & Linn, 1988). It was interesting to note that in the present study only marginal gender differences were found, which were visible only in PKG. Majority of emergent literacy skills assessed in the present study did not show any gender difference in performance.

In case of EP, it was seen that there was a significant development from LKG to UKG but not from PKG to LKG. This shows that children might begin to notice print around them as early as three years of age but they begin to associate meaning with environmental print around four years of age. Some researchers have linked letter naming skills to environmental print skills (Johnston et al., 1996; Riley, 1996) while others report that environmental print does not facilitate letter naming skills (Cardoso-Matins, Rodrigues, and Ehri, 2003; Masonheimer, Drum, and Ehri, 1984). Although environmental print has received mixed support in literature (Cardoso-Matins, Rodrigues & Ehri, 2003; Masonheimer, Drum, and Ehri, 1984), researchers agree that it provides meaningful interactions with written language, which helps preschool children understand the functions of print (Cronin, Farrell, & Delaney, 2002; Johnston et al., 1996; Riley, 1996; Share & Gur, 1999).

Alphabet knowledge.

The present study evaluated alphabet knowledge using measures such as letter name knowledge (LN), letter sound knowledge (LS), alphabetic principle (AP) and word recognition (WR). The combined scores on alphabet knowledge show that there is a significant developmental progression from PKG through UKG (Table 4.2.20). In case of LN (Table 4.2.21) it was seen that children show a significant development from PKG to LKG but not from LKG to UKG, which means that letter naming emerged around PKG and was fairly well developed by the time children reached UKG. In case of LS (Table 4.2.22), a significant development was seen from LKG to UKG and not from PKG to LKG, which means that although children could name letters in the initial preschool years, they began to appreciate letter-sounds around five years of age. These findings are in consonance with the results of the past research (Brady, Fowler, Stone, & Winbury, 1994; Lomax & McGee, 1987), which found that children's letter knowledge improves significantly between three to six years of age.

In case of AP (Table 4.2.23) it was seen that children showed a significant development from LKG to UKG but not from PKG to LKG. This means that around five years of age they began to understand that speech was a string of sounds that could be represented in print, with smaller strings representing smaller printed words and longer strings representing longer printed words. The development of AP coincides with the development of LS and WR, which shows that these skills come into play when children are cracking the alphabetic code and beginning to recognize words. This finding is consistent with the results of several researchers, who demonstrate that children learn the alphabetic principle when they understand that words are made up of letters that represent sounds in speech (Lomax & McGee, 1987; Share, Jorm, Maclean & Matthews, 1984; Tunmer & Nesdale, 1985).

Similar results were seen for word recognition (WR) abilities (Table 4.2.24), where a significant development was seen from LKG to UKG but not from PKG to LKG. Since children began to appreciate the letter-sounds and understood the alphabetic principle by five years of age, it was reasonable to expect that word recognition emerged around the same age. It was seen that younger preschoolers could identify the letters in the word but were unable to blend the sounds and read them as whole words. It was interesting to note that majority of children used the decoding strategy to read the words, that is, they read the word letter-by-letter and then blended them as a whole. Only a handful of children used the 'sight-word' strategy to read the words. Since the word-list was prepared in the CVC format with regular words, it is possible that after decoding the word, the participants might have used the 'analogy' strategy to blend the sounds and read them as a whole, as reported in literature by Ehri and Robers (2006).

Emergent writing.

In the present study it was seen that children's initial attempts at writing began with random scribbling. When asked to write their name, children made marks on paper, which resembled dots, circles and/or lines, which is in consonance with earlier studies (Clay, 1975; Heibert, 1988). It was also observed that none of the participants drew faces or figures when asked to write their name. This indicates that children were aware that writing differs from drawing, which is an important development in the print awareness skills of preschool children. Bloodgood (1999) reports that children distinguish between drawing and writing at about 2 and a half to 3 years of age. The findings of the present study show that the 3-to-4-year old children were aware that writing differs from drawing. Other researchers have also found that preschool children make letter-like scribbles to label their drawings indicating the awareness of the distinction between writing and drawing (Barclay, 1992; Ferreiro, 1984). According to van Kleeck (1990), children begin writing even before they can form letters and this early writing reveals children's early attention to the conventions of written language.

Results show that 3-to-4-year old children exhibited a variety of responses ranging from scribbles to writing their name. Some children could write a few letters from the alphabet, some could write a few letters in their name, while some could write all the letters in their name in the proper sequence. Thus it was seen that although the scores in PKG ranged from 1 to 9 (Max. score for EW = 10), the median was 4.5, which shows that majority of children in PKG could write some recognizable letters in their name. In LKG, majority of children got the directionality right and could write their names with the proper sequence of letters (using either the upper or the lower case).

Name-writing responses of older preschoolers (UKG) indicate an improvement in their knowledge of the finer aspects of writing conventions such as letter formation, directionality, letter sequence and capitalization. This shows that name-writing emerges around 3-to-4-years of age (Figure 4.2.25) and shows a developmental progression through six years of age. Thus, the results indicate that emergent writing shows a developmental trend from PKG to UKG, which is in consonance with the earlier reports on preschool writing (Hildreth, 1936; Springate, 1983; Stanley & Pershin, 1978).

Figure 4.2.37 shows the development of emergent writing in ELLs from PKG through UKG (age range of 3- to 6- years). It is important to note that the emergent writing development depicted in this figure does not imply that writing emerges in discrete stages. This figure is a representation of the diverse developmental stages in emergent writing observed in the present sample. The stages depicted in the figure are overlapping and may or may not be seen in every child in the age range of 3-6 years. A closer look at Figure 4.2.37 reveals that the initial scribbles progress into letter-like forms that eventually take the shape of recognizable letters, which later form letter strings with mixed case and eventually proper sequence of letters with appropriate capitalization.

The writing samples in Figure 4.2.37 are scanned copies of the name-writing task of some of the participants from the present study. Plate 1 shows the writing sample of a child (3;7 years, PKG) who has scribbled without any directionality or linearity, although the figures have started taking a closed shape. Plate 2 shows the writing sample of a child (4;1 years, PKG) who has written some letter-like forms with emerging directionality and linearity. In writing sample in plate 3 shows that the child (4;2 years, PKG) could write some recognizable letters with distinct direction and linearity. The writing sample in plate 4 shows that the child (4;4 years, LKG) wrote the first three letters of her name ('ARP....' for 'Arpitha') but could not complete it. When the investigator motivated her to write, she wrote some more letters. The writing sample in plate 5 shows that the child (5;3 years, UKG) has written his name (Janardhan. C) in a proper sequence but has mixed the case. He wrote 'D' and 'H' in upper case and the rest of the letters in lower case. In plate 6, the child (5;6 years, UKG) wrote his complete name ('Anirudha') in upper case. The writing sample in plate 7 shows that the child (5;9 years, UKG) has written her name ('D. Lakshmichandanan.') in cursive, with proper sequencing and capitalization. She has even used a 'period' to show the end of her writing.

It must be reiterated here that the samples in Figure 4.2.37 are writings of different participants and show a cross-sectional developmental pattern in emergent writing. It was interesting to note that the maximum score for EW in PKG was 9, which means that there were some children in PKG who could write their names with all the letters in a proper sequence and directionality, while there were others who were still scribbling. Therefore the stages exhibited in Figure 4.2.37 are not representational of the entire sample, but are examples of the diversity in the development of emergent writing. It is possible that some children skip some of these stages and show swift progression in their writing abilities, while others show a more gradual development characterized by spurts and plateaus of growth.

Figure 4.2.37. Development of emergent writing in ELLs (3-6 yrs)

Nonetheless, it is evident that these levels of name-writing development are roughly similar to the patterns reported in literature. Some researchers have described these levels as: scribbling, horizontal scribbling, discrete units, letters, and correct spelling of the children's names (Fox & Saracho, 1990; Saracho, 1990; Sulzby, 1985b). While others have reported the developmental pattern as scribbles to linear forms to mock letters to letters in random order to accurate representations (Hildreth, 1936). Hence it may be said that the development of emergent writing in English Language Learners is almost parallel to the development seen in children who are native speakers of English.

Phonological Processing Skills

Phonological Processing (PP) scores were derived by adding the scores of the measures that were employed to assess PP skills: Phonological Awareness (PA), Short Term Memory (STM) and RAN (Rapid Automatized Naming (RAN). The results of the present study indicate that PP scores of the sample showed a developmental trend from PKG to UKG (Table 4.2.26). This finding is in consonance with the results of earlier studies, which consider PP as an important element of emergent literacy skills (Adams, 1990; Lonigan, 2006; Wagner & Torgesen, 1987). Figure 4.2.26 reveals that the PP skills began emerging in PKG and reached the maximum in UKG. It was seen that participants in LKG showed a wide range of scores indicating that PP skills show greater homogeneity in PKG and UKG. This also shows that majority of the PP skills emerged during the PKG period and reached a considerable level of development in LKG and UKG.

Phonological awareness.

The results of the present study indicate that Phonological Awareness (PA) (Table 4.2.27) scores showed a developmental trend from PKG through UKG. Figure 4.2.27 reveals that the PA skills emerged in PKG and almost reached the maximum by UKG. PA scores showed a wide range in LKG, which indicates that PA concepts were undergoing a developmental progression at this stage. Research in the past has shown that PA skills show a developmental trend in the preschool years (Anthony et al., 2005; Carrol et al., 2003; Lonigan, 2006; Storch & Whitehurst, 2002). It has been reported in literature that children as young as 3 years demonstrate phonological awareness skills (Lonigan et al., 1998; MacLean, Bryant & Bradley, 1987).

The results of the PA measures (Table 4.2.28, 4.2.29, 4.2.30, 4.2.31, 4.2.32) reveal that WA, RA, AA and pA show a developmental trend from PKG through UKG, while SA shows a developmental trend from PKG to LKG but not from LKG to UKG. This can be explained by the fact that the SA scores reached a maximum in LKG hence they did not show a developmental trend from LKG to UKG. Figures 4.2.28, 4.2.29 and 4.2.31 show that WA, RA and AA emerge in LKG and show a developmental progression in UKG. SA and pA show a developmental progression from PKG to LKG and reached a maximum in LKG. Hence, it is evident that SA and pA emerge as essential elements of PP skills in PKG while WA, RA and AA emerge as essential elements of PP skills in UKG.

This pattern of developmental progression of PA skills is in contrast with several studies that state that preschoolers initially develop an awareness of gross segments (such as words and syllables) which is followed by the awareness of finer phonological segments (such as phonemes). According to the review of literature by van Kleeck (1990), a general order for the emergence of phonological awareness abilities typically begins when children divide sentences into semantically meaningful word groups. The ability to segment sentences into words emerges next, followed by the more phonologically based skill of segmenting words into syllables. The ability to segment words into phonemes comes last. Similar sequence of phonological awareness development has been supported by several researchers in the past (Anthony et al., 2003; Ehri et al., 2001; Goswami & Bryant, 1990; Carrol, Snowling, Hulme & Stevenson, 2003). Carrol et al. (2003) found that the pattern of progression from syllable to onset and rime to phonemes was not clear cut but their findings suggest that syllables and rime tasks were easier than phoneme task.

The review of literature shows that the developmental conceptualization of phonological awareness skills is a complex process. Goswami and Bryant (1990) have delineated the phonological awareness skills into linguistic complexity and cognitive operations. Majority of researchers have provided an order of development of phonological awareness skills based on linguistic complexity, that is, from larger linguistic units to smaller ones. In the present study it was seen that SA and pA developed earlier than WA, RA and AA. It is possible that the cognitive operations involved in the processing of these linguistic units play a major role in the order in which they are developed. If we analyze the cognitive operation required for each of these PA measures we see that matching of syllables (SA) developed earlier than blending of phonemes (pA), which developed prior to segmentation of words and syllables (WA), matching of rhymes (RA) and matching of initial phonemes (AA). Therefore, the findings of the present study show that it is not just the complexity of the linguistic unit that determines the developmental sequence, the cognitive operations involved in the processing of phonological units also contributes to the order of acquisition of phonological awareness skills. The results partly support the study by Anthony et al. (2003), which concludes that the ability to *detect* precedes the ability to *manipulate* phonological units and *blending* precedes *elision*.

When we compare the WA results with other studies reviewed in literature it appears that WA develops much earlier in native speakers of English-speaking children. According to Ezell and Justice (2005), children as old as three-to-four-years, begin to identify word boundaries. In the present study it was seen that ELLs could segment sentences into words and syllables when they were in LKG, that is, around 4-to-5-years old. It is probable that since the level of oral proficiency in English was emerging in PKG they were not certain of the word boundaries. By LKG their oral language proficiency in English improved, which probably enhanced the emergence of word awareness skills. Therefore, in LKG and UKG, WA scores correlate significantly with majority of oral language measures (Tables 4.2bPP, 4.2cPP) (correlational analysis is described in the following section). This indicates that for ELLs, oral proficiency of English is important for phonological awareness tasks (such as word awareness) that use sentences as stimuli.

The WA task required the participants to segment the sentence into words. It was interesting to note that the participants not just segmented the sentence into words they also segmented the words into syllables. For example, majority of participants segmented the word ‘drinking’ into ‘drink’ and ‘ing’. This shows that in ELLs with adequate level of English proficiency, segmentation of sentences and words develops simultaneously. This finding is consistent with the results of Lonigan et al. (1998), who reported that children (around four years) realize that speech can be broken down into words the same time they recognize that words can be broken down into syllables. The ability to understand word boundaries improves children's comprehension of oral language, which in turn helps them identify and map the sounds onto written words when reading instruction begins. Syllable awareness helps children recognize word parts, which enhances their phoneme-grapheme correspondence skills when learning to read.

In the present study SA was assessed using a syllable matching task. The task required the participants to match the initial syllable or the final syllable of a word with a picture from a set for three pictures. For example, in the word 'rainbow' the participant was required to match the initial syllable 'rain' with the appropriate picture (from a set of three) and in the word 'peacock' the participant was required to match the syllable 'cock' with the appropriate picture (from a set of three). The results showed a similar developmental trend for initial and final syllable matching. The results indicate that although children in PKG showed a range of responses the SA score reached the maximum. Due to this SA showed significant difference in performance from PKG to LKG but not from LKG to UKG.

The development of phonological awareness showed a significant pattern as shown in Figure 4.2.38. The ability to match syllables (Syllable Awareness) developed first, followed by blending phonemes (Phoneme Awareness), segmentation of sentences/words (Word Awareness), matching rhyme (Rhyme Awareness) and matching initial phonemes (Alliteration Awareness) respectively. This pattern of developmental progression is partially consistent with the findings of previous researchers (Anthony, Williams, McDonald & Francis, 2007; Ehri et al., 2001; Goswami & Bryant, 1990; Carrol, Snowling, Hulme, & Stevenson, 2003; van Kleeck, 1990), which shows that preschoolers initially develop an awareness of gross segments such as words and syllables, which is followed by the awareness of finer phonological segments such as phonemes. The present findings show that words and syllable segmentation is easier than phoneme alliteration. But, the results also reveal that blending of phonemes is easier than matching rhyme and segmentation of sentences and words, which is in contrast with the above studies. Carrol et al. (2003) found that the pattern from syllable to onset and rhyme to phonemes was not clear cut, although their findings suggest that syllable and rhyme tasks were easier than phoneme tasks. Anthony et al. (2007) have also shown that blending is an easier task for preschoolers than eliding.

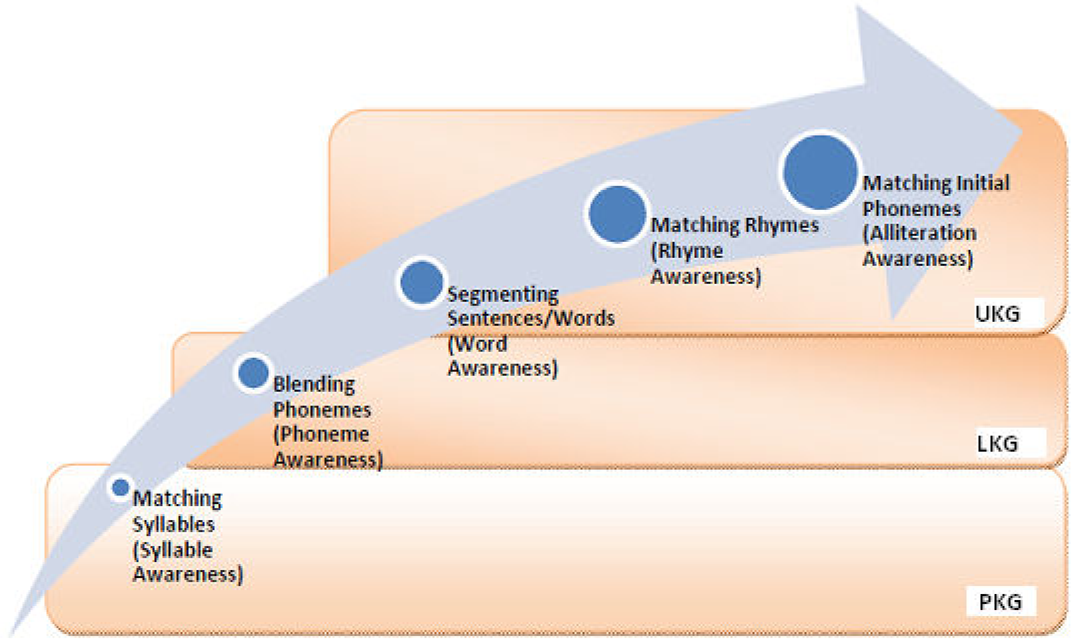

Figure 4.2.38. Development of phonological awareness in ELLs

Segmentation of a sentence into words requires detection of word boundaries, which in turn is dependent upon their English language proficiency of ELLs. Therefore, ELLs develop phoneme blending ability much earlier than sentence/word segmentation. This shows that meta-linguistic knowledge is dependent upon linguistic knowledge (oral language proficiency of English) in ELLs, indicating that oral language is a precursor to meta-linguistic awareness, which is essential for successful reading acquisition in alphabetic languages (such as English). This finding is partially similar to the study by Carroll, Snowling, Hulme & Stevenson, 2003), who found that implicit phonological awareness is a skill that grows out of normal language development. Further they found that this implicit ability seems to interact closely with receptive lexical knowledge and might therefore be better considered as a part of normal linguistic development rather than metalinguistic development.

Short term memory.

Consistent with the results of previous research (Gatherole & Adams, 1994), the results of the present study indicate that non-words can be successfully used to assess the phonological short term memory of children in the age range of three to six years.

Findings of the present study indicate that the repetition of non-words showed a significant developmental continuity from PKG through UKG (Table 4.2.33, Figure 4.2.33). It was evident that older preschoolers could repeat longer non-words with greater accuracy indicating that their short term memory could store more information than their younger counterparts.

The analyses of data revealed that majority of participants, including the younger ones (PKG) were able to repeat non-words up to three syllables in length. The non-word repetition task became challenging for the younger participants when the length of non-words increased to four syllables. It has been reported in literature that younger preschool children find it difficult to hold more than three syllables in their short term memory (Montgomery, 2003), thus, an increase in the number of syllables affected the accuracy of non-word repetition in the present sample. The kind of errors seen in the repetition of longer syllables included omissions, substitutions and transposition of syllables and phonemes.

Rapid automatized naming.

In the present study, phonological access to lexical storage was studied using the 'Rapid Automatized Naming' (RAN) task, which has been employed repeatedly by researchers in the past (Anthony et al., 2007; Araujo et al., 2010, 2011, de Jong & Olson, 2004; Denckla & Rudel, 1976; Kirby, Roth, Desrochers, & Lai, 2008; Torgesen, Wagner, & Rashotte, 1999; Wolf, 1999). The results of the present study reveal that performance on RANO and RANS shows a significant developmental trend from LKG to UKG but not from PKG to LKG (Table 4.2.35, 4.2.36). This may be due to the fact that younger participants (PKG & LKG) found the rapid naming task more challenging when compared to their older counterparts. Hence their performance did not show significant difference between the two grades but difference was seen only with the UKG group.

Hence results of the present study show the developmental pattern of emergent literacy skills across domains from PKG through UKG. Several studies in the past have shown that girls performed better than boys on tasks assessing OL, PK and PP (Below et al., 2010; Camarata & Woodcock, 2006; Chatterji, 2006; Dickinson et al., 2003; Hyde & Linn, 1988). Results of the present study did not find a gender effect but a marginal interaction effect was found between grade and gender for book handling skills in PKG.

It is noteworthy that no other emergent literacy measure showed a gender effect across grades. The study by Below et al. (2010) found that the small gender differences that exist in the literacy measures during the kindergarten period fade as the children mature. The review of literature in their study attributes these differences to physiological-maturational differences that are innate in males and females.

4.3 Results for TELA: Correlation Analysis

Analysis of data on two-way MANOVA indicated a clear developmental trend from PKG through UKG for the majority of emergent literacy measures. In order to examine the relationship among the components of Oral Language (OL), Print Knowledge (PK) and Phonological Processing (PP) skills, and also to extrapolate or identify the skills that would serve as predictors of Word Recognition (WR) and Emergent Writing (EW), statistical methods of correlation and regression analyses were employed.

Spearman's rho was used to study the correlations between the emergent literacy domains – OL, PK and PP. Results of the correlational analysis for the entire sample (95 participants) indicate that all the emergent literacy scores (OL, PK, and PP) co-relate significantly with each other at .01 level of significance (Table 4.3.1).

Spearman's rho was calculated for each grade separately to find out the grade-wise correlation among the emergent literacy domains (Table 4.3.2). The results indicate that in PKG, PK and PP are correlated significantly at .01 level of significance, whereas OL does not correlate with either PK or PP ($p > .05$). In LKG, OL significantly correlates with PK at .05 level of significance and with PP at 0.01 level of significance, while PK and PP do not show any significant correlation. In UKG, all the three emergent literacy domains, OL, PK and PP are significantly correlated at .01 level of significance.

Table 4.3.1
Spearman's rho for Emergent Literacy Domains

	N	OL	PK	PP
OL	95	1		
PK	95	.680**	1	
PP	95	.662**	.866**	1

Note. N = Number of participants, OL = Oral Language, PK = Print Knowledge, PP = Phonological Processing
* $p < .05$ ** $p < .01$

Table 4.3.2

Grade-wise Correlation of Emergent Literacy Domains

Grades	N	ELD	OL	PK	PP
PKG	32	OL	1	-	-
		PK	.311	1	-
		PP	.125	.605**	1
LKG	30	OL	1	-	-
		PK	.412*	1	-
		PP	.474**	.343	1
UKG	33	OL	1	-	-
		PK	.573**	1	-
		PP	.522**	.607**	1

Note. ELD = Emergent Literacy Domains, OL = Oral Language, PK = Print Knowledge, PP = Phonological Processing

* p < .05 ** p < .01

Table 4.3.3

Spearman's rho for Emergent Literacy Components for the Entire Sample

		OL		PK			PP		
		Voc	SR	CAP	AK	EW	PA	STM	RAN
OL	Voc	1							
	SR	.501**	1						
PK	CAP	.658**	.492**	1					
	AK	.713**	.527**	.777**	1				
	EW	.631**	.422**	.753**	.824**	1			
PP	PA	.634**	.543**	.738**	.844**	.774**	1		
	STM	.572**	.323**	.453**	.566**	.429**	.566**	1	
	RAN	-.503**	-.303**	-.485**	-.554**	-.469**	-.563**	-.527**	1

Note. Number of participants in the sample = 95

OL = Oral Language, Voc = Vocabulary, SR = Story Retell, PK = Print Knowledge, CAP = Concepts about Print, AK = Alphabet Knowledge, EW = Emergent Writing, PP = Phonological Processing, PA = Phonological Awareness, STM = Short Term Memory, RAN = Rapid Automatic Naming

* p < .05 ** p < .01

Spearman's rho was calculated to find out the correlation among the emergent literacy components[12] for the entire sample of 95 participants (PKG, LKG and UKG) and the results (Table 4.3.3) indicate that all the emergent literacy sub-skills (Voc, SR, CAP, AK, EW, PA, STM, RAN) co-relate significantly with each other at .01 level of significance.

[12] OL = Oral Language: Voc = Vocabulary, SR = Story Retell; PK = Print Knowledge: CAP = Concepts about Print, AK = Alphabet Knowledge, EW = Emergent Writing; PP = Phonological Processing, Ph.A = Phonological Awareness, STM = Short Term Memory, RAN = Rapid Automatic Naming

Grade-wise correlation was established for the emergent literacy components. Table 4.3.4 shows that in case of PKG, CAP correlates with all the sub-skills at .01 level of significance except SR and RAN. In fact, SR did not correlate with any sub-skills (p > .05) and RAN correlated with only PA at .01 level of significance. RAN showed negative correlation with majority of the sub-skills. PA showed correlations with CAP, AK, STM and RAN at .01 level of significance, with AK at .05 level of significance and it did not correlate with SR and EW. AK correlated with Voc., CAP and PA at .01 level of significance, with EW and STM at .05 level of significance and did not correlate with SR and RAN. Vocabulary correlated with CAP and AK at .01 level of significance, with EW and STM at .05 level of significance and it did not correlate with SR, PA and RAN. STM correlated with CAP, PA at .01 level of significance, with Voc., AK at .05 level of significance and it did not correlate with SR, EW and RAN. EW correlated with CAP at .01 level of significance, with Voc., AK, PA, RAN at .05 level of significance and it did not correlate with SR and STM.

