

Development of Phonological Awareness for Pre-school and  
Kindergarten Students at Risk of Reading Failure

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## **Dedication**

“Free the child's potential, and you will transform him into the world.”

*Maria Montessori*

I dedicate this project to the extensive work of Dr. Maria Montessori, who devoted her entire life to “freeing the potential” of every child she taught and developed the way for educators to continue to provide excellent phonologically based education in literacy.

I also dedicate this project to the children of the present and the future, the young readers of our world .Unless struggling readers are supported through education, they will never be recognized in our society where literacy opens doors to success.

As an educator, I owe these children the keys to literacy by providing that high quality of educational support.

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## Table of Contents

	Page Number
<b>Abstract</b>	<b>7</b>
<b>Chapter 1 – Introduction</b>	<b>8</b>
Aim of the Study	8
Problem underlying the Study	9
Research Questions	11
Research Methods	12
Definitions	12
Limitations and Delimitations	13
<b>Chapter 2 – Literature Review</b>	<b>14</b>
<b>Components of Phonological Awareness</b>	<b>14</b>
What is Phonological Awareness	14
The Importance of Phonological Awareness	16
Phonological Awareness in Children at Risk of Reading Failure	18
<b>Development of Phonological Awareness in the Classroom</b>	<b>19</b>
Importance of Teacher Preparation	19
Identification and Evaluation of ‘at risk’ Students	21
Linking Phonological Awareness Assessments with Pedagogical Instruction	23
Explicit instruction	24
Supportive instruction	27
Computer assisted instruction	28
Music assisted instruction	30
Pedagogical Features Important for Phonological Awareness Instruction	31
Articulation	31
Nonverbal cues	31
Vocabulary	32
Letter knowledge	32
Family interactions	32
<b>Extent to which Phonological Awareness improves Reading Abilities</b>	<b>33</b>
Short Term Intervention Outcomes	33
Long Term Outcomes after Pre-School and Kindergarten	35

<b>Chapter 3 – Analysis, Interpretation and Discussion</b>	<b>37</b>
<b>Analysis and Synthesis of the Literature</b>	37
<b>Implications for Practice</b>	41
<b>Limitations</b>	43
<b>Future Research</b>	44
Teacher Training	44
Intensive and systematic instruction	44
Computer Instruction	45
Musical Processing and Phonological Awareness	45
Nonverbal Cues	45
Outcomes	45
Phonological Awareness and Literacy Acquisition	46
Phonological Awareness and Special Education	47
<b>Chapter 4 – Conclusion</b>	<b>48</b>
<b>References</b>	<b>52-60</b>

## **Abstract**

Over the past several decades there has been consensus in reading disabilities literature that children who have difficulties learning to read may have a core deficit in phonological awareness (Adams, 1990; Al Otaiba, Puranik, Ziolkowski & Montgomery, 2009; Juel, 1988; Juel, Griffith & Gough, 1986; National Reading Panel, 2000; Phillips, Menchetti & Lonigan, 2008; Stanovich, 1991; Torgeson, 2002; Torgeson & Mathes, 2000). Phonological awareness skills are reliable predictors of reading ability (Carroll et al., 2003; Lane, Pullen, Eiselle & Jordan, 2002).

This literature review provides an insight as to how phonological awareness may be successfully developed in classrooms with children aged 3-6 years old, who are at risk of reading failure. The components of phonological awareness, instruction and interventions (such as explicit systematic instruction), and the extent to which phonological awareness may improve the reading abilities of children at risk of reading failure are discussed. Implications for practice, limitations of research, and recommendations for future research have also been incorporated. The review concludes that with high quality instruction and intervention, phonological awareness development is possible and can be successfully developed in preschool and kindergarten classrooms. Consequently, students at risk of reading failure may demonstrate positive reading outcomes both during and after intervention.

# CHAPTER ONE

## Introduction

### **Aim of the Study**

Over the past several decades there has been consensus in reading disabilities literature that children who have difficulties learning to read may have a core deficit in phonological awareness (Adams, 1990; Al Otaiba, Puranik, Ziolkowski & Montgomery, 2009; Juel, 1988; Juel, Griffith & Gough, 1986; National Reading Panel, 2000; Phillips, Menchetti & Lonigan, 2008; Stanovich, 1991; Torgeson, 2002; Torgeson & Mathes, 2000). According to Stanovich (1991), phonological acquisition is “one of the more notable scientific success stories of the last decade” (p.78). Phonological awareness is vital in beginning reading (Carroll, Snowling, Hulme & Stevenson, 2003; National Reading Panel, 2000; Oudeans, 2003; Phillips et al., 2008) , especially in kindergarten, because it forms the foundation for developing alphabetical understanding in order to read words (Hogan, Catts & Little, 2005). Phonological awareness skills are reliable predictors of reading ability (Carroll et al., 2003; Lane, Pullen, Eiselle & Jordan, 2002). Therefore, “one key goal of instruction and intervention in the pre-school period is to minimize the number of children who develop later problems by maximizing the number who enter kindergarten with sufficient phonological skills” (Phillips et al., 2008, p.3). According to Lundberg, Frost and Peterson, (1988, as cited in Carroll et al., 2003), and McCutchen, Abbott, Green, & Beretvas et al., (2002), teacher training and knowledge in phonological awareness can improve the efficacy of instruction in reading.

The aim of this paper is:

- To define phonological awareness

- To identify and evaluate research supported strategies for pre-school and kindergarten students who may exhibit low phonological awareness skills
- To discuss the extent that phonological awareness development, instruction and intervention may impact the reading skills of ‘at risk’ students in a pre-school or kindergarten setting

For the purpose of this paper, ‘at risk’ refers to students who may be at risk of reading failure.

### **The Problem underlying the Study**

The No Child Left Behind Act (2001) and the Individuals with Disabilities Education Act (IDEA, 2004) emphasize early intervention to prevent reading failure. Yet many students remain poor readers throughout their lives. According to the International Reading Association (IRA) and the National Association for the Education of Young Children (1998, as cited in Hawken, Johnston & McDonnell, 2005), prevention of reading failure should begin at birth and continue until age five, as this is when young children learn critical literacy skills.

Reading trajectories are established during early childhood and are generally stable over time (National Reading Panel, 2000). Difficulties in learning to read words with accuracy manifest from the very earliest stages of reading (Torgesen, 2002). Longitudinal studies suggest that children who are poor readers at first grade rarely attain average reading skills by the end of elementary school (Mather, Bos, & Babur, 2001; Torgesen, 2002), and 75% of children who struggle with phonological awareness in grade 3 will struggle with reading in high school (Hawken et al., 2005; Lyon, 2003; Mather et al., 2001; McCutchen et al., 2002). Consequently, poor reading skills may negatively affect overall school academic success in other academic areas (Lyon, 2003).

The most common cause of reading difficulties in children is a weakness in phonological awareness development (National Reading Panel, 2000; Phillips et al., 2008; Torgesen & Mathes, 2000). Children who are delayed in phonological awareness tasks are unable to make sense of phonics or phonemic patterns in written words, resulting in a deficiency in critical knowledge skills of reading and comprehension (Mather et al., 2001). In other words, phonological awareness is predictive of and causally related to children's later reading abilities (Phillips et al., 2008). Furthermore, according to McCutchen et al., (2002), in order to learn reading, children must understand that speech is composed of phonemes and that the alphabet represents phonemes.

The development of phonological awareness in preschool children has received little attention, despite studies supporting the efficacy of phonological instruction to improve reading (Al Otaiba et al., 2009; Carroll et al., 2003; Phillips et al., 2008). Stahl and Yaden (2004) suggest that perhaps schools may consider phonological skill instruction less important than developing other literacy skills such as verbal and book reading skills. Another possible reason may be that preschool aged children are considered too young for phonological awareness instruction (Olfman 2003, as cited in Phillips et al., 2008). Furthermore, commercial early reading programs may not include critical skills of blending and segmenting (Smith et. al., 2001).

