Digital tutorial for pre-reading skill (A supplement to the intervention module for preschool children with communication disorders)

PROJECT REPORT

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Every man who knows to read, has it in his power to magnify to multiply the ways in which he exists, to make his life significant and interesting

Aldous Stuxley

Dedicated to

All the sweet little ones and their parents who made this study possible

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Introduction

Speech and literacy are the basis of communication, and communication is the basis of most aspects of life. Skills in communication are critical to success in life. Communication is the exchange and flow of information and ideas from one person to another; it involves a sender transmitting an idea, information, or feeling to a receiver. Children begin to develop their communication skills at birth. The different forms of communication include gesturing, body language, eye contact, sign language, listening and speaking. As they mature, they learn to communicate in more complex ways. The acquisition of 'literacy', a form of communication, further refines their ability to communicate (Watson, 2002).

Literacy is the ability to read and write with understanding in any language. More specifically literacy has been described as the ability to read for knowledge and write coherently and think critically about the written word. It represents the lifelong, intellectual process of gaining meaning from print. The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines literacy as the "ability to identify, understand, interpret, create, communicate and compute using printed and written materials associated with varying contexts. Literacy involves a continuum of learning and benefits individuals, communities and the nation as well. It transforms people, communities and the entire social structure and is a key for socio-economic development. A literate or educated person has a high self esteem, he or she is fairly independent and is aware of his/her rights and duties and therefore cannot be exploited. It has an impact on an individual's ability to participate in society and to understand important public issues. Literacy deepens the understanding of oneself and the world, enriches the minds by

broadening their experiences, and improves the choices they make as consumers, producers and citizens. Therefore literacy and its learning holds great importance in the present day.

Learning to read and write is a significant milestone in the development of young children. Learning to read in the first years of school is essential for success in school and in life (Burns, Roe, & Ross, 1999). The importance of helping children become competent readers was recognized by the 1998 United States National Reading Summit. The summit recommended that adults help children become competent readers by reading daily to them from infancy, and that teachers use a variety of instructional methods to provide support for children with limited English, those with disabilities, and from lower socioeconomic homes (United States Department of Education [US DOE], 1998). This has also been the goal of many other countries around the world including India. The Indian parliament on 4 August 2009 passed The Right of Children to Free and Compulsory Education Act or Right to Education Act (RTE), which describes the modalities of the provision of free and compulsory education for children between 6 and 14 years in India under Article 21A of the Indian Constitution. India became one of 135 countries to make education a fundamental right of every child when the act came into force on 1 April 2010.

The key to all literacy is reading development, which involves a progression of skills that begins with the ability to understand spoken words and decode written words, and culminates in the deep understanding of text. Reading development involves a range of complex language underpinnings including awareness of speech sounds (phonology), spelling patterns (orthography), word meaning (semantics), grammar (syntax) and patterns of word formation (morphology), all of which provide a necessary platform for reading fluency and comprehension. Reading development also involves other prerequisite skills such as concept of matching, directionality, motor skills, rhyming and phonological awareness. All these basic skills together

are otherwise referred to as pre-reading skills. Pre-reading skills are those skills which children need in order to help them to become a reader. Pre-reading skills is an important component of emergent literacy, a concept which evolved during the past three decades as a result of new information on how young children develop an understanding of reading and writing (Hiebert & Fisher, 1990; Neuman & Roskos, 1993; Rex, Koenig, Wormsley, & Baker, 1994). Emergent literacy can be described as the process of learning about the environment that leads to the development of meaning and concepts related to reading and writing. According to Henry (2004) emergent literacy refers to the early literacy concepts, skills, and positive attitudes that form the foundation for subsequent reading and writing achievement.

Beginning from the first month through the second year of life, children's experiences with oral language development and literacy begin to build a foundation for later reading success (Strickland & Morrow, 1988; Weaver, 1988; Burns, Griffin, & Snow, 1999). From 2 to 3 years of age children begin to produce understandable speech in response to books and the written marks they create. From 3 through 4 years of age children show rapid growth in literacy. They begin to "read" their favorite books by themselves, focusing mostly on reenacting the story from the 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; Sulzby, 1991; International Reading Association & National Association for the Education of Young Children, 1998). Around age five, most children at the kindergarten level are considered to be *emergent readers*. They continue to make rapid growth in reading 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. Emergent

readers are just beginning to control early reading strategies such as directionality, word-by-word matching, and concepts of print. They use pictures to support reading and rely heavily on their knowledge of language (Holdaway, 1979; Pinnell, 1996b; Snow, Burns, & Griffin, 1998). Therefore the early age particularly the preschool years for a child is viewed as a very critical period for the child's learning of all the prerequisite skills that support later literacy development (Snow, Barnes, Chandler, Goodman, & Hemphill, 1991).

However, it is observed that while many children provided with the opportunity and facility of education, learn to read without significant difficulty, considerable percentage of children experience difficulty in learning to read and write at some stage in their scholastic period. This difficulty could arise due to the presence of various communication disorders such as learning disability, hearing impairment, mental retardation etc. A communication disorder is an impairment affecting one's understanding and speaking abilities. Along with speech and language problems such as lack or delay in the onset of speech and language, limited language development, restricted vocabulary, incorrect / inappropriate speech characteristics including voice, articulation and prosodic abnormalities etc. such children may also have difficulties in reading and/or writing and exhibit poor scholastic achievement. The estimates of persons with disabilities in India obtained through the latest population census and National Sample Survey Organization (NSSO)'s (2003) survey is about 2% of the population. Indian studies on prevalence of learning disability have revealed that there are an enormous percentage of children with language based learning disability in India (Prema & Jayaram, 2002). It is critical to identify them early, assess and treat their pre-reading abilities so that their deficits can be overcome to the maximum extent possible. There have been extensive research studies indicating characteristics of reading difficulties that can be identified as early as preschool years (Adams,

1990). Therefore the age 3 and 4 are the key years for identifying children who may need literacy support experiences. Snow et al., (1998), in their review of preschool prediction studies, found that assessment of children's literacy early in preschool predicted later reading achievement. Hence, children with communication problems require early intervention for improving literacy from both parents as well as professionals since they are at high risk for literacy failure.

The 'intervention' primarily refers to the implementation of a plan of action to improve one or more aspects of an individual's abilities. It is also a process which is long term and has to be implemented in a systematic, effective, and efficient manner. The intervention of children with communication disorders involves a team approach and is a big challenge to every professional in the field since each child has a unique combination of strengths and weaknesses. The speech-language pathologists and the educators play a very important role. The role of parents in the rehabilitation program cannot be under estimated. They are integral members and considered as equal partners for the planning and implementation of the intervention program. Family centered intervention is important to improve the efficiency and effectiveness of the intervention program. The amount of time the parents spend with the child is on the average, much more than the time spent by any other professional. Consequently they have a great deal of influence over the child's intervention and are by and large considered as useful and significant member/s in the team of members in rehabilitation.

The success of any intervention program depends on the fact that intervention should be initiated early with a systematic training program. Thus, developing resource materials and curriculums to preschools holds great potential aiming at preventing difficulty in learning to communicate. A good theoretical and clinical knowledge of the skill to be established, the

procedure of implementing and achieving these skills in children and its developmental pattern in typically developing children, are also extremely essential, which drives the clinical decision making with diverse clients. In India, however, there is paucity of qualified service providers to meet the needs of the estimated population having various types of communication disorders. Further, it is seen that even though many consumers avail services from qualified professionals, due to several personal reasons such as funds, time constraints, tight job schedules and distance they are unable to avail these intervention services for a prolonged period of time.

Taking into consideration the enormity of the percentage of children with language-based learning disability and communication disorders in our country and the mismatch in the trained professional manpower, designing early childhood programs for promoting young children's language and literacy development is essential. However, this is a complex endeavor and involves efforts at many layers within the system of early childhood education. Considering the fact that emergent literacy training programs are intensive as well as extensive and for a long term, it is highly demanding on the manpower and man-hour resources. Studies have suggested that with systematic training protocol and adequate periodic monitoring mechanism, training is effective irrespective of the trainer, provided the trainer is imparted with sufficient knowledge and skill in administration of training program to children. These preliminary research findings suggest that intervention approaches should be multilayered, integrated or embedded type that requires involvement of manpower at all the levels in order to bridge the gap between research and practice. This involves inclusion of early education providers, elementary teachers, parents, caregivers, along with the speech-language pathologists in the intervention model of emergent literacy skills.

Keeping this in view, a structured, systematic curriculum for speech-language pathologists, special educators, teachers and parents, in the form of an intervention module and training kit (Swapna, Jayaram, Prema, & Geetha, 2010) were developed, which is user-friendly and cost effective. This would serve the purpose of early intervention so that any person with minimum training can effectively carry out early intervention program. The intervention module for preschool children with communication disorders was developed for ten different skills, of which pre-reading skill is a part. This module contains text-based checklists and activities that can be used to enhance the skills of children with special needs. However, it was felt that if such home training programs are accompanied by visual demonstrations of skill enhancement sessions, it would be beneficial for the parents as well as professionals and allied health professionals. Such materials would boost the motivation and confidence level of the caregivers/parents and would in turn result in a better delivery of the rehabilitation program by them to the child. This would also improve the face validity of the training program. Further, it will augment the efficacy of the existing preschool curriculum modules by offering digital video demonstrations of activities that are captured in a video camera.

Considering the fact that there are limited audio-visual resource materials developed to train children with communication disorders, especially in the Indian context, this project was undertaken with the aim of developing a video based supplement to the intervention module on pre-reading skills. Further, recognizing the importance of providing early literacy services especially for children with communication disorders, the intervention module on pre-reading skills was taken from among the ten skills for the purpose of digitization.

The specific objectives of the study were:

- To develop a digital tutorial (video) to enhance pre-reading skill as detailed in the intervention module for preschool children with communication disorders (Swapna et al., 2010).

- To evaluate the efficacy of the digital tutorial in training pre-reading skills in children with hearing impairment in the age group of 3-7 years who are ‘at-risk’ for literacy failure.

The digital tutorial developed as a part of this study, if found effective, may find use in the clinical settings as well as the regular school setups. It may also be used with older children with various communication disorders who have poorly established concepts of literacy, as is often seen in cases of dyslexia and other learning disabilities.

Chapter 2

Review of Literature

A child starts the journey to becoming a reader on the day he is born and first hears the sounds of the parents/caregiver's voice. Every time the child is spoken, sung or read to, the understanding of language gets strengthened which lays the foundation for the acquisition of literacy. This exposure guides the child on the path to becoming a reader. When the child learns to read, he has the key that opens the door to all the knowledge of the world. Without this key, many children are left behind.

Emergent literacy

During early speech and language development, as the child begins to use complex language and learns to use language to express ideas, thoughts and feelings, something more important and interesting is also evolving which is crucial for laying a foundation for learning to read and write. This stage is known as emergent literacy, which begins at birth and continues through the preschool years (Roth & Paul, 2006). In 1966, New Zealand researcher Marie Clay introduced the term *emergent literacy* to describe the behaviors seen in young children when they use books and writing materials to imitate reading and writing activities, even though the children cannot actually read and write in the conventional sense (Ramsburg, 1998). Pinnell (1996b) states that emergent literacy and conventional literacy are not discrete stages but a continuum of learning that varies with the complexity of each individual's development. In the mid 1980's the term emergent literacy gained prominence as a theory for explaining the genesis of children's reading skills (Mason & Allen, 1986; Teale & Sulzby, 1986). An extensive body of research has expanded the understanding of emergent literacy. According to the current research, literacy development in children begins long before formal instruction in elementary school

(Holdaway, 1979; Teale & Sulzby, 1986; Clay, 1991; Allington & Cunningham, 1996; Burns, Griffin, & Snow, 1999; Hall & Moats, 1999).

