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Phonemic Awareness and Phonics as an Integral Field to Early Emergent Reading Programs

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A Literature Review Presented
in Partial Fulfillment of the Requirements
For the Degree of Master of Education

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Abstract

The act of learning to read is one which is unnatural to the human brain, causing exponential stress for young learners, students acquiring a new language, or learning disabled. To alleviate the nidus which acquiring the ability to decipher literature may impose, continual research in learning to read has taken place. Research which has aimed to discover the best kept secrets, programs and strategies for helping early to emergent readers succeed. Within the literature review, the benefit of implementing phonemic awareness and phonics into early to emergent reading programs will be discovered. Including, how phonemic awareness and phonics arose in classrooms during the 1900's and 1990 reading wars. The impact phonemic awareness and phonics has on long-term reading proficiency, and research-based strategies for reading intervention.

Key words: phonemic awareness, phonics, early to emergent reading, reading interventions, reading programs, orthographic mapping

Introduction

As stated through Pikulski (2002) reading is fundamental to a students' interdisciplinary academic success. Causing reading to be a dominate indicator when identifying children whom, are at risk for social, and academic failure (Scanlon, et al. 2008). As lack of reading proficiency, or reading disabilities are often linked to low academic, economic, social and emotional success. Typically, within higher education and career readiness (Pikulski, 2002). To oppose reading issues students are placed in Tier II or III reading interventions when identified as at risk. Such interventions may focus on fluency, or words per minute and spelling of new words. Other interventions target comprehension and vocabulary of literacy and informational texts e.g. locate and recall, integrate and interpret, and critique and evaluate (NAEP, 2019).

However, as many students are placed in intervention for fluency, comprehension or vocabulary. The National Assessment of Educational Progress show that very few students in the U.S. hold a proficient reading level (NAEP, 2019). This leads many researchers and educators alike to question the success of late-elementary interventions. And to ponder ways in which the nation's students may achieve an alarmingly difficult, yet necessary skill of reading. So that academic, economic, social and emotional success is supported through a well-rounded reading instruction in every child's life (Pikulski, 2002).

The act of placing students in intervention after identification is often compared to Slavin's (1991) mythical town. Slavin describes a town in which a quarter of the children experience health problems due to drinking contaminated water. This town treats each child's illness for many years, until Slavin proposes the idea of a water treatment plant. To those in the town, this instillation of a plant is absurd as the building cost exceeds the town's budget. Within this mythical town, children were treated for a preventable illness after the illness occurs.

However, by simply implementing a water treatment process the town could avoid the illness entirely (Pikulski, 2002). In cases of placing at-risk readers in intervention tremendous efforts are placed towards remediating reading problems which have already developed. A growing body of research, including Kennedy (1986) suggests that reading interventions beyond third grade are often unsuccessful. The effort placed towards fixing such reading problems is in contradiction to the minimal effort that is placed towards prevention of such reading problems from preschool to second grade (Pikulski, 2002).

Reading is centered in the ability to isolate and manipulate phonemes through recognizing phoneme-grapheme combinations. Creating research-based, meaningful opportunities to learn to read through phonemic awareness and phonics has been shown to be an integral part to successful reading programs. Further, early integration of phonemic awareness and phonics instruction will positively impact later outcomes of reading and writing (Grainger, 2010). Teaching each skill allows students to develop an advance vocabulary through sounding out words, understanding the rules of English and building sight word knowledge. Opposing reading programs rely heavily on lexicon or student memorization of words and provide little support for students to combat new or unknown words (Grainger, 2010). Mastery of phonemic awareness and phonics in early to emergent reading programs allow students to be successful readers and writers, in social environments, work force, and later schooling. When considering an early emergent literacy program, phonemic awareness and phonics serve as companion. These two components are equals in ensuring students' reading proficiency to promote later academic, economic, social and emotion success (Pikulski, 2002).