Studies indicate that teachers are unprepared at both pre-service and in-service levels to provide early literacy instruction for 'at risk' students (Cunningham, Perry, Stanovich & Stanovich, 2004; Mather et al., 2001, Phillips et al., 2008). They do not have sufficient competencies necessary to provide phonological instruction to children who may be at risk for reading difficulties (Cunningham et al., 2004; Hawken, Johnston & McDonnell, 2005; McCutchen et al., 2002; Phillips et al., 2008). Subsequently, questions arise on teacher

preparation and development regarding the identification of children's literacy problems and the policy initiatives within the school (Cunningham et al., 2004).

Teachers need to understand the relationship between poor phonological awareness and reading failure, and deepen their understanding of how to implement successful strategies to develop phonological awareness in the classroom. Changes in teachers' knowledge can lead to significant changes in their practice (McCutchen et al., 2002). Cunningham et al. (2004) argue that although there is interest in the disciplinary knowledge that teachers have in literacy, there is a noticeable lack of teacher knowledge in the domain of beginning reading instruction and a lack of technical knowledge in the fundamentals of teaching reading. Their study contends that teachers are "poorly calibrated" (p.139) in the domains of phonological awareness and phonics and that many teachers overestimate their reading related knowledge and experience.

It is evident that teachers, who teach literacy in inclusive classrooms today, need knowledge and skills to incorporate phonological awareness in their diverse classrooms. Therefore, this paper will review literature that addresses the issue of how early childhood educators may develop phonological awareness with 'at risk' students aged 3-6 years in a pre-school or kindergarten setting.

### **Research Questions**

How may phonological awareness be developed with students aged 3-6 years, who are 'at risk' of reading failure in a pre-school or kindergarten setting?

The literature review will address evidence based studies related to the development of phonological awareness by examining the following sub-questions:

- What are the components of phonological awareness and how do they affect children who are at risk of reading failure?

- How can educators develop phonological awareness instruction in their diverse and inclusive classrooms?
- To what extent can phonological awareness interventions improve the reading abilities of at risk students?

### **Research Methods**

The literature review will comprise of an account, analysis, synthesis and discussion of empirical studies related to phonological awareness. Sources will include, books, journals and peer reviewed articles that are published from 2000 to present, although earlier significant findings will be included. Electronic search databases will include ProQuest, OVID, PsychINFO, SAGE, ERIC, A+ Education Plus, and Prufrock Press. Information attained from the National Reading Panel (2000) and other educational policies will also be incorporated. Search terms will include phonological awareness, early childhood literacy, phonological development, teacher preparation, and early phonological intervention. Primary citations will be used for this review; however, secondary citations will be incorporated when primary sources are unavailable.

### **Definitions**

- Phonological awareness – The “conscious sensitivity to the sound structure” (p.101) of spoken language (Lane et al., 2002) and the “conscious ability to detect and manipulate sounds of language” (Sodoro, Rose & Rankin-Erickson, 2002, p.223). It is the understanding of different ways that oral language can be divided into small components and be manipulated. It represents a range of detection and manipulation skills and includes rhyming, segmenting words, blending syllables into words and phonemic awareness - the manipulation of phonemes by

segmenting, blending or changing phonemes within words to create new words (Chard & Dickson, 1999; Philipps et al., 2008).

- Phonemic awareness – the understanding that words are made up of individual sounds or phonemes (the smallest sound units of the spoken language), and the ability to manipulate these phonemes by segmenting, blending or changing phonemes within words to create new words (National Reading Panel, 2000).
- Phonics – An instructional approach that helps children make a connection between sounds and letters (National Reading Panel, 2000).
- Explicit and systematic phonological awareness instruction – carefully planned sequence that intentionally focuses on helping children to master tasks. Key elements include specific instructional sequencing, modeling, explaining, scaffolding and providing feedback (National Reading Panel, 2000; Phillips et al., 2008).

### **Limitations and delimitations**

The research will be limited primarily to the underlying core deficit of phonological awareness processing in children aged three to six years. However, factors or variables that affect phonological awareness development such as letter knowledge or alphabet awareness will be discussed briefly within the context of phonological awareness instruction and intervention. Research will be limited to English language studies, and will not include bilingual or multilingual students.

Furthermore, the review will be limited to developing phonological awareness in a school setting with educational practitioners and will not include speech and language pathologists or psychologists who work with ‘at risk’ children.

## **CHAPTER TWO**

### **Literature Review**

As mentioned in Chapter 1, this literature review will examine the following areas related to the development of phonological awareness in at risk students aged 3-6 years old:

- The components and importance of phonological awareness;
- The development of phonological awareness instruction in inclusive classrooms;
- The extent to which phonological awareness interventions may improve reading abilities of ‘at risk’ students.

#### **Components of Phonological Awareness**

##### **What is Phonological Awareness?**

Phonological awareness is the understanding of different ways that oral language can be divided into small components and manipulated. The ‘awareness’ component of the term is as important as the ‘phonological’ component, as the skill is not a simple unconscious discrimination of speech sound; rather it involves the explicit and deliberate processing of speech sounds (Castles & Coltheart, 2004). Operationally, skills that represent children’s phonological awareness lie on a continuum of complexity (Phillips et al., 2008; Sodoro et al., 2002). At the less complex end of the continuum are activities such as rhyming. At the center of the continuum are activities related to segmenting words and blending syllables into words. Finally, the most complicated level of phonological awareness is phonemic awareness, the understanding that words are made up of individual sounds or phonemes and the ability to manipulate these phonemes either by segmenting, blending or changing individual phonemes within words to create new words (Antony et al., 2003; Philipps et al., 2008). This model is not sequential,

where children have to demonstrate mastery of one level before beginning the next level: multiple levels of the continuum may develop simultaneously (Antony et al., 2003).

Carroll et al., (2003) indicate that phonological awareness progresses through the following stages:

1. Word level – this is the awareness that speech is a compilation of individual words.
2. Syllable level – this is the ability to segment words into units or syllables, and count syllables. According to Adams (1990, as cited in Lane, Pullen, Eiselle & Jordan, 2002), this stage is most important to reading acquisition.
3. Onset and rime level – the onset is the syllable that precedes the vowel in a word such as the ‘m’ in ‘mat’ and the rime is the rest of the syllables. This level is often omitted from early reading instruction (Lane et al., 2002).
4. Phoneme level – this is the most sophisticated level and is commonly referred to phonemic awareness, whereby children are able to manipulate the smallest sound units of spoken language.

Children who have strong phonological awareness are therefore sensitive to its components (syllables, rhymes, phonemes) and can detect, match, blend, segment and manipulate speech sounds. Children’s individual differences in phonological awareness influence subsequent differences in word-level reading (Sodoro et al., 2002).

It is important to acknowledge that phonological awareness, phonics and phonemic awareness are related constructs, but are distinct from each other. Phonological awareness is a measurable capability, which children can apply, perform or possess in varying amounts (Phillips et al., 2008). Phonics on the other hand is a method of reading instruction that focuses on the association of letter sounds with printed letters, or a group of letters (National Reading Panel,

2000). In the English language, the beginning reader must learn to make connections between the 26 letters of the alphabet and approximately 44 phonemes. The understanding that written spellings represent the phonemes of spoken words is called the ‘alphabetical principle’ and is often termed as ‘phonics’. It is necessary for the development of accurate decoding and word reading skills (National Reading Panel, 2000). Phonemic awareness is a subtype of phonological awareness, and unlike phonological awareness that represents a range of manipulation skills across different sizes of sounds, it specifically refers to the manipulation of the smallest sound pieces in words, called phonemes (National Reading Panel, 2000; Phillips et al., 2008). For example, the word ‘cat’ has 3 phonemes, so if the child has the ability to manipulate or detect the sounds ‘c’, ‘a’ and ‘t’, to make up the word ‘cat’, then the child possesses phonemic awareness.

### **The Importance of Phonological Awareness**

Joseph Torgeson (1998) makes a profound argument for the importance of phonological awareness training; “the most compelling findings from recent reading research is that children who get off to a poor start in reading rarely catch up... consequences of a slow start in reading becomes monumental as they accumulate exponentially over time” (p1).