Emergent literacy refers to the early literacy concepts, skills, and positive attitudes that form the foundation for subsequent reading and writing achievement (Henry, 2004). It is the earliest signs of interest and abilities related to reading and writing (Whitehurst & Lonigan, 1998). These early knowledge and skills are the precursors for the development of literacy; that is, they precede conventional reading and writing (Teale & Sulzby, 1986). The process of emergent literacy involves all aspects of a child's development, and continues throughout life (Teale & Sulzby, 1986; Strickland & Morrow 1989; Clay, 1991; Neuman & Roskos, 1993; Rex et al., 1994). It begins with the child's early nonverbal and verbal interactions with others, awareness of the environment, and explorations. It continues as the child gains intentional language, broadens explorations, and builds concepts. It progresses as the child gains an understanding of the functions of symbols and language (Clay, 1991; Neuman & Roskos, 1993), has experiences with books (Teale & Sulzby, 1989; Clay, 1991) and experiments with writing (Gibson, 1989). Out of these experiences, the child gradually builds concepts about reading and writing.

Previous research has identified a number of potentially important components of emergent literacy. Whitehurst and Lonigan (1998) recently outlined different components of emergent literacy skills and identified three factors that appear to be associated with preschool children's later word-decoding abilities: phonological processing abilities, print knowledge and oral language. Phonological processing ability is an understanding that speech is composed of units, such as words, syllables, and sounds, and the ability to perceive and manipulate the units of speech (Gunn, Simmons, & Kameenui, 1998). Awareness of print or print knowledge is also

thought to be important and includes the understanding of printed letters, understanding that print carries meaning, knowing that print has a variety of functions (street and store signs, lists, letters to a friend, etc.), print components (letters, punctuation, sentences), rules of print and naming letters, printed words correspond to spoken words, knowing that print moves in a particular direction on a page, knowing how to hold a book the right way, book rules (how a book opens, turning pages, title and author on cover, etc.), differentiating between print and pictures, turning pages left to right, and being able to tell the front of the book from the back (Whitehurst & Lonigan, 1998). Finally, oral language skills, that is, the vocabulary and an understanding of the uses and conventions of spoken language are critical for learning to read. Individually and collectively, these components of emergent literacy are related to each other and to later reading and academic success (Snow, Burns, & Griffin, 1998; Richgels, 2002).

A body of ethnographic and linguistic research has emerged over the last 20 years that paints an intriguing portrait of the ways in which children learn to read and write from the beginnings of development. One of the most prominent studies in this field was a review by Teale (1987). A summary of environmental print studies suggest that general literacy knowledge develops out of children's interactions with print. However, the nature of this significance remains unclear. In the research on acquisition of reading and writing concepts, the child is characterized as an active constructor of knowledge, not always employing adult-like thinking or strategies. Research employing storybook reading as a strategy to facilitate emergent literacy emphasizes the significance of repetitive routines such as repeated story book reading in the development of early literacy. Research on classroom applications of emergent literacy strategies shows that insights from emergent literacy research can be successfully applied to classroom teaching practices. As young children participate in literacy events utilizing particular forms of

written language, they learn the ways in which print, as a language signifier, maps onto speech (Read, 1971; Bissex, 1980; Ferreiro & Teberosky, 1982).

Trouble with literacy

Children who learn to read early and also read well are exposed to print more than their peers who do not get as much reading practice. This results in consequent growth in numerous knowledge domains (Morrison, Smith, & Dow-Ehrensberger, 1995). In contrast, children who lag behind in their reading skills receive less practice in reading than other children do (Allington, 1984), miss opportunities to develop reading comprehension strategies (Brown, Palincsar, & Purcell, 1986), often encounter reading material that is too advanced for their skills (Allington, 1984), and may acquire negative attitudes about reading itself (Oka & Paris, 1986). Such processes may lead to what Stanovich in 1986 termed a Matthew effect, in which poor reading skills impede learning in other academic areas (Chall, Jacobs, & Baldwin, 1990), which increasingly depend on reading across the school years. Although the development of skilled reading occurs without significant problems for the majority of children, an estimated one in three children experience significant difficulties in learning to read (Adams, 1990). These children may not have a firm grasp on concepts of print awareness, oral language and phonological processing abilities. This could be a consequence of communication disorders, which present various lacunae such as information processing disorder, attention deficit, behavioural problems, language delay, poor socialization abilities, deficit in the physical abilities, poor emotional skills, difficulty in relating to other children and playing with them, which inturn lead to poor scholastic performance.

There is strong continuity between the skills with which children enter school and their later academic performance. Those children who do experience early difficulties in learning to

read are likely to continue to experience reading problems throughout the school years (Baydar, Brooks-Gunn, & Furstenberg, 1993; Felton, 1993; Stevenson & Newman, 1986; Tramontana, Hooper, & Selzer, 1988) and into adulthood (Bruck, 1988). Juel (1988) reported that the probability that children would remain poor readers at the end of the fourth grade if they were poor readers at the end of the first grade was 0.88. Children who enter school with limited reading-related skills are at high risk of qualifying for special education services. In fact, the majority of school-age children referred for special education evaluation are referred because of unsatisfactory progress in reading (Lentz, 1988).

Intervention through team approach

Research shows that when adults create rich language and literacy environments and respond to a preschool child's communication in specific ways, they can boost that child's emergent language and literacy development and increase the likelihood of future academic success. And the adults with the greatest potential to help are the most important ones in that child's life: his parents and caregivers, including child care providers and early childhood educators, speech- language pathologists (SLPs) etc. The role of SLPs in emergent literacy and the benefit of alternative approaches to literacy intervention have increasingly been reexamined. SLPs have a key role in promoting the emergent literacy skills of all children, and especially those with known or suspected literacy-related learning difficulties. Improving early achievements in phonological awareness, print concepts, and alphabet knowledge is currently identified as a core responsibility of SLPs working with young children (American Speech and Hearing Association, ASHA, 2001) and meeting the needs of children with communicative impairments in these areas is a primary focus. However, a wider group of vulnerable children likely to become "poor readers," who may not necessarily meet the diagnostic standards for

Language Impairment also are likely to benefit from direct or indirect SLP involvement (ASHA, 2001). This position is supported by documentation that poor readers often have a history of underdeveloped phonological awareness abilities, subtle impairments with higher level cognitive–linguistic tasks, and clinically depressed oral language skills (Scarborough, 1989; Bishop & Adams, 1990; Lombardino, Riccio, Hynd, & Pinheiro, 1997; Stothard, Snowling, Bishop, Chipcase, & Kaplan, 1998; Catts, Fey, Tomblin, & Zhang, 2002). Collaborative interventions featuring collective involvement of preschool and kindergarten teachers, SLPs, and parents to ensure timely development of key reading precursors for all at-risk children is currently the gold standard for emergent literacy education and intervention (Snow et al., 1998).

The knowledge base of the SLP's related to phonological awareness, the developmental sequence of phoneme acquisition, the complexity of phoneme production, the categorization and structure of speech sounds within and across words, the relationship of phonological awareness to other areas of phonological processing, and appreciating the complexity of mapping speech to print (Boudreau & Larsen, 2004) differs from teachers' knowledge base; this knowledge can be a critical asset for educational teams (Moats & Lyon, 1996; Moats & Foorman, 2003; Cunningham, Perry, Stanovich, & Stanovich, 2004; Spencer, Schuele, Guillot, & Lee, 2007). They are involved in assessing individual performance to identify individual child's needs and linking individual assessment to instruction and intervention efforts. The content knowledge and professional skill of SLPs enable them to contribute to their school teams' efforts to enhance children's literacy acquisition in several ways. First, SLPs can boost other team members' knowledge; may be the parents, teachers, caregivers etc. Second, SLPs can provide their perspective in assessment and intervention decisions. Third, SLPs can collaborate with classroom teachers to enhance literacy instruction within the general education curriculum. They

can identify literacy curricula that are developmentally appropriate and developmentally sequenced (Wanzek, Dickson, Bursuck, &White, 2000; Smith, Simmons, Gleason, Kame'enui, Baker, Sprick, 2001). SLPs also can assist teachers in providing differentiated classroom instruction that better meets children's varying learning needs (Fuchs, Thompson, Al Otaiba, Yen, Braun, 2002). Fourth, SLPs may be the school team member who is most suited to provide small-group reading intervention to struggling students. Alternatively, it may be important for the SLP to collaborate with a reading teacher who provides such intervention.

A recent study by Moyle and Berman (2011) examined the efficacy of a SLP–designed and implemented emergent literacy program for Head Start preschoolers and the influence of intensity of intervention on children's gains. Results indicated that children who participated in the intervention program exhibited greater gains than the control group on oral language, phonological awareness, and alphabet/print knowledge. Children who received a higher dosage of intervention made greater gains on vocabulary and oral language compared to the lower intensity group. The results clearly revealed that SLPs may be valuable collaborators in promoting emergent literacy skills in at-risk children. The teachers also have an important role to play. Effective teachers of literacy have to know how to design developmentally appropriate experiences and how to accommodate instruction to meet children's needs. Holdaway (1979) argues that they can create the necessary conditions for developmentally appropriate learning by creating literate environments and giving children sufficient instructional support to help them learn to read and write successfully.

Parents/caregivers are the other potential group who are involved in the child's literacy training. The relationship between family environment and reading achievement has been studied for many years (Wingfield &Asher, 1984; Sulzby & Teale, 1991). Sulzby and Teale (1991)

concluded that literacy is deeply rooted in the culture of the family and community, and the home plays an integral role in emergent literacy. Children live in homes that support different kinds. Snow et al. (1998) suggest that measures of the home literacy environment itself, may provide an indication of a child's degree of risk for reading difficulties. For children who have little background with print, confusion can quickly turn into a high-risk factor for reading difficulties and possibly failure. The quantity and quality of interactions young children have with parents, guardians, siblings, and other family members play a significant role in children's reading development. Parents can influence their children's literacy development by creating a literate environment at home by fostering interests, and supporting children's efforts to become readers and writers (Vacca, Vacca, & Gove, 2000). Parents/caregivers should spend time in one-on one conversation with young children, read books *to* and *with* them, provide writing materials, support dramatic play that might incorporate literacy activities, demonstrate the uses of literacy, and maintain a joyful, safe, playful, and enriching atmosphere around literacy activities. Although excellent formal reading instruction can ensure success even for at high-risk readers, considerable efforts to involve the partnership of families greatly increase the chances of success (Edwards, 1995; Edwards, Pleasants, & Franklin, 1999). Sharif, Ozuah, Dinkevich, and Mulvihill (2003) examined the impact of a series of four parent workshops focusing on skills used in reading to children to improve the literacy skills of their preschoolers. 49 participants were recruited for the study, where all parents of children in the pre-K class were asked to participate. The outcome measure of this pre-post case series design was the children's receptive vocabulary, as an indicator of pre-reading skills (using the Peabody Picture Vocabulary Test-Revised). The comparison before and after intervention showed an increase in the mean standard score equivalent (SSE), that is, before intervention the mean SSE was 73.65 and following

intervention, the mean SSE score significantly increased to 80.15 ($p < .001$). The results of this study suggest that parental training has a positive outcome on the literacy development of young children.

Early interventional strategies

In recent years, in the western literature there are several important syntheses of research on the development of language and literacy in early childhood which have been carried out. In 1998, an important synthesis, Preventing Reading Difficulties in Young Children, was completed by the National Research Council of the National Academy of Sciences (Snow et al., 1998). The authors suggest recommendations for early interventions and instructional strategies for young children who are at risk for problems in learning to read. The National Research Council suggests that to be effective, teachers should use a variety of strategies, and that a single approach might not be appropriate for all children. They provide recommendations for practices in preschool through third grade. Their main emphasis for child care and other preschool settings is that they should be rich in language and literacy activities. In particular, the authors emphasize the importance of activities designed to develop children's phonological awareness. Furthermore, children who are at risk for poor outcomes in language and literacy should be identified early and provided with additional support.