Table 4.3.4

Correlations for Emergent Literacy Components in PKG

		OL		PK			PP		
		Voc	SR	CAP	AK	EW	PA	STM	RAN
OL	Voc	1							
	SR	.172	1						
PK	CAP	.510**	.187	1					
	AK	.487**	-.048	.524**	1				
	EW	.420*	.195	.747**	.436*	1			
PP	PA	.348	-.079	.557**	.508**	.446*	1		
	STM	.387*	-.040	.492**	.371*	.320	.457**	1	
	RAN	-.202	.152	-.327	-.205	-.367*	-.500**	-.174	1

Note. Number of participants in PKG = 33

* p < .05 ** p < .01

Table 4.3.5

Correlations for Emergent Literacy Components in LKG

		OL		PK			PP		
		Voc	SR	CAP	AK	EW	PA	STM	RAN
OL	Voc	1							
	SR	.390*	1						
PK	CAP	.149	.197	1					
	AK	.533**	.272	.219	1				
	EW	.285	.168	.472**	.448*	1			
PP	PA	.224	.483**	.153	.245	.339	1		
	STM	.442*	.190	-.086	.223	.065	.279	1	
	RAN	-.291	-.083	.014	-.173	-.104	-.179	-.590**	1

Note. Number of participants in LKG = 30

* p < .05 ** p < .01

Table 4.3.5 shows that in case of LKG, Vocabulary correlates only with AK at 0.01 level of significance and SR and STM at .05 level of significance. SR correlates only with PA at .01 level of significance and Voc. at .05 level of significance. AK correlates only with Voc. at .01 level of significance and EW at .05 level of significance. EW correlates only with CAP at .01 level of significance and AK at .05 level of significance. STM correlates only with RAN at .01 level of significance and Voc. at .05 level of significance. The other sub-skills correlated with only one sub-skill at .01 level of significance (CAP with EW, PA with SR and RAN with STM) and not with the others. The other correlations were not significant ($p > .05$).

Table 4.3.6 shows that in case of UKG, Vocabulary correlates with all the components at .01 level of significance, except EW ($p > .05$). SR correlates with Voc. and CAP at .01 level of significance and with AK, PA, RAN at 0.05 level of significance. CAP correlates with Voc., SR, AK at .01 level of significance and PA at .05 level of significance. AK correlates with Voc., CAP, PA, STM, RAN at .01 level of significance and SR at .05 level of significance. EW does not show any significant correlation with any sub-skills. PA correlates with Voc. and AK at .01 level of significance and with SR, CAP, STM, RAN at .05 level of significance. STM correlates with Voc., AK at .01 level of significance and PA at .05 level of significance. RAN correlates with Voc., AK at .01 level of significance and SR, PA, STM at .05 level of significance. The other correlations were not significant ($p > .05$).

Table 4.3.6

Correlations for Emergent Literacy Components in UKG

		OL		PK			PP		
		Voc	SR	CAP	AK	EW	PA	STM	RAN
OL	Voc	1							
	SR	.528**	1						
PK	CAP	.665**	.455**	1					
	AK	.586**	.436*	.489**	1				
	EW	.181	-.049	.072	.167	1			
PP	PA	.512**	.383*	.411*	.557**	.235	1		
	STM	.479**	.271	.241	.643**	-.051	.415*	1	
	RAN	-.461**	-.391*	-.339	-.495**	-.071	-.419*	-.423*	1

Note. Number of participants in UKG = 32

* $p < .05$ ** $p < .01$

The emergent literacy measures that were considered for correlational analysis are given in the footnote[13]. The correlations among these measures were studied for the entire sample (PKG, LKG, and UKG) as well as for each grade separately. The results for each grade will be described separately in the following sections.

Table 4.3.7 shows the correlation amongst the emergent literacy measures in all the three groups combined- PKG, LKG and UKG. The results of the combined group showed that majority of the emergent literacy measures were correlated with one another at .01 and .05 level of significance with the exception of TTR which correlated only with NEW-SR and LLF at .01 level of significance and with TD at .05 level of significance. NDW correlated with all the measures except TTR, TD and RANO. It was seen that RANO correlated with all the measures except MLU, NDW and TTR. Results also show that TTR, RANO and RANS show a negative correlation with majority of the variables, since TTR was a ratio between number of different words and total number of words, and RANO and RANS were timed tasks.

The results for each grade showed that the correlations between measures varied across grades. Tables 4.3.8, 4.3.9 and 4.3.10 show the correlation amongst the emergent literacy measures in PKG, LKG and UKG respectively. The results of Table 4.3.8, 4.3.9 and 4.3.10 are summarized separately for oral language (Table 4.3.8.1, 4.3.9.1, and 4.3.10.1), print knowledge (Tables 4.3.8.2, 4.3.9.2 and 4.3.10.2) and phonological processing (Tables, 4.3.8.3, 4.3.9.3 and 4.3.10.3) measures respectively.

[13] NEW-V = Number of English Words- Vocabulary, NEW-SR = Number of English Words- Story Retell, QAS = Question Answer Score, LLF = Literate Language Features, MLU = Mean Length of Utterance, TTR = Type Token Ratio, NDW = Number of Different Words, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print, LN = Letter Names, LS = Letter Sounds, AP = Alphabetic Principle, WR = Word Recognition, EW = Emergent Writing, WA = Word Awareness, RA = Rhyme Awareness, SA = Syllable Awareness, AA = Alliteration Awareness, pA = Phoneme Awareness, STM = Short Term Memory, RANO = Rapid Automatized Naming-Object, RANS = Rapid Automatized Naming-Size

A	SA	AA	pA	STM	RANO	RANS
32**	.373**	.584**	.530**	.569**	-.477**	-.501**
70**	.299**	.479**	.468**	.312**	-.465**	-.385**
36**	.512**	.478**	.485**	.449**	-.392**	-.483**
17**	.342**	.527**	.488**	.420**	-.381**	-.449**
79**	.266**	.442**	.446**	.367**	-.173	-.312**
101	-.006	.019	.023	-.016	.041	.024
25**	.213*	.350**	.291**	.278**	-.145	-.233*
56**	.368**	.354**	.439**	.284**	-.393**	-.396**
27**	.303**	.428**	.575**	.423**	-.275**	-.380**
00**	.324**	.478**	.472**	.354**	-.305**	-.387**
58**	.444**	.580**	.596**	.507**	-.385**	-.478**
04**	.301**	.678**	.522**	.544**	-.364**	-.484**
77**	.236*	.387**	.372**	.320**	-.305**	-.377**
31**	.343**	.597**	.530**	.436**	-.399**	-.469**
23**	.474**	.553**	.654**	.429**	-.370**	-.454**
57**	.444**	.711**	.666**	.507**	-.423**	-.465**
1	.441**	.745**	.619**	.476**	-.355**	-.440**
41**	1	.335**	.502**	.309**	-.374**	-.274**
45**	.335**	1	.649**	.456**	-.359**	-.443**
19**	.502**	.649**	1	.495**	-.478**	-.457**
76**	.309**	.456**	.495**	1	-.355**	-.545**
55**	-.374**	-.359**	-.478**	-.355**	1	.558**
40**	-.274**	-.443**	-.457**	-.545**	.558**	1

J = Mean Length of Utterance, TTR = Type Token Ratio, NDW = Number of Different Words, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print,
A = Syllable Awareness, AA = Alliteration Awareness, pA = Phoneme Awareness, STM = Short Term Memory, RANO = Rapid Automatized Naming-Object, RANS = Rapid

AA	pA	STM	RANO	RANS
162	.385*	.291	-.392*	-.253
077	.323	.019	-.249	-.094
298	.425*	.242	-.554**	-.471**
061	.397*	.450**	-.286	-.510**
028	.200	.164	.042	-.130
259	-.128	-.093	-.001	.152
091	.058	.036	.154	.042
105	.252	.240	-.448*	-.382*
326	.387*	.433*	-.059	-.292
311	.478**	.223	-.228	-.176
328	.555**	.371*	-.192	-.191
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
271	.473**	.320	-.304	-.387*
046	.333	.284	-.156	-.010
57**	.443*	.449**	-.151	-.260
233	.557**	.251	-.555**	-.367*
1	.478**	.253	-.077	.063
78**	1	.444*	-.412*	-.213
253	.444*	1	-.049	-.210
077	-.412*	-.049	1	.588**
063	-.213	-.210	.588**	1

J = Mean Length of Utterance, TTR = Type Token Ratio, NDW = Number of Different Words, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print, A = Syllable Awareness, AA = Alliteration Awareness, pA = Phoneme Awareness, STM = Short Term Memory, RANO = Rapid Automatized Naming-Object, RANS = Rapid

A	AA	pA	STM	RANO	RANS
072	.327	-.047	.481**	-.163	-.245
37	.422*	.115	.226	-.247	.001
19*	.271	.062	.362*	-.048	-.077
13	.545**	.126	.174	-.111	.069
96	.398*	.265	.201	-.200	-.029
24	.073	.270	.112	-.008	-.309
42	.286	.018	.087	-.022	.059
25	.252	.082	-.074	.078	.057
46	-.090	-.210	-.032	.042	.240
29	-.092	.129	.023	.065	-.254
087	.160	-.185	.016	.061	-.079
051	.457*	.171	.314	-.001	-.146
01	-.137	.146	.166	-.140	-.054
36*	.037	-.007	.382*	-.181	-.257
88	.264	.103	.065	.025	-.041
15	.660**	.419*	.249	-.347	-.021
77*	.607**	.408*	.194	-.089	.159
1	.042	.094	.095	.022	.164
42	1	.580**	.175	-.078	-.165
94	.580**	1	.188	-.372*	-.282
95	.175	.188	1	-.363*	-.592**
22	-.078	-.372*	-.363*	1	.296
64	-.165	-.282	-.592**	.296	1

J = Mean Length of Utterance, TTR = Type Token Ratio, NDW = Number of Different Words, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print, A = Syllable Awareness, AA = Alliteration Awareness, pA = Phoneme Awareness, STM = Short Term Memory, RANO = Rapid Automatized Naming-Object, RANS = Rapid

AA	pA	STM	RANO	RANS
.617**	.335	.488**	-.301	-.577**
.170	.185	.204	-.439*	-.321
.283	.080	.242	-.198	-.614**
.118	.024	.207	-.201	-.321
.299	.223	.199	.290	-.177
.157	.225	.133	.046	-.011
.458**	.390*	.397*	-.105	-.434*
.126	.272	.095	-.354*	-.255
.	.	.	.	.
.384*	.028	.308	-.131	-.278
.507**	.287	.517**	-.233	-.322
.584**	.294	.586**	-.346*	-.412*
.221	.271	.287	-.245	-.410*
.532**	.186	.437*	-.587**	-.453**
.134	.118	-.051	-.011	-.142
.458**	.161	.418*	-.159	-.483**
.578**	.218	.419*	-.316	-.728**
.	.	.	.	.
1	.225	.430*	-.234	-.519**
.225	1	.106	-.112	-.106
.430*	.106	1	-.246	-.517**
-.234	-.112	-.246	1	.487**
-.519**	-.106	-.517**	.487**	1

J = Mean Length of Utterance, TTR = Type Token Ratio, NDW = Number of Different Words, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print, A = Syllable Awareness, AA = Alliteration Awareness, pA = Phoneme Awareness, STM = Short Term Memory, RANO = Rapid Automatized Naming-Object, RANS = Rapid

Table 4.3.8.1

Correlation for Oral Language Measures in PKG

OL Measures	Significant OL Measures	Significant PK Measures	Significant PP Measures
NEW-V	NEW-SR*, QAS**	BHS*, TD**, LN**, EW**	SA*, pA*, -RANO*
NEW-SR	NEW-V*, -TTR*	EP*, EW*	-pA*
QAS	NEW-V**, LLF*	TD**, LN**, EW**	SA*, pA*, -RANO**, -RANS*
LLF	QAS*	TD*, EW*	PA*, STM**, -RANS**
MLU	NDW**	TD*	-
TTR	-	-EW*	-
NDW	MLU**	-	-

Note. Number of participants in PKG = 33
* p < .05 ** p < .01

Table 4.3.9.1

Correlation for Oral Language Measures in LKG

Oral Language Measures	Significant Oral Language Measures	Significant Print Knowledge Measures	Significant Phonological Processing Measures
NEW-V	NEW-SR**, LLF*	LN**, LS*	STM**
NEW-SR	NEW-V**, LLF**, TTR*, MLU**, NDW**	-	WA*, RA**, AA*
QAS	LLF**, MLU*, NDW*	BHS**, EW**	WA**, RA**, SA*, STM*
LLF	NEW-V*, NEW-SR**, QAS**, MLU**, NDW*	BHS**, LN*, EW*	WA**, RA**, AA**
MLU	NEW-SR**, QAS**, LLF**, NDW**	-	WA**, RA**, AA**
TTR	-NEW-SR*	-TD*	-
NDW	NEW-SR*, QAS*, LLF*, MLU**	LS*	WA**

Note. Number of participants in LKG = 30
* p < .05 ** p < .01

Table 4.3.10.1

Correlation for Oral Language Measures in UKG

OL Measures	Significant OL Measures	Significant PK Measures	Significant PP Measures s
NEW-V	NEW-SR*, QAS*, MLU*, NDW**	BHS**, EP**, LN**, LS**, AP**, WR*	WA*, RA**, AA**, STM**, -RANS**
NEW-SR	NEW-V*, SRS**, LLF**, -TTR**	BHS*, AP**, LS*	WA*, -RANO*,
QAS	NEW-V**, LLF**, MLU*, NDW*	BHS*, AP*	WA**, RA*, -RANS**
LLF	NEW-SR**, QAS**, MLU*, -TTR**,	LS*, AP**	WA*
MLU	QAS*, LLF*, NDW*	LN*	-
TTR	-NEW-SR**, -LLF**, NDW*	-	-
NDW	NEW-V**, MLU*, TTR*	LN*, LS**, AP**	AA**, pA**, STM*, -RANS*

Note. Number of participants in UKG = 32
* p < .05 ** p < .01

Table 4.3.8.2

Correlation for Print Knowledge Measures in PKG

Print Knowledge Measures	Significant Oral Language Measures	Significant Print Knowledge Measures	Significant Phonological Processing Measures
BHS	NEW-V*	LN*, EW*	SA**, -RANO*, -RANS*
TD	NEW-V**, QAS**, LLF*	LN**, EW**	RA**, pA*, STM*
EP	NEW-SR*	EW*	-
LN	NEW-V**, QAS**	LN**, EW*, BHS*, TD**	SA**, pA**, STM*
LS	-	-	-
AP	-	-	-
WR	-	-	-
EW	NEW-V**, NEW-SR*, LLF*, QAS**, -TTR*	TD**, LN*, BHS*, EP*	RA*, pA**, -RANS*

Note. Number of participants in PKG = 33

* p < .05 ** p < .01

Table 4.3.9.2

Correlation for Print Knowledge Measures in LKG

Print Knowledge Measures	Significant Oral Language Measures	Significant Print Knowledge Measures	Significant Phonological Processing Measures
BHS	QAS**, LLF**	EW*	RA*
TD	-TTR*		-
EP	-	-	-
LN	NEW-V**, LLF*	EW**	-
LS	NEW-V*, NDW*	WR**	AA*
AP	-	-	-
WR	-	LS**	-SA*, STM*
EW	QAS**, LLF*	BHS*, LN**	WA*, RA**

Note. Number of participants in LKG = 30

* p < .05 ** p < .01

Table 4.3.10.2

Correlation for Print Knowledge Measures in UKG

Print Knowledge Measures	Significant Oral Language Measures	Significant Print Knowledge Measures	Significant Phonological Processing Measures
BHS	NEW-V**, NEW-SR*, QAS*	LS*, AP*	-RANO*
TD	-	-	-
EP	NEW-V**	LN*, LS**, AP*	WA*, AA*
LN	NEW-V**, MLU*, NDW*	EP*, LS**, WR**	RA**, AA**, STM**, -
LS	NEW-V**, NEW-SR*, LLF*, NDW**	BHS*, EP**, LN**, LNS**, AP*, WR**	WA*, RA*, AA**, STM**, -RANO*, -RANS*
AP	NEW-V**, NEW-SR**, QAS*, LLF**, NDW**	BHS*, EP*	WA*, -RANS*
WR	NEW-V*	LN**, LS**	RA**, AA**, STM*, RANO**, RANS**
EW	-	-	-

Note. Number of participants in UKG = 32

* p < .05 ** p < .01

Table 4.3.8.3

Correlation for Phonological Processing Measures in PKG

Phonological Processing Measures	Significant Oral Language Measures	Significant Print Knowledge Measures	Significant Phonological Processing Measures
WA	-	-	-
RA	-	TD**, EW*	AA**, pA*, STM**
SA	NEW-V*, QAS**	BHS*, LN*	-
AA	-	-	RA*, pA*
pA	NEW-V*, QAS*, LLF*,	TD*, EP**, LN**, EW**	RA*, SA**, AA**, STM*, -RANO*
STM	NEW-V*, LLF**	TD*, LN*, EW*	RA**, pA*
RANO	-NEW-V*,-QAS**	-BHS*	-SA**, -pA*, RANS**
RANS	-QAS*, -LLF**	-BHS*, -EW*	-SA*, RANO**

Note. Number of participants in PKG = 33
* p < .05 ** p < .01

Table 4.3.9.3

Correlation for Phonological Processing Measures in LKG

Phonological Processing Measures	Significant Oral Language Measures	Significant Print Knowledge Measures	Significant Phonological Processing Measures
WA	NEW-SR*, QAS**, LLF**, MLU**NDW**	EW*	RA**, AA**, pA*
RA	NEW-SR**, QAS**, LLF**, MLU*	BHS*, EW**	WA**, SA*, AA**, Pa*
SA	QAS**	WR*	RA*
AA	NEW-SR*, LLF**, MLU*	LS*	WA**, RA**, pA**
pA	-	-	WA*, RA*, AA**, -RANO*
STM	NEW-V**, QAS*	WR*	-RANO*, -RANS**
RANO	-	-	- pA*, -STM*
RANS	-	-	-STM**

Note. Number of participants in LKG = 30
* p < .05 ** p < .01

Table 4.3.10.3

Correlation for Phonological Processing Measures in UKG

PP Measures	Significant OL Measures	Significant PK Measures	Significant PP Measures
WA	NEW-V*, NEW-SR*, QAS**, LLF*	EP*, LS*, AP*, EW*	RA*, AA**, STM*, -RANS**
RA	NEW-V**, QAS*	LN**, LS**, WR**	WA*, AA**, STM*, -RANS**
SA	-	-	-
AA	NEW-V**, NDW**	EP*, LN**, LS**, WR**	WA**, RA**, STM*, -RANS**
pA	NDW*	-	-
STM	NEW-V**, NDW*	LN**, LS**, WR*	WA*, RA*, AA*, -RANS**
RANO	-NEW-SR*	-BHS*, -LS*, -WR**	RANS**
RANS	-NEW-V**, -QAS**, -NDW*	-LS*, -AP*, -WR**	-WA**, -RA**, -AA**, -STM**, RANO**

Note. Number of participants in UKG = 32
* p < .05 ** p < .01

Discussion

The correlational analysis of the entire sample (Table 4.3.1) showed that the emergent literacy domains shared a significant correlation among one another, as reported in literature (Dickinson et al., 2003; Dickinson & Snow, 1987). The results further reveal that PK and PP shared a higher correlation with each other than with OL, which is similar to the results by Lonigan et al. (2000). This underscores the role of phonological processing skills in the acquisition of reading abilities of preschool children. Grade-wise correlation of the emergent literacy measures (Table 4.3.2) showed that PK and PP shared a significant correlation with each other, which is in consonance with several studies (Anthony et al., 2006; 2007; Bowey, 1994; Burgess & Lonigan, 1998; Johnston, Anderson & Holligan, 1996; Molfese et al., 2006; Muter & Diethelm, 2001; Sankaranarayanan, 2003; Stahl & Murray, 1994; Tabors et al., 2005; Wagner et al., 1994).

Considering the fact that the participants in the present study had a limited knowledge of English when they entered preschool, the improvement in their phonological processing skills could be attributed to the English Language instruction they received in school. This shows the effect of learning an alphabetic language (such as English) on the phonological processing skills. It cannot be denied that a part of the phonological awareness could have been transferred from the native language. It has been reported in literature that phonological awareness skills developed in one language can transfer to another language, even while those skills are still in the process of being developed (Cisero & Royer, 1995). Results of the present study do not throw any light on this issue since the phonological processing skills were not assessed in the native language.

The grade-wise analysis of the emergent literacy domains (Table 4.3.2) also showed that OL correlated significantly with PK and PP in LKG and UKG but it did not share significant correlations with them in PKG. It is interesting to note that as the participants progress from PKG through UKG their English language proficiency increases, thereby increasing the correlation of OL with PK and PP. This shows that children require a basic level of oral proficiency in English before they can benefit from literacy instruction in English, which is consistent with Goldsworthy's (2003) statement that oral language is the foundation from which written language emerges.

Further it was seen that the emergent literacy domains had higher correlations in UKG than in PKG or LKG. One possible reason for this finding could be the fact that children in pre-kindergarten had limited knowledge of the English language hence they scored poorly on the oral language tasks. Secondly, children in the PKG came from diverse backgrounds; the lack of uniformity in their emergent literacy domains may have contributed to the absence of significant correlations between these skills. As children progressed from PKG through UKG, the consistent literacy environment at school and exposure to the English language led to improved scores and a significant correlation among emergent literacy skills.

The emergent literacy domains were assessed based on their components[14]. The relationships between the components were analyzed for the entire sample and the result (Table 4.3.3) shows that all the components shared significant correlations with one another. This finding is in consonance with the results of several studies (Lonigan, Burgess and Anthony, 2000; NELP, 2009), which indicate that components of oral language, print knowledge and phonological processing skills show significant correlations among one another.

Vocabulary

The results of the correlational analysis of the emergent literacy components for the entire sample (Table 4.3.3) indicate that Voc correlates significantly with other components of OL (such as SR), PK (such as CAP, AK and EW) and PP (such as PA, RAN and STM). This finding is consistent with the results of several studies which have stressed the relationship of vocabulary with emergent literacy skills (Bowey, 1994; Carroll et al., 2003; Chaney, 1992, 1994, 1998; Dickinson et al., 2003; NELP, 2009; Reyes, 2008; Sankaranarayanan, 2003; Scarborough, 2001; Tabors, Roach, & Snow, 2001; Whitehurst & Lonigan, 2003).

The grade-wise analysis of data (Tables 4.3.4, 4.3.5, 4.3.6) reveals that Voc shared better correlations with emergent literacy components in UKG than in PKG and LKG. Results indicate that in PKG, Voc correlates significantly with CAP, EW and STM. In LKG, vocabulary correlated significantly with SR, AK and STM. In UKG, vocabulary correlated with all the emergent literacy components except EW. It was seen that vocabulary correlated with EW in PKG but not in LKG and UKG. This was probably due to the nature of the task employed to assess EW (name-writing), which was relatively simple for older preschoolers hence it reached a maximum and

[14] OL: Vocabulary (Voc.) and Story Retell (SR)
PK: Concepts about Print (CAP), Alphabet Knowledge (AK) and Emergent Writing (EW)
PP: Phonological Awareness (PA), Short Term Memory (STM) and Rapid Automatized Naming (RAN)

did not share correlations with other components in older preschoolers. Probably if the writing task was designed with increasing level of complexity it would have shared a better correlation with the vocabulary development. A more challenging writing task might have captured the complex associations between the emergent literacy components at this stage.

Results also reveal that vocabulary shares a significant correlation with AK and STM all through the preschool years. A strong interaction with AK shows that oral language plays an important role in the acquisition of print knowledge in the preschool years. The positive correlation with STM shows that children with good vocabulary skills probably had better short term memory or vice versa. This finding strengthens the role of STM in the acquisition of oral language and print knowledge components.

It was evident from the results that in LKG, emergent literacy components showed a wide range of scores (Table 4.3.5). LKG appears to be the phase of developmental progression, where children were functioning at different emergent literacy levels, therefore at this stage the components did not show a significant correlation between one another. Thus it is evident that the interactions between emergent literacy components are not constant throughout the 3- to 6- year period. Hence, the age of participants at the time of measurement plays an important role in assessing the interaction among the emergent literacy components. This might be one of the factors contributing to the differences in the correlation statistics found across studies.

Correlational analyses of the emergent literacy measures for the entire sample (Table 4.3.7) reveals that Voc correlates with all the emergent literacy measures except TTR (which did not show significant correlation with any measure). Grade-wise correlational analysis (Table 4.3.8, 4.3.9, 4.3.10) of OL measures[15] reveals that NEW-V shares better correlations in UKG followed by PKG and LKG respectively. A closer look at the relationship between NEW-V and WR (Table 4.3.10.1) reveals that Voc significantly correlated with WR in UKG, where children were beginning to read meaningfully. The participants in PKG and LKG could identify letters but were unable to recognize words; the ability to decode words appeared by the time they

[15] Vocabulary: NEW-V = Number of English Words- Vocabulary
Story Retell: NEW-SR = Number of English Words- Story Retell, QAS = Question Answer Score, LLFT = Literate Language Features Total, MLU = Mean Length of Utterance, TTR = Type Token Ratio, NDW = Number of Different Words

reached UKG. Research has indicated that vocabulary skills are positively and causally related to reading at all levels of a child's development (Whitehurst & Lonigan, 2003). Literature review shows that vocabulary knowledge is significantly related with decoding skills and these studies emphasize the role of vocabulary in the development of reading for meaning, which becomes critical for academic achievement in the later school years (Bishop & Adams, 1990; Bryant, MacLean, & Bradley, 1990; de Jong & van der Leij, 2002; National Early Literacy Panel Report, 2009; Torgesen et. al., 1997).