Gray and McCutchen (2006) maintain that phonological awareness is “highly predictive of children’s later reading and spelling abilities” (p325). Phillips et al., (2008) report that regardless of language and cognitive difficulties that child may have, a problem in the application and performance of phonological awareness is “at the heart of most children’s reading problems” (p3). Phonological awareness has proven to be a principal factor underlying early reading achievement (Ehri et al., 2001, as cited in Hogan, Catts & Little, 2005). Finally, “deficits in phonological awareness have been linked to reading disabilities” (Lyon, Shaywitz, & Shaywitz, 2003, as cited in Hogan et al., 2005, p285). Poor phonological awareness development

hinders the successful acquisition of the alphabetical principle (Kirby, Desrochers, Roth & Lai, 2008). The National Reading Panel (2000) conveys some important generalizations:

- Phonological awareness is directly related to reading ability;
- Phonological awareness precedes skilled decoding;
- Phonological awareness is a reliable predictor of later reading fluency;
- A deficit in phonological awareness is often associated with a deficit in reading; and
- Early language experiences are important in the development of phonological awareness.

Torgesen (2002) suggests that strong phonological awareness skills are vital to the development of accurate recall of spelling patterns, which are the basis of skilled sight word recognition. Readers learn and memorize sight words by connecting the graphemes in the spellings to phonemes in the pronunciations of individual words. According to Ehri and Snowling (2005), spellings of words are like maps that lay out their phonological and morphological forms visually. Deficits in phonological awareness inhibit word identification, and these may result in comprehension difficulties (Stanovich, 1998 as cited in Sodoro et al., 2002). A phonological processing deficit may underlie word reading difficulties (Catts, Adlof, Hogan & Weismer, 2005).

Phillips et al., (2008) explain that when children understand that words are made up of syllables and phonemes, they are able to decode written language and acquire the alphabetical principle; the fact that written words represent spoken words in a sound by sound correspondence (for example, the word fish has 3 sound components - f- i- sh). Strong phonological awareness may also help children understand that the alphabetical principle applies despite varying spelling patterns signifying the same sound (for example 'ee', ea' and ei, all signify the long 'e' vowel sounds). This reiterates that phonological awareness is a key to

beginning reading. Phonological awareness will “not cause children to be able to read but ...cause them to be better at learning to read at some later date” (Castles & Coltheart, 2003, p.79). According to Lewis et al., (2006), children who have strong phonological awareness training become better readers irrespective of factors such as intelligence, receptive vocabulary, memory skill or social class.

### **Phonological Awareness in Children at Risk of Reading Failure**

Children at risk may experience significant difficulty segmenting and differentiating individual speech sounds in spoken words, blending individual speech sounds to form a spoken word, and effectively using phonological codes to aid working memory (Stanovich, 1994). This finding ties in with the model of human memory proposed by Atkinson and Shiffrin (1968, cited in Ormrod Saklofske, Schwean, Harrison & Andrews, 2006), whereby phonological awareness instruction goes through three components of memory – the sensory register, working memory and finally long term memory, which involves connecting new information to prior knowledge.

Goswami and Thomson (2009) argue that children as young as 3.9 years old can be analyzed for reading impairments by measuring their phonological processing abilities. Additionally, a familial reading deficit may be reliably reflected at an early age of 3.5 years by assessing phonological awareness skills (Puolakanaho, Poikkeus, Ahonen, Tolvanen, & Lyytinen, 2004).

Phonological awareness is not a naturally developing ability and may require deliberate teaching opportunities, partly because phonemes do not exist naturally in spoken English language (Phillips et al., 2008). In speech, each phoneme is not distinctly pronounced in isolation, and therefore attention may be focused on the meaning of words rather than the specific sounds of words. The basic dysfunction in phonological processing is believed to be the

struggling reader's defining deficits in acquiring alphabetic and phonologically based reading skills (Lovett, 1997, as cited in Lovett, Lacerenza, & Borden, 2000). The significance of these deficits in phonological processing has been emphasized by the findings of neuro-imaging studies. Shaywitz (2002, as cited in Goswami, 2008) reported different profiles of brain activation while studying phonologically demanding tasks which compared 'at risk' and able readers of similar age and background. The weight of this evidence identifies phonological processing deficits, disruptions in word identification, learning, and difficulty acquiring the alphabetic principle as defining features of developmental reading difficulties.

According to Phillips et al., (2008), a conceptual understanding of phonological awareness, letter name knowledge and letter sound knowledge facilitate reading and writing development in young children.

### **Development of Phonological Awareness in the Classroom**

Studies indicate that effective phonological awareness instruction can be integrated successfully within a pre-school and kindergarten curriculum (Lonigan, Farver, Menchetti, Phillips & Chamberlain, 2005; Lonigan, Phillips & Menchetti, 2006; Phillips & Lonigan, 2005; Phillips et al., 2008) and evidence based studies help teachers identify and plan effective classroom strategies for their students on an ongoing basis (Ormrod et al., 2006).

### **Importance of Teacher Preparation**

Teachers need to be trained and competent in all the multiple levels of phonological awareness (National Reading Panel, 2000; Phillips et al., 2008). Access to quality education is imbalanced, particularly for preschool children at risk for reading failure (Diamond & Powell, 2011). Although studies indicate that early intervention is beneficial, educators are not adequately prepared for this task (Cunningham et al., 2004; Hawken et al., 2005; Mather et al.,

2001; National Reading Panel, 2000; Parette et al., 2009). Pre-school teachers tend to focus on rhyming activities and identifying initial sounds rather than on more productive strategies such as blending and identifying syllable units (Hawken et al., 2005). In fact their findings suggest that 25% of teachers had never taught children blending or identifying syllable units in words, and 22% use these strategies no more than twice a month.

Lyon (2003) argues that a challenge which needs to be addressed is bridging the gap between research and the ineffective instruction being provided by educators in our classrooms. Educational organizations such as the International Reading Association have altered their positions regarding phonological awareness instruction with preschool children; yet teachers have lagged behind in incorporating research based instruction (Phillips et al., 2008). This may be due to a lack in the pedagogical understanding of relevant phonological awareness constructs, curricular materials and not having the motivation to make changes (McCutchen & Berninger, 1999, as cited in Phillips et al., 2008), or perhaps due to ineffective pre-service preparation for prospective teachers and ongoing in-service training (Cunningham et al., 2004; Lyon, 2003; Mather et al., 2001). Changes in teachers' knowledge through professional development can lead to sustainable positive changes in practice (Cunningham et al., 2004; McCutchen et al., 2002). Diamond and Powell (2011) concur with McCutchen et al., (2002), by indicating that promoting professional development for teachers, including coaching may enhance evidence based instruction in language and literacy for children at risk of reading failure.

Therefore in order for interventions to be effective, Mather et al., 2001 propose that teachers should possess positive perceptions on the role of explicit instruction and believe that struggling readers require direct teaching interventions. The authors recommend that pre-service and in service training should include:

- An awareness of phonemes and a knowledge of how these are represented in writing;
- Knowledge of the alphabetical principle, and how speech sounds relate to print;
- A thorough understanding of the relationship between poor phonological awareness and reading failure; and
- Knowledge on how to implement activities in the curriculum to develop phonological awareness.

In essence, ongoing training programs for teachers to improve phonological awareness in preschool and kindergarten is vital for children who have reading deficits.

### **Identification and Evaluation of ‘at risk’ Students**

As mentioned, the phonological awareness continuum model is further characterized by Carroll et al., (2003), who concurs that its development progresses from awareness of concrete, large sound units (words and syllables) to awareness of abstract, smaller sound units (phonemes). At any given time in a classroom of children aged 3-6 years, students’ phonological awareness skills will be at numerous points along the continuum. Therefore, teachers need to first identify, evaluate and assess each child’s mastery on each component of the phonological awareness continuum (Phillips et al., 2008). Children who have difficulties in reading can be readily observed during the initial stages of their literary development (Lyon, 2003). Lyon (2003) states that children who may be at risk of reading failure demonstrate difficulties linking sounds to letters, their reading is characterized by frequent starts, stops and mispronunciations and their comprehension is poor.