In addition in 1998, the International Reading Association (IRA) and the National Association for the Education of Young Children (NAEYC) created a position statement on early literacy (International Reading Association & National Association for the Education of Young Children, 1998). The document makes recommendations for teaching practices that support the literacy development of children from birth through age 8. The position statement supports the recommendations of the National Research Council report (Snow et al., 1998). The authors state

that children come from a wide variety of language and literacy backgrounds, so children vary greatly in their emergent literacy skills. No single teaching method or approach will work for all children, so teachers must employ a range of teaching strategies. However, the single most important teaching strategy for children between birth and age 5 is reading aloud to children using a style that engages children as active participants.

Researchers (Teale & Sulzby, 1987; Morrow, 1990) indicate that shared storybook reading 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, Falco, Lonigan, Fischer, DeBaryshe, Valdez-Menchaca, & Caulfield, 1988). Strickland (1989) found that children who come from homes where storybooks are read have an advantage over the children who are not read to at home. These parents use literature as a way of communicating family values and helping children construct meaning by relating new information to what they already know. During storybook reading, parents also talk about words and pictures and help the child to move to higher levels of thinking during family reading. Repeated storybook reading contributes to positive language changes (Yaden, 1988).

Senechal, LeFevre, Hudson, and Lawson (1996) examined the effects of storybook exposure and the amount of teaching in reading and writing skills needed to be provided by parents to enhance the language skills and emergent literacy of first grade children. The results

showed that storybook exposure might have a direct impact on children's language skills whereas additional support in the form of teaching is necessary to enhance emergent literacy. Other important strategies include fostering an understanding of print concepts, arranging the classroom in a way that encourages interaction with books as well as engagement in writing activities, and posting signs and labels throughout the classroom to enhance the "environmental print" available in the child care setting. In addition, teachers and care givers should develop children's understanding of the alphabetic principle and phonemic awareness. The compendium of research on early literacy (Neuman & Dickinson, 2002) confirms that the preschool years play a critical role in children's literacy development. In particular, phonemic awareness is acknowledged as an important component for early reading, but multiple authors also identify oral language as important in facilitating both early reading and writing skills (Goswami, 2002; Watson, 2002). Several interventions are proved to be useful like, including one-on-one tutoring or classroom-wide instruction in phonics, improving access to print materials, and providing multiple opportunities for using literacy materials in meaningful and engaging ways.

Effect of intervention on language and literacy skills in typically developing children

There are a number of efficacy and effectiveness studies providing empirical support for the positive impacts of language and literacy curricula within preschool classroom settings (Assel, Landry, Swank, & Gunnewig, 2007; DeBaryshe & Gorecki, 2007). Bradley and Bryant conducted some of the earliest and most frequently cited research on preschool assessment and intervention in phonological sensitivity skills, in a series of studies from 1978 to 1990. They demonstrated significant positive correlations between various rhyming skills in preschoolers and later reading and spelling performance (Bradley & Bryant, 1978, 1983; MacLean, Bryant, & Bradley, 1987; Bryant, MacLean, Bradley, & Crossland, 1990). Bradley and Bryant (1985) also

studied the effect of various training procedures for teaching sound categorization to 5- to 7-year-olds who had performed poorly on this type of task at baseline. They found that instruction in sound categorization coupled with spelling practice using plastic letters was most effective in improving reading and spelling achievement, as compared to training in sound categorization alone or various control conditions.

Yeh (2003) studied the effects of two different approaches for teaching phonemic awareness skills to 44 kindergartners in four Head Start classrooms. One approach focused on rhymes, alliteration, and story activities, while, the second approach focused on phoneme segmentation and blending. Results indicated that with nine hours of instruction, children made significant progress in phonemic awareness skills, particularly when instruction focused on phoneme segmentation and blending. The investigator noted that both approaches were more effective when children had been taught prerequisite attention skills. He further suggested the importance of investigating the efficacy of instructional methods that emphasize segmenting and blending onsets and rimes, as many preschoolers struggle with full phonemic blending and segmentation. A combined focus on phonological awareness and alphabet knowledge reflects current best practice for preschool emergent literacy instruction (Lundberg, 1988; Schneider, Kuspert, Roth, Vise, & Marx, 1997; Schneider, Roth, & Ennemoser, 2000; Justice, Chow, Capellini, Flanigan, & Colton, 2003).

A recent observational, correlational study of 176 preschoolers' emergent literacy growth through various classroom activities indicated that explicit, alphabetic code-focused activities in conjunction with rich, meaning based experiences yielded better student outcomes than a focus on one approach to the exclusion of the other (Connor, Morrison, & Slominski, 2006). The authors noted the importance of developmentally appropriate explicit activities, involving a high

degree of teacher-child interaction and engagement and no drilling of skills or reliance on worksheets. Preschoolers with the weakest vocabulary and letter-word skills at the beginning of their prekindergarten year needed more targeted instructional opportunities than students with stronger skills in these language domains. Their findings revealed that the most appropriate form of curriculum and instruction depends on the particular skill to be developed and individual child characteristics.

DeBaryshe and Gorecki (2007) evaluated child outcomes for the "Learning Connections" (LC) curriculum, a curriculum that was designed by the authors to improve teacher instruction in oral language, phonological and phonemic awareness, alphabet knowledge and print conventions, and emergent writing. Children who received LC showed greater end-of-year outcomes on measures of phonemic awareness and emergent writing relative to children who received the prevailing curriculum, although LC did not accelerate children's growth in vocabulary or emergent reading.

In a similar study, Assel et al., (2007) evaluated child outcomes for two commercial curricula, both of which provide teachers with an explicit scope, sequence, and instructional activities focused on alphabet knowledge, phonological awareness, and oral language. In general children who received either of the experimental curricula showed improved outcomes on measures of pre-reading, vocabulary, and listening comprehension relative to children in control classrooms in which no specified curricular scope and sequence was used.

Bailet, Repper, Piasta, and Murphy (2009) assessed the efficacy of an experimental targeted, explicit, developmentally appropriate intervention designed to teach emergent literacy skills to preschoolers considered at risk for reading failure. Results from this study suggest that

pre-kindergarten children who demonstrated weakness on emergent literacy measures benefit from participation in a 9-week targeted intervention, when compared to children who demonstrate the same weakness but do not participate in the same intervention. By the end of intervention, many participants displayed increased knowledge in phonological awareness and letter knowledge. Considering these results it was concluded that, differentiated, targeted early literacy instruction for at risk pre kindergartners is possible in typical preschool child care centers.

A language and literacy intervention was implemented in 10 Head Start classrooms and teachers were trained in specific book reading and conversation strategies. The focus of the intervention was to train teachers how to increase opportunities for language and vocabulary development in young children. At the end of the year, children in the intervention classrooms performed significantly better than children in the control classrooms on the Peabody Picture Vocabulary Test-III and the Expressive One-Word Vocabulary Test. In addition, teachers in the intervention classrooms used strategies that promoted language development during book reading and other classroom activities. They concluded that the Head Start teachers can be trained to implement strategies that have positive effects on children's language and literacy development (PsycINFO Database Record, 2010 APA).

Murphy (2007) examined the impact of two language and literacy interventions on the emergent literacy and language skills of four and five-year old children in three Head Start classrooms. Interventions took place three times per week for approximately fifteen minutes over an eight week period. One intervention, Word Work by (Calfee & Patrick, 1995; Calfee, Norman, Trainin, & Wilson, 2001) provided explicit instruction in print knowledge and phonological awareness. The second intervention, Dialogic Reading (Whitehurst, Falco,

Lonigan, Fischel, DeBaryshe, Valdez-Menchaca, & Caulfield, 1988), involved interactive storybook reading designed to provide opportunities to enhance language and vocabulary development in young children. The control group received no intervention beyond the curriculum offered in the classroom. After an eight-week intervention, students in the WordWork group performed higher in both print knowledge and phonological awareness than students in the Dialogic Reading.

Research designed to examine the impact of explicit instruction on four and five-year old children on phonological awareness and print knowledge have shown positive and enduring results. Byrne and Fielding-Barnsley (1991, 1993) conducted a longitudinal study with 126 preschool children from four different classrooms serving children from low-income families. The intervention focused on nine phonemes, and initial and final sounds. The results showed that children who received explicit training performed significantly higher than the comparison group on measures of phonological processing and early reading/writing. Another study examined the impact of phonological awareness training in preschool on at-risk children based on socioeconomic circumstances compared to students considered not at risk (Hindson, Byrne, Fielding-Barnsley, Newman, Hine, & Shankweiler, 2005). Both groups of students made significant gains as a result of the interventions. Research on children from low-income families related to explicit instruction in code-related skills has been found to produce positive effects.

It may be noted that a large majority of the studies concerning emergent literacy practices have been concentrated in Western countries, especially dealing with English-speaking population. There are very few studies in India that have examined the impact of emergent literacy training on later literacy skills. The "Kannada VachanaKaryaKrama" (KVK) package (Padmini, 2010-11) as a part of the educational program PRATHAM, was used to improve

learning outcomes among primary school children and for building their Kannada language skills. It was intended to correct the graded difficulty at four levels namely Saralakshara, Gunithakshara, SajathiOtthakshara, VijathiOtthakshara. It also dealt with issues regarding pronunciation. KVK program was being run in government schools through Pratham volunteers. With an aim to improve the reading ability of children in 60 days, this program has now been handed over to government teachers of a few selected government schools. An evaluation of the program is in progress.

Prema (2010) conducted a study to develop a 'Phonological Sensitivity Training Kit in Kannada (PhoST-K)', which mainly deals with phonological sensitivity, one of the key elements of emergent literacy. The study included children at risk of language based learning disability who were trained for their phonological awareness skills in 20 sessions. There was a significant improvement in the phonological awareness scores which could be attributed for the explicit training intervention that was provided.

Lakshmish and Prema (2010) developed digital literacy coach and an accompanying manual and evaluated the effectiveness of the material by assessing its impact on print knowledge and oral language. The trainees here were teachers who were trained by speech-language pathologists. The children were in turn trained using the manual for 20 sessions and the results revealed significant improvement in the experimental group in terms of print knowledge and oral language. The group that used the digital manual appeared to be 6 months ahead of their peers indicating that the digital manual promotes literacy learning in children.

Apart from these few studies, there is very little documented evidence of research carried out in this field in Indian languages. Very little research has focused on individual components of

emergent literacy and their relationship with academic and/or language skills. Moreover, there are no documented reports on the efficacy of emergent literacy intervention programs. Hence, the body of data available on emergent literacy in India is extremely limited. This paucity of literature calls for more research and the development of resource materials in the area of emergent literacy.

Intervention in children with communication disorders

Children with language impairments with concomitant speech difficulties are at far greater risk for reading disability than the general population (Boudreau & Hedberg, 1999; Lewis, Freebairn, & Taylor, 2000; Catts et al., 2002; Lewis, O'Donnell Freebairn, & Taylor, 2002). In population based samples, 40% to 65% of children with language impairments may be diagnosed in the early grades with a reading disability (Catts et al., 2002). In clinic-referred samples of children with language impairments, the rate of reading disability may be as great as 75% (Stark, Bernstein, Condino, Bender, Tallal, & Catts, 1984). There is ample evidence that these early literacy deficits will persist throughout the school years (Stothard, et al., 1998; Johnson, 1999). Although reading comprehension often is compromised, the early reading difficulties (i.e., word decoding) of children with language impairments typically are linked to poor phonological awareness abilities. The relationship between language and literacy, as well as the high prevalence of reading disability in children with language impairments, provides a clear rationale for SLPs and other professionals in the field of early childhood intervention to participation in the literacy learning of young children (Kamhi & Catts, 1989; Catts, 1991; Fey, Catts, & Larivee, 1995).

Several barriers occur for the acquisition of literacy in students or children with significant disabilities; it may be attitudinal barriers that the child is too disabled to acquire these

skills and cannot benefit from such disability instructions. The belief system that literacy is not an option for people with disability has been documented, (Barudin & Hourcade, 1990; Fosset, Smith & Mirenda, 2003). Another barrier is the mindset of the persons providing care and services to these children. They feel that these children are not expected to read and write and hence, these types of goals may not emerge in their educational planning. However, it is required to create avenues and strategies to help the children learn despite their disabilities and children can achieve our expectations, if provided the right type of support.