Story Retell

Correlational analysis for the story retell components (Tables 4.3.8, 4.3.9, 4.3.10) shows significant correlations with other emergent literacy components. The grade-wise analysis shows that SR did not correlate with any other component in PKG, while it correlates with PA and Voc in LKG and with majority of components in UKG, which can be attributed to the development of English as the children progressed from PKG to UKG.

A closer look at the SR measures (Table 4.3.8.1, 4.3.9.1, 4.3.10.1) reveals that NEW-SR, QAS and LLF correlate significantly with other OL, PK and PP measures. This shows that comprehension and expression abilities of preschoolers play an important role in the emergent literacy process. Grade-wise analysis shows that SR measures share better correlations with emergent literacy measures in UKG than in the PKG and LKG. This finding can be probably explained by the increase in exposure to English as children progress from PKG to UKG. It is interesting to note that SR measures do not correlate with WR but correlate with EW (in PKG and LKG). The results indicate that NEW-SR, QAS and LLF shared better correlations with other measures than MLU, TTR and NDW, indicating that they are essential measures of oral language in preschool children.

Concepts about Print

In the present study the correlational statistics of the entire sample (Table 4.3.3) reveal that print knowledge components (CAP, AK and EW) correlate significantly with the components of OL and PP skills. Grade-wise analysis (Tables 4.3.4, 4.3.5, 4.3.6) shows that CAP correlated with all the components except Story Retell (which did not correlate with any other component) and RAN in PKG, with only EW in LKG and with Voc., SR, AK and pA in UKG. The closer look reveals that CAP shared higher correlations with other components in the PKG, followed by

UKG and LKG respectively. This shows that CAP is a good measure of emergent literacy skills for three-to-four-year old children.

The correlational analysis of the measures employed to assess CAP (BHS, TD, EP) reveals that they correlate significantly with other emergent literacy skills when analyzed for the entire sample (PKG, LKG and UKG) (Table 4.3.3). Grade-wise analysis (Tables 4.3.8.2, 4.3.9.2, 4.3.10.2) showed that BHS shared higher correlations with other measures in PKG and UKG than in LKG. TD showed higher correlations in PKG and since it reached a ceiling by PKG, it did not correlate with other skills in LKG and UKG. EP showed higher correlations in UKG when compared to PKG and LKG. This indicates that BHS and TD are essential measures of emergent literacy skills in PKG, while EP is a good measure in UKG.

Alphabet Knowledge

The correlational analysis of the AK skills for the entire sample (Table 4.3.3) reveals that AK shares a significant correlation with the OL and PP skills. The grade-wise correlation reveals that (Table 4.3.4, 4.3.5, and 4.3.6) in PKG, AK correlates significantly with all the sub-skills except SR and RAN, in LKG it correlates with Voc. and EW, and in UKG it correlates with all the sub-skills except EW. This indicates that AK plays an important role in the development of emergent literacy skills in preschoolers, especially in PKG and UKG.

A closer look at the correlation between the components of PP and AK reveals that in PKG and UKG, AK correlates significantly with PA and STM; in UKG, AK correlates negatively with RAN, while in LKG, it does not share a significant correlation with the components of PP. Hence it is evident that although the results of the present study are in consonance with several studies in literature that have linked AK with PP skills (Badian, 1995; Bowey, 1995; Burgess & Lonigan, 1998; Johnston et al., 1996; Molfese et al., 2006; Muter and Diethelm, 2001; Share & Gur, 1999; Wagner, Torgesen, and Rashotte, 1994), it is important to note that in the present study the relationship between the components of AK and PP was not consistent throughout the preschool period, as seen in LKG, where participants did not show a significant relationship between AK and PP components.

The correlational analysis of the measures employed to assess AK (LN, LS, AP, WR) reveals that they correlate significantly with other emergent literacy skills, when analyzed for the entire sample (PKG, LKG and UKG) (Table 4.3.3). Grade-wise analysis (Tables 4.3.8.2, 4.3.9.2, 4.3.10.2) showed that LS, AP and WR did not show any correlations with other skills in PKG since these skills emerged in LKG. In fact, AP shared significant correlations with other measures only in UKG. LN shared higher correlations in PKG whereas LS shared higher correlations in UKG. Results also show that WR and AP shared higher correlations in UKG. This indicates that LN is an essential measure of emergent literacy in PKG and LKG, while LS, AP and WR are essential measures in UKG.

The findings of the present study reveal that Word Recognition skills emerged in LKG and they correlated with LS in LKG and with both LN and LS in UKG. These findings are in consonance with the several studies, which report that children need letter knowledge in order to be readers, and letter knowledge is a strong predictor of reading success (Chall, 1996; Ehri & Sweet, 1991; NELP, 2009; van Kleeck, 1990). According to NELP (2009), AK and EW shared a strong correlation with decoding; CAP was moderately correlated, while EP showed a weak correlation with decoding. The results of the present study show that EP did not correlate with WR in any grade; it correlated with EW in PKG while it correlated with LN, LS and the AP in UKG. This is in consonance with past research, which shows that although EP is not a strong predictor of reading it enhances print awareness and understanding of the functions of print (Cardoso-Matins, Rodrigues, & Ehri, 2003; Masonheimer, Drum, & Ehri, 1984).

A closer look at the relationship of AP with other emergent literacy measures shows that AP correlates predominantly with oral language measures in UKG. AP has the same conceptual background as AK and WR therefore it is surprising that AP does not share significant correlations with LN, LS or WR. The developmental trend shows that AP emerges during the same period as LS and WR (in LKG) but the lack of correlation with these skills indicate that the stringent scoring of 'all or none' employed to assess the AP (adapted from Abecedarian Reading Assessment, Wren & Watts, 2002) was not suitable to trace the inter-relationships among measures.

These findings are consistent with the results of several studies, which show that print awareness is an important element of the foundation of emergent literacy knowledge (Adams, 1990; Lonigan, Burgess & Anthony, 2000; Stuart, 1995). Literature review shows that print knowledge is one of the most robust predictors of later reading competence (Adams, 1990; Denton & West, 2002; Hammill, 2004; NELP, 2009; Storch & Whitehurst, 2002; West, Denton, & Germino-Hausken, 2000). According to Whitehurst and Massetti (2004), head-start children who begin to learn about print, sounds, and writing during the pre-school period are more likely to be ready-to-read at the end of kindergarten and more likely to read successfully in elementary school.

Results of the present study show that emergent literacy measures shared higher correlations in PKG and UKG than LKG. In LKG, very few print knowledge variables (for example, EW) showed significant correlations with other emergent literacy measures. This shows that emergent literacy skills showed maximal variability in the LKG. In UKG, Letter Sounds correlated with majority of emergent literacy measures, followed by Alphabetic Principle, Letter Names and Word Recognition. It is interesting to note that Letter Names correlated with several measures both in PKG and UKG.

The correlational statistics are consistent with the descriptive statistics, which show that measures such as EW, TD and LN show a significant development from PKG to LKG but not from LKG to UKG, indicating maximum correlations in the PKG group. Similarly, those skills that show a significant development from LKG to UKG (such as LS, AP and WR) show maximum correlations in the UKG group. This also shows that the LKG group shows maximum variability in the development of emergent literacy skills. Thus, the results of the present study indicate that print knowledge measures show stronger correlations with other emergent literacy measures in the PKG and UKG groups when compared to the LKG group. Hence it is important that preschool children should be assessed for those emergent literacy measures that are predominant at the time of assessment.

Emergent Writing

When the sample is examined as a whole (PKG, LKG and UKG) (Table 4.3.3), the correlational statistics reveals that EW scores correlate significantly with other emergent literacy sub-skills. But a grade-wise analysis (Tables 4.3.4, 4.3.5, 4.3.6) shows that EW correlates with Voc., CAP, AK, pA and RAN in PKG, with CAP and AK in LKG, and with none of the sub-skills in UKG. It is possible that since the name writing task reached a maximum score in UKG it did not show any significant correlations in UKG. These findings are consistent with past research, which shows that name-writing abilities correlate with print knowledge and phonological processing skills in preschool children (Bloodgood, 1999; Clay, 2001; Ferguson, 1975; Fox and Saracho, 1990; NELP, 2009; Storch & Whitehurst, 2002). Bloodgood (1999) claimed that the lack of significant correlations between EW and PA measures could be attributed to the small sample size. Clay (2001) claimed that reading and writing processes are strongly connected. Teale and Sulzby (1986) stress that since emergent writing is a developmental precursor to reading and writing, it should be a part of an emergent literacy assessment battery.

It is interesting to note that in the present study, emergent writing scores correlated significantly with oral language measures such as vocabulary and story retell abilities. There is a paucity of studies in literature that have reported an association between these two emergent literacy skills. One possible explanation could be that word recognition or decoding, spelling and reading comprehension has been the focus of research in the area of emergent literacy, thus, fewer studies have included emergent writing in their research design. It is possible that even when emergent literacy is evaluated in a study, its association with oral language is not established.

Phonological Awareness

The correlational analysis of the PA scores for the entire sample (Table 4.3.3) indicates that PA scores correlate significantly with other emergent literacy components. Grade-wise correlation (Tables 4.3.4, 4.3.5, 4.3.6) shows that in PKG, PA correlates with all components except Voc. and SR, in LKG, PA correlates with only SR and in UKG, PA correlates with all components except EW. It is interesting to note that PA does not correlate with the oral language components, Voc. and SR in PKG but correlates with SR in LKG and with both Voc. and SR in UKG. It is possible that with increased exposure to the English language in school, the oral proficiency in English improved leading to an improvement in their phonological processing skills. Hence, PA and OL sub-skills showed a significant correlation in LKG and UKG. The relationship of PA and OL found in the present study is consistent with the study by Carrol et al. (2003) that found significant correlations between language tasks and phonological awareness.

Correlatinal analysis (Tables 4.3.4, 4.3.5, 4.3.6) revealed that PA shared a significant correlation with AK and CAP in PKG and UKG but not in LKG. It was noticed that LKG was a phase of developmental progression for several emergent literacy components hence they demonstrated different levels of development and they did not show significant correlations between one another. Results further show that PA correlated with EW only in PKG and not in LKG and UKG. One probable reason for this finding could be the fact that EW was a single measured variable, whereas PA was derived from the sum of five measured variables that were employed to assess PA.

Correlational analysis of the entire sample for the PA measures (Table 4.3.7) (WA, RA, SA, AA and pA) reveals that all the measures shared significant correlations with other emergent literacy measures. Grade-wise analysis (4.3.8.3, 4.3.9.3, 4.3.10.3) reveals that majority of PA measures shared higher correlations in UKG followed by LKG and PKG respectively. This trend shows the effect of literacy on the emergent literacy measures. As the participants progress from PKG through UKG their literacy experiences increase significantly, leading to a developmental progression in the emergent literacy skills, which is demonstrated by higher correlations between the emergent literacy measures in UKG. These findings are in consonance with the study by Anthony, Williams, McDonald and Francis (2007), who reported that older preschoolers had better developed latent phonological processing abilities than younger preschoolers.

A closer look at the correlational statistics reveals that WA does not correlate with any measure in PKG since it emerged in LKG and SA did not correlate with any measure in UKG since it reached a maximum score in UKG. SA shared significant correlations with emergent literacy measures in PKG and LKG but not in UKG. The correlational results show that SA correlated with WR only in LKG, which is consistent with the study by Lonigan et al. (1998), which indicated that SA is not a predictor of WR. Results revealed that pA shared a significant correlation with majority of measures in PKG suggesting that it is an essential measure of emergent literacy in the PKG period. Similarly, WA, RA and AA shared a significant correlation with majority of measures in UKG indicating that they are essential measures of emergent literacy in UKG. It was seen that in LKG, WA, RA, SA and AA correlated with majority of oral language measures and with print knowledge measures such as BHS, LS, EW and WR hence, they can be considered essential emergent literacy measures in LKG.

The results of the present study support the relation between WR and PA measures. Correlational analysis shows that PA measures such as RA and AA correlate with WR in UKG, while SA correlates with WR in LKG. These results are consistent with other studies (Anthony et al., 2007; Carrillo, 1994), which found that phonological awareness skills were uniquely associated with word reading skills in older preschoolers. Several other researchers have also reported that PA plays an important role in the word reading abilities of young children. The report by NELP (2009) shows a moderate correlation between PA and decoding. Gray and McCutchen (2006) also found correlations between phonological processing skills and word reading.

There have been very few studies in literature that report the relationship between writing and phonological awareness skills. The results of the present study show that EW shares significant correlations with RA and pA in PKG, with WA and RA in LKG, and with WA in UKG. This is in consonance with the findings by Storch and Whitehurst (2002), who found that name writing is associated with code-related skills in preschool children. Bloodgood (1999) claimed that the lack of significant correlations between EW and PA measures could be attributed to the small sample size.

Correlational analysis of phonological awareness measures with LN and LS (AK measures) shows that SA and pA correlate with LN in PKG, AA correlates with LS in LKG and WA, RA, AA correlate with LS in UKG, while AA correlates with LN in UKG. These findings are consistent with studies in the past that have reported a link between phonological awareness skills and letter knowledge (Burgess & Lonigan, 1998; Johnston, Anderson & Holligan, 1996; Muter & Diethelm, 2001; Wagner, Torgesen, & Rashotte, 1994). It was also seen that RA and pA correlated significantly with TD in PKG. These findings indicate the importance of phonological awareness in the development of Print Knowledge skills of preschool children.

Short Term Memory

The results of the present study show a significant correlation between STM and oral language components - Voc and SR (Tables 4.3.8, 4.3.9, 4.3.10), which is in consensus with the findings of Alloway et al., (2005). It was seen that STM shared significant correlations with Voc skills from PKG through UKG. This finding reiterates the importance of STM in learning new words. Several other studies report a strong relationship between children's phonological working memory and word learning (Gathercole & Baddeley, 1989, 1990b; Gathercole, Hitch, Service, & Martin, 1997; Gathercole, Willis & Baddeley, 1992). This reinforces evidence for the specific role of the phonological loop in supporting the long-term learning of the phonological forms of new words in the course of vocabulary acquisition (Baddeley, Gathercole, & Papagno, 1998). This finding strengthens the role of phonological short term memory in the initial years when children depend heavily on their listening and speaking abilities to acquire adequate language skills.

Children with poor short term memory are at risk of developing speech and language deficits since they are unable to process long and complex linguistic units that need to be held in the working memory, and rehearsed for storage in the long term memory. It has been reported in literature that children with specific language impairment show deficits in the performance of tasks that place a load on their short term memory, such as repeating three to four syllable non-words (Gathercole & Baddeley, 1990a; Montgomery, 2003). In fact several researchers have suggested that poor working memory can be used as an identifier of children with SLI and those with low academic achievement (Gathercole & Pickering, 2001).

The report by NELP (2009) suggests that phonological STM shares a strong relationship with decoding skills when they were measured in the preschool years than when they were measured in the kindergarten years. Findings of the present study indicate significant correlation of STM with LN knowledge and TD skills of pre-kindergarten participants. In the older participants (UKG), STM shared a significant correlation with LS knowledge and WR. Although the younger participants could name letters, their letter-sound abilities were still under-developed, which probably explains their poor performance on the WR task. The older participants had significantly better LS knowledge and WR abilities, which were enhanced by their superior STM. It was evident that better STM capacities enabled the participants to hold greater number of letter-sound strings in their working memory, which gave them an opportunity to blend the letter strings into words, leading to better word-recognition scores. Similar results have also been reported by Gathercole and Baddeley (1993).

The study by Gathercole, Lamont, and Alloway (2006) reports specific links between complex memory performance and writing abilities at school entry suggesting that the same constraints may also be operating at the earliest stage of writing. In the present study it was seen that STM shared a significant correlation with emergent writing in the PKG participants but not in LKG and UKG participants. It is possible that the name writing task employed in the present study was too simple to tap the diverse writing behaviours of the older participants. A more challenging writing task would have placed a greater load on the short term memory capacities of the participants, thereby providing better insight into the connections between STM and writing.

Phonological STM showed significant correlations with the various PA components such as WA, RA, AA and pA (Tables 4.3.8.3, 4.3.9.3, 4.3.10.3). In PKG, STM correlated with RA and pA, in LKG, STM correlated with pA, and in UKG, STM correlated with WA and AA. It is interesting to note that the short term memory of younger children (PKG) correlated with tasks such as matching (rhyme awareness) and blending (phoneme awareness), whereas in the older children (UKG), STM correlated with the tasks such as segmentation (word awareness) and initial phoneme matching (alliteration awareness). Thus, it is evident that STM and PA skills play a crucial role in key learning areas for children at the beginning of formal education (Alloway et al., 2005).

Results of the present study show that STM correlates significantly with other emergent literacy measures such as Voc, SR, CAP, AK, EW, PA and RAN. This finding is consistent with the review of literature (Alloway et al., 2004; 2005; Anthony et al., 2007; Gathercole et al., 1991; 2003; Gray & McCutchen, 2006; Hulme, Hatcher, Nation, Brown, Adams, & Stuart, 2002; NELP, 2009; Swanson & Howell, 2001), which indicates that STM is one of the essential measures of emergent literacy skills and it can be used successfully with preschool children.

Rapid Automatized Naming

RAN showed a negative correlation with majority of the emergent literacy measures in the present study. This may be due to the design of the RAN task, which measured the time taken to perform the task making RAN a time-based task. The results showed that the duration of RAN task reduced as the score on the other literacy measures increased. Also, RAN shared a significant correlation with Voc, AK, PA and STM. The results for RANO and RANS reveal that both the measures share higher correlations in UKG followed by PKG and LKG respectively. It was also seen that RANS shared better correlations with other measures when compared to RANO. It is probable that the RANS task showed higher correlations with other literacy measures as it was relatively more complex in nature compared to RANO, which enabled it to tap the developmental progression of the underlying processes. The relationship of RANO and RANS with WR shows that both the measures share a high correlation with WR in UKG, while in PKG, RANS shares a high correlation with EW.

Review of literature also shows that RAN for objects and colours showed a moderate correlation with decoding, reading comprehension and spelling (Aarnoutse, 2005; NELP, 2009). Performance on RAN has been shown to predict decoding in typically developing preschool and kindergarten children (Anthony et al., 2007; NELP, 2009; Shankaranarayanan, 2003; Wagner et al., 1994, 1997). Also, performance on RAN has been found to predict the decoding abilities of dyslexics and reading matched controls better than age-matched controls (Araujo et al., 2011).

4.4 Results for TELA: Regression Analysis

A stepwise multiple regression analysis was done to extract the potential predictors for Word Recognition (WR) and Emergent Writing (EW). Since PKG children could not recognize words, WR emerged in LKG. Therefore, the predictors for WR were derived for LKG and UKG. In PKG, the participants could identify letter names (LN) hence the predictors for LN were derived in PKG. It was also seen that EW reached a maximum in LKG hence predictors for EW were derived in PKG and LKG. In order to derive the predictors, letter naming/word recognition/emergent writing were taken as dependent variables (one at a time) and the emergent literacy measures[16] were taken as independent variables. The predictors were derived separately for PKG, LKG and UKG (Tables 4.4.1, 4.4.2 and 4.4.3).

In PKG (Table 4.4.1), three potential predictors were found for Letter Naming (LN): Phoneme Awareness (pA) (R^2 = .332, $p < .01$), Number of English Words-Story Retell (NEW-SR) (R^2 = .439, $p < .01$), and Number of English Words-Vocabulary (NEW-V) (R^2 = .569, $p < .01$). The regression equation for WR in UKG is as follows: LN-PKG = 2.807 + 2.094 * pA – 0.393 * NEW-SR + 0.425 * NEW-V.

In PKG (Table 4.4.1), two potential predictors were found for Emergent Writing (EW): Text Discrimination (TD) (R^2 = .497, $p < .001$) and Literate Language Features (LLF) (R^2 = .587, $p < .05$). In PKG, the regression equation for EW is as follows: EW-PKG = 1.684 + 0.356 * TD + 2.521 * LLF.

In LKG (Table 4.4.2), three potential predictors were found for Word Recognition (WR): Letter Sounds (LS) (R^2 = .299, $p < .001$), Rhyme Awareness

[16] NEW-V = Number of English Words- Vocabulary, NEW-SR = Number of English Words- Story Retell, QAS = Question Answer Score, LLF = Literate Language Features, MLU = Mean Length of Utterance, TTR = Type Token Ratio, NDW = Number of Different Words, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print, LN = Letter Names, LS = Letter Sounds, AP = Alphabetic Principle, WA = Word Awareness, RA = Rhyme Awareness, SA = Syllable Awareness, AA = Alliteration Awareness, pA = Phoneme Awareness, STM = Short Term Memory, RANO = Rapid Automatized Naming Object, RANS = Rapid Automatized Naming Size

(RA) ($R^2 = .433$, $p < .01$), and Literate Language Features (LLF) ($R^2 = .535$, $p < .05$). The regression equation for WR in UKG is as follows: WR-LKG = -0.168 +0.092 * LS -0.360 * RA + 0.296 * LLF.

In LKG (Table 4.4.2), two potential predictors were found for Emergent Writing (EW): Letter Naming (LN) ($R^2 = .282$, $p < .01$) and Rhyme Awareness (RA) ($R^2 = .439$, $p < .05$). In LKG, the regression equation for EW is as follows: EW-LKG = 3.034 + 0.090 * LN + 0.135 * RA.

In UKG (Table 4.4.3), three potential predictors were found for Word Recognition (WR): Alliteration Awareness (AA) ($R^2 = .382$, $p < .05$), Rapid Automatized Naming Object (RANO) ($R^2 = .550$, $p < .01$), and Rhyme Awareness (RA) ($R^2 = .612$, $p < .05$). The regression equation for WR in UKG is as follows: WR-UKG = 15.892 + 0.287 * AA – 1.084 * RANO + 0.423 * RA.

Table 4.4.1
Stepwise Multiple Regression of Emergent Literacy Measures in PKG

Model	*Dependent Variable*	*Predictors*	*R*	*R^2*	*Adjusted R^2*	*B Coef.*	*t*	*Sig.*
1	LN	pA	.576	.332	.310	2.094	3.495	.002
		NEW-SR	.662	.439	.400	-0.393	-3.019	.005
		NEW-V	.754	.564	.522	0.425	2.904	.007
2	EW	TD	.705	.497	.480	0.356	5.112	.000
		LLF	.766	.587	.559	0.401	2.521	.017

Note. LN = Letter Names, EW = Emergent Writing, pA = Phoneme Awareness, NEW-SR = Number of English Words-Story Retell, NEW-V = Number of English Words-Vocabulary, TD = Text Discrimination, LLF = Literate Language Features

Table 4.4.2
Stepwise Multiple Regression for Emergent Literacy Measures in LKG

Model	*Dependent Variable*	*Predictors*	*R*	*R^2*	*Adjusted R^2*	*B Coef.*	*t*	*Sig.*
1	WR	LS	.547	.299	.274	0.092	4.711	.000
		RA	.658	.433	.391	-0.360	-3.612	.001
		LLF	.731	.535	.481	0.296	2.387	.025
2	EW	LN	.531	.282	.256	0.090	3.130	.004
		RA	.662	.439	.397	0.135	2.746	.011

Note. WR = Word Recognition, EW = Emergent Writing, LS = Letter Sounds, RA = Rhyme Awareness, LLF = Literate Language Features, LN = Letter Names, RA = Rhyme Awareness

Table 4.4.3
Stepwise Multiple Regression for Emergent Literacy Measures in UKG

Model	*Dependent Variable*	*Predictors*	*R*	*R^2*	*Adjusted R^2*	*B Coef.*	*t*	*Sig.*
1	WR	AA	.618	.382	.362	0.287	4.377	.042
		RANO	.742	.550	.520	-1.084	-3.347	.004
		RA	.783	.612	.572	0.423	2.161	.039

Note. WR = Word Recognition, AA = Alliteration Awareness, RANO = Rapid Automatized Naming Object, RA = Rhyme Awareness

Discussion

The regression analysis revealed that oral language measures such as NEW-V and NEW-SR were predictors for Letter Names (LN). Literate Language Features (LLF) was a predictor for Emergent Writing (EW) in PKG and for Word Recognition (WR) in LKG. This shows that oral language skills play a major role in the acquisition of emergent literacy skills of younger preschoolers, as reported in literature (Curenton & Justice, 2004; Goldsworthy, 2003; Vellutino, 1991; Whitehurst & Lonigan, 1998). Further, the results reveal that oral language measures did not emerge as a significant predictor in the older preschoolers. This finding is in contrast with the results of the study by Dickinson et al. (2003) who claim that oral language continues to play a critical role in later reading achievement. The difference in the results of the two studies could be due to the fact that the participants in the present study were ELLs who had limited proficiency in English and therefore their oral language performance did not correlate with other measures.