Assessment of phonological awareness skills are not “one size fits all” (p.224), and therefore must vary according to the learner’s needs, resources available and the type of

information and intervention required (Sodoro et al., 2002). Assessments should be ongoing (at least three times a year) in order to eliminate “false negatives” (Torgeson, 2002, p. 22), and in order for evaluations to be thorough and useful, both informal and formal methods may be used (Phillips et al., 2008).

Informal classroom strategies such as observations, checklists, interviews and running records document performance and progress across a range of skills. Though they lack reliability and validity, they are essential in developing ongoing instruction and effective intervention plans, because they focus on specific skills within the curriculum (McLoughlin & Lewis, 2008). When evaluating students for phonological awareness skills, Sodoro et al., (2002) recommend that teachers follow Adam’s (1990) explanation of five levels of tasks encompassing activities that represent the sound structure of the English language:

- Level 1 - An ear for sounds such as sense of patterns in rhymes and songs;
- Level 2 - The ability to compare and contrast sounds such as in rhyme and alliteration, (oddy tasks), whereby a child is given several words and asked to identify the word that does not belong due to first, middle or last sound differences; for example – the child may be asked to identify the difference in the first sounds of the words ‘fog, dog and log’. Middle sound identification is the most difficult. Matching phonemes and recognizing rhyming words are also level 2 tasks.
- Level 3 - the ability to blend individual phonemes into a word such as c-a-t;
- Level 4- the ability to manipulate phonemes by isolating them, then being able to delete or add extra phonemes; and

- Level 5 – the ability to hear, segment and tap out the separate phonemes in each word.

These tasks for measuring phonological awareness levels vary in type and level of difficulty (Adams 1990, as cited in Sodoro et al., 2002). Skills in phonological processing abilities enable teachers to identify children who may have reading difficulties prior to reading instruction, or may help identify children who may continue to be at risk of reading failure (Sodoro et al., 2002).

Formal classroom-based assessments (such as norm referenced tests, criterion referenced tests or curriculum based measurement), may not always be feasible as educators may be unfamiliar with how to collect data systematically (McLoughlin & Lewis, 2008). Standardized tests often require time and specialized skills for administration, scoring, graphing and comparing scores (McLoughlin & Lewis, 2008). In addition, resources such as assessment materials, personnel, and intervention programs are costly, especially for schools with a high number of at-risk students (Bishop & League, 2006).

### **Linking Phonological Awareness Assessments with Pedagogical Instruction**

Children in early grades vary greatly in their reading skills; therefore tailoring instruction requires teachers' flexibility. According to the National Reading Panel (2000), it is common for programs to present a fixed sequence of lessons from the beginning to the end of the year instead of adapting instruction to cater to students' individual needs. In order to help children acquire the knowledge and skills necessary to comprehend printed material, instruction must be a level that is consistent with their verbal and language comprehension skills (Torgesen, 2002). Pedagogical research supports the concept of teaching within the child's range of ability (Bedrova & Leong,

2006; Phillips et al., 2008). According to Torgesen (1998), instruction should be embedded within as many opportunities for meaningful reading and writing as possible.

Majority of children who enter kindergarten at risk of reading failure can learn to read at average levels if they are identified early and provided with high quality phonological awareness instruction (Lyon, 2003). Without these interventions, the majority of children will not catch up and will continue to have reading problems through adulthood (Lyon 2003). To ensure benefit for all children, teachers should plan for instruction by identifying the instructional goals and outcomes, conduct a task analysis for complex skills and develop a detailed lesson plan (Ormrod et al., 2006). Ormrod et al., (2006) emphasize the need for establishing realistic objectives using mastery learning and direct instruction for students who have general delays in cognitive functioning.

Strategies should be tailored to the individual strengths and weaknesses of students, particularly those with specific cognitive academic difficulties (Ormrod, et. al., 2006). The majority of instructional approaches with empirical support include small group or individualized instruction, as these support both the individual children's Individual Education Program (IEP), and the needs of the inclusive classroom (Al Otaiba & Fuchs, 2002; National Education Panel, 2000; Lonigan et al., 2006; Rashotte, MacPhee, & Torgesen, 2001; What Works Clearinghouse, 2007c as cited in Phillips et al., 2008).

Strategies for developing phonological awareness within the classroom curricula are discussed below:

**Explicit instruction.**

Mather et al., (2001); Sodoro et al., (2002); The National Reading Panel (2000); Torgesen (1998); and Torgesen (2002) concur with Phillips et al., (2008) - "children with

phonological processing weaknesses will benefit from the same approach to reading instruction as children with normal abilities in this area – *structured, systematic, and explicit*- but for this at-risk group, such instruction is not just beneficial, it is critical” (p3).

As such, teachers cannot assume that these children will acquire any necessary skill for reading words unless they are directly taught that skill or knowledge and receive sufficient opportunities to practice it (Phillips et al., 2008; Torgesen, 1998; Torgesen, 2002). Phillips et al., (2008) argue that children at risk require an explicit and systematic type of instruction that “follows a carefully planned scope and sequence and that intentionally includes a focus on building conceptual understandings” (p8). Children need the knowledge and skills to help them understand and process the sound structure of words, blending of words, and the rhyming of words (National Reading Panel, 2000). Explicit and systematic phonological awareness instruction is a critical component of early reading instruction across a broad span of children, and is particularly beneficial for children at risk of reading failure (Lyon, 2003; Mather et al., 2001; Torgesen, 2002). Moats (1999) argue that “although some children will learn to read in spite of incidental teaching, others never learn unless they are taught in an organized, systematic, efficient way by a knowledgeable teacher using a well-designed instructional approach” (p.7).

Explicit instruction includes specific teacher statements that clearly demonstrate student expectations and accomplishments. In contrast to explicit instruction, incidental and implicit instruction relies in varying degrees on a presumption that young children have a pre-existing conceptual understanding of phonological awareness (Zill & Resnick, 2006 as cited in Phillips et al., 2008). Phillips et al., (2008) recommend that implicit and incidental instruction should be

considered as supplemental to the scope and sequence of explicit phonological awareness instruction.

In the case of at risk children, instruction must be more intensive, ranging from small-group to one-on-one instruction, depending upon the severity of the risk factors for each child and directly taught with a greater number of learning opportunities per day (Torgesen, 1998; Torgesen, 2002). The focus should be on the children who are most in need of special instruction. “The efficiency of the entire process will be improved if procedures are available to accurately target the right children very early in the process of reading instruction” (Torgesen, 1998, p4).

Skills that require instruction include phonemic awareness, letter-sound correspondences, blending skills, pronunciation conventions, use of context, strategies for multi-syllable words and automatic recognition of high-frequency “irregular” words (Torgesen, 2002). According to Torgesen (1998), instruction should be embedded within as many opportunities for meaningful reading and writing as possible.

The National Reading Panel (2000) conclude that programs which incorporate explicit phonemic awareness training significantly improves children’s reading ability as young as 4 years old compared to programs that lack attention to phonemic awareness. Early development of phonemic decoding skills is critical for helping to prevent reading failure in at risk children, as word level reading processes helps children acquire word memorization required for automatic recognition (Ehri, 1998 as cited in Torgesen, 2002). Children who have delays in phonemic awareness development have little chance to notice phonemic patterns in written words and a difficult time in making sense of phonics instruction (Torgesen, 2002). Instruction should incorporate teaching children in small groups to manipulate phonemes in letters by focusing on

one or two phoneme manipulations rather than multiple types. It is important to note that phonemic awareness training does not constitute a complete reading program; rather it is a component within an integrated reading program that includes phonological awareness training (National Reading Panel, 2000).

Key elements to explicit instruction are instructional sequencing, modeling, explaining the task, scaffolding and providing positive, frequent and corrective feedback (Phillips et al., 2008). Instructional sequencing requires a teacher to intentionally plan and design in advance the phonological skills that are going to be taught, the order of the tasks, the pacing of instruction and finally whether instruction will be with a whole group, small group or individualized (Phillips et al., (2008). It is recommended that the focus of each phonological session should be limited to a single skill so as to increase memory, and to offer opportunities for repetition in multiple settings throughout the year (Phillips et al., 2008; Torgesen, 2002). At risk children may require additional structured practice and support with a teacher in order to keep pace with their peers (Torgesen, 2002). Special education teachers should engage at risk children in individual or small group (3-4 children) explicit and intensive phonological awareness activities (Torgesen, 2002). Procedures that allow for peer tutoring (such as Mathes, Torgesen and Allor's (2001) model, as cited in Torgesen, 2002) are more explicit and intensive than instruction typically provided by the classroom teacher (Torgesen, 2002).