This literature review will support mastery of phonemic awareness and phonics as prominent aspects to a successful reading program for early and emergent readers. Early

intervention programs play a crucial role in eradicating reading, academic and social failure (Pikulski, 2002). An ideal which has been supported through many years of research. Bus & Van (1999), Ehri et al. (2001) and more recent studies through Suggate (2014) show that phonemic awareness and phonics intervention can be effective means to improve students' reading proficiency in short term (Suggate, 2014). For example, Ehri et al. (2001) found that phonemic awareness helped all early to emergent readers. Where as phonics served as a Tier II intervention for the early to emergent readers who had begun struggling (2001). Further research proposes that student mastery of phonemic awareness and phonics in early reading, serve as predictors of students' later reading and spelling proficiency. Paige et al. (2018) found that letter, and phoneme knowledge can directly impact students spelling and fluency up to sixth grade.

Literature Review

Defining Phonemic Awareness

Sensitivity to speech is presented at birth; within a child's first 9 months of life, he or she will become aware of stress patterns. Thus, utilizing this information in communication such as pausing and durational differences in cries. Further sensitivity to sound in infants, allows the child to identify stressed and unstressed syllables, e.g. *kingdom* (Kuppen & Bourke, 2017). Early identification of sounds leads to segmentation of words, syllables and phonemes when learning to speak. Research has shown that infant-direct speech or IDS, which may include intense announcement of vowels, can support identification of phonemes and segmentation of words. As well as increased neural activity in regions of the brain associated with phonetic encoding (Kuppen & Bourke, 2017).

The ability to identify sounds, and stress patterns in words as an infant, later supports phonemic awareness development when learning to read. Phonemic awareness is the ability to hear and manipulate sounds in spoken words. Included in this is the ability to identify onset-rime, phonemes and syllables in words or word parts, as well as, distinguishing and creating rhyming words in word families. Detecting, segmenting and manipulating sounds may take place at large, e.g. words or unit level e.g. phonemes (Kuppen & Bourke, 2017). Examples of activities which support phonemic awareness comparing the pronunciation of /t/ in *cat*, *water*, and *winter*. Or segmenting each sound in the word *log*, /l/ /o/ /g/ (Roberts et al. 2019).

Duchovicova et al., (2019) discovered the impact preschool students' ability to hear and manipulate spoken sounds has on vocabulary acquisition and language structures. Centering the research around the belief that success in spoken expression at a young age is crucial to development and attainment of skills in school. Duchovicova et al., (2019) assessed students'

phonetic analysis, e.g. detecting a spoken sound in a word, and phonetic synthesis, e.g. blending given sounds to create a word, and the effect these skills had on specific cognitive functions necessary for reading and writing. This study found that students who enter school with phonemic awareness skills learn to read and write at greater ease than peers who lack the ability to analyze and synthesize phonemes in words.

Defining Phonics

The ability to hear and manipulate phonemes in spoken words is merely one aspect to a foundational reading program. The ability to crack the code of written language, and recognize graphemes, or written letters which symbolize spoken sound is identified as phonics (Kuppen & Bourke, 2017). Spoken symbols are referenced to as phonemes; the mastery of phoneme-grapheme combination has been shown, by many, as important for early decoding process of unknown words in reading (Paige et al., 2018).

Mastery of phonics often takes place through a fairly linear process, often beginning with students learning to identify the beginning or ending letter and sound in words e.g. /s/ in *sun* and /t/ in *pit* (Kuppen & Bourke, 2017). Once early readers begin to identify the surface sounds of a word, next, phonics entails chunking of sounds. Explicitly teaching spelling rules of English will create fluent and immediate identification of phoneme chunks during decoding of unknown words. Common spelling rules of English are described in Table 1 (Paige et al., 2018).