The regression analysis reveals that Text Discrimination (TD) is a predictor for EW in PKG, LN is a predictor for EW in LKG and LS is a predictor for WR in LKG. This indicates that text discrimination and alphabet knowledge play a significant role in the development of emergent literacy skills in younger preschoolers. These findings are consistent with the results of several studies (Ehri & Sweet, 1991; Badian, 1995; Muter & Diethelm, 2001; van Kleeck, 1990; Walsh, Price & Gillingham, 1998).

The results of the regression analysis show that measures of phonological awareness predicted letter naming, emergent writing and word recognition in all the stages of development, that is, from PKG through UKG. In PKG, PA predicted LN, in LKG, RA predicted WR and EW, and in UKG, AA and RA predicted WR. This finding is in consonance with several studies that found that phonological awareness skills are strong predictors for reading success in preschool and kindergarten children (Anthony et al., 2007; Bryant et al., 1989; Ehri & Sweet, 1991; Maclean et al., 1998; Mason & Allen, 1986; Sankaranarayanan, 2003; Scarborough 1990; 1991a; Share et al., 1984; Sulzby & Teale, 1991; Torgesen et al., 1994; van Kleeck, 1990; Wagner & Torgesen, 1987).

4.5 Discriminant Function Analysis

Discriminant function analysis is used to predict group membership of a set of predictors. The characteristics of predictors are related to form groups based upon similarities of distribution of dimensional space which are then compared to groups. This enables to test the validity of groups based on actual data, to test groups which have been created, or to put objects into groups.

The data for Oral Language, Print Knowledge and Phonological Processing skills was subjected to discriminant function analysis (Table 4.5.1, 4.5.2) for the entire sample and separately, in order to derive functions for each emergent literacy domain. The analysis for the emergent literacy domains for the entire sample revealed that the first discriminant function (DF1) accounted for 91% of the total among-group variability and the second discriminant function (DF2) accounted for the remaining 9%. The analysis for the oral language measures revealed that the DF1 accounted for 96% of the total among-group variability and the DF2 accounted for the remaining 4%. The analysis for the print knowledge measures revealed that the DF1 accounted for 89.7% of the total among-group variability and the DF2 accounted for the remaining 10.3%. The analysis for the phonological processing measures revealed that the DF1 accounted for 92.6% of the total among-group variability and the DF2 accounted for the remaining 7.4%. The emergent literacy measures are given in the footnote[17].

Table 4.5.1

Eigen Values for Emergent Literacy Measures

	Discriminant function	Eigen value	Percentage of variance	Cumulative percentage	Canonical correlation
OL + PK + PP	1	19.491	91.0	91.0	.975
	2	1.932	9.0	100.0	.812
OL	1	0.750	96.0	96.0	.655
	2	0.031	4.0	100.0	.175
PK	1	12.627	89.7	89.7	.963
	2	1.451	10.3	100	.769
PP	1	2.455	92.6	92.6	.843
	2	0.195	7.4	100.0	.404

Note. OL = Oral Language, PK = Print Knowledge, PP = Phonological Processing

[17] NEW-V = Number of English Words- Vocabulary, NEW-SR = Number of English Words- Story Retell, QAS = Question Answer Score, LLF = Literate Language Features, MLU = Mean Length of Utterance, TTR = Type Token Ratio, NDW = Number of Different Words, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print, LN = Letter Names, LS = Letter Sounds, AP = Alphabetic Principle, WA = Word Awareness, RA = Rhyme Awareness, SA = Syllable Awareness, AA = Alliteration Awareness, pA = Phoneme Awareness, STM = Short Term Memory, RANO = Rapid Automatized Naming-Object, RANS = Rapid Automatized Naming-Size

Table 4.5.2

Wilk's Lambda for Emergent Literacy Measures

Test of functions	Function	Wilks' lambda	Chi square	df	Sig.
OL + PK + PP	1 through 2	.017	331.757	46	.000
	2	.341	87.139	22	.000
OL	1through 2	.554	52.584	14	.000
	2	.969	2.758	6	.837
PK	1 through 2	.030	310.501	16	.000
	2	.408	79.337	7	.000
PP	1through 2	.242	125.473	16	.000
	2	.837	15.758	7	.027

Note. OL = Oral Language, PK = Print Knowledge, PP = Phonological Processing

Table 4.5.3

Functions at Group Centroids for Emergent Literacy Measures

	Function	
Grades	1	2
PKG	-3.846	-1.489
LKG	-2.387	1.868
UKG	5.900	-.254

Table 4.5.4

Classification Results for Emergent Literacy Measures for the Entire Sample

		Predicted group membership			
	Grade	PKG	LKG	UKG	Total
Original Count	PKG	30	2	0	32
	LKG	2	28	0	30
	UKG	0	0	33	33
%	PKG	93.8	6.2	.0	100
	LKG	6.7	93.3	.0	100
	UKG	.0	.0	100	100

Table 4.5.6

Standardized Canonical Discriminant Function Coefficients for Emergent Literacy Measures for the Entire Sample

	Function	
	1	2
NEW-V	.015	-.028
NEW-SR	-.213	.436
QAS	-.282	-.220
LLF	.396	-.003
MLU	.086	.149
TTR	.291	.311
NDW	.144	-.004
BHS	-.153	.050
TD	.040	.090
EP	.155	-.181
LN	.159	.737
LS	-.262	.074
AP	.061	-.126
WR	1.166	-.369
EW	.347	.310
WA	.463	.087
RA	.030	-.108
SA	.211	-.187
AA	-.496	-.032
pA	.186	.187
STM	-.250	-.221
RANO	.328	-.076
RANS	.082	-.151

Table 4.5.7

Structure Matrix for Emergent Literacy Measures for the Entire Sample

	Function	
	1	2
WR	.732*	-.256
WA	.308*	.257
LS	.234*	.045
RA	.219*	.056
EP	.164*	-.044
AA	.157*	.132
AP	.143*	-.030
TTR	-.027*	-.009
LN	.250	.756*
EW	.253	.535*
TD	.133	.455*
PA	.174	.371*
NEW-V	.152	.261*
BHS	.096	.238*
RANS	-.100	-.232*
NEW-SR	.108	.186*
RANO	-.084	-.186*
QAS	.119	.176*
SA	.092	.163*
STM	.091	.151*
LLF	.113	.135*
MLU	-.001	.117*
NDW	.059	.111*

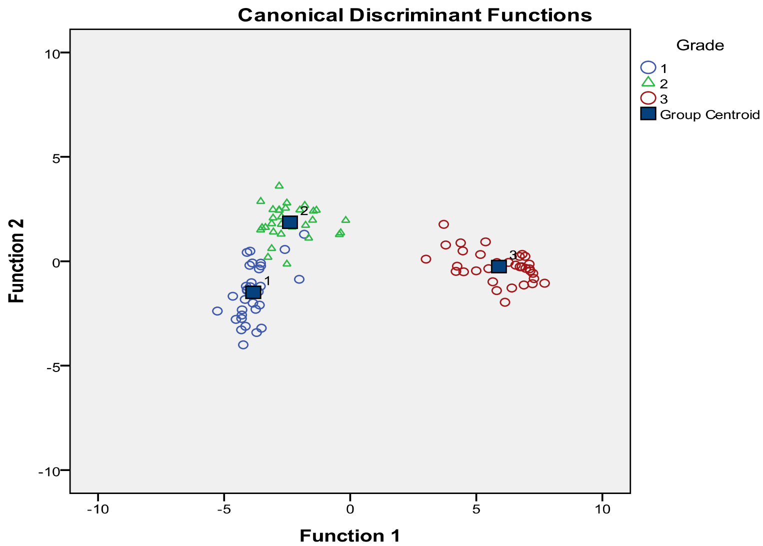

Figure 4.5.1. Plot for canonical discriminant functions of all the emergent literacy measures for 1 = PKG, 2 = LKG and 3 = UKG

Table 4.5.8
Standardized Canonical Discriminant Function Coefficients for OL Measures

	Function	
	1	2
NEW-V	.637	.113
NEW-SR	.090	.483
QAS	.227	-.103
LLF	.308	-.611
MLU	.137	.813
TTR	.100	.238
NDW	.124	.004

Table 4.5.9
Structure Matrix for OL Measures

	Function	
	1	2
NEW-V	.881*	.021
QAS	.670*	-.181
NEW-SR	.625*	.023
LLF	.611*	-.394
NDW	.347*	.079
MLU	.085	.819*
TTR	-.129	.253*

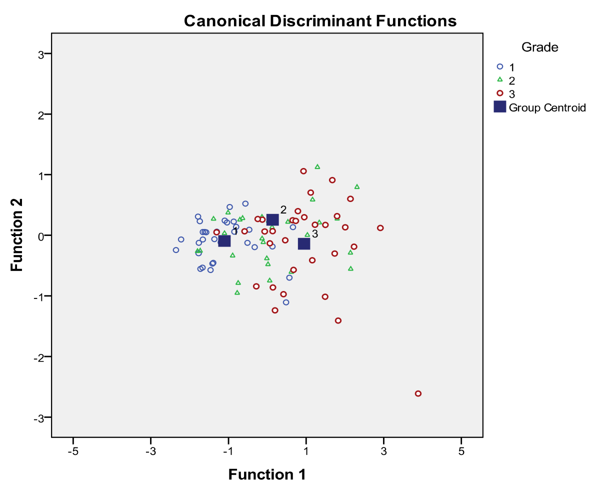

Figure 4.5.2. Plot for canonical discriminant functions of oral language (OL) measures for 1 = PKG, 2 = LKG and 3 = UKG

Table 4.5.10

Functions at Group Centroids for O L Measures

	Function	
Grades	1	2
PKG	-1.103	-.095
LKG	.135	.255
UKG	.946	-.140

Table 4.5.11

Classification Results for OL Measures

		Predicted group membership			
	Grades	PKG	LKG	UKG	Total
Original Count	PKG	25	4	3	32
	LKG	10	11	9	30
	UKG	3	7	23	33
%	PKG	78.1	12.5	9.4	100
	LKG	33.3	36.7	30.0	100
	UKG	9.1	21.2	69.7	100

Table 4.5.12

Standardized Canonical Discriminant Function Coefficients for PK Measures

	Function	
	1	2
BHS	-.102	.019
TD	-.106	-.011
EP	.030	-.212
LN	.181	.807
LS	-.227	.156
AP	.117	-.013
WR	.995	-.367
EW	.343	.274

Table 4.5.13

Structure Matrix for PK Measures

	Function	
	1	2
WR	.910*	-.272
LS	.290*	.059
EP	.204*	-.045
AP	.178*	-.030
LN	.308	.880*
EW	.312	.626*
TD	.164	.529*
BHS	.118	.277*

Table 4.5.14

Functions at Group Centroids for PK Measures

	Function	
Grades	1	2
PKG	-3.062	-1.300
LKG	-1.963	1.613
UKG	4.754	-.206

Table 4.5.15

Classification Results for PK Measures

		Predicted group membership			
	Grade	PKG	LKG	UKG	Total
Original Count	PKG	25	7	0	32
	LKG	2	28	0	30
	UKG	0	1	32	33
%	PKG	78.1	21.9	.0	100
	LKG	6.7	93.3	.0	100
	UKG	.0	3.0	97.0	100

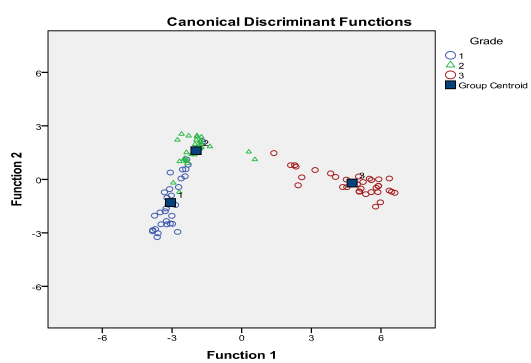

Figure 4.5.3. Plot for canonical discriminant functions of print knowledge (PK) measures for 1 = PKG, 2 = LKG and 3 = UKG

Table 4.5.16

Standardized Canonical Discriminant Function Coefficients for PP Measures

	Function	
	1	2
WA	.834	.090
RA	.234	.818
SA	.059	-.041
AA	-.240	-.065
pA	.370	-.785
STM	-.177	.100
RANO	.141	.022
RANS	-.254	.325

Table 4.5.17

Structure Matrix for PP Measures

	Function	
	1	2
WA	.896*	.183
RA	.601*	.510
AA	.457*	.091
SA	.293*	-.203
STM	.286*	-.169
pA	.568	-.572*
RANS	-.331	.387*
RANO	-.275	.297*

Table 4.5.18

Functions at Group Centroids for PP Measures

	Function	
Grades	1	2
PKG	-1.817	.331
LKG	-.154	-.638
UKG	1.903	.259

Table 4.5.19

Classification Results for PP Measures

	Predicted group membership				
	Grade	PKG	LKG	UKG	Total
Original Count	PKG	26	5	1	32
	LKG	6	17	7	30
	UKG	1	1	31	33
%	PKG	81.3	15.6	3.1	100
	LKG	20.0	56.7	23.3	100
	UKG	3.0	3.1	93.9	100

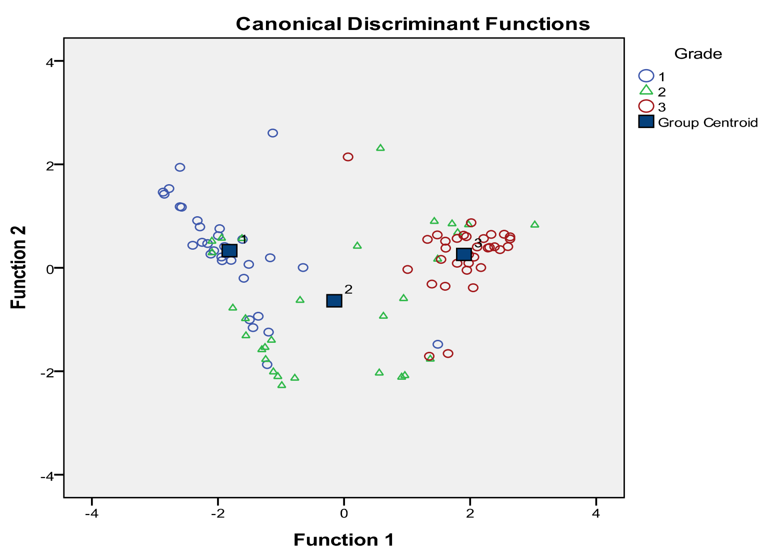

Figure 4.5.4. Combined group plot for canonical discriminant functions of phonological processing (PP) measures for 1 = PKG, 2 = LKG and 3 = UKG

Discussion

The results of the present study suggest that the order of developmental progression of emergent literacy measures is different across grades. According to the results of the discriminant function analysis it is evident that the entire sample can be divided into two distinct groups. Figures 4.5.1 shows that DF1 differentiates PKG and LKG from UKG, that is, measures such as WR, WA, LS, RA, EP, and AA differentiate PKG and LKG from UKG, indicating that these measures play an essential role in the development of emergent literacy skills in older preschoolers. Therefore, measures that are loaded on DF1 function can be called 'later emerging literacy skills'. It can be seen from Table 4.5.1 that later emerging literacy skills comprised of measures that required explicit awareness of skills, which were the result of explicit literacy instruction given in preschools. Figure 4.5.1 also shows that DF2 differentiates PKG and LKG, that is, measures such as LN, EW, TD, pA, NEW-V, BHS, RANS, RANO, QAS and STM differentiate PKG from LKG. Therefore, measures that are loaded on DF2 can be called 'early emerging literacy skills'.

This finding is similar to the results of Carroll et al. (2003), which concludes that early implicit awareness is a skill that grows out of normal language development, that is, it seems to interact closely with receptive lexical knowledge and might therefore be better considered a part of normal linguistic, rather than of metalinguistic development. The development of later emerging skills, appear to build on the foundation of the earlier developed skills, which play an important role in the developmental continuity of reading acquisition. Since both early and later emerging literacy skills are encompassed in the purview of emergent literacy, these findings are consistent with the concept of inside-out skills given by Whitehurst and Lonigan (1998), which states that code-related skills such as print knowledge, phonological processing and vocabulary are most important early in the sequence of learning to read when the primary task is the development of accurate and fluent decoding skills.

When discriminant function analysis was done separately for OL, PK and PP interesting findings emerged. The discriminant functions for OL (Figure 4.5.2) reveal that DF1 accounted for 96% of the total among-group variability. It is evident from the figure that although there is a considerable overlap among the grades, PKG and UKG can be differentiated by DF1 through measures such as NEW-V, QAS, NEW-SR, LLF and NDW. It was observed that DF2 did not differentiate the grades since measures such as MLU and TTR did not differentiate the groups. These findings suggest that the oral language abilities of preschool ELLs show considerable overlap indicating that although a distinct developmental trend is not well established as yet, it is emerging.

The discriminant functions for PK (Figure 4.5.3) reveal that DF1 accounted for 89.7% of the total among-group variability. It is evident from the figure that DF1 differentiates PKG and LKG from UKG, that is, measures such as WR, LS, EP and AP significantly differentiate PKG and LKG from UKG. It was observed that DF2 differentiated between PKG and LKG, that is measures such as LN, EW, TD and BHS differentiated PKG from LKG. These findings indicate that measures loaded on DF1 depict 'later emerging print knowledge skills' while measures loaded on DF2 depict 'early emerging print knowledge skills'.

The discriminant functions for PP (Figure 4.5.4) reveal that DF1 accounted for 92.6% of the total among-group variability. It is evident from the figure that DF1 differentiates PKG and LKG from UKG, that is, measures such as WA, RA and AA differentiates PKG and LKG from UKG. It was observed that DF2 discriminated PKG from LKG, that is, measures such as pA, RANS and RANO discriminated PKG from LKG. These findings indicate that measures loaded on DF1 depict 'later emerging phonological processing skills' while measures loaded on DF2 depict 'early emerging phonological processing skills'.

The discriminant function analysis yielded another important finding, regarding the classification results for predicted group membership. The analysis of the combined data (Table 4.5.19) reveals that 93.8% of PKG participants shared group membership with PKG while only 6.3% shared group membership with LKG. It was seen that 93.3% of LKG participants shared group membership with LKG, while only 6.7% shared group membership with PKG. The results for UKG show that all the participants (100%) in UKG shared group membership with UKG. These findings indicate that majority of participants shared membership with their group while very few participants shared membership with another group.

The classification results for OL, PK and PP individually, show that for OL, PKG participants showed maximum group membership while for PK and PP, UKG participants showed maximum group membership. LKG participants showed maximum group membership for PK measures.

Development of Emergent Literacy

Results of the present study clearly indicate that development in emergent literacy is distinct across grades and domains. Figures 4.5.5, 4.5.6, 4.5.7 and 4.5.8 indicate that the emergent literacy measures show a differential developmental trend for each grade: PKG, LKG and UKG respectively. In order to determine the acquisition of emergent literacy measure at each grade, 75% criterion for acquisition was set for each skill (which is similar to the Pre-reading Inventory of Phonological Awareness, PIPA, 2003). Based on the 75% criterion, data analysis revealed that SA, STM and BHS were acquired in **PKG**; pA, RANS, RANO TD, LN, EW, NEW-V and QAS were acquired in **LKG**; and AA, WA, RA, WR and LS were acquired in **UKG**.

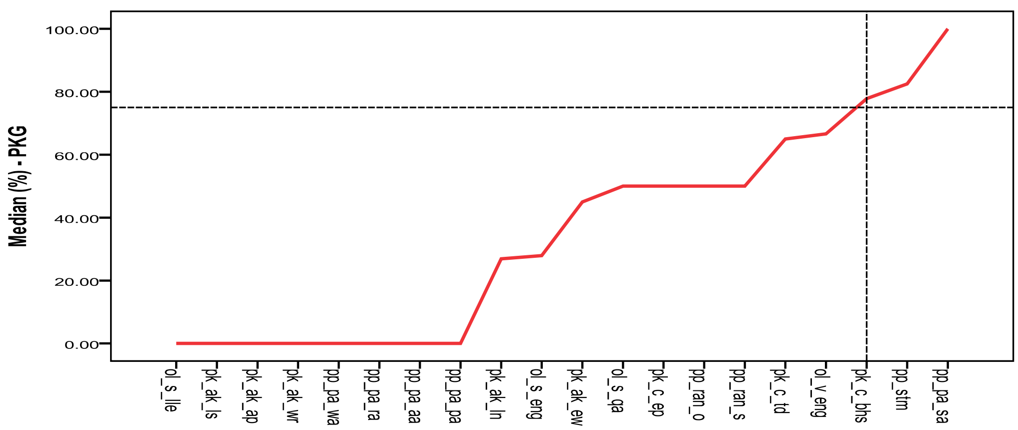

Figure 4.5.5. Developmental trend of emergent literacy measures in PKG

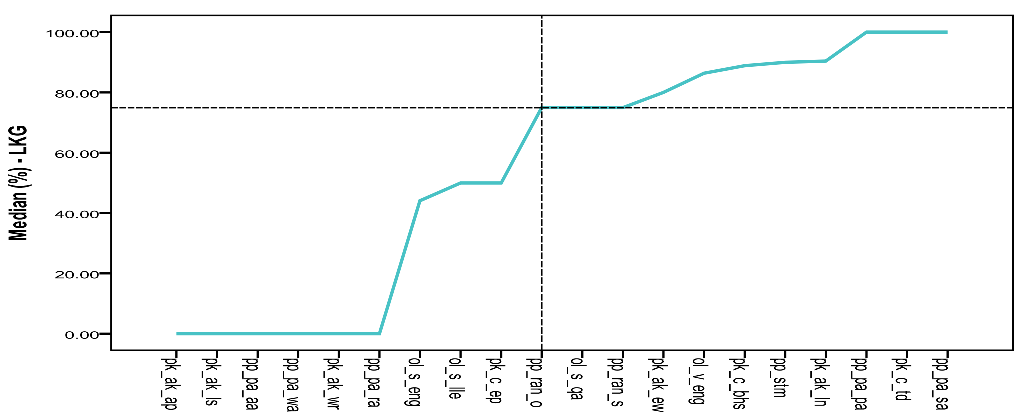

Figure 4.5.6. Developmental trend of emergent literacy measures in LKG

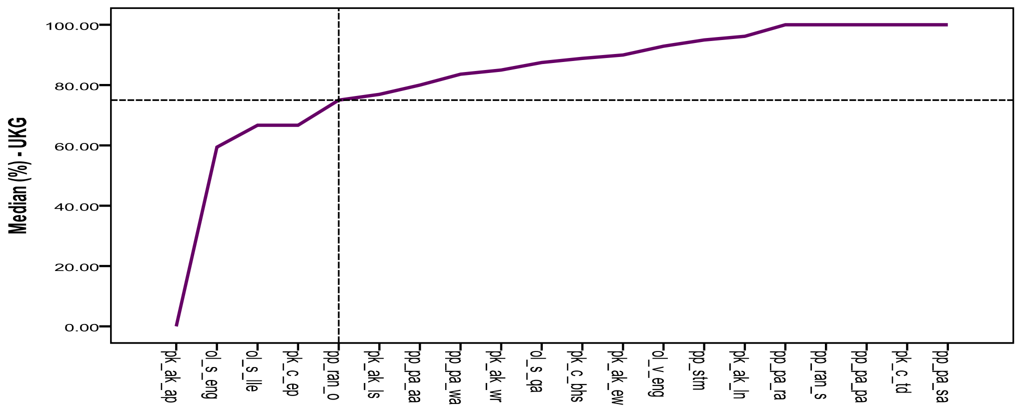

Figure 4.5.7. Developmental trend of emergent literacy measures in UKG

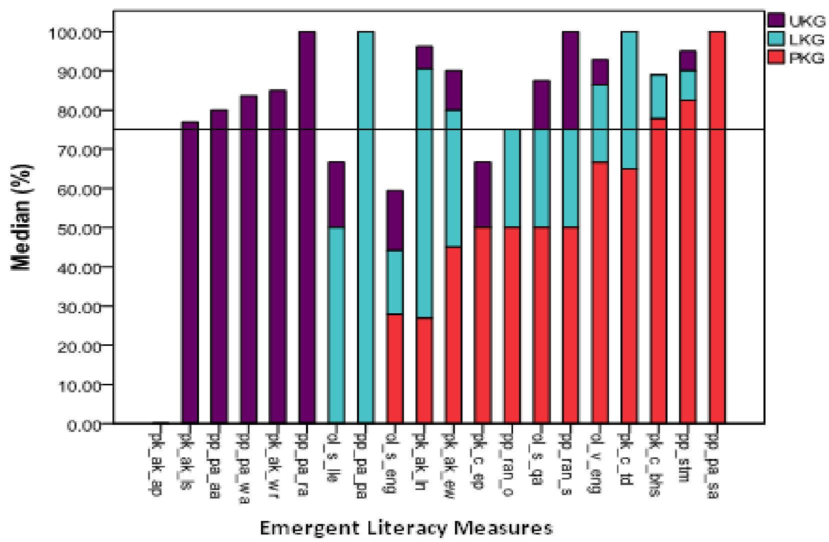

Figure 4.5.8. Development of emergent literacy measures[18] across grades

The developmental trend observed in each grade (Figures 4.5.5, 4.5.6, 4.5.7) revealed that the development of emergent literacy skills was not linear. This is consistent with the 'Ascendancy Hypothesis' given by Scarborough (2003), which claims that growth in the components of language consists of spurts and plateaus at particular times rather than steady incremental advances, which means that spurts in language skills occur at different ages. The developmental trend across grades

[18] pk_ak_ap = Alphabetic principle, pk_ak_ls = Letter sounds, pp_pa_aa = Alliteration awareness, pp_pa_wa = Word awareness, pk_ak_wr = Word recognition, pp_pa_ra = Rhyme awareness, ol_s_lle = Literate language features, pp_pa_pa = Phoneme awareness, ol_s_eng = Number of English words-story retell, pk_ak_ln = Letter names, pk_ak_ew = Emergent writing, pk_c_ep = Environmental Print, pp_ran_o = Rapid automatized naming- object, ol_s_qa = Question answer, pp_ran_s = Rapid Automatized naming- Size, ol_v_eng = No. of English words-Vocabulary, pk_c_td = Text Discrimination, pk_c_bhs = Book Handling Skills, pp_stm = Short Term Memory, pp_pa_sa = Syllable awareness

indicates that oral language measures such as vocabulary; story retell and question-answer task shows a gradual development. Further, it shows that print knowledge (such as letter names, letter sounds and word recognition) and phonological processing measures (such as phoneme awareness, rhyme awareness, word awareness and alliteration awareness) show a sudden spurt in development. It is evident from Figure 4.5.8 that the development of emergent literacy skills in ELLs progresses in an 'overlapping sequence'. Based on the results of the present study the following model of emergent literacy development for ELLs has been derived.