### **Supportive instruction.**

Emotional support such as positive encouragement, feedback and positive reinforcement is "widely understood" (Torgesen, 2002, p.17). Phillips et al., (2008) recommend that feedback should be specific rather than generic, and should immediately follow a desired response. Positive feedback maintains motivation and attention of children, particularly those at risk.

However, children at risk of reading failure also require cognitive support by way of carefully scaffolded instruction. Phillips et al., (2008) state that scaffolding should be directed at providing the right amount of support for children to perform the targeted skill independently. Torgesen (2002) discusses two types of scaffolding: one involves the careful sequence of activities so that skills are gradually built, and the second type involves teacher-student dialogues that directly demonstrate the processing and thinking requirements needed in order to complete a task successfully. The second type of scaffolding has four elements:

- The student is presented with a task, for example, spelling the word “flat”.
- The student is unable to do the task or makes an incorrect response.
- The teacher prompts the child by asking a question that focuses the child’s attention on the task required, for example the teacher may ask “What do you hear after ‘f’?”
- The child then makes another response which may be correct.

This instructional interaction leads the child to discover the information critical to accomplishing the task, instead of being told what to do (Torgesen, 2002). According to Juel (1996, as cited in Torgesen, 2002), scaffolding support has increasing importance as the severity of the child’s disability increases.

### **Computer assisted instruction.**

Specific instructional strategies which incorporate technology may be beneficial when providing phonological awareness instruction to at risk preschool and kindergarten children, although the efficacy of research is limited (Parette, Hourcade, Dinelli & Boeckmann, 2008). Given the increased presence of technology both in classrooms and in children’s lives, computer and technology applications in the classroom may offer valuable tools for the development of

preschool children's reading (Anderson et al., 2008, as cited in Parette, Blum, Boeckmann & Watts, 2009).

Early childhood educators are unfamiliar with technological applications in early education due to lack of teacher training, resources and a paucity of evidence based research (Parette et al., 2009); however Parette et al's (2009) study recommends that teachers should focus of technological modifications for students at risk. Adams (2006, as cited in Parette et al., 2009) observes the effectiveness of software programs such as Soliloquy Reading Assistant (Soliloquy Learning); and Parette et al., (2008) discuss the success of the Clicker 5 (Crick Software Ltd) program which has been adopted in 90% of schools in the UK having a promise to enhance emergent literacy particularly for children at risk. Mastropieri and Scruggs (2007) support software phonics programs such as Reader Rabbit Reading (Riverdeep-The Learning Company) and Lexia Software (Lexia Learning Systems) that emphasize phonological awareness.

Parette, et al., (2009), support the use of Microsoft PowerPoint slides coupled with direct instruction, delivered with an LCD projection system to teach emergent literary skills. The authors recommend the 'Ready-to-go' PowerPoint templates (Blum & Watts, 2008), to teach phonological awareness to 4 year old at risk students. The program emphasizes repetition and reinforcement, and has familiar features for young children such as animation, color and a large screen presentation format. Therefore teachers can manipulate pictures, sounds, color, slide designs and animation to promote interest and motivation, as well as deliver information in a clear and structured format. Furthermore, family members can become involved with PowerPoint activities outside school by creating books from the slides.

Contrary to explicit intervention findings that validate individual or small group instruction, Parette et al., (2009) conclude that large group instruction in technology coupled with direct instruction holds children's attention, motivation and interest.

### **Music assisted instruction.**

A pilot study conducted in Canada on the co-relationship between phonological awareness and musical pitch processing indicates that there is a significant link between pitch awareness, rhythm perception and phonological awareness skills (Bolduc & Montesinos – Gelet, 2005). This may be due to the fact that poor readers have deficient tonal memory ( Atterbury 1985, as cited in Bolduc & Montesinos – Gelet, 2005). The authors question whether early auditory musical training may be helpful to struggling students, particularly those who experience reading and writing difficulties.

Gromko (2005) conducted a 4 month study on kindergarten children and concludes that children who receive musical instruction show significant gains in phonemic segmentation. Perhaps by enhancing musical education in the classroom, the child's attention is focused on different, but potentially useful elements in phonological awareness (Bolduc & Montesinos – Gelet, 2005). Johansson (2006) acknowledges related research which indicates music instruction for four and five year old children correlate with phonological awareness and reading development. An ongoing longitudinal study by Forgeard, et al., (2008) concur with the above studies that music intervention may potentially remediate phonological awareness deficits. Furthermore a recent study that integrates chants with shared book reading is also indicative of rhyme acuity and phonological awareness development (Richards, 2010). Although these recent studies appear promising, further research and teacher training may be necessary to substantiate findings in music assisted phonological awareness instruction.

## **Pedagogical Features Important for Phonological Awareness Instruction**

### **Articulation.**

One of the most important features of phonological awareness instruction is clear and consistent articulation (Carroll et al., 2003; Phillips et al., 2008). This is because in the English language, many letters, particularly vowels have more than one sound. Children with phonological awareness difficulties tend to show impairments in expressive (output) phonology, and articulation is considered a measure of output phonology (Carroll et al., 2003). As children invariably repeat the teacher's model, it is vital that the modeled letter-sound production is articulate and clear (Phillips et al., 2008). For example, teachers should model the spaces between sounds in blending and segmenting activities correctly, and be careful that consonant sounds in words that have repeated consonants (such as 'cotton' or 'butter'), are not repeated (Phillips et al., 2008).

### **Nonverbal cues.**

Strategic use of nonverbal cues, such as clapping and tapping can be used to support children's understanding (Phillips et al., 2008). Teachers in experimental intervention studies have found that physical movements that represent the act of putting sounds together or taking them apart can be a useful augmentation during word, syllable, and phoneme-level blending tasks (Phillips et al., 2008). Children too can be taught to use gestures during blending and segmenting activities. Visual aids such as picture and object props are useful representations to help children with memory, task performance and manipulation of words (Phillips et al., 2008).

**Vocabulary.**

Vocabulary and rich oral language interactions are another key skill area that has the possibility of increasing children's phonological awareness ability (Kirby et al., 2008; Lyon, 2003; Parette et al., 2009). Studies suggest the possibility that the larger a child's vocabulary becomes, particularly with more words that may share sound components, the more likely a child is able to cognitively grasp the concept that words are made up of sound components, the key insight needed for growth in phonological awareness (Parette et al., 2009; Metsala & Walley, 1998, and Walley, Metsala & Garlock, 2003 as cited in Phillips et al., 2008). Strong and consistent instruction in vocabulary is especially beneficial for at risk children.

**Letter knowledge.**

Another variable known to influence early phonological awareness development is letter knowledge (Carroll et al., 2003; Oudeans, 2003; Phillips et al., 2008; Van Bysterveldt Gillon & Moran, 2006). Phillips et al., (2008) discuss longitudinal findings, which indicate that letter name and letter sound knowledge, and the development of phonological awareness are reciprocally supportive. Interestingly, Snow et al., (1998 as cited in Torppa, Poikkeus, Laakso, Edlund & Lyytinen, 2006) have suggested that letter-naming ability is almost as successful at predicting future reading, although Carroll et al., (2003) recommend further empirical studies.

**Family interactions.**

Other factors that influence the development of phonological awareness in the classroom is the importance of family interactions and the home environment on early literacy and phonological awareness development, emphasizing the importance of parents' attitudes to literacy and their engagement in literacy-related activities (Torgesen, 2002; Van Bysterveldt et al., 2006).