Limited opportunities and exposure is provided to these children and hence experiential learning is poor. The amount of time the family spends reading to a child with severe disability is less compared to that of a normal child (Light & Smith, 1993; Marvin, 1994). Perhaps the inconsistent responses of these children discourage the parents causing them not to want to spend much time to engage in literacy activities. It is same in the school environment that the teachers perceive these students as not being sufficiently capable to benefit from literacy activities (Kliewer, 1998; Katims, 2001; Kliewer & Biklen, 2001). The children with disabilities seem to be overlooked when it comes to literacy opportunities. Therefore, there is a limited means of accessing literacy since children with severe disabilities do not have means to interact during literacy experiences owing to their speech and language, physical or sensory barriers. However the critical need to ensure that children with significant disabilities have means of active engagement in literacy experiences is a main objective for those supporting students (Fisher & Kennedy, 2001).

Another very realistic barrier is the limitation of time, since the literacy activities involves preparation of materials and designing it individually depending on the child's

disability. Therefore there is a need to collaborate with other professionals and determine the strategy for meeting individual needs (Downing, Spencer, & Cavallaro, 2004).

Besides the above there is a general myth that if children do not acquire literacy skills by certain age then efforts at further literacy activities should not be attempted. Therefore children who do not acquire reading and writing skills during elementary years will find themselves without access to specific instructions in these areas in the later years. Teaching meaningful literacy skills is important no matter the individual's age. Determining what to teach and how to do this in a manner that is relevant and interesting to the learner should be the focus and not the age of the individual.

Literacy acquisition can have a profound impact on quality of life indicators such as self esteem, self determination, independence, information gathering, the ability to learn and enjoyment. Such quality of life indicators are equally important for students with significant disabilities. A study conducted by Layzer, Goodson, and Moss (1993) found low levels of interactions between teachers and preschool students during a story reading activity. In this study, they conducted weeklong observations in over one hundred classrooms. Teachers were observed talking with individual students or small groups approximately 26% of the time, which was less than the amount of time not speaking to any child at all (28%). Also, in 20% of the classrooms half of the children received no individual attention at all from the teacher throughout the observations. In another study by Dickinson and McCabe (2001), 77 Head Start classrooms were observed to analyze student-teacher interactions during choice time. According to the observations only 1% of the time was spent on explicit talk, and there was no explicit talk in nearly 90% of the classrooms. Despite the well known benefits of storybook reading with young children, similar disappointing observations have been made in classrooms serving low-income

children. Dickinson and Tabors (2001) found on average that the children were read to less than 8 minutes per day. Children in only 4% of the classrooms were read to more than 20 minutes per day. These are troubling findings considering the importance of rich language experiences in early childhood that have been established throughout.

Therefore these barriers have to be curbed by changing the attitudes and mindset of our community and modify teaching strategies by organizing informative programs. Sensitization workshops, easily accessible resource materials and supplement curriculums to the professionals dealing with early childhood intervention will benefit children in becoming efficient readers in future.

Effect of intervention on language and literacy skills in children with communication disorders

There are a number of evidence based research studies carried out on intervention of literacy skills in language impaired population. These studies reveal positive results in effective treatment of literacy skills. Warrick, Rubin, and Rowe-Walsh (1993) investigated the effect of phoneme awareness training on a group of 14 language-delayed kindergarten children. Two 20-minute sessions of instruction were provided per week for 8 weeks, in groups of seven children. Results indicated significant growth in phonemic awareness skills as compared with 14 normal children and 14 comparable language impaired children who did not receive the experimental intervention. The researchers noted that the language impaired kindergartners learned rhyming more quickly than alliteration and recommended an instructional sequence for young children that reflected this finding.

Justice et al., (2003) examined the effects of a 12-week emergent literacy intervention with 18 preschoolers from a low-income, urban preschool center. Five participants displayed

normal speech and language skills, whereas the remaining 13 participants displayed a variety of receptive language, expressive language, and/or speech production deficits. Intervention consisted of two components: an experimental, explicit intervention program, emphasizing name writing, alphabet recitation, and phonological awareness, and a comparison intervention, consisting of adult-child shared storybook reading. Lessons were given to small groups of children for 30 minutes, twice weekly for 12 weeks, for a total of 12 hours of instruction. Results indicated significant early literacy gains following intervention, particularly in relation to the experimental, explicit instruction segment.

Research was carried out on preschool children with specific language impairment (SLI) by Ezell, Justice, & Parsons in (2000) and Lovelace and Stewart (2007) who measured print concepts, while Munro (2008) measured phonological awareness and vocabulary growth as indicators of emergent literacy skills. In all the three studies the results indicated that the intervention was successful in increasing language and emergent literacy outcomes for children diagnosed with SLI.

Ezell and colleagues (2000) conducted a pilot investigation aimed to examine the efficacy of a parent-child book-reading program. The program was designed to enhance the early literacy skills of preschoolers with communication disorders. Four parents and their children completed a 5-week program which included parent training supplemented by individualized guided reading practice sessions to complete daily. Pre and post-test measures were compared and found that the program positively influenced children's print concept knowledge and it fostered parental strategies during shared book reading. This study demonstrated the effectiveness of parent education: teaching them techniques to use during shared reading stimulated their children's acquisition of key literacy skills. The intervention included parent group sessions, weekly

instructional plans for parents, parent training, and providing books to parents. It has been suggested that programs that focus on the family help maximize the parents' abilities and influence the child's development (Mahoney & Wheedon, 1997).

Lovelace and Stewart (2007) examined the extent to which using non-evocative, explicit referencing of print concepts during joint reading would facilitate knowledge of print concepts in children with language impairment. The Concepts of Print Assessment (CPA) was developed and used during baseline probes as well as during post-experimental measures. Using a single-subject, multiple probe design, measures revealed that knowledge of print concepts remarkably improved when the procedure was incorporated into shared reading and also that the children tested maintained the knowledge with repeated input. Results suggested that children with language impairment may benefit from explicit referencing strategies that can be easily incorporated into the context of storybook reading during language therapy.

A study reported by Munro (2008) revealed that hybrid intervention approach to teaching children with SLI emergent literacy skills improved significantly on clinical measures of phonological awareness, spoken vocabulary and oral narrative after receiving the intervention. This hybrid intervention combined individual targets such as phonological awareness and vocabulary knowledge within the context of whole language-oral narratives, storybook readings, and drill play. By using targeted intervention of specific literacy skills (i.e., rhyme awareness, letter recognition, phoneme segmentation) within a whole language approach, post-test measures showed that the children's performance significantly improved on each clinical measure and phonological awareness measure.

Studies have also been carried out on preschoolers with a range of cognitive, physical, emotional, behavioral, learning, and developmental disabilities. Katims (1991) examined the effect of using emergent literacy activities in such children. The emergent literacy activities included daily storybook readings paired with emergent writing activities, as well as the availability of a well-stocked classroom library center. The experimental group was compared with a control group of similar children in a preschool classroom that lacked these emergent literacy activities. The results of the study indicated that the children who were exposed to emergent literacy activities were subsequently found to interact with books in more sophisticated and varied ways than the children in the control group.

Effect of literacy training in children with hearing impairment

In addition, there are several reports of studies conducted to improve literacy levels in children with hearing impairment. Rottenberg and Searfoss (1992) were primarily interested in discovering how and what deaf children learned about reading and writing in a preschool setting. They examined whether deaf children's emergent literacy is similar to hearing children's, as documented in the research literature. The seven children considered in their study were 3 and 4 years of age and had moderate to profound hearing loss. The results indicated that the deaf children demonstrated considerable emergent literacy knowledge and understanding, which looked similar to hearing children represented in the research literature.

Williams (1994) also investigated whether the deaf children's emergent literacy is similar to hearing children's. He wanted to explore how deaf children experienced emergent literacy activities in their homes and in the preschool and kindergarten classroom and document what the children learned about written language as a result of these experiences. Williams observed both in the children's homes and in their preschool and kindergarten classrooms and documented the

emergent literacy activities in each context. The results of the Williams (1994) study were similar to the study by Rottenberg and Searfoss. The results indicated that all three deaf children demonstrated considerable emergent literacy knowledge and understanding, which looked similar to hearing children. The findings also suggested that emergent literacy is a viable construct for conceptualizing deaf children's initial encounters with reading and writing and their early understandings about print.

Maxwell (1984) and Rottenberg (2001) investigated the impact of interactive storybook reading on deaf children's emergent reading development. They detailed the development of a deaf child of deaf parents; examined the progress of a deaf child of hearing parents. Both studies demonstrated that preschool age deaf children can learn much about written language through interactive storybook reading and that their emergent reading development is similar to that of hearing children as described in the literature.

Hurdles in the implementation of literacy support programs

The main aim in service delivery is to make basic training available to people in contact with person who has a disability and to facilitate professionals/allied health professionals in becoming trainers within their community. There is also a great need to train most specialist workers such as teachers and social workers to reach out to people. The need is higher in developing countries like India where special services are inaccessible to the rural community. The training must help to develop better services. Too often training becomes divorced from service goals when it concentrates on knowledge and skills to help individuals with a disability. Models of training need to embrace wider issues such as methods for changing attitudes, planning service goals and nurturing partnerships among various groupings in the community (Myers, 1990).

Studies have shown that teachers, if not supported with enough training and literacy support programs and materials, fail to bring about a positive change in the children who are at risk for literacy failure. For e.g., the federal preschool curriculum evaluation showed that only one of the 14 curricula demonstrated significant effects on both children's language and emergent literacy skills. Interestingly, the federal initiative failed to find significant effects for the two curricula that were found to benefit children's skill development in an independent evaluation by Assel et al., (2007). According to the authors, one possible drawback to many available language and literacy curricula is that they do not appear to be easily implemented well by teachers, which may reduce the benefit of such tools (Wasik, Bond, & Hindman, 2006; Assel et al., 2007; Justice, Mashburn, Hamre, & Pianta, 2008; Pence, Justice, & Wiggins, 2008). In fact, evidence suggests that many teachers require sustained, distributed support if they are to use many of the prevailing language and literacy curricula (Dickinson & Brady, 2006; Wasik et al., 2006; Assel et al., 2007). As such, research-based implementation efforts often require intensive and ongoing professional development provided by university-led experts and teams to ensure efficacious implementation of language and literacy programs (e.g., Wasik et al., 2006; Jackson, Larzelere, St. Clair, Corr, Fichter, & Egertson, 2006; DeBaryshe & Gorecki, 2007). Drawing from an earlier example, DeBaryshe and Gorecki (2007) recommended providing teachers with two 1.5-hr in-service workshops across the year, weekly coaching by a research assistant, and meetings every third week with the lead researcher to assist teachers in planning and implementation. Although sustained professional development efforts can be effective in supporting teacher implementation of language and emergent literacy curricula (Fukkink & Lont, 2007), these coaching models can be expensive, time consuming, and difficult to access, if not prohibitive, for many preschool programs. Thus, a gap exists between the conditions under

which many language and literacy curricula are shown to be efficacious or effective in research studies and the conditions under which preschool programs adopt language and literacy curricula in “business-as-usual” conditions.

Indeed, outside of a research study context, some preschool programs do not have the resources of both money and personnel to provide preschool educators with the necessary intensive support they might need to implement evidence-based language and literacy techniques and curricula (Bellm, Burton, Whitebook, Broatch, & Young, 2002; Barnett, 2003). Hence, preschools need access to empirically validated tools and programs that can be easily used by large numbers of professionals at relatively low costs. Further, video supplements accompanying the intervention programs would enhance the effectiveness of the delivery of the literacy support services.