The development of emergent literacy measures in ELLs (Figure 4.5.9) shows that different emergent literacy measures were acquired at different grades (PKG, LKG and UKG). This figure is based on the 75% criterion, that is, if an emergent literacy skill is achieved with an accuracy of 75% or more, it will be considered acquired (Pre-reading Inventory of Phonological Awareness, PIPA, 2003). Every skill included in the figure (Figure 4.5.9) has shown 75% accuracy for the indicated grade. The developmental progression of emergent literacy skills is demonstrated by the increasing size of the sphere. The biggest sphere, which represents UKG, includes the smaller spheres: LKG and PKG, indicating that the emergent literacy measures included in LKG and PKG have already been acquired by the time children reach UKG. The LKG sphere includes the smallest sphere, PKG, indicating that the emergent literacy measures acquired in PKG have already been acquired by the time children reach LKG.

The colour of the text represents the emergent literacy domain that the measures represent; 'red' represents Print Knowledge, 'black' represents Phonological Processing and 'green' represents Oral Language skills. It was observed that measures of PK and PP achieved the 75% criterion in PKG (through UKG), while measures of OL achieved the 75% criterion in LKG. This shows that although oral language skills in English emerge in PKG, they reach 75% accuracy in LKG and continue to develop in UKG. It is important to note that the emergent literacy measures represented here are those measures that reached the 75% criterion. Other measures (not mentioned in the model) are also operating in these grades but their percentage of accuracy is less than 75%, probably because they have just emerged and are in the process of development. These emergent literacy skills, when measured in later grades have shown to achieve 75% accuracy. Further it should be noted that skills, that reached 75% accuracy continue to develop in later grades.

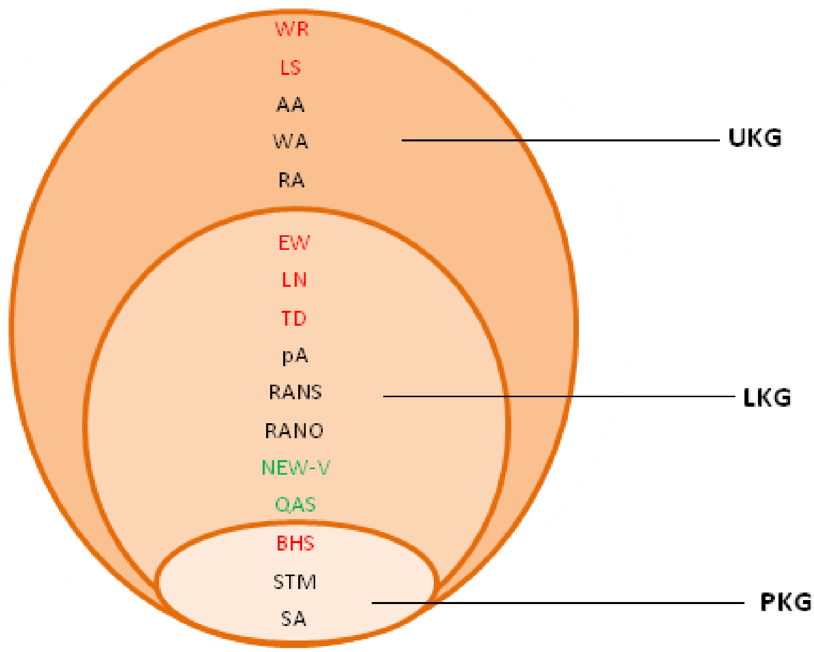

Figure 4.5.9. Emergent literacy development for ELLs

Note. 'Red' text represents Print Knowledge, 'Black' text represents Phonological Processing and 'Green' text represents Oral Language skills

The skills that children demonstrated in PKG were a reflection of the home literacy experiences. It was observed that in PKG, children could perform tasks such as matching meaningful monosyllabic words, non-word repetition (STM) and book handling skills. The figure shows that LKG is the most active period of emergent literacy acquisition, that is, majority of emergent literacy skills are acquired in this period. This explains the finding of the correlational analysis, which indicates that in the LKG period the emergent literacy measures do not show high correlations when compared to PKG and UKG. It is evident from the figure that in UKG, children could perform more complex tasks such as phonological awareness and word recognition, indicating that the emergent literacy skills acquired at earlier stages provide a scaffold for the development of later acquired skills such as word recognition.

4.6 Structural Equation Modelling (SEM)

In the present study, SEM (SPSS- Amos software, Version 18) was used to derive a model of emergent literacy predictors in ELLs (Figure 4.6.3). Structural Equation Modelling is a statistical technique that allows the investigator to construct latent variables, which are not measured directly, but are estimated in the model from several measured variables, each of which is predicted to 'tap into' the latent variables.

In the present study the model was derived by taking 'emergent writing' and 'word recognition' as dependent variables and other emergent literacy measures[19] as independent variables. The predictors were derived separately for each grade (PKG, LKG and UKG). The structural equation models for WR and EW for each grade are given in the Appendix. In the present study, derivation of predictors was given more importance than the statistics of coefficients. The predictors for WR and EW derived from SEM (Figures 4.6.1 and 4.6.2) were incorporated in the model that is shown in Figure 4.6.3.

As seen in Figure 4.6.1 and 4.6.2, Emergent Writing (EW) was predicted by Question-Answer Score in PKG and LKG, by Text Discrimination (TD) in PKG, by Letter Naming (LN) in LKG and by Word Awareness (WA) in PKG and UKG. Word Recognition was predicted in UKG by Number of English Words-Vocabulary, Literate Language Features, Rhyme Awareness and Rapid Automatized Naming-Object. It should be stressed at this point that since word recognition was achieved significantly in UKG, the predictors for WR were derived only for UKG.

The present findings are consistent with literature review, which reveals that a) oral language (Curenton & Justice, 2004; Goldsworthy, 2003; NELP, 2009; Vellutino, 1991; Whitehurst & Lonigan, 1998), b) print knowledge (Ehri & Sweet, 1991; Badian, 1995; Muter & Diethelm, 2001; NELP, 2009; van Kleeck, 1990; Walsh, Price & Gillingham, 1998) and c) phonological processing skills (Anthony et al., 2007; Bryant et al., 1989; Ehri & Sweet, 1991; Maclean et al., 1998; Mason & Allen, 1986; NELP, 2009; Sankaranarayanan, 2003; Scarborough 1990; 1991a; Share et al., 1984; Sulzby & Teale, 1991; Torgesen et al., 1994; van Kleeck, 1990; Wagner & Torgesen, 1987) play a major role in the acquisition of successful reading and writing skills in very young children who are ELL's.

[19] NEW-V = Number of English Words- Vocabulary, NEW-SR = Number of English Words- Story Retell, QAS = Question Answer Score, LLF = Literate Language Features, MLU = Mean Length of Utterance, TTR = Type Token Ratio, NDW = Number of Different Words, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print, LN = Letter Names, LS = Letter Sounds, AP = Alphabetic Principle, WA = Word Awareness, RA = Rhyme Awareness, SA = Syllable Awareness, AA = Alliteration Awareness, pA = Phoneme Awareness, STM = Short Term Memory, RANO = Rapid Automatized Naming-Object, RANS = Rapid Automatized Naming-Size

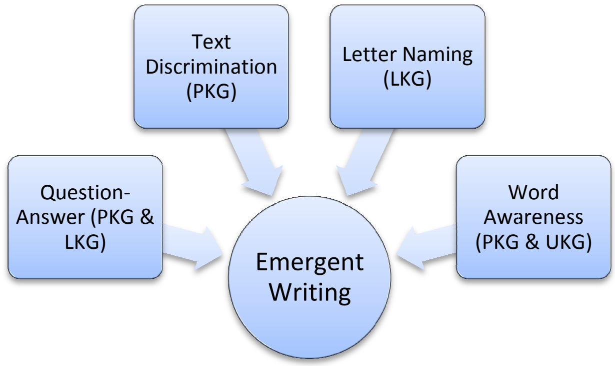

Figure 4.6.1. Predictors for emergent writing in ELLS (grade-wise)

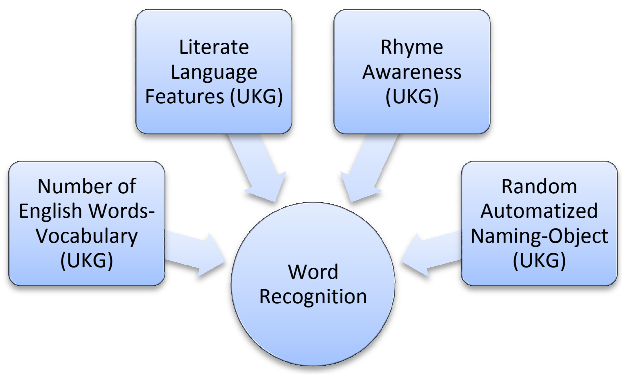

Figure 4.6.2. Predictors for word recognition in ELLs (grade-wise)

Model of Emergent Literacy Predictors (MELP)

Based on the predictors derived from SEM a model of emergent literacy predictors (MELP) ELLs was designed (Figure 4.6.3). It is evident from the figure that all the three emergent literacy domains, oral language, print knowledge and phonological processing play an essential role in the development of emergent writing and word recognition in ELLs. Further, it shows that text discrimination, letter naming, question-answer and word awareness predict emergent writing, while literate language features, number of English words- vocabulary, rhyme awareness and rapid automatized naming predict word recognition.

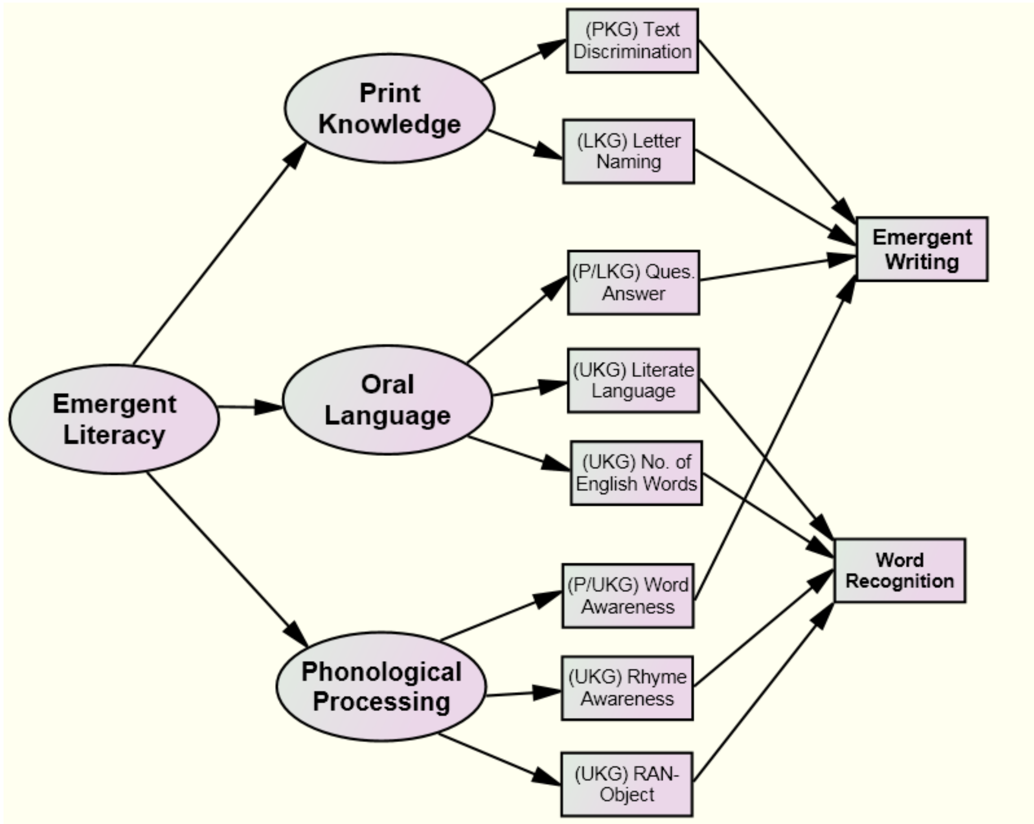

Figure 4.6.3. Model of emergent literacy predictors in ELLs

In summary, the results of the present study revealed some important findings. Firstly, Kannada-speaking English Language Learners show reading and writing behaviours which can be termed as 'emergent literacy' skills, since they were acquired prior to formal schooling and they facilitated the acquisition of word recognition. One of the major highlights of the study was that emergent literacy development was not discrete; rather it followed an 'overlapping sequence'. Emergent literacy in ELLs showed a non-linear developmental continuity, that is, literacy emerged in spurts and plateaus. The developmental pattern from PKG through UKG indicated that oral language skills showed a gradual development, while majority of print knowledge and phonological processing skills showed a sudden spurt in development (Figure 4.5.5, 4.5.6, 4.5.7).

Secondly, the development of emergent literacy seen in ELLs was similar to the development seen in native English speakers, especially in the print knowledge domain. However, a few exceptions were observed, such as the developmental pattern of phonological awareness skills, which showed that phoneme blending and syllable matching emerged prior to word awareness skills. The delayed emergence of word awareness skills could be attributed to the gradual development of oral language skills, which in turn could be attributed to the fact that the participants were English Language Learners; their proficiency in English and the effect of native language on the development of emergent literacy might explain the difference. Therefore, the present study highlights the important role of oral language in the acquisition of reading in ELLs.

The results also revealed that the emergent literacy measures shared significant intra and inter- relationships among one another, which changed over time. Structural equation modelling was used to extrapolate predictors for word recognition and emergent writing. The results reveal that emergent literacy predictors were not confined to a single domain; text discrimination, letter naming, question-answer and word awareness predicted emergent writing, and literate language features, number of English words- vocabulary, rhyme awareness and rapid automatized naming predicted word recognition. Hence it is evident that all the three domains of emergent literacy - oral language, print knowledge and phonological processing play a role in the acquisition of reading and writing in preschool ELLs.

Thus, the present study was designed to test the following hypotheses:

1) Emergent literacy domains such as Oral language, Print knowledge and Phonological processing show a developmental pattern from three to six years.
2) Emergent literacy domains such as Oral language, Print knowledge and Phonological processing share inter-relationships with one another.

The present study employed descriptive statistics, MANOVA and discriminant function analysis to test the developmental pattern of emergent literacy measures in Kannada-speaking English Language Learners. Results of the study have indicated the developmental pattern of emergent literacy domains such as oral language, print knowledge and phonological processing from PKG through UKG, thereby supporting the first hypothesis.

The present study employed correlational analysis, hierarchical stepwise multiple regression and structural equation modelling to study the inter-relationships among emergent literacy measures. Results of the study have indicated that the measures used to study the domains of emergent literacy showed inter-relationships among one another, thereby supporting the second hypothesis.

The results of the study in general are suggestive of a distinct developmental pattern of emergent literacy in ELLs. The development of skills in the three domains under study – oral language, print knowledge and phonological processing provide insights about the inter-relationships among the skills in ELLs as reported in native English speakers, however with a few exceptions. The findings give insights into the theoretical issues related to emergent literacy and offer guidelines to develop emergent literacy model for ELLs.

Summary and Conclusion

Acquisition of literacy depends upon the child's environment and several pre-requisite skills which enable children to become successful readers. From a very young age, children from literate families, begin to show an interest in print. They love to look at pictures, listen to stories, scribble with crayons and play with sounds in rhymes. These initial experiences with print and sounds of a language set the stage for literacy to emerge and therefore, these skills are referred to as Emergent Literacy skills. Research indicates that emergent literacy skills are essential for later reading achievement and children with limited literacy skills or experiences, might develop reading difficulties in later grades. Although a great deal is known about the development of emergent literacy in native English-speaking school age children, there is a paucity of research on preschool children who acquire English as a second language.

Research in early literacy development of preschool children is essential for understanding the emergence and developmental patterns of literacy. Review of literature also suggests that children's reading achievement in later grades can be predicted by evaluating their emergent literacy skills in the preschool period. While evaluating the emergent literacy skills, children 'at risk' for reading difficulties in later grades can be detected and intervention programs facilitating emergent literacy skills can be recommended. The present cross-sectional study attempted to explore the development of emergent literacy in 3- to 6-year-old Kannada-speaking English Language Learners studying in preschools with English as the medium of instruction. The results of this study provide significant findings within the population of English language learners that add to the existing literature on emergent literacy from the perspective of ELL's.

The objective of this research was to study the development of emergent literacy in Kannada-speaking English Language Learners in the age range of three to six years. The objective was carried out in the following phases:

- Survey of emergent literacy experiences of preschool children by assessing the literacy environment at home, in the classroom and the quality of books available to them.
- Development of a Tool for Emergent Literacy Assessment (TELA).

- Assessment of emergent literacy skills by evaluating the oral language, print knowledge and phonological processing skills of preschool children using TELA.
- Study of the relationships among the emergent literacy skills.

Hypothesis

Two hypotheses are posed for the present study:

1) Emergent literacy domains such as Oral language, Print knowledge and Phonological processing show a developmental pattern from three to six years.
2) Emergent literacy domains such as Oral language, Print knowledge and Phonological processing share inter-relationships with one another.

95 participants in the age range of 3 – 6 years were selected from preschools with similar literacy environments after a series of three surveys that were conducted in ten preschools with English as the medium of instruction. The survey aimed at assessing the emergent literacy experiences of preschool children at home, in school and the quality of books available to them. Based on the results of the survey preschool children studying in PKG, LKG and UKG were selected for the study from three schools with similar literacy environments.

In the absence of a standardized test for emergent literacy in India, a Tool for Emergent Literacy Assessment (TELA) was developed for the purpose of studying the emergent literacy skills of Kannada-speaking English Language Learners. TELA comprised of assessments for the three domains of emergent literacy: Oral Language, Print Knowledge and Phonological Processing. Several measures were designed to assess each emergent literacy component in detail (vocabulary, story retell, concepts about print, alphabet knowledge, emergent writing, phonological awareness, short term memory and rapid automatized naming). TELA was designed specifically for preschool children and therefore, majority of tasks were accompanied with colourful pictures.

Participants were assessed in a quiet room of the school after obtaining informed consent from the parents and the school. Participants' responses were recorded on TELA score sheets; some responses were audio recorded and timed as per requirement of the task. Tangible rewards such as chocolates and stickers were given to participants after the completion of the assessment. The responses were transcribed, coded and statistically analyzed using SPSS and Amos (Version 18.0). Conforming to the objectives of the study, the data was subjected to various statistical operations such as descriptive statistics, MANOVA, Duncan's post hoc test, discriminant function analysis, correlational analysis, hierarchical multiple regression and structural equation modeling.

The results of the present study revealed some important findings. Firstly, Kannada-speaking English Language Learners show reading and writing behaviours which can be termed as 'emergent literacy' skills, since they were acquired prior to formal schooling and they facilitated the acquisition of word recognition. One of the major highlights of the study was that emergent literacy development was not discrete; rather it followed an 'overlapping sequence'. Emergent literacy in ELLs showed a non-linear developmental continuity, that is, literacy emerged in spurts and plateaus. The developmental pattern from PKG through UKG indicated that oral language skills showed a gradual development, while majority of print knowledge and phonological processing skills showed a sudden spurt in development (Figure 4.5.5; 4.5.6; & 4.5.7).

Secondly, the development of emergent literacy seen in ELLs was similar to the development seen in native English speakers, particularly in the print knowledge domain. However, a few exceptions were observed, such as the developmental pattern of phonological awareness skills, which showed that phoneme blending and syllable matching emerged prior to word awareness skills. The delayed emergence of word awareness skills could be attributed to the gradual development of oral language skills, which in turn could be attributed to the fact that the participants were English Language Learners; their proficiency in English and the effect of native language on the development of emergent literacy might explain the difference. Therefore, the present study highlights the important role of oral language in the acquisition of reading in ELLs.

Based on the results of the study, the investigator derived a developmental pattern for Emergent Literacy skills in ELLs (Figure 4.5.9). This developmental pattern included only those emergent literacy measures, which showed 75% accuracy of response in PKG, LKG and UKG. These findings highlight that emergent literacy emerges in overlapping developmental stages. This shows that by the time children enter formal literacy instruction (Grade 1) they are well equipped with the foundational skills that would assist them in acquiring more advanced conventional reading and writing skills. The pattern of development gives a clear picture of the skills that develop in each grade (PKG, LKG and

UKG), thereby assisting professionals to plan and implement assessment and intervention programs for ELLs for successful academic performance

Results also reveal that oral language, print knowledge and phonological processing skills shared high intra- and inter-correlations among each other. It was observed that emergent literacy measures shared higher correlations in UKG followed by PKG and LKG respectively. This indicates that in PKG, literacy skills emerged, in LKG they underwent a period of progression, where they operated at varying levels of development and by UKG, majority of emergent literacy skills were well developed. The important finding of the present research is that the inter-relationships among emergent literacy skills change over time. This means that professionals working with preschool children should be aware of the different skills that operate at different times during the developmental stage in order to carry out periodic evaluation and facilitation of reading and writing abilities. This also implies that all emergent literacy skills need not be focused upon for all preschoolers. Depending upon the age of the child, professionals may choose skills that play a significant role in the acquisition of literacy at that age and/or grade.

The results of the present study were also analyzed by employing stepwise regression analysis (using SPSS version 18) to extrapolate predictors for word recognition and emergent writing. The predictors were derived independently for each grade. In PKG, participants could not perform the word recognition task hence predictors for letter naming and emergent writing were derived. It was found that in PKG, vocabulary and phoneme awareness predicted letter naming while text discrimination and literate language features predicted emergent writing. In LKG, letter sounds, rhyme awareness and literate language features predicted word recognition while letter names and rhyme awareness predicted emergent writing. In UKG, predictors were derived for word recognition alone since emergent writing reached a maximum in LKG and was not significant in UKG. It was found that in UKG, Alliteration awareness, rapid automatized naming and rhyme awareness predicted word recognition.

In order to derive a model for emergent literacy predictors, Structural Equation Modeling (SEM) was employed using the statistical software, AMOS (SPSS Version 18). This statistical tool extracts significant predictors by allowing inter-correlation among the independent variables (unlike stepwise regression which does not allow inter-correlation). AMOS also allows the investigator to assign equal weight to the random error, thereby ensuring that the predictors derived are significant. Based on the results obtained from AMOS, the investigator derived a Model for Emergent Literacy Predictors (MELP), which provided predictors for ‘emergent writing’ and ‘word recognition’. It showed that text discrimination, letter naming, question-answer and word awareness predicted emergent writing, and literate language features, number of English words- vocabulary, rhyme awareness and rapid automatized naming predicted word recognition. These emergent literacy predictors provide a framework for professionals working with preschool children to enhance their reading and writing abilities.

Another important finding of the present study is that the predictors of reading and writing are not confined to a single domain. It is evident that for ELLs all the domains of emergent literacy - oral language, print knowledge and phonological processing play an important role in the acquisition of reading and writing. These domains are most important early in the sequence of learning to read, when the primary task is the development of accurate and fluent decoding skills, which lead to successful reading comprehension. It is important to note that oral language proficiency plays an important role in the literacy acquisition process of ELLs who acquire reading parallel to the acquisition of English language (unlike the native English speakers). This means that professionals working with preschool ELLs should enhance oral language skills (in English) along with print knowledge and phonological processing in order to facilitate reading acquisition.

It is also noteworthy that reading and writing were best predicted by different sets of predictors at different times, which means that different emergent literacy components operate at different times. Hence it is essential to equip the professionals working with preschool children with the knowledge of emergent literacy predictors so that they function as effective facilitators in the reading acquisition process.

Thus, the present study was designed to test the following hypotheses:

3) Emergent literacy domains such as Oral language, Print knowledge and Phonological processing show a developmental pattern from three to six years.

4) Emergent literacy domains such as Oral language, Print knowledge and Phonological processing share inter-relationships with one another.

The present study employed descriptive statistics, MANOVA and discriminant function analysis to test the developmental pattern of emergent literacy measures in Kannada-speaking English Language Learners. Results of the study have indicated the developmental pattern of emergent literacy domains such as oral language, print knowledge and phonological processing from PKG through UKG, thereby supporting the first hypothesis.