### **Extent to which Phonological Awareness improves Reading Abilities**

Piaget's theory of cognitive development proposes that children construct their own knowledge through experiences. His theory supports the need for educators to provide rich, developmentally appropriate experiences, including reading experiences, during their early childhood years. Converging evidence from intervention studies has indicated that significant improvement can be attained on phonological reading measures for young children at risk for reading, confirming that phonologically based decoding and early skills are teachable aspects of reading (Moats & Foorman, 1997, as cited in Lovett et al., 2000; Phillips et al., 2008; Torgesen, 2002).

Instruction in phonological awareness is beneficial for most children and seems to be critical for others, but the degree of explicitness and the systematic nature of instruction may need to vary according to the learner's skills (Torgesen, 2002). Lyon (2003) acknowledges findings by the National Institute of Child Health and Human Development (NICHD), which suggests that more than 74% of at risk students who enter first grade without appropriate instruction will continue to have reading problems into adulthood.

### **Short Term Intervention Outcomes**

A visible question is the extent to which phonological awareness instruction in a pre-school and kindergarten class can bring children's reading skills to adequate levels during and after the time of intervention. Castles and Coltheart (2003) discuss findings which suggest that although rhyming fails to predict reading skills, phoneme segmentation and blending is highly predictive of both reading and spelling acquisition.

However, there are large individual differences in early intervention responses and not all children show satisfactory outcomes (Torgesen, 2002). Torgesen (2002) discusses the results of

a study on at risk children conducted by Torgesen, Wagner, Rashotte, Rose, et al., 1999 and concludes that the most explicit phonological instruction and intervention produced the strongest growth in word reading ability. In fact, only the most explicit intervention produced a reliable difference in word reading growth. As such, Torgesen question strong outcomes suggesting that perhaps teachers involved in the research studies were highly trained (Torgesen, 2002). The positive findings concur with other studies (Al Otaiba et al., 2009; and - Brown & Felton, 1990; Hatcher, Hulme & Ellis, 1994; Iveson & Tunmer, 1993; as cited in Torgesen, 2002) supporting early explicit phonological interventions. Children who receive interventions in kindergarten catch up to same age typically developing peers in all measures of phonological awareness (Warrick, Rubin & Rowe-Walsh, 1993, as cited in Al Otaiba et al., 2009). Scanlon, Vellutino, Small and Fanuele (2000) too examined the outcomes on small group explicit interventions in kindergarten and suggest that it may be possible to improve reading results with multilayered interventions in early education.

Isakson, Marchand-Martella and Martella (2011) assessed the effects of the McGraw Hill Phonemic Awareness program, an explicit intervention program designed for at risk preschool children. Their findings indicate that the intervention program was successful after just 5 months of intensive instruction on 5 preschool children. However, further published studies are required to ratify this program. Furthermore the sample size of the study was very small and not randomly selected, indicating a need for future research.

One of the biggest challenges in schools is providing a range of instructional reading opportunities that match the diversity in children's' abilities and talent (Torgesen, 2002).

### **Long Term Outcomes after Pre-school and Kindergarten Intervention**

Another question, when developing phonological awareness in a school for children aged 3-6 years is the extent of the long term impact of early phonological awareness instruction and interventions in preventing reading failure. Long term outcomes may depend on ongoing phonological awareness support after pre-school and kindergarten intervention is concluded (Torgesen, 2002). Instructional practices that have been shown to be efficacious should ideally be applied in everyday practice settings (Phillips et al. 2008).

Lyon (2003) discusses the effectiveness of 5 longitudinal kindergarten, first and second grade intervention studies conducted by the National Institute of Child Health and Human Development (NICHD) on 22,000 children at risk of reading difficulties and concludes that if explicit interventions in phonological awareness, together with fluency, vocabulary and reading comprehension strategies are implemented correctly, the percentage of children who fail to read in fourth grade would be reduced from 38% to six percent or less. Interestingly, majority of the children in this large group of poor readers were not eligible for special education services. Further findings by Hogan et al., (2005) conclude that phonological awareness assessments and interventions predicts word reading from kindergarten to second grade; however beyond second grade, the best predictor of word reading is word reading itself, rather than phonological awareness. Other studies argue that the acquisition of reading skills influences the way in which children perform phonological tasks; whereby phonological awareness tasks can be carried out using orthographic information as opposed to just phonological information (Castles & Coltheart, 2003; Hogan et al., 2005). Once early foundations for reading success are established, reading growth is dependent on the breadth and depth of the child's reading experiences and practice (Snow et al., 1998 as cited in Torgesen, 2002).

Nancollis, Lawrie and Dodd (2005) concur with these findings, that phonological awareness development alone is insufficient for reading success. They conclude from their study on 'at risk' children that syllable segmentation, rhyme awareness and initial phoneme discrimination had little effect on literacy acquisition two years post intervention, indicating a need for further longitudinal research on long term intervention outcomes.

In a nutshell, the evidence outlined in this review suggest that although phonological awareness instruction is a prerequisite skill for reading success, long term successful reading outcomes are not solely dependent on effective phonological awareness interventions, but also on interventions in other components of reading which must be integrated via informed instruction and practice.

## **CHAPTER THREE**

### **Analysis, Interpretation and Discussion**

#### **Analysis and Synthesis of the Literature**

There is a considerable body of evidence discussed in chapter 2 suggesting that phonological awareness development is a significant precursor skill of reading, a powerful component of reading performance, and deficits in phonological awareness can lead to reading failure, including comprehension (Al Otaiba et al., 2009; Carroll et al., 2003; National Reading Panel, 2000; Phillips et al., 2008; Stanovich, 1991; Torgeson, 2002; Torgeson & Mathes, 2000). However studies identify not just phonological awareness, but also word identification and the alphabetical principle as defining features of reading failure (Phillips et al., 2008).

Phonological awareness development in preschool and kindergarten has received little attention despite a wealth of evidence based research on the topic (Carroll et al, 2003, Hawken et al., 2005). Therefore, the aim of this literature review is to provide valuable information to early childhood educators on how phonological awareness may be developed in their classrooms; by defining phonological awareness, identifying research supported strategies for instruction and intervention, and discussing how these may impact the reading abilities of children aged 3-6 years old who are at risk of reading failure.

Early educational settings lack support in this area, and many educators are unprepared in the developmental trajectory of phonological awareness and the incorporation of effective instruction in their teaching plans (Cunningham, et al., 2004; Mather et al., 2001; Phillips et al., 2008). It is evident from the literature that high quality instruction and intervention is necessary for at risk students at pre-school/kindergarten level in order to prevent reading failure, yet phonological awareness is not prioritized in preschool and kindergarten classrooms (Hawken et

al., 2005). Statistically, approximately 74% of students entering grade 1 will continue to be at risk of reading failure unless they receive appropriate instruction (Lyon, 2003).

As mentioned in the review, there is an imbalance between teacher instruction and scientific research (Lyon, 2003) which needs to be bridged. New teachers may not have adequate training in incorporating phonological awareness constructs within the curricula or in implementing high quality interventions (Diamond & Powell, 2011; Lyon, 2003). They may not be aware of the distinct differences between phonological awareness, phonemic awareness and phonics. Cunningham et al., (2004) argue that teachers who are better able to calibrate their knowledge are likely to seek more knowledge on phonological awareness. Findings indicate that specific pre-service and in-service training is recommended (Cunningham et al., 2004; Hawken et al., 2005; Mather et al., 2001). In fact Cunningham et al., (2004) conclude that there is much more need of “professional development in the domain of phonological awareness than in the domain of children’s literature” (p.161). However, the Government of Alberta (2011) education budget does not currently indicate readily available resources towards early childhood professional teacher development in language and literacy, indicating that there are no immediate solutions for addressing this issue.

The literature recommends early evaluation and phonological awareness support for children who may be at risk or experience reading difficulties in order to prevent negative reading outcomes. Several formal and informal strategies have been identified for the assessment of children who may be at risk of reading failure. Teachers need to recognize that children have individual differences when developing their phonological awareness constructs, and that they may develop multiple levels of the phonological continuum simultaneously (Antony et al., 2003; Torgesen, 2002). Phillips et al., (2008) recommend that teachers may need to assess children

both on their letter and their sound knowledge in order for them to benefit from an integrated instructional phonological awareness program.