Video is a strong medium of instruction since it is VISUAL. Viewers can see new ideas and approaches in action. A variety of activities can be quickly displayed and viewers can watch the sequences a number of times to reinforce their learning. It is culturally appropriate**.** Local scenes depict the viewer’s reality and emphasize that the messages are appropriate to the culture and that they are already being applied there. Since videos can be easily transportable, video cassettes or CD’s can be easily taken or sent to any place which has video playback equipment. This is becoming more readily available throughout the world. Recorders and televisions can be battery operated. The video programmes can be easily repeated with different groups of parents or community workers; and although such programmes are time-intensive to produce, they are very time-efficient. Research in both developed and developing countries has demonstrated the effectiveness of this method of training with families and staff (McConkey & Templer, 1987; Baker, 1989). In developed countries, video-based training is expanding rapidly in education and

in the business world. Although video equipment is not common-place in developing countries, it will become more so in the future. The availability of ready-made training packages will hopefully stimulate their interest in becoming more skilled in the use of video and give service personnel a model to follow in developing their own training materials.

Incorporating video programs to dissipate knowledge and to easily train personnel has been a new start both in special education and health care. Therefore, this new approach towards training is the need of the hour. Since the training involves local people in a community who have, or could have, regular contact with the child who has a disability, their levels of literacy are likely to be poor; hence the emphasis needs to be on learning by seeing or doing, rather than from talks and books (Werner & Bower, 1982). The information provided must be practical and relevant to the people with disabilities whom they know. Examples of good practice are most useful but these should come from their own culture and from similar conditions to those which the trainees experience. Hence, indigenously produced materials are necessary (Thornburn & Roeher, 1986). The training will take place locally and it should be easily repeated for differing groups within the community and over time, as new people come along. Community trainees have many other commitments in their homes and locality which make it impossible for them to travel for training even if they could afford it (Thornburn, 1990). A large number of tutors will be required if opportunities for training are to be available in every community. Given the dearth of experienced trainers in most countries, one solution is the use of ready-made training packages with videos which can be presented by a local 'tutor', who could receive some pre-training for this role (McConkey, 1988).

In 1989, the Special Education Unit of UNESCO launched a new initiative in parent and community education. The aim was to test the feasibility of producing video programmes in

developing countries which could be used to inform families and communities about ways of overcoming children's disabilities. The people from Uganda, Malawi and Sri Lanka participated in the study. The educational and technological resources were mobilized by the project to assist personnel working in services for children and families with disabilities. Within nine months, a training package was produced in each country using local resources. Each package consisted of a series of video programmes with accompanying print materials for use by tutors and/or participants. In all, 27 tutors presented the packages in a total of 57 locations across the three countries. Local tutors were mostly employed in services for children with disabilities, such as therapists and teachers, or as teacher-trainers. At nearly every showing; there were families who sought further help for their son or daughter with a disability. In nine out of ten showings with the general public, people came forward to offer their help. In Malawi the package is now being used in nine CBR programs and in Sri Lanka there are plans to use the package in the training of public health workers. In Uganda and Sri Lanka the packages are being used in teacher-training programs. In all countries, personnel are enthusiastic to produce further video programs.

A look into the existing literature indicates that programs are designed for teachers and other allied health professionals to assist in providing better emergent literacy experiences to children in order to establish a firm foundation for conventional reading and writing. The documented reports suggest a significant impact of such programs. It has also been documented that a video supplement accompanying these can be helpful in training both typically developing children and children with communication disorders for pre-reading skills. Thus, the development of audio-visual resource and training material for explicit training of emergent literacy skills in preschool children is a crucial factor for their future literacy achievement. Since such systematic and methodical teaching with a systematic curriculum is reported to facilitate

literacy development and since video manual can serve as a rich source for imparting knowledge among professionals, allied health professionals, and parents, the present study was designed with an objective of developing a digital video for SLPs, pre-service/in-service teachers, special educators, parents/caregivers to enhance their knowledge about emergent literacy and also provide teaching strategies that help to facilitate establishment of early literacy skills in young children that are complementary to acquisition of reading and writing skills. This digital tutorial would act as a supplement to the already developed intervention module on facilitating pre-reading skills in preschool children with communication disorders (Swapna, Jayaram, Prema, & Geetha, 2010). The current study also involved evaluating the efficacy of the digital tutorial in training pre-reading skills in children with hearing impairment in the age group of 3-7 years who are 'at-risk' for literacy failure.

Chapter 3

Method

The main aim of the present study was to develop a digital tutorial for professionals, allied health professionals and parents/caregivers to provide teaching strategies that help to facilitate establishment of early literacy skills in young children that are complementary to acquisition of reading and writing skills. The current study was also designed to evaluate the efficacy of the digital tutorial in training pre-reading skills in children with hearing impairment in the age group of 3-7 years who are 'at-risk' for literacy failure. The present study was carried out in two phases.

Phase I: Development of the digital tutorial as a supplement to the intervention module for preschool children with communication disorders developed by Swapna et al., (2010) to facilitate the pre-reading domain.

Phase II: Evaluating the efficacy of both text based and video based resource material.

Participants:

The participants in the study included typically developing children in the age range of 1-6 years and children with hearing impairment in the age range of 3 to 7 years. The typically developing children participated in the phase I of the study involving the development of the video or the digital tutorial. The children with hearing impairment participated in the phase II of the study involving the evaluation of the efficacy of the digital tutorial (video). The details of the two groups of participants have been reported below.

Participants who took part in Phase I: A total of 15 typically developing children in the age group of 1-6 years participated in the video recording of the activities to enhance pre-reading

skill. The children were recruited from preschools in and around Mysore. The kids who were co-operative and less camera conscious were selected for video recording. The videos of the children were recorded with prior written consent from the parents after explaining to them the purpose and the procedure of the video recording.

Participants of the Phase II: A group of 6 children with bilateral severe hearing impairment using behind the ear hearing aids in the age range of 3-7 years (mean=4.95,SD=1.56) participated in the study. Four of them were males and two were females. The details of the participants have been provided in the table 1 below.

Table 1: *Details of the participants.*

Sl.No.	Name	Age/gender	Socioeconomic status	Degree of hearing impairment	Type of hearing aid
1.	AB	3.7/M	Upper middle		
2.	CD	3.7/M	Upper middle	Bilateral severe	Behind the ear
3.	EF	4.6/M	Lower middle	hearing	digital hearing
4.	GH	4.3/M	Lower middle	impairment	aid on both the
5.	JK	7/F	Upper middle		ears
6.	MN	6.10/F	Upper middle		

All the participants enrolled in the study in both the groups belonged to lower or upper middle class which was ensured using National Institute of Mental Health-Socio-Economic Status (NIMH-SES) scale developed by Venkatesan (2009).

In addition four professionals and two mothers of children with hearing impairment also participated. The professionals included two speech-language pathologists and two special educators. These participants were recruited from the Department of Special Education, All India Institute of Speech and Hearing (AIISH), Mysore, who were actively involved in early

intervention practices. The participants were selected by adhering to appropriate ethical procedures.

The details of the two phases are provided below:

Phase I: Development of the digital tutorial

The preparation of the digital tutorial was undertaken in four steps as mentioned below

a) Script writing

b) Pilot sampling of video shots

c) Final video and commentary recording

d) Editing

a) Script writing

The intervention module for pre-reading skill consisted of a total of forty seven items/objectives. Each of these items had a section of 3 activities each to facilitate pre-reading skill in the age range of 0-6 years. Hence, the entire module consisted of 138 activities. Initially a methodical and an elaborate script was prepared for the activities to be video recorded. The script involved the messages that had to be conveyed through the video, keeping in mind the order in which the films will appear. It also included other details such as the length of each activity, the duration of the activity, the specifications regarding the visual effects, the characters and materials involved in each video clip and if the scene was to be shot indoor or outdoor etc. This script was prepared in accordance with the guidelines provided in the Educational Video Workshop by Hoffmann (2009). The script also included the commentary which introduces certain sequences to describe points that the viewers should observe and to give additional

information about the video. Emphasis was laid on the simplicity of language which was maintained throughout the script. A sample script has been provided in the table below.

Table 2: *Sample script prepared for the video recording*

Shots	**Activity**	**Set up**	**Materials**	**Characters**	**Audio**	**Video**	**Duration**
1	Follow or track the movements of the objects	Indoor	Torch, toy	• T,C	T: Look here Dolly....do you see the torch light on the wall? Now, look where it moves. C: Tracks the movement T: Very good Dolly! Great job, Now look at the toy dolly, see how it moves. C:Tracks the movement T: Excellent	*MLS *CU child's head MLS MLS	1 min

- T-Therapist, C- Child, *MLS- Medium length shot, CU- Close up

b) Pilot sampling of video shots: A pilot sampling was conducted by randomly picking few activities from the script. The videos featured therapists and typically developing children who were going to be a part of the final video. The video recording was carried out in the setup identified for the same, keeping in mind all the specifications mentioned in the script. The video recording was later edited and the commentary was superimposed on the video. Title of the activity was also loaded on to the video. This was viewed by the investigators and their feedback on the video with respect to parameters such as content and presentation of activities, clarity of the audiovisuals, utility of the video in teaching a particular skill and suggested modifications were taken into consideration before shooting the final video.

c) Final video recording and commentary: The final video recording of the activities was done by a professional videographer using a Sony camcorder and a collar microphone. A silent room with minimum background noise with adequate lighting was chosen for the recording. The visual effects in terms of the angle of the shots and the type of shots for e.g., close up or a wide shot etc. was taken care of. The recording was done for all 138 activities with age matched typically developing children between the age group of 1-6 years. The video features a speech therapist and a special educator teaching pre-reading skills to the children.

The commentary was recorded in English by narrators, with good clarity in voice and fluent speech. It was recorded in the speech-language pathology lab of Dept. of Speech-Language Pathology, AIISH, Mysore using the external module of Computerized Speech Lab software to cut down all extraneous noise and for better quality of sound. These commentaries were later coupled with the videos during the editing phase. The commentary was recorded in English keeping in mind the multilingual users in India.

d) Editing: The editing was done by a professional using editing softwares. For the audio and video editing, Adobe audition and Adobe Premiere softwares were used. The screen capture and image editing was carried out using the Camtaria and Adobe photoshop softwares and finally for the programming and integration of different edited video files, the Articulate story line software was used.

The outcome of the final educational video program was two DVD's with 138 activities for the two different age groups (0-3 and 3-6 years), which begins with an overview of the product. It contained clear titles and a sequential flow of activities which goes in parallel with the pre-reading intervention module.

Phase II – Evaluating the efficacy of the digital tutorial

The efficacy study was divided into five steps

a) Orientation program to the professionals and parents
b) Assessing emergent literacy experiences
c) Preparation and distribution of the resource kit to each participant
d) Training in pre-reading skills
e) Evaluation of the digital tutorial

a) ***Orientation program to the professionals and parents****:* An orientation program for about two hours was organized for the four professionals (2 speech-language pathologists, 2 special educators) and two mothers of children with hearing impairment involved in the efficacy study. This was carried out to impart knowledge about the concept of emergent literacy and how explicit training can enhance the pre-reading skills using the resource materials that had been developed as a part of the project. The group was familiarized with the training procedure that they had to carry out during the research study.

b) ***Assessing emergent literacy experiences and assessment of baseline :*** Prior to the training, the information regarding the child's exposure to literacy at home and in school environment was elicited by administering a parent and teacher questionnaire titled 'Emergent literacy experiences in the classroom/home' (Khurana & Prema, 2008) on the professionals and mothers who participated in the study. The questionnaire provided information regarding the types of books the children were exposed to at homes, storytelling habits at homes and overall literacy exposure that the child gets in the home environment. The special educators

reported information regarding the teaching strategies used in the classroom if the child was taught book handling skills, print awareness, phonological awareness etc. and the availability of training resources in the school. This gave the information regarding other sources from which the child was obtaining literacy inputs.