The present study employed correlational analysis, hierarchical stepwise multiple regression and structural equation modeling to study the inter-relationships among emergent literacy measures. Results of the study have indicated that the measures used to study the domains of emergent literacy showed inter-relationships among one another, thereby supporting the second hypothesis.

The results of the study in general are suggestive of a distinct developmental pattern of emergent literacy in ELLs. The development of skills in the three domains under study – oral language, print knowledge and phonological processing provide insights about the inter-relationships among the skills in ELLs as reported in native English speakers, however with a few exceptions. The findings give insights into the theoretical issues related to emergent literacy and offer guidelines to develop emergent literacy model for ELLs.

Implications

In a linguistically and socio-culturally rich country like India, the findings of the present study are reassuring for parents, teachers and professionals who are concerned about the diversity in the emergent literacy practices and environments of preschool children. The present study explored the development of emergent literacy in Kannada-speaking English Language Learners. The findings of the present study indicate that preschool children show significant development in their emergent literacy skills. Further, it identified predictors for word recognition and emergent writing, which provide a framework for assessment and intervention of emergent literacy skills in ELLs. In the absence of known studies in the area of emergent literacy in India, these findings provide a scaffold for future research in this area. This study highlights the importance of emergent literacy domains such as oral language, print knowledge and phonological processing in the acquisition of reading and writing skills in preschool children. It is essential for parents, teachers and professionals working with young children to be aware of the importance of these skills and their impact on later literacy achievement. It also stresses the need for facilitating oral language proficiency in English in order to enhance literacy acquisition in ELLs.

This study provides evidence for building children's language and literacy skills in the preschool period. The developmental patterns and the model of emergent literacy derived in the present study add to the current knowledge in the field and bring new insights into the unique circumstances of preschool ELLs. This study would aid in the early identification of children 'at risk' for reading and writing difficulties. The developmental patterns and predictors of emergent literacy derived from the study could be used to orient preschool teachers and parents about the importance of emergent literacy and its role in later reading achievement. It also stresses the need to provide literacy rich experiences to preschool children, which would help create print awareness and facilitate literacy acquisition.

The tool for emergent literacy assessment (TELA) developed by the investigator can be standardized for ELLs who hail from different native language backgrounds. The findings of the present study have instructional implications as it would help professionals working with preschool children to make decisions about selecting the most appropriate emergent literacy skills for the curriculum. At present, preschools in India do not have a standardized curriculum. This study provides a foundation for outlining the essential elements for the acquisition of reading and writing in preschool children. The developmental patterns and the predictors of emergent literacy would help educators in planning teaching strategies and assessing outcomes.

Caveats and Future Directions

The conclusions of the present study must be tempered by the fact this was a cross-sectional study; a longitudinal study would have yielded far more convincing results. The investigator recommends future researchers to evaluate the development of emergent literacy with a longitudinal perspective. It must be stressed that the present sample provides an insight into the emergent literacy skills of English language learners from Mysore city, who were native speakers of Kannada. It must also be stressed that participants in the present sample were sequential bilinguals, who had acquired functional proficiency in Kannada and were beginning to learn English. Hence, these findings should not be generalized to a sample from other linguistic, geographical and socio-cultural backgrounds with caution.

It needs to be mentioned that the assessment tool used to evaluate emergent literacy skills in this study was developed by the investigator in conformation with the objectives of the study. Future researchers could take up standardization of the tool for emergent literacy assessment (TELA) so that it can be used for assessment purposes in the educational and /or clinical set up. The investigator also recommends that similar assessment tools be developed in other Indian languages so that emergent literacy skills of children from different linguistic backgrounds can be assessed. In a multilingual country like India, it is not sufficient to study effects of bilingualism on the acquisition of literacy. In fact it is recommended that future studies include effects of multilingualism on literacy acquisition in preschool as well as elementary school children.

Since the present study conducted a survey to assess the emergent literacy environment of preschool ELLs, it could not assess the effect of emergent literacy environment on the emerging literacy skills of children. Future researchers can overcome the short-falls of the survey method by employing direct observation methods. This would generate empirical data that could be correlated with the performance of participants on standardized assessment tools to study the effect of emergent literacy environments on the development of the emergent literacy skills.

Since the objectives of the present study did not require a detailed evaluation of the socio-economic status (SES) of the participants, only some factors such as parental education, occupation and time spent with the child were probed. The investigator recommends future researchers to include SES assessments in order to account for the variability in the developmental patterns within and across groups.

The investigator recommends future researchers to undertake emergent literacy acquisition in monolingual preschoolers. Although this is a daunting task in several ways, it is imperative that efforts must be made in this direction. Firstly, pure monolinguals are a fast-fading reality in India. Herculean efforts would be required to reach interior parts of the country to gain access to monolingual preschoolers. Secondly, the preschoolers in the interior parts of the country are acquiring literacy in very informal and diverse ways, which might pose challenges in standardizing the procedures for assessment and acquisition of emergent literacy processes. Thirdly, it is essential to study the circumstances in which literacy emerges in children who do not go to preschools but enroll directly in schools (Grade 1). Presumably, since children enter formal school (Grade 1) around 5-6 years of age, the age range of emergent literacy learners might be higher, which might change the dynamics of the domains of literacy.

The overview of the literature convinces the investigator of the need for a theoretical model to test the complex cognitive, social, and cultural explanations for emergent literacy in English Language Learners. There is a need to explain individual differences, to design reading instruction at the preschool level, and to implicate the consequences of these efforts. In order to develop and expand research and knowledge about emerging literacy, the investigator recommends defining emergent literacy more broadly to include oral language, print knowledge and phonological processing domains from a multilingual perspective. Researchers should refrain from generalizing findings of monolingual participants to bilingual/multilingual populations, and must examine a wider range of social, economic, and cultural understandings of emergent literacy. Researchers must not restrict their objectives to peripheral assessment of factors that affect literacy acquisition; they must work towards finding ways in which children from under-represented populations can be successful in school. Although emergent literacy research in India is at its infancy, future researchers are assured of unlimited insights that are waiting to be unearthed.

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Appendix

Instruction Manual for the Tool for Emergent Literacy Assessment (TELA)

Children from diverse backgrounds enter school with different literacy experiences. These experiences facilitate the development of emergent literacy in the early years of their life. Emergent literacy describes the concepts, skills and knowledge that young children have about reading and writing prior to beginning their formal literacy instruction in elementary school (Whitehurst & Lonigan, 1998). Each child needs to be evaluated individually in order to determine his/her emergent literacy abilities. The Tool for Emergent Literacy Assessment (TELA) has been developed to help Speech Language Pathologists, Special Educators and Teachers evaluate the emergent literacy skills and experiences of preschool children in the age range of three to six years. TELA is divided into two parts; Part One consists of **Emergent Literacy Questionnaires**, which evaluate the emergent literacy experiences of children at home and in school. Part Two consists of **Emergent Literacy Assessment**, which evaluate three essential emergent literacy domains - Oral Language, Print Knowledge and Phonological Processing.

Part One

Emergent Literacy Questionnaires

Acquisition of literacy is a complex process, which is influenced by the literacy experiences that children have at home and school. BELA (Part One) evaluates these literacy experiences through a set of three questionnaires:

1. Questionnaire for Parents: Evaluates the literacy environment at home
2. Questionnaire for Teachers: Evaluates the literacy environment at school
3. Questionnaire on Books: Evaluates the quality of books available to preschool children

Guidelines

a) It is important to evaluate the emergent literacy environment of children before we evaluate their concepts and skills. Thus, all preschool children in the age range of three to six years should be evaluated on Part one before administering the tests in Part two.
b) The questionnaires are meant for parents and teachers of preschool children. The questionnaire on 'Questionnaire for Parents' should be given to parents, and the 'Questionnaire for Teachers' and 'Questionnaire on Books' should be given to preschool teachers.
c) Each questionnaire consists of simple Yes/No questions. The parent/teacher is expected to tick 'Yes' if they agree and 'No' if they disagree.

d) Some questions request an additional response in percentages. For example, "Do you prefer storytelling to storybook reading? Specify the approximate percentage of time you devote to each. (Storytelling………..%, Storybook Reading………. %).

 Yes No

For this question, parent needs to tick 'Yes' or 'No' based on whether they agree or disagree. They should also specify the approximate percentage of time they use storytelling and storybook reading with their child.

e) After the questionnaires are collected from parents and teachers, they should be scored and analyzed.

Instructions for Scoring

a) Each question receives a score of '1' if the parent/teacher has marked 'Yes' and '0' if the question was marked 'No'. There are some exceptions to this rule.
   a. In 'Parent's Checklist', question number 3 a. scores '1' if the parent has marked 'No' and '0' if the parent has marked 'Yes'.
   b. In 'Books for Children', question number 4 c. scores '1' if the teacher has marked 'No' and '0' if the teacher has marked 'Yes'.
   c. In both, the 'Parent's Checklist' and the 'Teacher's Checklist', question number 7 requires a response in percentages. Each time the parent/teacher gives a percentage equal or greater than 50% for English language use, the question scores '1'. If the percentage of English language use is less than 50%, the question scores '0'.
b) In case a question is left unanswered or if a clear response is not apparent, it scores '0'. For example, if the percentages in a question do not add up to 100%, the question scores '0'.
c) The total score for each questionnaire is calculated by adding all the questions, which scored '1'. The maximum score for each questionnaire is as follows:
   a. Parent's Checklist = 28
   b. Teacher's Checklist = 28
   c. Book's for Children = 25

Part Two

Emergent Literacy Assessment

Children from different literacy backgrounds acquire different levels of emergent literacy skills. TELA (Part Two) evaluates emergent literacy skills through the assessments of three domains:

I. Oral Language Assessment
II. Print Knowledge Assessment
III. Phonological Processing Assessment

The general guidelines provided below are applicable to the assessment of all the three domains of TELA. Each domain is further divided into components, which have specific measures to evaluate specific skills. For example, Oral Language assessment consists of two components: Vocabulary and Story Retell. Guidelines specific to each assessment are described in the following sections.

General Guidelines

a) All the three assessments should be administered to children in the age range of three to six years.
b) Discontinuation of a task is recommended after four consecutive failures in order to avoid frustration on the child's part.
c) For the timed tests and for tests that have only five items, the discontinuation rule of four consecutive failures does not apply.
d) The items under each assessment should be administered in the order mentioned in the manual.
e) Always begin the assessment with Practice Items (if Practice Items are available for that Test).
f) Repetitions and corrective feedback are permitted during Practice Trials. The examiner should make sure the child has understood the task before proceeding to the actual testing.
g) The practice items should not be timed or scored.
h) In case the child fails to understand the Practice Trials, that task can be discontinued. But the examiner should ensure that enough attempts were made to explain the task to the child.
i) The tests that are timed like the vocabulary subtest should be carried out exactly for *one minute*. Score the responses, which were elicited during the one minute time period only.
j) The stopwatch should be kept out of view of the child. The examiner should start the stopwatch soon after the presentation of the first test item.
k) During the actual testing the examiner should present one item at a time and in case the child hesitates or is unable to answer, the examiner should provide a prompt like "What is this?" or "It's your turn now" or "Give it a try".
l) After a response the examiner should provide a feedback like "Well done!" irrespective of the accuracy of response.
m) Corrective Feedback such as "That's correct" or "Are you sure? Try again" may be used during practice trials but should not be used during actual testing.
n) A prompt or feedback need not be provided after each presentation.
o) In case the child does not follow the instructions for the task in English, the examiner may explain the task and provide instructions in the local language (Kannada, in the present study).

p) Since the children being tested are in the age range of three to six years, misarticulations/mispronunciations are ignored while scoring.

I. Oral Language Assessment

Children acquire oral language before they acquire how to read and write, hence it is important to assess their oral language ability. The oral language assessment is divided into two components:

i. Vocabulary task
ii. Story Retell task

1) Vocabulary task

This task evaluates the expressive vocabulary of children. The vocabulary task consists of 40 pictures from various lexical categories like animals, birds, colours, body parts, clothes, vegetables, fruits, vehicles, utensils, professions, insects, actions, household articles and nature. The pictures have been selected from the project, 'With a little bit of help' (Karanth, Manjula, Geetha, & Prema, 1999). The child is presented with pictures one by one, and the total number of pictures named correctly within one minute constitutes the score for this task.

Directions for Administration

a) Begin the assessment by practice items. The examiner should present ten practice pictures, one at a time. Before the presentation of the first picture, the examiner should say, "I'm going to show you some pictures. Here's the first one". Show the picture and say, "This is a ..."
b) After the practice pictures the examiner should say, "I will show you some more pictures. It's your turn to name the pictures. Try to name them as fast as you can". Present the pictures one at a time.
c) The examiner should start the stopwatch immediately after the presentation of the first test picture. The practice items are not timed. The test should be discontinued after *one minute*.
d) Repetitions are allowed during practice trials, but not during actual testing. During actual testing, the target picture should be presented to the child and if the child does not respond within *three seconds* provide a prompt like "What is this?" and give the child an *additional two seconds* to name the picture. If the child is unable to name the picture, present the next picture.
e) In case the child responds to a picture, irrespective of the accuracy of response, the next picture should be presented immediately.
f) Corrective feedback can only be given during practice trials. During actual testing, the examiner can only provide feedback like, "Well done!" irrespective of the nature

of response. Feedbacks like, “That’s correct” or “Are you sure? Try again” should not be used.

g) In case the child names a picture in another language besides English (in the present study, Kannada), the examiner should note down the response.
h) Each picture is numbered; hence they should be presented in order. The practice pictures are not numbered so they can be presented in any order.
i) Since this assessment lasts for only one minute, pictures can be presented for one minute irrespective of the accuracy of response. The discontinuation rule of four consecutive failures does not apply here.

Directions for Scoring

a) If the child names a picture correctly in English, the examiner should write a tick mark against the word in the Vocabulary section of the TELA Score Sheet (responses for all tasks should be recorded in the TELA Score Sheet). In case the subject names the picture in the native language (in this study, Kannada) the examiner should record the response on the score sheet.
b) Record the ‘Total Number of Words-Vocabulary’ attempted by each subject in 1 minute.
c) Since subjects are not instructed to respond in any particular language, both English and Kannada responses should be accepted.
d) The responses are divided into accurate and inaccurate responses. For example, if a subject looked at the picture of ‘table’ and said, “table”, it would be an accurate response. Any other response would be considered as an inaccurate response.
e) Accurate responses are scored differently based on the language used (English or Kannada). Since the present research aims at the study of emergent literacy development in English Language Learners, more emphasis is laid on English responses. An accurate response in English should be given a score of ‘3’ and an accurate response in Kannada should be given a score of ‘2’.
f) If a response is inaccurate but semantically related to the target response, it should be given a score of ‘1’. For example, if a subject looks at the picture of a ‘table’ and calls it a ‘chair’ it is evident that he/she has identified that the object is from the lexical category ‘furniture’. Although the object is labeled inaccurately, the lexical category is identified correctly and the response is ‘semantically related’ to the target response. Hence, the response should be scored ‘1’.
g) In case a response is completely inaccurate for example, if a subject looks at the picture of a ‘table’ and calls it a ‘car’, it is an incorrect response and is scored as ‘0’.
h) The total score for the vocabulary subtest is the sum of scores for Number of English Words-Vocabulary (NEW-V), Number of Kannada Words-Vocabulary (NKW-V) and Number of Semantically Related Words-Vocabulary (SRW).
i) The practice items are not scored.

j) Since the total number of pictures in the vocabulary subtest is 40, the maximum score for the vocabulary subtest would be 120 if all the responses are accurate and are in the English language.

Table 1

Sample Table for Recording Responses on the Vocabulary task

Subject	Total Number of Words-Vocabulary	Accurate responses		Inaccurate responses	
		Number of English Words-Vocabulary (NEW-V Score)	Number of Kannada Words-Vocabulary (NKW-V Score)	Number of Semantically Related Words-Vocabulary (SRW Score)	Inaccurate Responses

2) *Story Retell task*

This task evaluates the comprehension and expression of oral language in children. The examiner uses a wordless picture book to narrate a story to the child. The child is then asked to look through the pictures again and retell the story. The child's responses are audio recorded, transcribed, segmented and analyzed. Story retell subtest is divided into two tasks:

i. Story Retell Task
ii. Question Answer Task

Sequence for the Story Retell Subtest: The examiner should use the following sequence for the story retell subtest.

Narrate the story using the wordless picture book

Ask the child to retell the story using the wordless picture book
(Audio record the story retell task)

Carry out the question answer task
(Audio record the question answer task)

Transcribe the recorded story retell task

Segment the transcribed data into C-units

↓

Analyze the story retell task using the SALT software

↓

Analyze the question answer task

Directions for Administration

1. Story Retell Task

a) The examiner should show the wordless picture book to the child and say, “I’m going to tell you a story! Listen carefully. Once I finish, it will be your turn to tell the story” The examiner should narrate the story in English using the wordless picture book.

b) On completion of the story narration, the examiner should give the wordless picture book to the child and say, “Now it’s your turn to tell the story!” The child is expected to go through the wordless picture book and retell the story.

c) The examiner should audio record the child’s narrative including the examiner’s prompts and feedback.

d) If the child cannot retell the story, the examiner may provide prompts like, “Once there was….” If the child stops in between or is unable to proceed, the examiner may prompt by saying, “And then…” or “What happened after that?” But the examiner should not provide any prompts, which directly aid the child’s narration.

e) The examiner may give feedback like, “Well done!” irrespective of the nature of the response.

2. Question-Answer Task

a) After the Story Retell Task the examiner should move to the Question-Answer Task and say “I’m going to ask you a few questions about the story”.

b) The questions should be asked in English. In case the child is unable to answer the question, the examiner should repeat the question in the native language (in this study, Kannada).

c) The child’s response should be noted down in the TELA Score Sheet.

d) If the child does not answer, the examiner should move to the next question.

e) The Question-Answer Task should be audio recorded and scored.

Transcription and Analysis of the recorded Sample

The examiner should listen to the recorded sample and transcribe the narration sample according to the following rules:

a) Only the child's utterances should be transcribed, the examiners utterances need not be transcribed.
b) Repetition of words/phrases/sentences should be omitted. For example, if the child points to the picture of a cat and says "cat…cat…cat" the examiner should transcribe the word 'cat' only once.
c) Irrelevant utterances (utterances that do not refer to the story) should be omitted.
d) Unintelligible utterances should be omitted.
e) A mixed word (words where the root word is in English and the suffix is in Kannada) should be counted as a Kannada word. For example, "cleanaagi" and "walku".
f) The title of the story should not be transcribed for analysis.
g) If the child repeats the utterance 'Mini and Kitty' for every picture, the utterance should be transcribed only once for each picture.

Segmentation Rules

The utterances should be segmented into C-units (communication unit) for the purpose of transcription.

a) Object names should be segmented as 1 C-unit. For example, if a child looks at a picture in the storybook and says, "Cat... girl… flower… leaf" then each object name should be considered as a single C-unit.
b) Noun phrases should be considered as 1 C-unit. For example, if the child says "Mini and Kitty" it should be considered as a single C-unit.
c) Grammatically incorrect clause should be considered as 1 C-unit. For example, if a child says "cat and girl walking" or "mini catty walking" should be considered as a single C-unit.
d) If the examiner asks a question for example, "where is he going?" and the child answers "to home" or "manege" (home) or "tap hatira" (near the tap), it should be considered as a single C-unit.
e) Noun phrases like "little girl" or "cat dirty" should be considered as 1 C-unit.
f) Incomplete clauses where subject or object is missing should be considered as 1 C-unit. For example, "the girl washing" or "go to home" or "biddh hoyithu" (fell down) should be considered as a single C-unit.
g) Independent clauses joined by a conjunction should be considered as 2 C-units for example, "Mini saw tap and wash the Kitty hand" should be considered as 2 separate C-units; 'Mini saw tap' and 'and Kitty wash the kitty hand'.
h) A main clause and a subordinate clause should be considered as 1 C-unit. For example, "Kitty fell on the water and not neat" should be considered as a single C-unit.

Directions for Scoring

The transcribed and segmented data can be analyzed using the SALT (Systematic Analysis of Language Transcripts) software.

1. Story Retell task[1]

The following measures should be assessed for the story retell task:

a) Total Number of Words: These are the total number of words used by the child during narration.
b) Number of English Words- Story Retell (NEW-SR): These are the number of English words used by the child during narration. Each English word uttered by the child receives a score of ‘3’, so the NEW-SR score = NEW-SR x 3.
c) Number of Kannada words-Story Retell (NKW-SR): These are the number of Kannada words used by the child during narration. Each Kannada word uttered by the child receives a score of ‘2’, so the NKW-SR score = NKW-SR x 2.
d) Number of Proper Nouns (NPN): These are the number of Proper Nouns used by the child during narration. For example, ‘Mini’ and ‘Kitty’. Each Proper noun uttered by the child receives a score of ‘1’, so the NPN score = NPN x 1.
e) Total score for the Story Retell Task = NEW-SR Score + NKW-SR Score + NPN Score.
f) Mean Length of Utterance (MLU): This is the number of words used by the child in one utterance.
g) Type Token Ratio (TTR): This is the ratio of the number of different words (NDW) used by the child and the total number of words uttered by the child.
h) Number of Different Words (NDW): These are the number of different words used by the child during narration.
i) The total score for the story retell task is likely to differ from child to child.

Sample Transcript

The following sample provides a bilingual narrative of a girl 5 years and 9 months old. Translation of the Kannada words has been provided in italics within parentheses. The translation has not been scored. All the parameters listed above have been scored for the following sample.

[1] Since the narrative sample in the present study is bilingual and the study aims at evaluating the development of Emergent Literacy in Kannada-speaking children acquiring literacy in English, the scoring is different for both the languages, Kannada and English. Since the children are acquiring literacy in English, responses in English score higher than responses in Kannada.

$ Child
+ Subject Id: KV-UKG-Gowri Sharma
+ Name: Gowri Sharma
+ Gender: F
+ DOB: 6/19/02
+ DOE: 03/6/08
+ CA: 5;9
+ Context: Con
+ Language: English
+ Examiner: Sarika
+ Transcriber: Sarika

C this is mini.
C this is kitty.
C mini and kitty go walk.
C kitty bidd hoyithu. *(Kitty fell down)*
C mini saw tap.
C mini kittyge snana madsidhu. (*Mini gave Kitty a bath)*
C kitty clean aithu. (*Kitty was clean)*
C mini and kitty went to home happily.

Scores for different measures in the Story Retell Task are as follows:

Total Number of Words-Story Retell = 31
NEW-SR (Number of English Words- Story Retell) = 15 (Score = 15 x 3 = 45)
NKW-SR (Number of Kannada Words-Story Retell) = 6 (Score = 6 x 2 = 12)
NPN (Number of Proper Nouns) = 10 (Score = 10 x 1 = 10)
Total Score = NEW-SR + NKW-SR + NPN = 45 + 12 + 10 = 67
MLU (Mean Length of Utterance) = 3.88
TTR (Type Token Ratio) = 0.65
NDW (Number of Different Words) = 20

2. Question Answer Task

a) Each correct answer should be scored ‘1’ for the question answer task.
b) Since it is a comprehension task, responses are evaluated based on their semantic content and not on their syntax. For example, the question “Where did Mini and Kitty go?” might not elicit a response in the form of a complete sentence. The child might just say “walking”.
c) The examiner should accept single word responses and score ‘1’ for each correct answer.

d) The total score for the Question Answer task = 8.

The total score for the Story Retell Task = Story Retell Score + Question Answer Score

Table 2

Sample Table for Recording Responses on Story Retell Task

<table>
<tr><td>Participant</td><td colspan="7">Story Retell task
(Score = NEW-SR + NKW-SR + NPN)</td><td>Question Answer Task
(Score)</td></tr>
<tr><td rowspan="2"></td><td>Total no. of words</td><td>NEW-SR Score</td><td>NKW-SR Score</td><td>NPN Score</td><td>MLU</td><td>TTR</td><td>NDW</td><td rowspan="2"></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

The maximum score for the Oral Language assessment is as follows:

1) Vocabulary task = 120
2) Story Retell task - Varies from child to child

II. Print Knowledge Assessment

Knowledge of print is essential for acquisition of literacy. Print Knowledge assessment is divided into three components:

1) Concepts about Print (CAP)
2) Alphabet Knowledge (AK)
3) Emergent Writing (EW)

1) Concepts about print

This component consists of three measures:

A. Book Handling Skills (BHS)
B. Text Discrimination (TD)
C. Environmental Print (EP)

A. Book Handling Skills (BHS)

Directions for Administration

a) The examiner should use the storybook (with text) for this task.
b) The examiner should show the storybook to the child and say, “Take a look at this storybook. I want you to help me read this book”.
c) Give the storybook to the child with the spine of the book facing the child and ask the first question, “Show me how you hold the book”.
d) The child is expected to hold the book and follow the instructions given by the examiner.
e) The examiner should ask the child to do as instructed in the score sheet and score the child’s responses based on the directions for scoring given below.