Castles and Coltheart (2005) question whether it is possible to identify or provide interventions in phonological awareness to preschool children who do not have literacy skills. Castles and Coltheart (2005) discuss findings which argue that phonemic awareness is rarely present in children who do not possess any alphabetical skills. On the other hand, as discussed earlier, Phillips et al., (2008) explain that when young children comprehend that words comprise of syllables and phonemes, they decode written language and may then acquire the alphabetical principle. As such, Goswami and Thomson (2009) state that children as young as 3.9 years old can be measured for phonological processing abilities and Lyon (2003) concludes that at risk children can be readily observed during their pre-literary stages.

However, assessing children before during and after instruction or intervention is not straight forward as there are many variations depending on children's needs and resources available (Sodoro et al., 2002). Teachers may be challenged by the diversity in their inclusive classrooms, and resources may be limited. Informal classroom observations may lack reliability or validity (McLoughlin & Lewis, 2008), and formal based assessments may not be feasible due to additional costs (Bishop & League, 2006), teachers time limitations or lack of specialized skill sets for scoring and graphing (McLoughlin & Lewis, 2008). None the less, McLoughlin & Lewis (2008) support informal assessments as they focus on specific skills and are essential for developing intervention plans.

As phonological awareness does not develop naturally, children at risk may require direct instruction, which can effectively be incorporated in a preschool or kindergarten classroom (Phillips et al., 2008). Evidence based studies consistently support explicit and systematic

instructional strategies, where the teacher clearly and deliberately explains, supports and models phonological awareness development practices to at risk students (Phillips et al., 2008; Torgesen, 1998; Torgesen, 2002). Findings as discussed in this review suggest that explicit and systematic phonological awareness training is indeed possible in preschool children, provided instruction and interventions are tailored within the child's range of abilities (Lonigan et al., 2005; Lonigan et al., 2006; Phillips et al., 2008) .

In view of there being a diverse range of reading abilities in each classroom, small group and individual explicit instruction is most effective (Phillips et al., 2008; Torgesen, 2002); yet most preschool curricula indicate a dominance of whole group activities or implicit activities such as songs and whole group clapping (Heroman & Jones, 2004 as cited in Phillips et al., 2008). There is an absence of studies supporting the positive effect of these implicit whole group activities; therefore teachers should consider whole group phonological awareness instruction as supplemental to small group or individual systematic, explicit instruction (Phillips et al., 2008). Supportive instruction such as peer tutoring and scaffolding also provides desired responses when implemented individually or in small groups (Phillips et al., 2008). In contrast, pilot studies that incorporate Microsoft PowerPoint technology together with direct instruction, Clicker 5 or other software programs mentioned in the review, support whole group class instruction, as it sustains children's interest, attention and motivation (Parette et al., 2008; Parette et al., 2009). Studies on the positive impact of musical instruction on phonological awareness instruction (Bolduc & Montesinos – Gelet, 2005; Forgeard et al., 2008; Johansson, 2006; Richards, 2010) are at its early stages of experimentation and further studies on its success require ratification.

Features such as consistent articulation, non verbal cues (tapping, clapping, gestures, and visual aids), rich oral language, letter knowledge and family interactions may enhance

phonological awareness development; therefore teacher awareness of these pedagogical features is important.

Evidence based studies support the efficacy of phonological awareness intervention outcomes for the first two years after intervention, indicating that explicit and systematic instruction is a prerequisite to successful reading outcomes; although questions arise as to why short term outcomes in some findings are unrealistically high (Torgesen, 2002). A possible explanation may be due to highly trained teachers in settings that were analysed, compared to other schools (Torgesen, 2002). Interestingly, long term intervention outcomes based on longitudinal studies suggest that once the early foundations of reading success is established, growth is dependent on a balanced reading program, and phonological awareness development alone is insufficient to prevent reading failure (Hogan et al., 2005; Nancolis et al., 2005; Sodoro et al., 2002; Torgesen, 2002). However, phonological awareness training is vital for preschool and kindergarten students (Lyon 2003) and should be prioritized particularly for at risk students (Hawken et al., 2005).

### **Implications for Practice**

Early childhood educators need to be aware of a possible large gap in phonological awareness skills between at risk children and their typically developing peers (Al Otaiba, 2009). Research indicates that a widening gap can undermine poor readers' success in other academic areas, which is exacerbated by a decline in motivation and low self esteem when they begin elementary education (Lyon, 2003).

Teachers need to focus on the importance of early intervention, as remediation becomes increasingly difficult as children get older (Lyon, 2003; McCutchen et al., 2002; National Reading Panel, 2000; Phillips et al., 2008). Majority of children who struggle with reading in

first grade continue to struggle in fourth grade (Lyon, 2003; McCutchen et al., 2002). According to the National Center of Educational Statistics (as cited in Lyon, 2003), 38% of fourth graders in the United States are unable to read at grade level. Lyon (2003) indicates that with early phonological interventions at kindergarten level, this percentage can be reduced to 6% or less. There is promising evidence in this literature review that explicit systematic interventions in phonological awareness can remediate reading difficulties in young children, provided instruction is tailored to children's abilities and is delivered individually or in small groups (Mather et al., 2001; The National Reading Panel, 2000; Phillips et al., 2008; Sodoro et al., 2002; Torgesen, 1998; Torgesen, 2002). Therefore, teachers need to allocate sufficient time in their curricula for daily phonological awareness instruction for at risk children (Oudeans, 2003).

In light of individual learning differences between at risk children, teachers should frequently monitor progress; at least three times a year, and provide additional support if necessary (Torgesen, 2002). Frequent ongoing assessments are particularly important for children who do not respond well enough to interventions (Al Otaiba et al., 2009; Torgesen, 2002).

Finally, educational authorities should recommend and provide professional development opportunities in phonological awareness development for early childhood educators who teach at risk children. As McCutchen et al., (2002) conclude from their findings on a 2 week professional development program, that when teachers incorporate their newly acquired instructional skills into their professional practices, their students show greater growth in phonological awareness, than before professional training.

### **Limitations**

Research sample sizes in the findings discussed in the review were often small; therefore caution must be taken in interpretation of data. Fortunately, the research base documenting the efficacy of phonological development continues to expand (Al Otaiba et al., 2009); therefore, hopefully future larger sample sizes or meta-analysis will allow researchers to provide more definite conclusions regarding different intervention approaches in developing phonological awareness.

Studies discussed in this paper do not detail the range of classroom settings and diversity of children within it – these variables may influence teacher’s methods of developing phonological awareness and therefore should be considered. For example; the research in this paper was generalized and covered a broad group of ‘at risk’ students rather than targeting specific at risk conditions such as speech and language impairments, which may require specific interventions. Additionally, it did not address specialized settings such as a Montessori school setting, where the methodology and structure allows for individualized and small group explicit phonological instruction (Stotheim, 2009), or programs such as Head Start where children are from a low socioeconomic backgrounds and only about a third of the teacher population has post secondary education (Hawken et al., 2005); therefore may need additional specialized training in phonological awareness development.

Finally, the review was very specific to phonological awareness and did not specifically address the development of other important instructional components such as phonics, vocabulary or the alphabetical principle, which may also impact reading performance; therefore the review may be biased towards published studies on phonological awareness.

### **Future research**

Despite a wealth of empirical research on the topic on phonological awareness, considerations for future research are outlined below:

#### **Teacher Training**

The National Association for the Education of Young Children (1998, as cited in Hawken et al., 2005) conclude that current educational policies and resources are “inadequate in ensuring that preschool...teachers are qualified to support literacy development, a task requiring strong pre-service preparation and professional development” (p.32). This statement concurs with Lyon (2003), who suggests that there is a gap between research and teacher preparation. Future research that explores strategies for bridging the gap may contribute to helping professional development programs for early childhood educators.

#### **Intensive, Systematic and Explicit Instruction**

According to the National Reading Panel (2000), the term ‘intensive’ is not defined. Furthermore there is no defined time limit for phonological awareness instruction; for example should it continue beyond kindergarten and first grade? How long should each specific explicit instruction last, and how much practice is needed for maximum positive results (National Reading Panel, 2000)? Preschool teachers are faced with numerous decisions such as the order to teach letters, whether to teach names and sounds simultaneously or whether to teach letters in lowercase, uppercase or both simultaneously (Phillips et al., 2008). There is no empirical evidence explaining these instructional choices, therefore future studies are recommended. Meanwhile teachers should provide rich language environments with maximum exposure to manipulative activities.