In addition the children's pre-reading skills were assessed in terms of their attention towards concepts of print, matching ability, pointing ability, enjoyment of literacy activities, book handling knowledge, alphabet knowledge, phonological awareness etc. using the 'Assessment checklist for pre-reading domain' developed by (Swapna, Jayaram, Prema, & Geetha, 2010). This assessment checklist rated the pre-reading abilities of children by scoring '1' if the child achieved a particular item, '0.5' if the child required help to complete the item or if the performance was inconsistent and '0' if the skill was absent in the child. This gave the baseline score of each child before the training program.

c) ***Preparation and distribution of the resource kit to the participants:*** The professionals and the parents included in the study were further divided into two groups: control and the experimental group. The control and the experimental group consisted of one speech-language pathologist (SLP), one special educator and one mother each. Each trainer in a group (SLP, special educator & mother) was assigned a child with hearing impairment for providing training in pre-reading skills. The participants in each group were given a resource kit to teach pre-reading skills to the children with hearing impairment. The resource kit included a text based manual for teaching pre-reading skills, a video based manual going parallel to the text based manual for teaching pre-reading skills, materials for training and a score sheet to document the responses. The control group was provided with only the text based intervention module (manual) to facilitate pre-reading skills whereas the experimental group was provided

with both the text based manual and video supplement to the intervention module to facilitate pre-reading skills. Both the groups were given a score sheet along with their resource material to score the performance of the children assigned on a daily basis. The participants were asked to follow the instructions and activities given to them in their resource kit. Appropriate materials required for the training such as the books or toys were provided to them.

d) ***Training in pre-reading skills:*** Each trainer in both the groups (SLP, special educator & mother) was assigned a child with hearing impairment for providing training in pre-reading skills. The children with hearing impairment in both the groups were matched for their age, socio economic status, type and degree of their hearing loss, the type of hearing aid used and other factors. The goals chosen for training each individual child were based on their baseline scores obtained on the 'Assessment checklist for pre-reading domain'. The pre-reading abilities in which the child scored either '0.5' or '0' were taken up as goals. A half an hour training session every day for a month's period (ranging from13-20 sessions) was carried out. During this period, it was ensured that pre-reading skill was not taught at any other time as the child was a part of the preschool training center at the Dept. of Special Education and the concerned special educators handling the children were instructed to engage the child in other activities. The training was provided using the resource kit and the scores were recorded every day on the score sheet along with the descriptive feedback regarding the intelligibility of the text, the audiovisual clarity of the videos, the ease of carrying out the activity, the availability of materials used in the activities etc. At the end of the training period, assessment checklist for pre-reading skills was run again on each child to assess their present level of abilities. The score sheets along with their feedbacks were collected from the participants.

e) ***Evaluation of the digital tutorial:*** A questionnaire on 'Instructional Video Evaluation Instrument' (Bart & Don, 1996) was used to obtain feedback from the participants who used the video based manual during the training. The participants rated the video material on a rating scale of 0-5 (1 indicated poor and 5 indicated exceptional) in terms of its accuracy, usefulness, content presentation, visual /audio quality etc.

The pre-training and post-training scores obtained for each child in the control group and experimental group were averaged and the data was subjected to statistical analysis using SPSS version17 software. The results are presented and discussed in the following chapter.

Chapter 4

Results

The present study was designed to develop a digital tutorial (video) to facilitate pre-reading skills which was carried out as a part of phase I. Typically developing children in the age group of 1-6 years participated in this phase. The details of the digital tutorial that was developed and its contents are described below:

Phase I: The digital tutorial runs parallel to the text based manual on pre-reading skills which is a part of the intervention module for children with communication disorders (Swapna et al., 2010). The digital tutorial begins with a 5 minute introduction to pre-reading skills followed by demonstration of activities for each objective under the skill. The digital tutorial has been divided into two parts, part I consists of twenty four pre-reading skills for children from the age of 3 to 36 months which are a part of the phase I of the intervention module. The phase II consists of twenty two pre-reading skills for children from the age 36 to 72 months. Three activities have been demonstrated for each pre-reading subskill totalling up to 138 activities. Each activity lasts for a minimum of 90 to 120 seconds including the commentary. The language used in the manual is English. The language is kept simple and comprehensive as far as possible for the users. This current video developed has been recorded in English keeping in mind the multilingual users in India, so that maximum number of individuals are benefited by it and makes training more accessible to everyone. The final training package consists of a text based manual on pre-reading skills along with the video recorded on two DVD's, one for phase I and the other for phase II.

Phase II: As a part of phase II, a total of six children with hearing impairment were selected as participants to assess the efficacy of the digital tutorial developed on pre-reading skills. They

were divided into two groups of three children each. Each child in a group was assigned to a SLP, a special educator and a mother for training on a one-to one basis on pre-reading skills. One group was considered to be the control group who were trained by using the text based manual and the other was the experimental group who were trained using the digital tutorial and the text based manual by the trainers. The training was provided for half an hour on a daily basis for a duration of one month (13-20 sessions). The children were assessed for their pre-reading ability before and after the training program. The data obtained from the children were averaged and was analyzed both quantitatively and qualitatively using SPSS version 17 software.

The results have been presented under different sections.

1. Quantitative analysis of the children's pre-reading skills
2. Qualitative assessment of the program efficacy
3. Rating of the digital tutorial

1. Quantitative analysis of the children's pre-reading skills:

To determine the extent to which participation in such early literacy enhancing program influenced the pre-reading skills, the performance of all the children with hearing impairment before and after training was compared. Descriptive statistics was computed and the mean and standard deviation for all the children prior to and after training are depicted in table 3. The pre-training percentage mean score obtained for all the six children as a group was 43.23 (SD=5.9) and the post-training percentage mean score was 80.78 (SD=11.46). This included those who had been trained in the text only mode and text and video based mode. Visual inspection of this data indicated that there was a remarkable increase in the mean post-training scores of the entire group. The mean scores obtained were then analyzed statistically using non parametric Wilcoxin

signed rank test. The results indicated a significant difference in the pre and post-training scores (/z/=2.20, $p<0.05$). This suggests that the participation in the intervention program has effectively stimulated the pre-reading skills indicating that both the text based manual and the digital tutorial have served the purpose in enhancing the training skills regardless of the trainer's background/profession.

Table 3: *Combined percentage mean and Standard deviation (SD) of the pre and post training scores of all participants.*

	Overall	
	Pre-training scores	**Post-training scores**
Mean(%)	43.23	80.78
SD	5.96	11.46

Further, the data was bifurcated in terms of control and experimental group to analyze for statistically significant differences, if any, within each group. The control group had a pre-training percentage mean score of 41.70 (SD=7.29) while their post-training score was 74.37 (SD=9.52). On the other hand, the experimental group scored a pre-training mean percentage of 44.76 (SD=5.36) and the post-training scores were 87.20 (SD=10.70). This data (depicted in table 4) also clearly revealed that both the groups showed a considerable improvement in performance on pre-reading skills. Although the experimental group in which the trainers used the digital tutorial to impart the training had performed better in the post test when compared to that of the control group as revealed by the difference in pre and post mean scores, the Wilcoxin signed rank test did not show a significant difference in the pre and post test results of the experimental and the control group (/z/=0.028, $p>0.05$). The mean scores for each child in both the groups have been depicted in Figures 1 and 2.

Table 4: *Percentage mean and standard deviation (SD) for the pre and post- training scores of control and experimental group.*

	Control group		**Experimental group**	
	Pre-training scores	**Post- training scores**	**Pre-training scores**	**Post-training scores**
Mean(%)	41.70	74.37	44.76	87.20
SD	7.29	9.52	5.36	10.70

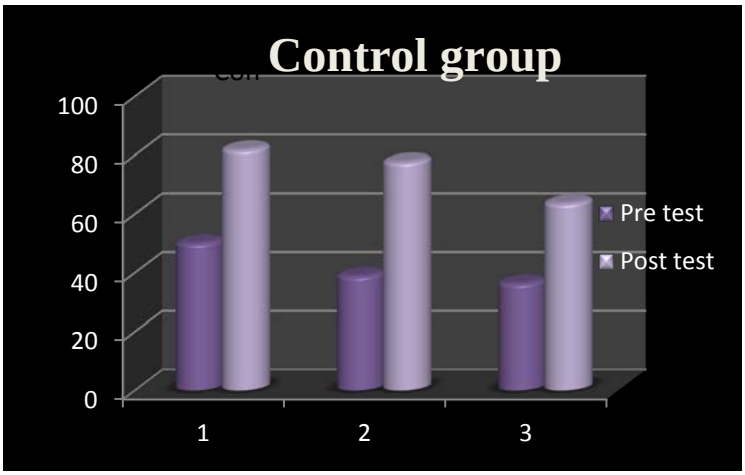

Figure 1: *Mean percentage pre and post-training scores of the three children included in the control group.*

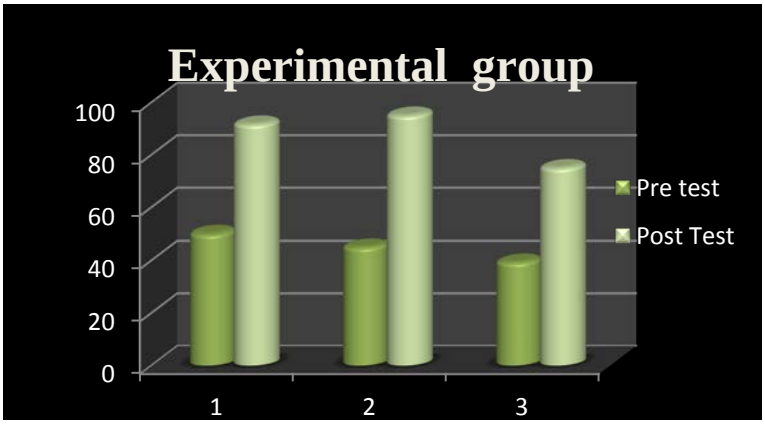

Figure 2: *Mean percentage pre and post-training scores of the three children included in the experimental group.*

2. Qualitative assessment of the program efficacy:

A qualitative assessment of the children who participated in the training program suggested that the training program had been effective in enhancing the pre-reading skills in children with hearing impairment in general and the group that used the digital tutorial showed better gains revealing the effectiveness of the video mode in training to impart literacy activities in children. However, it was noted that the gains were variable across individuals since the activities that were given to children were based on their individual baselines. The following section details the specific gains observed for each child and trainer dyad.

Prior to the training, the information regarding the child's exposure to literacy knowledge at home and in school environment was obtained using a parent and teacher questionnaire titled 'Emergent literacy experiences in the classroom/home' (Khurana & Prema, 2008). The results of this questionnaire revealed that the medium of instruction was based on the child's mother tongue. Therefore, each child was trained in different languages. The teachers in their feedback reported that the children were exposed to book handling skills, phonological awareness and print awareness. They reported that the preschool had enough book resources to teach reading skills for the Kannada speaking children, while the Malayalam group reported not enough book resources for children in Malayalam. The parents reported that they encouraged children to read books and involved them in reading activities in general but no specific training strategies or techniques were used while training them in the home environment. It can be concluded that the children who participated in the study did have an exposure to emergent literacy skills both at home and school but did not have any explicit training for pre-reading skills with specific goals and activities.

Participants trained by the special educator (AB and CD): AB and CD were 3 years 7 months old. They belonged to the younger group attending the preschool. These children one each, were assigned to two special educators who trained the child for pre-reading skills during the co-curricular period for one hour every day. AB was trained for a total of 20 sessions and CD was trained for a total of 16 sessions. During the baseline assessment AB failed in 10 items. The activities that she failed ranged from some of the basic book handling skills such as the ability to turn pages singly, matching objects to pictures to visual closure and sequencing activities. CD failed in 8 items which included differentiating between toys and books, pretending to read books, ability to ask questions while stories are read etc. The special educator who trained AB was given the tool kit including the score sheet and the text based manual with illustrations and activities particular to those that AB failed. The responses of the children were documented objectively. At the end of 20 sessions the post assessment revealed that AB had achieved 8 items out of 10 and had taken an average of 3 sessions to learn one subskill. The special educator who trained CD was given the tool kit which included the digital tutorial along with the text based manual. The post assessment revealed that CD had achieved 7 items out of 8 and had taken an average of two sessions to learn each skill. The feedback obtained by the special educator who trained AB stated that the program was beneficial and the text based manual was comprehensive, although she reported that the child did not show consistent responses throughout the training program for two of the activities. The feedback from the special educator who trained using the digital tutorial was more promising as she reported that the pre-reading abilities of the child were increasing over time and also in turn his oral language skills and fluency were also improving. She reported it took longer time to prepare the materials for some of the activities although it was beneficial. She reported that the activities demonstrated in the digital tutorial were very easy to

understand. She also reported that the video was well organized and more such videos should be released to improve the resource materials. However, the number of sessions for participant CD was limited to 16 since she did not attend the preschool regularly.