Directions for Scoring

a) The first task, "Show me how you hold the book", is scored 1' if the child holds the book with the spine on the left and the front cover on top.
b) The second task, "Show me the front of the book" is scored '1', if the child points to the front cover of the book.
c) The third task, "Show me the name of the book" is scored '1', if the child points to the title of the book printed on the front cover or on the title page of the book.
d) The fourth task, "Where does the story begin?" is scored '2', if the child points to the beginning of the text on the first page or to the picture on the first page and '1' if the child points to the title page.
e) The fifth task, "Where does the story end?" is scored '1', if the child points to the last page of the book, the last picture of the book or the back cover of the book.
f) Since this test only has five items, all the tasks should be evaluated, irrespective of the nature of response. The discontinuation rule of four consecutive failures does not apply here.
g) Mark the responses on the TELA Score Sheet.
h) Maximum score for Book Handling Skills (BHS) = 9.

B. Text Discrimination

This measure consists of two tasks:

i. Point to the letter
ii. Point to the word

Directions for Administration

a) Depending upon the task the examiner tells the child, "I will show you some print, and you have to point to the letter/word". For example, in the stimulus given below, the child is shown a card with the following text printed on it. The child is asked to point to the 'letter'. The correct response is 'g'.
   @ g % 2
b) Begin with the practice items. Say, "We have to find the letters of the alphabet" or "We have to find the word".
c) Show all the four choices and ask the child to find the letter/word.
d) Repetitions are allowed during the practice trials but not during actual testing.
e) The responses should be scored based on the directions for scoring.

Directions for Scoring

a. Score each response as '1' if the child points correctly to the letter/word.
b. Mark the responses on the Score Sheet- Text Discrimination
c. The maximum score for Text Discrimination (TD) = 10 (5+5).

C. Environmental Print

Directions for Administration

a) Show the picture to the child and ask the child "What is this?" For example, the child is shown the picture given below and asked "What is this?" Responses such as 'Chocolate' or 'Dairy Milk' or 'Cadbury' are acceptable responses.

b) If the child does not answer, the examiner can prompt the child by saying, "What does it say?" or "Where have you seen this?" or "Do you know what this means?"

c) Mark the responses on the BELA Score Sheet.

Directions for Scoring

a) If the child provides any of the following responses, score '1' for each item.
   i. "Dairy Milk" or "Chocolate" or "Cadbury"
   ii. "Women" or "Toilet" or "Ladies" or "Bathroom"
   iii. "Maggi" or "Noodles"
   iv. "Stop"
   v. "Colgate" or "Toothpaste"
   vi. "Parle-G" or "biscuit'

b) Since this task has only six items, all the pictures can be presented, irrespective of the nature of response. The discontinuation rule of four consecutive failures does not apply here.

c) Maximum score for Environmental Print (EP) = 6.

The total score for Concepts about Print (CAP) = 25 (9+10+6).

2) Alphabet Knowledge

This component consists of three tasks:

A. Letter/Sound Knowledge (LSK)
B. Alphabetic Principle (AP)
C. Word Recognition (WR)

A. Letter/Sound Knowledge

Directions for Administration

a) This component consists of two tasks, Letter Name (LN) and Letter Sound (LS) knowledge. The directions for both the tasks are the same except the instructions given by the examiner, which change depending upon the task.

b) Begin with the Practice Items. For each child, any four letters in his/her name can be selected as Practice Items.
c) Show the child one letter at a time and say, “I will show you some letters. Let’s name these letters” or “I will show you some letters. Let’s say the sounds these letters make”.
d) Present the letters and say, “This is… (Name the letter)” or “This is… It says the sound… (Say the sound that the letter makes)”. For example in the stimulus given below, the correct response for letter names would be, /ee/, /tee/, /en/, /arr/, /o/, /ay/, and the correct response for letter sounds would be, /e/, /t/, /n/, /r/, /o/, /a/.

E T n r O a

e) Allow the child to name the letter or say the sound after you.
f) During the practice trials the examiner can repeat or provide corrective feedback.
g) Present the card that has letters printed on it. Point to one letter at a time and ask the subject to name the letter or say the sound it makes.
h) To prevent frustration on the part of the subject, if the examiner feels that the child is unable to say letter sounds, this task can be discontinued. But, letter naming task should be carried out for all subjects.
i) If the child is unable to name a particular letter, the examiner can move to the next letter.
j) Record the responses (letters/sounds) on the TELA Score Sheet.
k) Score the responses based on the directions for scoring.

Directions for Scoring

a) Score each correct response with ‘1’ and each incorrect response with ‘0’.
b) A response is correct if the letter/sound is named correctly.
c) A response if incorrect if the letter/sound is substituted by another letter/sound.
d) Due to the similarity in the fonts of the lower case ‘l’ and the upper case ‘I’, if the child substitutes one for the other, mark it as correct and score ‘1’.
e) Misarticulations are ignored; if the child consistently substitutes one sound for the other, for example, if the test sound is /r/ and the child consistently says /l/ for /r/, the examiner should mark it as correct and score ‘1’.
f) The total score for this task will be the total number of letters/sounds identified correctly by the child.
g) The maximum score for Letter/Sound Knowledge = 104 (52+52).

B. Alphabetic Principle (AP)

Directions for Administration

a) Begin with Practice Items. Say to the child "First, I will show you two words, one is a long word and the other is a short word. Then I will say one of them (target word) and you have to point to that word".
b) Keep the two words in front of the child, say one of the words and ask the child to show you the target word. For example, in the stimulus below, the examiner says the target word 'Ambulance' and asks the child to point to the target word. If the child points to 'Ambulance' the response is correct.

Am   Ambulance

c) During the practice trials the examiner can provide corrective feedback or repeat the items.
d) Score the response according to the directions for scoring.

Directions for Scoring

a) For this task the subject receives a score of '1' if all the ten target words have been identified correctly and a score of '0' if any one or more target words have been identified incorrectly.
b) Mark the responses on the TELA Score Sheet.
c) The maximum score for Alphabetic Principle (AP) = 1.

C. Word Recognition (WR)

Directions for Administration

a) The examiner should begin with the Practice Items. Present one word at a time and say, "I will show you some words. Let's read them together".
b) The examiner should present the practice word and say, "This is… (Read the word)". For example the child is presented with the word 'hut' and asked to read the word.
c) In case the child is unable to answer or hesitates, provide a prompt like "What is this?" If the child is unable to read the word, present the next word after prompting once.
d) Record the responses on the TELA Score Sheet.
e) Score the responses based on the directions for scoring.

Directions for Scoring

a) Score a correct response as '1' and an incorrect response as '0'. A response is considered correct if the subject reads the word correctly. If the child only names the letters in the word without saying the whole word, the response is marked as incorrect.
b) Any misarticulations made while reading the word should be ignored.
c) The maximum score for Word Recognition (WR) = 20.

The total score for the Alphabet Knowledge subtest = 134 (104+10+20)

3) Emergent Writing (EW)

This task requires the child to write his/her name. The examiner provides the child with a blank paper and a pencil and asks the child to write his/her name. In case the child is unable to write his/her name, the examiner asks him/her to write whatever s/he wishes.

Directions for Administration

a) The examiner should provide the child with a blank paper and a pencil.
b) Say "I would like you to write your name on this paper".
c) In case the child is unable to write, the examiner should say, "You may write whatever you wish".
d) Score the responses based on the directions for scoring.

Directions for scoring

a) The responses are scored based on two dimensions, letter formation and directionality. For letter formation the child's writing is scored as follows:
   - 0- Child is unable to write or make any marks on paper
   - 1- Name is a scribble
   - 2- Name has letter like forms
   - 3- Writes a few letters of the alphabet
   - 4- Name has some recognizable letters
   - 5- Name is almost correct with recognizable letters but with mixed case (upper/lower case).
   - 6- Name is correct with all recognizable letters, in the proper sequence, with proper case (either all upper or all lower case).
   - 7- Name is correct with all recognizable letters, in the proper sequence, with accurate capitalization (name begins with a capital letter followed by lower case)
b) For directionality, the child's writing is scored as follows:
   - 0- No directionality
   - 1- Partial directionality
   - 2- Reverse directionality (right to left)
   - 3- Correct directionality (left to right)
c) The total score for each child would be the sum of the letter formation score and the directionality score.
d) The maximum score for Emergent Writing (EW) = 10

The maximum score (169) for Test of Print Knowledge is as follows:

1) Concepts about Print (CAP) = 25
2) Alphabet Knowledge (AK) = 134
3) Emergent Writing (EW) = 10

Table 3

Sample Table for Recording Scores on the Print Knowledge Subtest

CAP			AK			EW
BHS	TD	EP	LSK	AP	WR	

Note. CAP = Concepts about Print, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print, AK = Alphabet Knowledge, LSK = Letter Sound Knowledge, WR = Word Recognition, EW = Emergent Writing

III. Phonological Processing Assessment

Phonological Processing skills are one of the most essential emergent literacy skills for alphabetic languages such as English. The test of Phonological Processing consists of three components:

1) Phonological Awareness (PA)
2) Phonological Short Term Memory (STM)
3) Phonological access to lexical storage (Rapid Automatized Naming - RAN)

1) Phonological Awareness

This component consists of five measures:

A. Word Awareness (WA)
B. Syllable Awareness (SA)
C. Rhyme Awareness (RA)
D. Alliteration Awareness (AA)
E. Phoneme Awareness (pA)

A. Word Awareness (WA)

This is a segmentation task where the child is given a sentence and s/he is asked to divide it into smaller segments (words/syllables). In order to rule out the role of memory in this task, the child is provided with a picture describing that sentence. To make the task interesting for the child the examiner gives the child some plastic counters. The child is asked to put one counter on the table for each word/syllable in the sentence. For the sentence, “The boy is eating”, the child may segment the sentence into 4 parts- ‘the’, ‘boy’, ‘is’ and ‘eating’ and put 4 counters on the table. The child gets a score of ‘1’ for each part segmented correctly. Hence for the above example, if the child keeps 4 counters on the table, he/she gets a score of ‘4’.

Directions for Administration

a) Start with the practice items.

b) Explain to the child how a sentence can be divided into smaller parts (words) by saying “I will say a sentence and show you how we can divide the sentence into smaller parts”.
c) Say the sentence at a normal rate of speech and ask the child to repeat the sentence after you.
d) Take the plastic counters and repeat the sentence with a pause between each word (segment the sentence into smaller parts). Ask the child to put one counter on the table for each word. Ask the child to say the word while placing the counter on the table.
e) Once the child is familiar with the task using practice items the examiner can begin the actual testing.
f) During the actual testing the examiner should not pause between words. The sentence should be said at a normal rate of speech.
g) The child is expected to segment the sentence into words/syllables and put one counter on the table for each word. In case the child segments the word further into syllables, accept the response. For example, for the stimulus ‘He is swimming’ the child may segment the word into three parts, ‘he’, ‘is’, ‘swimming’ and keep 3 counters on the table. Or the child might segment the above stimulus into four parts, ‘he’, ‘is’, ‘swim’, ‘ming’ and keep 4 counters on the table.
h) Record the responses on the TELA Score Sheet.
i) Score the responses based on the directions for scoring.

Directions for Scoring

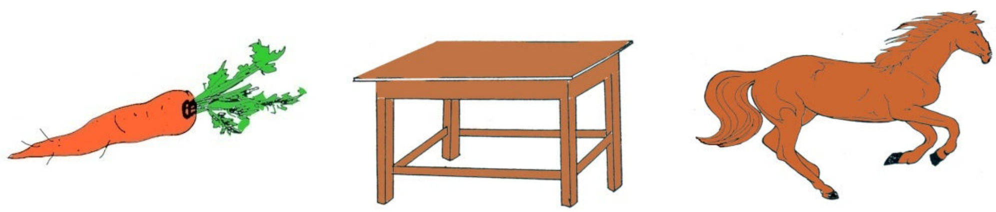
a. Each word segmented correctly by the child should be scored ‘1’. Any additional word (not mentioned by the examiner) should not be scored.
b. The score for a sentence would be the total number of words/syllables counted correctly by the child.
c. If the child puts some counters on the table without segmenting the sentence orally, do not score the response. The examiner should score only those words, which were segmented orally, along with the placement of the counters.
d. In case the child segments the word into syllables, for example, if the child places one counter on the table and says ‘eat’, then places another counter on the table and says ‘ting’, the response should be scored as ‘2’ (one for each syllable segmented correctly). Hence if a child says, ‘the’, ‘boy’, ‘is’, ‘eat’, ‘ting’, the response should be scored as ‘5’.
e. Misarticulations/mispronunciations should be ignored.
f. Since the task involves word awareness, if a word is substituted by a synonym or a similar word, the response can be scored. For example, if a test sentence says “He is swimming” and if the child substitutes ‘he’ with ‘she’, the response should be scored

as correct. But if the child says, “She is swimming fast”, the word ‘fast’ should not be scored.

g. The maximum score for Word Awareness (WA) = 55. This score includes the segmentation of words into syllables.

B. Rhyme Awareness (RA)

In this task the child has to match rhyming words. The examiner places a card in front of the child, which has three pictures. The examiner points to each picture, names them and asks the child to repeat the names of all the pictures. Then the examiner says a stimulus word and asks the child to find a word from the pictures on the table, which rhymes with the stimulus word provided by the examiner. For example, in the stimulus below, the child is given the target word ‘parrot’ and asked to match it with a rhyming word from the pictures provided. If the child points to ‘carrot’ the response is considered as correct.



Directions for Administration

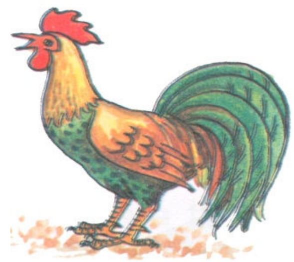
a) Begin the test with practice trials. Place the card in front of the child, name the pictures and ask the child to repeat the names of all the pictures.
b) Say, “Now we will find words that sound the same”. Say, “Let’s find a word which sounds like this word” and say the stimulus word.
c) Sweep your finger on the pictures on the table and say, “Which one of these words sounds the same as… (Say the stimulus word)”.
d) Once the child is familiar with the task, the examiner can begin with the actual testing.
e) Record the responses on the TELA Score Sheet.
f) Score the responses according to the directions for scoring.

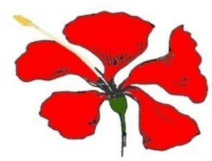
Directions for Scoring

a) A response is correct when the child names/points to the target picture.
b) A response is incorrect when the child names/points to an incorrect picture.
c) Score ‘1’ for a correct response and ‘0’ for an incorrect response.
d) The maximum score for Rhyme Awareness (RA) = 10.

C. Syllable Awareness (SA)

This is an elision task where the child is expected to segment a bi-syllabic word into two parts (syllables). To rule out the role of memory, pictures are used in this task. The examiner places a card in front of the child, which has three pictures. The examiner points to each picture, names them and asks the child to repeat the names of all the pictures. The examiner says the stimulus word and asks the child to segment the word into two parts (syllables). Then the examiner asks the child to delete either the initial or the final part (syllable) and match it with the pictures on the table. For example, if the word is 'peacock' and the child is asked to segment the word into two, 'pea' and 'cock'. The child is asked to delete the initial syllable 'pea' and match the remaining word 'cock' with the pictures given below - dog, cock and flower. The correct response in this example is 'cock' hence the child is expected to point to the picture of 'cock'.





Directions for Administration

a) The assessment begins with practice trials. Explains the task to the child using the practice items.
b) The assessment has two sections, one where the child has to delete the initial syllable and the other where the child has to delete the final syllable.
c) Both sections have practice items. The examiner should begin with the initial syllable deletion first.
d) Say the stimulus word 'peacock' and say, "We can segment this word into two parts, 'pea' and 'cock'. I want you to remove the first part 'pea' and keep the last part." Ask the child, "What is left when we remove the first part 'pea'?" (The child should say "cock").
e) Sweep your finger below the pictures and say, "Now point to the picture that matches the last part of the word 'peacock'." The child should point to the picture of the 'cock'.
f) Once the child is familiar with the task the examiner can begin the actual testing.
g) Care should be taken that while saying the stimulus word the examiner should not stress the target syllable. The stimulus word should be said with normal stress pattern.
h) For the deletion of the final syllable, the examiner should use the same instructions but make sure that the child understands that this time he/she has to keep the first part (syllable) and remove the last part (syllable).

i) Score the responses based on the directions for scoring.

Directions for Scoring

a) A correct response is one where the child segments the word into two parts and points to the target picture.

b) In case the child segments the word orally into two parts but does not point to the target picture, consider the response correct and score ‘1’.

c) If the child points to the target picture without segmenting the word orally, the response should be considered correct and scored ‘1’.

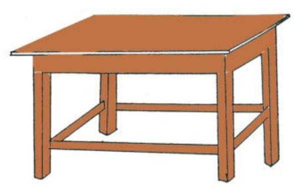
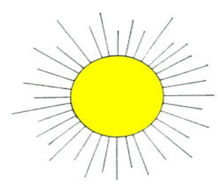
d) A response is incorrect if the child points to an incorrect picture or if the child segments the word incorrectly or repeats the wrong syllable (initial or final).

e) Score ‘1’ for each correct response and ‘0’ for each incorrect response.

f) The maximum score for Syllable Awareness (SA) = 10.

D. Alliteration Awareness (AA)

In this task the child has to match the initial sounds in words. The examiner places a card in front of the child, which has three pictures. The examiner points to each picture, names the picture and asks the child to repeat the names of all the pictures. Then the examiner says the stimulus word and asks the child to find a word from pictures on the table, which begins with the same sound as the stimulus word. For example, if the stimulus word is ‘bat’ and the pictures on the table (given below) are ‘balloon’, ‘table’ and ‘sun’, the child is expected to point to ‘balloon’, since both ‘bat’ and ‘balloon’ begin with the same sound /b/.

Directions for Administration

a) Begin the assessment with practice trials. Explain the task using the practice items.

b) Place a card in front of the child, point to the pictures, name them and ask the child to repeat the names of all the pictures.

c) Say, “We will match words that begin with the same sound”.

d) Say the stimulus word and say, “Let’s find a word that begins with the same sound as this word”.

e) Sweep your finger under the pictures on the table and say, “Which of these words begin with the same sound as… (Name the stimulus word)”.

f) Once the child is familiar with the task begin with the actual testing.

g) Record the responses on the TELA Score Sheet.

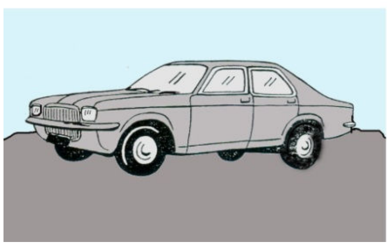
h) Score the responses according to the directions for scoring.

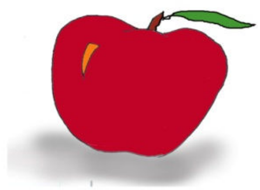
Directions for Scoring

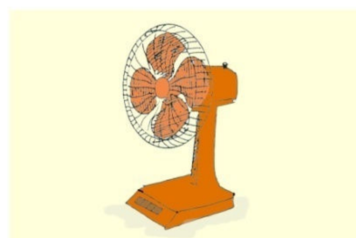
a) A response is correct when the child names/points to the target picture.
b) An incorrect response is one where the child names/points to an incorrect picture.
c) Score '1' for the correct response and '0' for the incorrect response.
d) The maximum score for the Alliteration Awareness (AA) = 10.

E. *Phoneme Awareness (pA)*

This is a blending task where the examiner presents the child with monosyllabic words. The word is said slowly in such a manner that the phonemes are separated with a minimal pause in between each phoneme. The child is expected to blend the individual phonemes to form the word. For example, the examiner says, "/k/…/a/…/r/" and asks the child to join the sounds together to form a word and match it with one word from the pictures on the table (given below). The child is expected to point to 'car', which is the correct response.







Directions for Administration

a) Begin the assessment by practice trials.
b) Explain the task to the child by saying, "We will make words by joining sounds. What word do we get when we join the sounds /k/…/a/…/r/? We get the word "car".
c) Once the child has understood the task using the practice items, begin the actual testing.
d) Record the responses on the TELA Score Sheet.
e) Score the responses based on the directions for scoring.

Directions for Scoring

a) A correct response is one where the child blends all the phonemes in sequence and says the word as a whole.
b) An incorrect response is one where the child repeats the phonemes in isolation or says an incorrect word.
c) Misarticulations should be ignored.
d) A correct response scores '1' and an incorrect response scores '0'.
e) The maximum score for Phoneme Awareness = 10

The total score for Phonological Awareness (pA) = 95 (55+10+10+10+10)

2) Phonological Short Term Memory (STM)

This task requires the child to repeat a list of non-words. The list consists of 20 non-words varying in length from one to four syllables. For example, /nQf/, /fo:sa/, /n?bQna/ and /?S?nfeke:t/. The non-words are spoken with a natural prosodic pattern, characteristic of English words of that length.

Directions for Administration

a) The examiner should say, "I'm going to say a few funny words, I want you to repeat them after me".
b) Begin the assessment with the practice items.
c) The non-words should be spoken in a natural prosodic pattern characteristic of English words.
d) Once the child is familiar with the task start actual testing.
e) Record the responses on the BELA Score Sheet.
f) Score the child based on the directions for scoring.

Directions for Scoring

a) A correct response is one where the child repeats the word correctly with all the phonemes in the correct sequence.
b) An incorrect response is one where the child repeats the word incorrectly, i.e. repeats only a few phonemes, or jumbles the sequence of phonemes.
c) Misarticulations should be ignored.
d) Score '1' for a correct response and '0' for an incorrect one.
e) The total score for Phonological STM = 20.

3) Phonological Access to Lexical Storage (Rapid Automatic Naming- RAN)

This subtest consists of two parts, Rapid Automatic Naming-Object (RANO) and Rapid Automatic Naming-Size (RANS). For both subtests the child is presented with four pictures in varying sequences. Each subtest has five cards, each card has the same pictures but in different a sequence. The subject is required to name the pictures as fast as possible. The time taken by the child to name each card would be recorded. The RANO consists of four pictures 'bus', 'sun', 'cap' and 'fan', and RANS consists of pictures of 'big bus', 'small bus', 'big ball' and 'small ball'.

Directions for Administration

a) Begin the test by familiarizing the child with all the pictures for RANO. Point to the pictures, name them and ask the child to name all the pictures.
b) Once the child is confident of naming the pictures, begin with the testing.

c) Say, "Now I will show you a card with four pictures. I want you to name each picture as fast as you can".
d) Place the stimulus card in front of the child and start the stopwatch.
e) Measure the time taken by the child to name all the pictures.
f) In case the child names the picture incorrectly, correct him and restart with the same card.
g) Once all the cards in the RANO have exhausted, familiarize the child with the pictures for RANS and follow the same procedure.
h) For RANS, the child is expected to say whether the object is 'big' or 'small' along with the name of the object.
i) Record the responses on the TELA Score Sheet.
j) Score the responses based on the directions for scoring.

Directions for Scoring

a) The score for each item is the time taken by the child to name the pictures in a card.
b) Time each card individually.
c) The score for each subtest would be the average time taken to correctly name all the cards in that subtest.
d) Total time for the RAN subtest is the sum of RANO and RANS subtest.
e) Total RAN Scores:

RANO scores:	RANS scores:
3 – 4 sec = 4	< 8 sec = 4
4 – 5 sec = 3	8 – 10 sec = 3
5 – 6 sec = 2	10 – 12 sec = 2
6 – 7 sec = 1	12 – 14 sec = 1

f) Maximum Score for the RAN subtest = 8

The maximum score (123) for Phonological Processing assessment is as follows:

1) Phonological Awareness- 95
2) Phonological Short Term Memory (STM)- 20
3) Phonological access to lexical storage (Rapid Automatic Naming - RAN)- 8

Table 5

Sample Table for Recording Scores on Phonological Processing Subtest

PA					STM	RAN	
WA	RA	SA	AA	pA		RANO	RANS

Note. PA = Phonological Awareness, WA = Word Awareness, RA = Rhyme Awareness, SA = Syllable Awareness, pA = Phoneme Awareness, STM = Short Term Memory, RAN = Rapid Automatic Naming, RANO = Rapid Automatic Naming Object, RANS = Rapid Automatic Naming Size.

The maximum scores for the TELA subtests have been shown in Table 6 (below).

Table 6

Maximum Scores for TELA subtests

Oral Language		Print Knowledge			Phonological Processing		
Voc.	SR	CAP	AK	EW	PA	STM	RAN
120	SR=Varies with each subject. QA=8	BHS=9 TD=10 EP=6 Total=25	LN=52 LS=52 AP=1 WR=20 Total=125	10	WA=55 RA=10 SA=10 AA=10 pA=10 Total=95	20	Total RAN = 8
-		Total=160			Total=122		

Note: Voc. = Vocabulary, SR = Story Retell task, QA = Question Answer task, CAP = Concepts About Print, BHS = Book Handling Skills, TD = Text Discrimination, EP = Environmental Print, LN = Letter Names, LS = Letter Sounds, AP = Alphabetic Principle, WR = Word Recognition, PA = Phonological Awareness, STM = Short Term Memory, RAN = Rapid Automatic Naming, WA = Word Awareness, RA = Rhyme Awareness, SA = Syllable Awareness, AA = Alliteration Awareness, pA = Phoneme Awareness, RANO = Rapid Automatic Naming = object, RANS = Rapid Automatic Naming- size

BELA- Score Sheet

Name: Age/Sex: Date:
School:

I. Oral Language

1) Vocabulary (Maximum Score- 60) **Total Score………**

Practice Items: Ball, Dog, Bus, Nose, Star, Man, Jeep, Balloon, Bat, Bag.