### **Computer Instruction**

Further research to support the use of Microsoft PowerPoint, and other newly available technologies to support phonological awareness would help teachers enhance their instruction, particularly whole group instruction. An evidence base for the use of PowerPoint together with Direct Instruction is only just emerging and has much potential in the development of phonological awareness (Parette et al., 2009).

### **Musical Processing and Phonological Awareness**

There appears to be a distinct link between rhythm perception, musical pitch awareness and phonological awareness development in early childhood students (Bolduc & Montesinos-Gelet, 2005; Gromko, 2005; Forgeard et al., 2008; Johansson, 2006). Although studies indicate that musical instruction is a useful tool for phonological awareness development, the studies comprised of small samples and are in their experimental stages. Further research may confirm whether auditory training should be used as a supplemental intervention to explicit instruction and may provide educators with guidance on the best methods of integrating phonological awareness and musical instruction into the curriculum.

### **Nonverbal Cues**

Experimental studies suggest that physical movement and cues such as clapping and tapping support phonological awareness understanding (Phillips et al., 2008). Future research may provide further evidence to validate the efficacy of the positive effects of non verbal cues on phonological awareness development.

### **Outcomes**

Additional research that reliably measures phonological awareness skills before and after intervention both short term and long term is needed; for instance, in the short term during

intervention, specific benchmarks to help teachers assess performance would be valuable. Few teachers use standardized measures, perhaps due to cost and specialized training that teachers require in using formal assessment measures (Bishop & League, 2006; McLoughlin & Lewis, 2008). The study conducted by Isakson et al., (2011) on the positive outcomes of the McGraw Hill Phonemic Awareness program involved a very small sample of 5 children. Future research on the program will determine more accurate results on its efficacy.

Hogan et al., (2005) and Nancollis et al., (2005) indicate that phonological awareness training does not impact reading success 2 years beyond intervention. Further longitudinal research on elementary school children who received explicit phonological awareness instruction at preschool and kindergarten, will help ascertain the extent of the positive impact of phonological awareness training in early childhood.

### **Phonological Awareness and Literacy Acquisition**

An area of interest is whether there is a reciprocal causal relationship between phonological awareness and literacy acquisition. Longitudinal studies indicate that letter name and letter sound knowledge and phonological awareness are reciprocally linked and are strong predictors of decoding skills (Carroll et al., 2003; Phillips et al., 2008). The National Reading Panel (2000) identifies phonological awareness and letter knowledge as the best predictors of reading during the first 2 years of instruction. Although much of the literature is indicative of a reciprocal relationship, Castles and Coltheart (2005) suggest that this may not be the case. Instead, when children acquire reading skills, “they change the way that they perform phonological awareness tasks” (p.102), and use their orthographic skills either together or instead of their phonological skills to arrive at a solution. Future research may clarify questions regarding the causal relationship between phonological awareness and literacy acquisition.

**Phonological Awareness and Special Education**

Finally, a further question for future research is whether successful phonological development and instruction at preschool and kindergarten will reduce the need for special education. Lyon (2003) argues that most children at risk of reading failure do not qualify for special education services; however, successful instruction can significantly reduce the number of at risk children by two-thirds, allowing for provision to children who genuinely need special education services.

## **CHAPTER FOUR**

### **Conclusion**

This literature review discussed how phonological awareness may be developed in a preschool classroom for children aged 3-6 years old, who are at risk of reading failure. Scientific studies as detailed in this review conclude that phonological awareness is an important skill leading to reading acquisition and a powerful predictor of future reading achievement and fluency (Al Otaiba et al., 2009; Carroll et al., 2003; National Reading Panel, 2000; Phillips et al., 2008; Stanovich, 1991; Torgeson, 2002; Torgeson & Mathes, 2000). Three main issues were discussed – the components of phonological awareness, the development of phonological awareness in a classroom comprising of preschool and kindergarten students and the extent to which phonological awareness interventions impact reading outcomes.

Firstly, the paper defined and explained the components of phonological awareness and the continuum of phonological awareness which comprises of rhyming, segmenting, blending syllables to words, and phonemic awareness, which is the most complex level of phonological awareness. The continuum is not a sequential model and the components can develop simultaneously. Children who have strong phonological awareness can therefore detect, match, blend, segment and manipulate speech sounds. Unlike phonemic awareness, phonological awareness is a measurable capability, which a child can apply, perform or possess in varying amounts (Phillips et al., 2008).

The review then evaluated research supported findings that discussed the identification of at risk children and instructional strategies for successful development of phonological awareness. Identification and ongoing evaluation of children at risk is vital as children vary greatly in their reading skills. Evidence based research validates that instruction in phonological

awareness strategies is a critical component of intervention for children at risk of reading failure (Phillips et al., 2008). Phonological awareness is not naturally acquired. However, through high quality instruction, children in preschool and kindergarten can acquire effective phonological awareness skills. Research studies indicate that direct, systematic, and explicit instruction that is individualized or in small groups, tailored to children's range of abilities is favourable (Lyon, 2003; Mather et al., 2001; National Reading Panel, 2000; Phillips et al., 2008; Sodoro et al., 2002; Torgesen, 2002), although Parette et al., (2009) support whole group instruction in computer assisted instruction as it maintains class motivation and interest. Findings suggest a link between music instruction and phonological awareness, although further studies are needed to validate the success of related programs.

Implicit whole group instruction should be supplemental to explicit phonological awareness instruction, as there is no evidence based research to validate it being best practice (Phillips et al., 2008). Additional cognitive support by way of scaffolding and peer tutoring, and positive feedback are further elements of phonological awareness development.

Teachers need to have an understanding of the multiple levels of phonological awareness, so that variability in students' needs may be met. The literature indicates that they require an awareness of pedagogical features that are important for phonological awareness development such as articulation, vocabulary, nonverbal cues (tapping, clapping, visual aids and gestures), letter knowledge, and family interactions. Teachers also need to have an understanding of the multiple levels of phonological awareness, so that variability in students' needs may be met. They need a strong foundation of research-based best practices, in order to provide optimal learning opportunities for the children they serve. However, studies indicate that access to good

quality phonological awareness education is not prioritized at preschool level, and consequently educators lack training in phonological awareness development (Hawken et al., 2005).

The literature review finally examined the extent to which explicit phonological awareness instruction is successful in preschool and kindergarten settings. Findings indicate that explicit early interventions produce the strongest growth in reading (Torgesen, 2002), and children who receive these interventions typically catch up to their peers in all levels of phonological awareness (Warrick et al., 1993, as cited in Al Otaiba et al., 2009). However, after second grade, studies suggest that a balanced reading program is necessary as phonological awareness alone is insufficient for reading success (Nancollis et al., 2005). Further longitudinal research is needed on the extent to which phonological awareness training influences long term reading success.

Certain issues could not be addressed in the study and therefore future research is recommended. For example there were no studies indicating the length of each specific explicit instruction or the amount of practice needed for maximum positive results (National Reading Panel, 2000). Furthermore, there were no details regarding the order to teach letters, whether to teach names and sounds simultaneously or whether to teach letters in lowercase, uppercase or both simultaneously, when developing phonological awareness instruction (Phillips et al., 2008). The literature review covered a generalized group of 'at risk' students and did not address specific strategies which may serve individual learning needs. For example in the case of children with speech and language impediments, teachers may have to work with other professionals such as speech pathologists and develop specific plans to address their reading difficulties.

Unfortunately, there is a lack of opportunities for professional development in phonological awareness training (Hawken et al., 2005), and therefore this paper will hopefully provide teachers with an insight into the value of phonological awareness development for 3-6 year old children.

Ultimately, it is evident that prevention of reading failure can indeed begin during early childhood by providing high quality phonological awareness training, when preschoolers and kindergarten children are developing critical emerging literacy skills for reading success.

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