Participants trained by the parent (EF and GH): *EF* was 4 years 6 months old and GH was 4 years 3 months old and they were included in the middle preschool group. These children were assigned to their respective parent (mother) who imparted the training for 20 sessions. Participant EF was included in the control group and hence the parent was given only the text based manual as the training material, whereas, participant GH was assigned to the experimental group and hence received both the text based and the digital tutorial for his training. These children were trained at home for 1 hour every day. The responses of the children were documented on a daily basis objectively in the score sheet.

On the basis of participant EF's results the mother was given 13 items to train the child. The activities ranged from developing questioning skills, recognizing alphabets, sequencing of events etc. At the end of 20 sessions, EF had achieved 11 items with a minimum of 2 sessions taken to learn each activity. The parent in her feedback reported that the child was positively responding to almost all the activities and the child enjoyed the activities. The material given was comprehensive however two activities required more instructions according to her. Overall she said the program has been very helpful and was motivated to continue training her child based on the manual.

Based on the participant GH's baseline, the activities given to the child were book handling skills, matching skills, alphabet knowledge, rhyming and phonological awareness skills etc. A total of 18 items were given for the training purpose and the child was trained for a total of

20 sessions. At the end of the training period GH achieved 17 items and had taken a minimum of 1 to 2 sessions to learn each activity. It was observed that the mother was able to cover more number of activities during the training period. The feedback given by the mother was positive; she reported the activities to be very helpful for the child. The child showed interest throughout the training program since the activities were play based. She also reported that she found it difficult to comprehend the activities when she read the text based material, however the same was clarified by the video and it had helped her understand the activities in a better way.

Participants trained by the SLP's (JK and MN)*:* JK was 7 years old and MN was 6 years 10 months old. They were attending the higher preschool group. JK and MN were assigned to the SLP's who trained them for 15 and 13 sessions respectively. They were trained for the pre-reading skill one hour every day during the speech therapy session. JK was included in the control group and hence the trainer was given only the text based manual to train the child, whereas MN was in the experimental group and the trainer obtained both the text based and the digital tutorial for training. Based on the baseline results of JK, he was trained for a total of 11 items. The activities given for training included goals such as alphabet knowledge, phonological awareness skills like rhyming, blending, alliteration, reading numbers etc. At the end of the training period JK achieved 8 items and took an average of 2 sessions to learn each skill. In case of MN, his baseline indicated that he failed in a total of 10 activities and the activities comprised of alphabet knowledge, phonological awareness, matching skills, reading numbers etc. At the end of the training period MN achieved 9 items and on observation of the score sheet he took an average of 1 session to learn each skill.

The feedback obtained by the therapist of JK reported the activities to be very helpful and handy to carry out the training. The text based manual was comprehensive and easy to follow.

She reported that the phonological awareness activities were very helpful in teaching the child awareness of sounds and the child responded positively for such activities. The feedback from the therapist of MN indicated that the video manual was very useful in following the activities. The demonstrations were very clearly depicted in the video and were easy to follow. Following video manual consumed less time to understand and carryout the activity and therefore the text based manual was the second option for the therapist.

3. Rating of the digital tutorial:

To evaluate the digital tutorial, the professionals (SLP's and special educators) and parents who trained the experimental group by using the video supplement were given the Instructional Video Evaluation Instrument (Bart & Don, 1996) to rate the video on a rating scale (1= poor, 5= exceptional) in terms of its content and its technical production. A mean rating of 4 and above was obtained for 12 out of 16 parameters. An average of 80% was rated by all the three trainers who used the digital tutorial indicating a good rating on the scale. This suggested that the video manual was certainly of benefit to impart training in pre-reading skills. The mean ratings of the digital tutorial by the trainers are provided in Table 5. The aspects on which a mean score of less than 4 was obtained was considered and feedback of the same were provided to the editors following which the fine tuning of editing was carried out.

Table 5*: Mean ratings of the trainers who used the digital tutorial for training.*

Sl. No.	Parameters	Mean ratings
1.	Accuracy	4
2.	Usefulness	4
3.	Bias free	4.33
4.	Stated the objectives	4
5.	Content presentation	3.66
6.	Learner application	4.33
7.	Met the objectives	3.66
8.	Learner Interaction	4
9.	Integration into the learning environment	4.66
10.	General video design characteristics	4.33
11.	Focused on intended content	4
12.	Visual quality	3.33
13.	Audio quality	3.33
14.	Audio-visual relationship	4.66
15.	Provided introductory information	4
16.	Clarifies and summarizes content	4

Chapter 5

Discussion

Preschoolers with communication disorders and other special needs face considerable difficulties with emergent literacy acquisition (Gillam & Jhonston, 1985; Katims, 1991; Snow et al., 1998). Therefore, speech-language pathologists have been encouraged to develop strategies to enhance more global aspects of language learning disabilities such as deficits in early reading abilities (Schuele & Van kleek, 1987; Van Kleek, 1990; Menyuk & Chesnick, 1997). To date although there have been number of techniques advocated in the literature to teach pre- reading skills in schools and at homes, very few have been examined with the clinical population. Moreover in the Indian context very few resource materials have been developed exclusively for training special children for pre-reading skills. With this premise the present study was aimed at developing a digital tutorial on the activities to enhance pre-reading skill as a supplement to the intervention module for preschool children with communication disorders developed by Swapna et al., (2010). Further, the efficacy of the digital tutorial was tested in children with hearing impairment in the age group of 3-7 years who were at risk for literacy failure. The results of the study revealed several points of interest which has been discussed below.

The major outcome of this study was the development of a video based resource material (digital tutorial) which can be used by professionals and allied health professionals/caregivers involved in early childhood rehabilitation in different environments; may be at classrooms, homes, language therapy sessions etc. to train children in pre-reading skills. The principal intention behind the development of a video based resource material is considering the fact that video is a strong medium of instruction since it is VISUAL. Users can see new ideas and approaches in action. A variety of activities can be quickly displayed and viewers can watch the

sequences a number of times to reinforce their learning. It is culturally appropriate and can be easily transported too. The video programs can be easily repeated with different groups of parents or professionals; and although such programs are time-intensive to produce, they are very time-efficient thereafter proving effectiveness.

Developing such video materials also helps in cascading current knowledge effectively and efficiently to other disciplines like, teachers or special educators, early child care providers, parents etc. The resource material developed in the present study is mainly designed and researched by a group of speech-language pathologists supported by a special educator. There has been a great importance for collaborated work in the field of language and literacy which is also supported by ASHA (2001). It emphasizes on improving early achievements in phonological awareness, print concepts, and alphabet knowledge as a core responsibility of SLPs.

In the present study the video was rated to be good 80% of the time for its content, planning and technical production by the trainers (professionals and parents). This suggested that the video manual was certainly of benefit to impart training in pre-reading skills. The feedback obtained from the trainers in the experimental group revealed that they always chose the video over the text based manual since it was less time consuming, more comprehensive and it was easy to imitate the activities demonstrated in the video. This feedback supports the initiative taken by the UNESCO (1989) in producing video programs in developing countries for parent and community education. However in the present study the number of trainers who viewed the video were limited and hence the video should be presented to a large group of viewers for their feedback and to report its effectiveness.

Since video mode is becoming more popular in recent days and most of the individuals have the access to technology, it can be made use, thereby propagating visual modes of teaching and learning. Preschools need access to empirically validated tools and programs that can be easily used by large number of professionals at relatively low costs. The present project tackles this issue by providing easy access to evidence based resource material for people involved in early rehabilitation. Such video based manuals can be less expensive and less time consuming in understanding and implementing. Further, this would also help in providing intensive and ongoing professional development from experts and teams to ensure efficacious implementation of language and literacy programs as proposed by Wasik et al., (2006), Jackson et al., (2006) and DeBaryshe and Gorecki (2007).

Likewise, the video could also help in building strong home-school partnership wherein both the parent and the teacher can be working on teaching same goals in different environments. It provides activities and ideas to create a literate environment both at home and schools fostering interests, and supporting children's efforts to become readers and writers. Such resource materials can also help cross the barriers of socio economical status by providing rich literacy environments and experiences to children in different socioeconomic status school and home settings as portrayed in Duke's study in, 2000 where he found that there were differences in print environments and experiences offered to children in different socioeconomic status school settings. According to him schools, themselves, may contribute to relatively lower levels of literacy achievement. Therefore, using such resource materials as a common guidance tool can overcome such differences.

The video which was developed was further field tested for its efficacy in training children with delayed speech and language due to hearing impairment by trainers from different

backgrounds (special educators, parents of children with hearing impairment and speech-language pathologists). The results indicated a significant improvement in the pre-reading skills of both the control and the experimental group when their pre and post-training scores were compared. This revealed the effectiveness of both the text based and the video based manual in imparting training by all three trainer groups. The results are in consensus with several evidence based research studies carried out on intervention of literacy skills in language impaired population which revealed positive results in effective treatment of literacy skills. The studies by Katims (1991), Ezell et al., (2000), Lovelace and Stewart (2007) and Munro (2008) targeted intervention on specific literacy skills and compared the pre and post performance of the children and the results suggested that children with language impairment may benefit from explicit referencing strategies that can be easily incorporated into the context of storybook reading during language therapy and adult child interaction. Studies reported by Yaden (1988) and Senechal et al., (1996) revealed that repeated storybook reading contributes to positive language changes. Accordingly the present resource material is also designed mostly based upon using story reading activities in teaching pre-reading skills to children.

Moreover, studies focusing on literacy interventions for hearing impaired population reveal positive outcomes. The investigations by Lartz and McCollum (1990), Lartz (1993), Rottenberg and Searfoss (1992) have indicated that deaf and hard-of-hearing preschool children are clearly capable of exhibiting responses characteristic of their hearing peers when engaged in dialogic, interactive reading during storybook reading sessions. They found that emergent literacy is a viable construct for conceptualizing deaf children's initial encounters with reading and writing and their early understandings about print. Similarly in the present study, the population considered was the hearing impaired, who were trained in different environments.

The results showed improvements in their pre and post pre-reading skills reiterating the fact that the resource materials have been beneficial in training the special population. However, the video manual needs to be used with children with other communication disorders to comment on its effectiveness across all populations.

Comparison of the results between experimental and control group did show a difference but it was not statistically significant. This could possibly be due to the small sample size in both the groups and variability in the performance of each child. However, the participants in the experimental group scored higher mean scores in their post-training assessment compared to that of the control groups. This can be accounted by the video manual that was used by the trainers in the experimental group. The results are in consensus with the study by Lakshmish and Prema (2010) in which the children who underwent intervention using the digital material showed gains in their literacy parameters indicating the effectiveness of the digital literacy coach. Research in both developed and developing countries has also demonstrated the effectiveness of this method of training with families and staff (McConkey & Templer, 1987; Baker, 1989). In developed countries, video-based training is expanding rapidly in education and in the business world. Although video equipment and computer is not common-place in developing countries, it will become more so in the future. The availability of ready-made training packages will hopefully stimulate their interest in becoming more skilled in the use of video and give service personnel a model to follow in developing their own training materials. This supports the idea that the emphasis needs to be on learning by seeing rather than from talks and books (Werner & Bower, 1982). However, the present study carried out only a pilot investigation to see the effectiveness of the digital manual and hence requires a larger sample size to get an insight regarding the efficacy.