No.	Words	Response	No.	Words	Response
1.	Cow		21.	Cot	
2.	Hen		22.	Tomato	
3.	Red		23.	Apple	
4.	Eye		24.	Boat	
5.	Pants		25.	Glass	
6.	Table		26.	Policeman	
7.	Carrot		27.	Butterfly	
8.	Banana		28.	Eating	
9.	Car		29.	Moon	
10.	Cup		30.	Candle	
11.	Doctor		31.	Fish	
12.	Ant		32.	Peacock	
13.	Sleeping		33.	Green	
14.	Sun		34.	Ear	
15.	Pen		35.	Sock	
16.	Pig		36.	Cupboard	
17.	Duck		37.	Cauliflower	
18.	Yellow		38.	Watermelon	
19.	Leg		39.	Cycle	
20.	Cap		40.	Spoon	

2) Story Retell

a) Retell task **Total Score………**

Page One: "Once there was a little girl named Mini". (8)
Page Two: "She had a white cat called Kitty". (7)
Page Three: "One day Mini and Kitty went for a walk". (9)
Page Four: "On the way, Kitty fell in a ditch and got dirty". (11)
"Mini was sad because Kitty was covered in mud". (9)
Page Five: "She saw a tap and decided to give Kitty a bath". (11)
Page Six: "Mini gave Kitty a bath". (5)
"After the bath Kitty was clean again". (7)
Page Seven: "Mini and Kitty went home happily". (6)

b) Question-Answer task **Total Score………**

i. What was the little girl's name? Ans. The little girl's name was Mini. (6)
Response…………………………………………………………………………
ii. Who was Kitty? Ans. Kitty was a cat. (4)
Response…………………………………………………………………………
iii. What colour was Kitty? Ans. Kitty was white in colour. (5)
Response…………………………………………………………………………
iv. Where did Mini and Kitty go? Ans. Mini and Kitty went for a walk. (7)
Response…………………………………………………………………………
v. What happened when Mini and Kitty went for a walk? Ans. When Mini and Kitty went for a walk, Kitty fell in a ditch and got dirty. (16)
Response…………………………………………………………………………
vi. Why was Mini sad? Ans. Mini was sad because Kitty was covered in mud. (9) Or, Ans. Mini was sad because Kitty got dirty. (7)
Response…………………………………………………………………………
vii. What did Mini do when she saw a tap? Ans. When Mini saw a tap she decided to give Kitty a bath. (12). Or, Ans. When Mini saw a tap she gave Kitty a bath. (5)
Response…………………………………………………………………………
viii. Did Mini and Kitty go home happily? Ans. Yes! Mini and Kitty went home happily. (7) Response…………………………………………………………………………..

II. Print Knowledge

1) Concepts about Print (Max. Score- 13) **Total Score………**

A. Book handling skills (Max. Score- 8) **Score………**

i. Show me how you read a book. Score………
Score 1 for *each* of the following actions:
- The child holds the book upright i.e. front cover on top and back cover at the bottom.
- The child holds the spine of the book on the left.
- The child opens the book correctly.
- The child turns pages correctly.

ii. Show me the front of the book. Score………
Score 1 for the following action:
- The child points to the front cover of the book, OR
- The child points to the title of the book.

iii. Show me the name of the book. Score………
Score 1 for the following action:
- The child points to the title of the book.

iv. Where does the story begin? Score………
Score 1 for the following action:
- The child points to the text/picture on the first page, OR
- The child opens the first page of the book.

v. Where does the story end? Score………

Score 1 for the following action:

- The child points to the last page of the book, OR
- The child points to the back cover of the book.

B. **Text Discrimination (Max. Score- 10)** **Score………**

a) Point to a letter (Circle the response) Score………

Practice Items

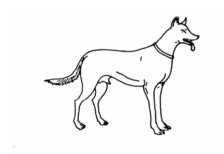
i.	#	4	T	¬
ii.	@	g	%	2

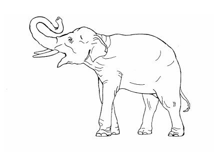
Test Items

i.	w	{	3	→
ii.	9	+	∞	R
iii.	±	A	8	>
iv.	□	7	h	!
v.	P	?	“	6

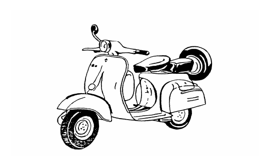
b) Point to a word (Circle the response) Score………

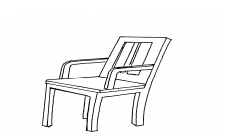
Practice Items

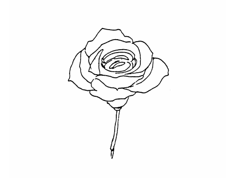
i. Z Boy 550 

ii.  118 q sun

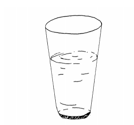
Test Items

i. 762 U Cat 

ii. Ball  100 s

iii. 839 Man  T

iv. J 212 hat 

v.  k 908 Nose

C. Environmental Print (Max. Score- 5) **Score………**

i. Score 1 if the child says 'Cadbury', 'Dairy Milk', 'Chocolate'
Response……………………………………………………………………………………..
ii. Score 1 if the child says 'Women', 'Toilet', 'Ladies- room' 'Bathroom' 'loo'
Response……………………………………………………………………………………..
iii. Score 1 if the child says 'Maggi', 'Noodles', 'Chow-mien'
Response……………………………………………………………………………………..
iv. Score 1 if the child says 'Stop'
Response……………………………………………………………………………………..
v. Score 1 if the child says 'Colgate', 'Toothpaste', 'Paste' 'Brush'
Response……………………………………………………………………………………..

2) Alphabet Knowledge (Max. Score-104) **Total Score………**

A. Letter Knowledge (Max. Score- 52) **Score………**
Sound Knowledge (Max. Score- 52) **Score………**

Letter	E	T	n	r	O	a
R- Name						
R- Sound						
Letter	I	s	D	L	H	C
R- Name						
R- Sound						
Letter	F	p	u	M	Y	g
R- Name						
R- Sound						

Letter	W	V	b	x	q	K
R- Name						
R- Sound						
Letter	J	z	e	t	N	R
R- Name						
R- Sound						
Letter	o	A	i	S	d	l
R- Name						
R- Sound						
Letter	h	c	f	P	U	m
R- Name						
R- Sound						
Letter	y	G	w	v	b	X
R- Name						
R- Sound						
Letter	Q	K	j	Z		
R- Name						
R- Sound						

B. Alphabetic Principle (Circle the response) (Max. Score- 10) Score………

Practice Items

i. Am Ambulance

ii. Keeping Key

Test Items

i. Be **Behave**

ii. **Seesaw** See

iii. Inside **In**

iv. Tea **Teacher**

v. Animal **An**

vi. Window **Win**

vii. **Golden** Go

viii. **Sun** Sunday

ix. **Pen** Pencil

x. To **Today**

C. Word Recognition (Max. Score- 20) Score………

Practice Items: Hut, Pan, Ten, Log, Fig.

SNo.	Word	Response	Score
1	Sun		
2	Hat		
3	Bus		
4	Pen		

5	Bag		
6	Pin		
7	Leg		
8	Cot		
9	Dog		
10	Cap		
11	Jug		
12	Van		
13	Bed		
14	Pig		
15	Top		
16	Lid		
17	Hen		
18	Cup		
19	Box		
20	Win		

3) Emergent Writing (Max. Score- 7) **Score………**

Response…………………………………………………………….…………………...
Scoring:

a) Letter formation and directionality. For letter formation the child's writing is scored as follows:
   - 0- child is unable to write
   - 1- name is a scribble
   - 2- name has letter like forms
   - 3- writes a few letters
   - 4- name has some recognizable letters
   - 5- name has some recognizable letters but with mixed case
   - 6- name is correct with recognizable letters in proper sequence and case
   - 7- name is correct with recognizable letters in proper sequence with capitalization

b) For directionality, the child's writing is scored as follows:
   - 0- no directionality
   - 1- partial directionality
   - 2- reverse directionality (right to left)
   - 3- correct directionality

III. Phonological Processing Skills **Total Score………**

1) Phonological Awareness (Max. Score- 84) **Total Score………**

A. Word Awareness (Max. Score- 44) **Total Score………**

Practice Items

i. He is writing.

ii. This man is fat.

Test Items

i. He is writing. Score……….

Response…………………………………………………………………………

ii. She is painting. Score………

Response…………………………………………………………………………

iii. She is cooking Score………

Response…………………………………………………………………………

iv. This is a flower. Score………

Response…………………………………………………………………………

v. He is playing football. Score………

Response…………………………………………………………………………

vi. This is a big house. Score………

Response…………………………………………………………………………

vii. He is drinking orange juice. Score………

Response…………………………………………………………………………

viii. She is brushing her teeth. Score………

Response…………………………………………………………………………

ix. The dog is on the table. Score………

Response…………………………………………………………………………

x. The cat is in the basket. Score………

Response…………………………………………………………………………

B. Rhyme Awareness (Circle the response) **(Max. Score- 10)** **Score………**

Practice Items

i. Parrot- **carrot**, table, horse

ii. Moon- flower, camel, **spoon**

Test Items

i. Fan- **man**, chair, boat

ii. Cat- bell, fan, **bat**

iii. Wall- pig, **ball**, cap

iv. Band- fish, star, **hand**

v. Boat- apple, **goat**, pen

vi. Sheep- **Jeep**, chair, leg

vii. Pen- car, mango, **hen**

viii. Pot- table, **cot**, banana

ix. Tap- **Cap**, monkey, cycle

x. Car- house, shirt, **star**

C. Syllable Awareness (Circle the response) **(Max. Score- 10)** **Total Score………**

<u>Delete initial syllable</u> Score………

Practice Items

i. Pea<u>cock</u>- dog, flower, **cock**

ii. Hand<u>bag</u>- **bag**, table, duck

Test Items

i. Pine<u>apple</u>- car, **apple**, glass

ii. Post<u>man</u>- tomato, bus, **man**

iii. Football- cap, **ball**, mango
iv. Matchbox- **box**, spoon, carrot
v. Motorcycle- goat, nose, **cycle**

Delete final syllable Score………

Practice Items

i. Eyebrow- moon, **eye**, fire
ii. Rainbow- hen, jeep, **rain**

Test Items

i. Pencil- **pen**, shirt, car
ii. Cupcake- bell, ant, **cup**
iii. Carpet- fan, **car**, bell
iv. Cowboy- **cow**, jeep, pen
v. Starfish- leg, bus, **star**

D. Alliteration Awareness (Circle the response) **(Max. Score- 10)** **Score………**

Practice Items

i. Bat- **balloon**, table, sun
ii. Nest- hen, **nose**, ball

Test Items

i. Cat- **cow**, dog, sheep
ii. Mango- ball, car, **monkey**
iii. Shirt- apple, **ship**, cap
iv. Soap- **sun**, pig, tomato
v. Fan- bus, pants, **fish**
vi. Doctor- bag, **dog**, pen
vii. Hen- bell, **house**, candle
viii. Ant- tap, duck, **apple**
ix. Banana- cow, shirt, **bus**
x. Pig- **pen**, man, cup

E. Phoneme Awareness (Circle the response) **(Max. Score- 10)** **Score………**

Practice Items

i. /g/ /o:/ /t/ - pen, **goat**, cow
ii. /f/ /æ/ /n/ - car, apple, **fan**

Test Items

i. /d/ /ɔ/ /g/ - **dog**, candle, glass
ii. /b/ /ɔ/ /l/ - duck, chair, **ball**
iii. /k/ /æ/ /p/ - bus, **cap**, hen
iv. /ʤ/ /i/ /p/ - leg, man, **jeep**
v. /m/ /u:/ /n/ - **moon**, cat, eye
vi. /b/ /æ/ /g/ - cup, house, **bag**
vii. /n/ /o:/ /z/ - pig, sun, **nose**

viii. /ʃ/ /i/ /p/ - **sheep**, carrot, bell

ix. /b/ /o:/ /t/ - table, **boat**, hand

x. /f/ /ɪ/ /ʃ/ - **fish**, cycle, bat

2) Phonological STM (Max. Score- 20) **Total Score………**

Practice Items

1) nu:b
2) se:mən
3) ʤəpama
4) vete:ʤɪbəl

Test Items (Tick mark the correct responses)

Monosyllables Score………

1) næf
2) po:s
3) mis
4) lɔb
5) no:b

Two syllables Score………

1) kənmi
2) fo:sa
3) sænfi
4) hipen
5) ma:ga

Three syllables Score………

1) nəbæna
2) nɪsema
3) mæfɪli
4) fəbælo
5) kɔsmito

Polysyllables Score………

1) hecɔplitər
2) ækvitɪtɪ
3) kənʃənfekəri

4) əʃənfeke:t

5) nærɑʧuli

3) Phonological Access to Lexical Storage (RAN) **Average Time………..**

A. Rapid Object Naming **Average Time………**

Practice Item: Bus	sun	cap	fan	Time………

Test Items:

Cap	sun	fan	bus	Time………
Fan	cap	bus	sun	Time………
Sun	fan	cap	bus	Time………
Cap	bus	sun	fan	Time………
Fan	sun	bus	cap	Time………

B. Rapid Size naming **Average Time………**

Practice Item: Big ball	small bus	big bus	small ball	Time……

Test Items:

Big bus	small ball	big ball	small bus	Time……....
Small ball	small bus	big bus	big ball	Time……....
Small bus	big ball	small ball	big bus	Time……....
Big bus	big ball	small bus	small ball	Time……..
Small ball	big bus	small bus	big ball	Time……....

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Development of Emergent Literacy – Questionnaire for Parents

Literacy development begins in the very early stages of childhood, before the onset of formal education. Even though the activities of young children may not seem related to reading and writing, early behaviours such as "reading" from pictures and "writing" with scribbles are examples of emergent literacy and are an important part of children's literacy development. The purpose of this questionnaire is to survey the Emergent Literacy Environment of children. This information will be used for research purposes. Strict confidentiality is assured.

Name of the Child…………………………… Age/sex……………. Date……………

Mother tongue…………………………………Medium of Instruction…………………

Name of the School……………………………… ……………………………………

Class……………………………………….

Home Address:
……………………………………………………………………………………………

……………………………………………………………………………………………

Phone………………………………………

Email………………………………………

Information	Mother	Father	Other adult at home
Name			
Age			
Educational Qualification			
Occupation			
Languages spoken at home			
Time spent with the child (hrs/day)			

1. **Do you have the following books at home:**
   a. Story books?
      ☐ Yes ☐ No
   b. Rhyme books?
      ☐ Yes ☐ No
   c. Alphabet and number books?
      ☐ Yes ☐ No
   d. Drawing and colouring books?
      ☐ Yes ☐ No

2. **Do you:**
   a. Read story books to your child?
      ☐ Yes ☐ No
   b. Teach your child how to hold a book and turn pages to follow a story?
      ☐ Yes ☐ No
   c. Point to words while reading a story?
      ☐ Yes ☐ No
   d. Involve your child while reading stories, e.g. encourage him/her to ask questions or complete a sentence for you?
      ☐ Yes ☐ No

3. **Do you:**
   a. Prefer story telling to storybook reading? Specify the approximate percentage of time you devote to each. (Storytelling………. %, Storybook reading....…... %)
      ☐ Yes ☐ No
   b. Change your voice and facial expressions while reading/telling stories?
      ☐ Yes ☐ No
   c. Ask your child what the story was about or what he/she learnt from it?
      ☐ Yes ☐ No
   d. Ask your child to retell the story in his/her own words?
      ☐ Yes ☐ No

4. **Does your child:**
   a. See you read newspapers, magazines or books?
      ☐ Yes ☐ No
   b. See you make shopping lists or write letters to family and friends?
      ☐ Yes ☐ No
   c. Identify familiar logos and company names, like Colgate, Maggi etc.
      ☐ Yes ☐ No
   d. Identify signs on doors, like TOILET, EXIT, PULL, etc.
      ☐ Yes ☐ No

5. **Do you encourage your child:**
   a. To learn names and sounds of letters of the alphabet, e.g. ‘M’ is called ‘em’ but it says the sound ‘mmmm’?
      ☐ Yes ☐ No
   b. To make letter like forms (scribble)?
      ☐ Yes ☐ No
   c. To write letters of the alphabet?
      ☐ Yes ☐ No
   d. To match spoken word to the written word?
      ☐ Yes ☐ No

6. **Do you:**
   a. Teach your child new words?
      ☐ Yes ☐ No
   b. Encourage your child to use complete sentences while speaking?
      ☐ Yes ☐ No
   c. Have a detailed conversation with your child e.g. “Why do we brush our teeth”?
      ☐ Yes ☐ No
   d. Encourage your child to talk about his/her experiences, e.g. “How was school today”?
      ☐ Yes ☐ No

7. **Specify the approximate percentage of time you use English/Kannada (native language) with your child:**
   a. Daily conversation?
      English ………% Kannada …….. %
   b. Storytelling?
      English ………% Kannada …….. %
   c. Reading storybooks?
      English ………% Kannada …….. %
   d. Other reading and writing activities?
      English ………% Kannada …….. %

Your cooperation is highly appreciated.

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Development of Emergent Literacy – Questionnaire for Teachers

Literacy development begins in the very early stages of childhood, before the onset of formal education. Even though the activities of young children may not seem related to reading and writing, early behaviours such as "reading" from pictures and "writing" with scribbles are examples of emergent literacy and are an important part of children's literacy development. The purpose of this questionnaire is to survey the Emergent Literacy Environment of children. This information will be used for research purposes. Strict confidentiality is assured.

Teacher's name……………………………Age/sex………………………Date………

Educational qualification…………………………………………………………..

Number of years of teaching experience…………………………………………………..

Are you trained in Pre-Primary teaching? If yes, name the training institute……………..
……………………………………………………………………………………………..

How many languages do you use in the classroom? (Please specify the languages)
………………………………………………………………………………………

How many children do you have in each class? ....

What is the age range of children in your class?…………………………………………

Do you screen children for problems in: a) Hearing and speech? ……………………

b) Reading and writing? …………………..

School's name and address…………………………………………………………...
……………………………………………………………..…………………………
…………..………………………………………………………………………………
……………………….……………………………………………………………….

Email: Website:

Medium of Instruction……………………………………………………………….

1. Do you teach book handling skills in your classroom, like:

a. A book has a front and a back cover?
 Yes No

b. A book is held right side up?
 Yes No

c. Pages are turned one at a time to follow a story?
 Yes No

d. A book is read from left to right?
 Yes No

2. Do you :

a. Read storybooks to your students?
 Yes No

b. Encourage children to retell the story in their own words?
 Yes No

c. Send home books (from the library) that children can read themselves?
 Yes No

d. Send home books and encourage parents to read to their children?
 Yes No

3. Do you teach children:

a. That each letter has a name and a sound, e.g. ‘M’ is called ‘em’ but it says the sound, ‘mmmm’?
 Yes No

b. Written forms of letters of the alphabet?
 Yes No

c. To write words, like their name?
 Yes No

d. To match sounds to letter names e.g. the sound /shshsh/ is written as ‘sh’ (like in ‘ship’)?
 Yes No

4. Do you teach children that:

a. Words can be broken down into sound parts (syllables) e.g. ‘tomato’ has three sound parts, /to/, /ma/ and /to/?
 Yes No

b. A word can be broken into sounds e.g. ‘fan’ can be broken into /fff/, /aaa/, /nnn/?
 Yes No

c. Some words have the same ending sound/s (e.g. m<u>at</u>, b<u>at</u>, c<u>at</u>)?
 Yes No

d. Some words have the same beginning sound (e.g. <u>b</u>at, <u>b</u>ig, <u>b</u>all)
 Yes No

5. Do you encourage children to:

a. Learn important signs by symbolic reading? e.g. sign for toilet is – 

☐ Yes ☐ No

b. Learn important signs by sight reading? e.g. 

☐ Yes ☐ No

c. Encourage children to express themselves using complete sentences?

☐ Yes ☐ No

d. Encourage children to talk about their experiences, e.g. “what happened in the playground”?

☐ Yes ☐ No

6. Do you encourage children to:

a. Read words by naming the <u>letters</u> in the word e.g. ‘aar’, ‘a’, ‘em’ makes ‘Ram’?

☐ Yes ☐ No

b. Read words by decoding the <u>sounds</u> in the word e.g. /rrr/, /aaa/, /mmm/ makes ‘Ram’?

☐ Yes ☐ No

c. Point at words when you are reading, by moving his/her finger under the print?

☐ Yes ☐ No

d. Match spoken word to the written word?

☐ Yes ☐ No

7. Specify the approximate percentage of time you use English/Kannada (native language) with your students:

a. Daily conversation?

English ....% Kannada .... %

b. Storytelling?

English ....% Kannada .... %

c. Reading storybooks?

English ....% Kannada .... %

d. Other reading and writing activities?

English ....% Kannada .... %

Your cooperation is highly appreciated.

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Development of Emergent Literacy – Questionnaire on Books

Literacy development begins in the very early stages of childhood, before the onset of formal education. Even though the activities of young children may not seem related to reading and writing, early behaviours such as "reading" from pictures and "writing" with scribbles are examples of emergent literacy and are an important part of children's literacy development. The purpose of this questionnaire is to survey the types and quality of books (curriculum books/others) available for children up to six years. This information will be used for research purposes. Strict confidentiality is assured.

Name:……………………………………………………….. Date:……………………….

Age/Sex:…………………………..

Profession /Designation:…………………………………………………………………

Name of the School:…………………………………………………………………….

Address……………………………………………………………………………….

………………………………………………………………………………………..

………………………………………………………………………………………...

Phone:…………………………………E-mail:…………………………………………...

Website:………………………………

Total number of books available in your organization for children up to six years………..

Does your organization develop reading material (like storybooks)? If yes, please specify the type/s of material developed…………………………………………………………

Does your organization have books in different languages? (Please specify the percentage of books you have in each language) ……………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

1) Does your organization have:

a) Books for teaching rhymes?

☐Yes ☐No

b) Books for teaching concepts like alphabet, numbers, colours, shapes, opposites etc.?

☐Yes ☐No

c) Books with informational text like types of fruits, vegetables, transportation etc.?

☐Yes ☐No

d) Storybooks which describe a fantasy or an adventure?

☐Yes ☐No

e) Storybooks about familiar experiences, which a child can relate to. e.g. sharing with siblings and friends?

☐Yes ☐No

2) Are these books:

a) Attractive and interesting for young children?

☐Yes ☐No

b) Easy to handle, in terms of size and weight?

☐Yes ☐No

c) Laminated (so that they can be wiped clean)?

☐Yes ☐No

d) Durable (doesn't wear and tear easily)?

☐Yes ☐No

e) Free of hazards like sharp edges and toxic printing material?

☐Yes ☐No

3) Are these books graded according to:

a) Theme or topic (younger children will loose interest if the topic of the book is too advanced)?

☐Yes ☐No

b) Size of print (larger print is easier for younger children to read)?

☐Yes ☐No

c) Vocabulary level (children gain from reading if they understand at least 90% of the words)?

☐Yes ☐No

d) Amount of text (books with just one word per page or three to four words per page for younger children and books with two or three sentences per page for older children)?

☐Yes ☐No

e) Complexity of text (whether books use simple sentences which children can understand easily)?

☐Yes ☐No

4) Are the illustrations (pictures) in the book:

a) Colourful and attractive?

□Yes □No

b) Descriptive of the text (do the pictures depict what the text says e.g. 'big scary monster')?

□Yes □No

c) Abstract and difficult to interpret?

□Yes □No

d) Incorporating text, in the form of labels or speech bubbles e.g.

□Yes □No

e) Appropriate to socio-cultural aspects?

□Yes □No

5) Does your organization have:

a) Board books, which are made from heavy cardboard with a plastic coating?

□Yes □No

b) Cloth books, which are soft, strong and washable (books that are printed on cloth)?

□Yes □No

c) Touch and feel books (they contain pictures with different textures, pages of different shapes or holes)?

□Yes □No

d) Interactive books, which can be manipulated (they have flaps or other parts that move)?

□Yes □No

e) Electronic books (CD-ROM) which children can read on a computer?

□Yes □No

Thank you for your co-operation.

Emergent Literacy Measures	Abbreviations
Oral Language	**OL**
Vocabulary	**V**
No. of English Words- V	**NEW-V**
No. of Kannada Words- V	**NKW-V**
Semantically Related Words	**SRW**
Story Re-tell	**SR**
No. of English Words- SR	**NEW-SR**
No. of Kannada Words- SR	**NKW-SR**
No. of Proper Nouns	**NPN**
Mean Length of Utterance	**MLU**
No. of Different Words	**NDW**
Type Token Ratio	**TTR**
Literate Language Features	**LLF**
Print Knowledge	**PK**
Concepts about Print	**CAP**
Book Handling Skills	**BHS**
Text Discrimination	**TD**
Environmental Print	**EP**
Alphabetic Knowledge	**AK**
Letter Names	**LN**
Letter Sounds	**LS**
Alphabetic Principle	**AP**
Word Recognition	**WR**
Emergent Writing	**EW**
Phonological Processing	**PP**
Phonological Awareness	**PA**
Word Awareness	**WA**
Rhyme Awareness	**RA**
Syllable Awareness	**SA**
Alliteration Awareness	**AA**
Phoneme Awareness	**pA**
Short Term Memory	**STM**
Rapid Automatized Naming	**(RAN)**
RAN – Object	**RANO**
RAN - Size	**RANS**