Due to the variability in the performance of each child the results of the training program were written descriptively by comparing the trainer-child dyads. The data obtained from the two trainers of the same profession were compared, i.e. one who used the video (experimental group) versus the one who used the text based manual (control group) and the results were reported individually. The children were matched for their age and type and severity of the disorder. But the uncontrolled variables were their learning capabilities and the skills that they had already learnt. Therefore the baselines of the children were different and each child was trained for different activities. Another uncontrolled variable was the number of sessions that the trainers covered during the given period of time. Owing to the irregularity of the child in attending the school or the absence of the trainer to attend his/her professional duties, the number of sessions varied.

The participant AB (control group) achieved 8 out of 10 activities and participant CD (experimental group) achieved 7 out of 8 activities. These participants were trained by the special educators. Participant EF (control group) achieved 11 out of the 13 activities that were given to him whereas, participant GH (experimental group) achieved 17 activities out of a total of 18 activities. These participants were trained by their mothers. The last group wherein the speech therapists trained the children, participant JK (control group) achieved 8 activities out of the 11 activities given to him and the participant MN (experimental group) achieved 9 out of 10 activities that were given. Overall by observing the pre and post-test scores it was seen that every child who participated in the training program irrespective of the trainer scored higher than their baseline scores at the end of the training and the participants in the experimental group learnt more number of activities compared to that of the control group in the given number of sessions. Also, from the feedback provided by individual trainers it can be inferred that the trainers who

used the video were more confident and relaxed in carrying out the training program as they had an upper hand in terms of viewing the demonstration of the activities.

In general the results of the training program indicated that the children who underwent the training were benefited by the program and the trainers including the special educators, SLP's and parents have provided a positive feedback on the resource material. The trainer in the experimental group who used both the text based and digital tutorial have reported the program to be highly effective and useful since they had an added advantage of viewing the activities being demonstrated than only reading the text based material. All the three groups of trainers ranked the video program highly beneficial in terms of information provided and the benefits upon the child's development of pre-reading skills. Some of their comments with respect to the video have been listed below:

- They reported that the range of activities covered were good and there were good number of activities for each item demonstrated which were very creative and effective in teaching children.
- They also reported that they were more confident in carrying out the training and it consumed less time to understand the activities since they had a visual aid.
- The parents were able to carry out the activities easily at home with minimal assistance.
- The teachers reported that the manual could be a good support for their classroom curriculum.
- All the participants reported that to see and learn was more easier than to read and learn.

Chapter 6

Summary and Conclusions

Literacy has been described as the ability to read for knowledge and write with understanding in any language coherently and think critically about the written word. Learning to read and write is a significant milestone in the development of young children. The key to all literacy is reading development, which involves a progression of skills that begins with the ability to understand spoken words and decode written words, and culminates in the deep understanding of text.

Although most children develop these skills normally, many children experience difficulty in learning to read and write. This difficulty could arise due to the presence of various communication disorders such as learning disability, hearing impairment, mental retardation etc. It is critical to identify them early, assess and treat their pre-reading abilities so that their deficits can be overcome to the maximum extent possible. Intervention is a long term process and hence designing early childhood programs and implementing them in a systematic manner for promoting young children's language and literacy development is essential.

A look into the available literature on intervention of literacy revealed that programs have been designed for teachers and other allied health professionals to assist in providing better emergent literacy experiences to children in order to establish a firm foundation for conventional reading and writing. The documented reports suggest a significant impact of such programs. Keeping this in view, a structured, systematic curriculum for speech-language pathologists, special educators, teachers and parents, in the form of an intervention module and training kit (Swapna, Jayaram, Prema, & Geetha, 2010) were developed, which is user-friendly and cost

effective. This would serve the purpose of early intervention so that any person with minimum training can effectively carry out early intervention program. The intervention module for preschool children with communication disorders was developed for ten different skills, of which pre-reading skill is a part. This module contains text-based checklists and activities that can be used to enhance the skills of children with special needs. However, it was felt that if such home training programs are accompanied by visual demonstrations of skill enhancement sessions, it would be beneficial for the parents as well as professionals and allied health professionals.

The present study was designed with an objective of developing a digital tutorial (video) for speech-language pathologists, pre-service/in-service teachers, special educators, parents/caregivers to enhance their knowledge about emergent literacy and also provide teaching strategies to facilitate the establishment of early literacy skills that are complementary to acquisition of reading and writing skills in young children. This digital tutorial would act as a supplement to the already developed intervention module on facilitating pre-reading skills in preschool children with communication disorders (Swapna, Jayaram, Prema, & Geetha, 2010). The current study also involved evaluating the efficacy of the digital tutorial in training pre-reading skills in children with hearing impairment in the age group of 3-7 years who are 'at-risk' for literacy failure.

The study was carried out in two phases; phase I which included the development of the digital tutorial as a supplement to the intervention module for preschool children with communication disorders developed by Swapna et al., (2010) to facilitate the pre-reading domain and phase II which involved evaluating the efficacy of both text based and video based resource material.

The participants in the study included 15 typically developing children in the age range of 1-6 years and 6 children with bilateral severe hearing impairment in the age range of 3 to 7 years. The typically developing children participated in the phase I of the study involving the development of the video or the digital tutorial. The children with hearing impairment participated in the phase II of the study involving the evaluation of the efficacy of the digital tutorial (video). In addition four professionals and two mothers of children with hearing impairment also participated. The professionals included two speech-language pathologists and two special educators. These participants were recruited from the Department of Special Education, All India Institute of Speech and Hearing (AIISH), Mysore, who were actively involved in early intervention practices. The participants were selected by adhering to appropriate ethical procedures.

The development of the digital tutorial included four steps which were script writing, pilot sampling of video shots, final video and commentary recording and editing. Evaluating the efficacy of the digital tutorial included five steps which were orientation program to the professionals and parents, administration of a questionnaire on emergent literacy experiences, preparation and distribution of the resource kit for each participant, training in pre-reading skills and evaluation of the digital tutorial. The orientation program was carried out to impart knowledge about the concept of emergent literacy and how explicit training can enhance the pre-reading skills using the resource materials that had been developed as a part of the project. Prior to the training, the information regarding the child's exposure to literacy at home and in school environment was elicited by administering a parent and teacher questionnaire titled 'Emergent literacy experiences in the classroom/home' (Khurana & Prema, 2008) on the professionals and mothers who participated in the study. In addition the children's pre-reading skills were assessed

in terms of their attention towards concepts of print, matching ability, pointing ability, enjoyment of literacy activities, book handling knowledge, alphabet knowledge, phonological awareness etc. using the 'Assessment checklist for pre-reading domain' developed by (Swapna, Jayaram, Prema, & Geetha, 2010).

The professionals and the mothers included in the study were further divided into two groups: control and experimental group. The control and the experimental group consisted of one speech-language pathologist (SLP), one special educator and one mother each. Each trainer in a group (SLP, special educator & mother) was assigned a child with hearing impairment for providing training in pre-reading skills. The participants in the each group were given a resource kit to teach pre-reading skills to the children with hearing impairment. The resource kit included a text based manual for teaching pre-reading skills, a video based manual going parallel to the text based manual for teaching pre-reading skills, materials for training and a score sheet to document the responses. The control group was provided with only the text based intervention module (manual) to facilitate pre-reading skills whereas the experimental group was provided with both the text based manual and video supplement to the intervention module to facilitate pre-reading skills. Both the groups were given a score sheet along with their resource material to score the performance of the children assigned on a daily basis. The participants were asked to follow the instructions and activities given to them in their resource kit. Appropriate materials required for the training such as the books or toys were provided to them.

Each trainer in both the groups (SLP, special educator & mother) was assigned a child with hearing impairment for providing training in pre-reading skills. The children with hearing impairment in both the groups were matched for their age, socio economic status, type and degree of their hearing loss, the type of hearing aid used and other factors. The goals chosen for

training each individual child were based on their baseline scores obtained on the 'Assessment checklist for pre-reading domain'. The pre-reading abilities in which the child scored either '0.5' or '0' were taken up as goals. A half an hour training session every day for a month's period (ranging from13-20 sessions) was carried out. The training was provided using the resource kit and the scores were recorded every day on the score sheet along with the descriptive feedback regarding the intelligibility of the text, the audiovisual clarity of the videos, the ease of carrying out the activity, the availability of materials used in the activities etc. At the end of the training period, assessment checklist for pre-reading skills was run again on each child to assess their present level of abilities.

Finally a questionnaire on 'Instructional Video Evaluation Instrument' (Bart & Don, 1996) was used to obtain feedback from the participants who used the video based manual during the training. The participants rated the video material on a rating scale of 0-5 (1 indicated poor and 5 indicated exceptional) in terms of its accuracy, usefulness, content presentation, visual /audio quality etc. The pre-training and post-training scores obtained for each child in the control group and experimental group were averaged and the data was subjected to statistical analysis using SPSS version17 software.

The major outcome of the phase I of the study was the development of a video based resource material (digital tutorial) which can be used by professionals and allied health professionals/caregivers involved in early childhood rehabilitation in different environments; may be at classrooms, homes, language therapy sessions etc. to train children in pre-reading skills.

The results with regard to the evaluation of the efficacy of the digital tutorial revealed that the post-training percentage mean score obtained for all the six children with hearing

impairment was higher than the pre-training percentage mean score. This included those who had been trained in the text only mode and text and video based mode. The results of the Wilcoxin signed rank test indicated a significant difference in the pre and post-training scores which suggested that the participation in the intervention program has effectively stimulated the pre-reading skills indicating that both the text based manual and the digital tutorial have served the purpose in enhancing the training skills regardless of the trainer's background/profession.

Further, when the data was bifurcated in terms of control and experimental group to analyze for statistically significant differences, the results revealed that both the groups had a higher post-training percentage mean score compared to the pre-training percentage. However, the clinical experimental group in which the trainers used the digital tutorial to impart the training had performed better in the post test when compared to that of the control group, although Wilcoxin signed rank test did not show a significant difference.

A qualitative assessment of the children who participated in the training program suggested that the training program had been effective in enhancing the pre-reading skills in children with hearing impairment in general and the group that used the digital tutorial showed better gains revealing the effectiveness of the video mode in training to impart literacy activities in children. However, it was noted that the gains were variable across individuals since the activities that were given to children were based on their individual baselines.

Prior to the training, the information regarding the child's exposure to literacy knowledge at home and in school environment was obtained using a parent and teacher questionnaire titled 'Emergent literacy experiences in the classroom/home' (Khurana & Prema, 2008). The results of this questionnaire revealed that the medium of instruction was based on the child's mother tongue. Therefore, each child was trained in different languages. The teachers in their feedback

reported that the children were exposed to book handling skills, phonological awareness and print awareness. They reported that the preschool had enough book resources to teach reading skills for the Kannada speaking children, while the Malayalam group reported not enough book resources for children in Malayalam. The parents reported that they encouraged children to read books and involved them in reading activities in general but no specific training strategies or techniques were used while training them in the home environment. It can be concluded that the children who participated in the study did have an exposure to emergent literacy skills both at home and school but did not have any explicit training for pre-reading skills with specific goals and activities. Further on the Instructional Video Evaluation Instrument, an average of 80% was rated by all the three trainers who used the digital tutorial indicating a good rating on the scale. This suggested that the video manual was certainly of benefit to impart training in pre-reading skills.

However a few the limitations of this study need to be noted. First the sample size in both the experimental and the control group to study the efficacy of the training material was limited. Hence it is considered as a pilot efficacy study and further longitudinal research is needed to show relatively modest increases in children's language and literacy. Secondly, the difference in individual trainee and child dyads and their knowledge background could have contributed to the variability in the results. Moreover there could have been an impact of the other training methods on the performance of the child. Thirdly, the video manual needed to be viewed by more number of audiences to comment on its overall effectiveness. These limitations suggest possibilities for future research on emergent literacy intervention for children with communication disorders. This video based resource material being first of its kind can serve as a model for further activity based manuals in the future. It is recommended that future research expands this model to

include larger number of participants and conduct a longitudinal study to assess the efficacy of the manuals and its literacy benefits in children.

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