Table 1

Description of Common Spelling Rules in the English Language

Spelling Rule	Description
Digraphs	/th/ in <i>this</i> or /ch/ in <i>chip</i> (Paige et al., 2018).
R-controlled vowels	/er/ in <i>sister</i> or /ar/ in <i>barn</i> (Paige et al., 2018).
Vowel teams	/ai/ in <i>pain</i> or /oa/ in <i>boat</i> (Paige et al., 2018).
Bossy e	<i>kit-kite</i> or <i>mad-made</i> (Paige et al., 2018).

An additional skill which allows chunking of phonemes when learning new words includes identifying syllables. Some words may only include one to two syllables e.g. bag, or cloudy. Longer, or more difficult words to decode may be multisyllabic e.g. capability, or responsibility (Paige et al., 2018). When decoding words, the reader may look for phoneme patterns, by finding phoneme patterns the reader is able to decode one syllable in the word at a time. Phoneme patterns may include: every syllable has one vowel, look for ‘cvc’ (consonant-vowel-consonant), divide syllables between double consonants e.g. *sup/per*, and lastly, divide the syllable before the consonant of an ‘-le’ e.g. *mum/ble* (Paige et al., 2018).

As previously stated, learning phonics is a linear path. Early to emergent readers must master identification of beginning and ending sounds of words, chunk phonemes and syllables through common spelling rules. Lastly, phonics entails the recognition of onsets and rimes of words e.g. *c-at* (Paige et al., 2018). Early to emergent readers may utilize each skill when decoding an unknown word. After utilizing phonics skills to decode, readers may blend, or merge, together the phonemes to discover the unknown word. Adams (1990) places the linear process of learning phonics into five dimensions, all which entail the ability to compare, break

apart and blend the phonemes of words. Shatschneider et al. (2004) identifies the ability to identify the beginning sound of words as a sixth dimension (Paige et al. 2018).

The importance of decoding unknown words through phonics skills has long been established (Double et al., 2019). In a study by Share et al. (1995) letter naming knowledge was shown to be the best predictor of end-of-the year phonics reading achievement for kindergarten students, and a predictor of students reading achievement in first grade. Letter naming knowledge also serves as an early predictor for students' later spelling proficiency (Paige et al., 2018). Letter naming knowledge or LNK requires fluent and immediate identification of the upper and lower case 26 graphemes in the alphabet. Letter naming knowledge contributes to accurate identification of phonic rules, and phoneme chunks in decoding, allowing the storage of words in long-term memory (Paige et al., 2018).

Early to Emergent Reading Programs

For a K-12 reading program to be considered effective the program must entail areas of emphasis which include word study, comprehension, guided reading and fluency. When creating an early to emergent reading program for students, preschool to second grade, word study is an integral piece to an early to emergent reading program. Word study mirrors phonemic awareness and phonics, and research-based strategies and interventions which explicitly teach mastery of phoneme and graphemes (National Reading Panel, 2000). Shanahan (2006) proposed four essential steps of an effective literacy curriculum in which phoneme and grapheme mastery is the foundation of each step (Rasinski, 2011).

Rasinski (2011) further proposes research-based instructional practices which may be considered essential for a well-balanced reading program. Beginning with *The Science of*

Reading, vast opportunities to practice reading whether with adult, peer, or silent will promote mastery of words. Through practice, students obtain the opportunity to utilize skills taught whole, or small group to decode, master or memorize common words in text. Next, Rasinski proposes oral assisted reading as essential for young readers or students learning a new language. Oral assisted reading is composed of reading a text while simultaneously hearing the text read aloud. Thus, promoting the connection sight and sound in a fluent manner.

The importance of a well-balanced early to emergent reading program has been shown effective in preventing future reading failure. Cunningham and Stanovich (1997) found that type of print used within early stages of reading impact later growth in reading comprehension. In the same study it was found that early exposure to text impacted reading proficiency up to ten years later (Allington, 2013). In a study completed by Paige et al. (2018) the method of delivery and type of program used to teach letter name knowledge and phonemic awareness predicted spelling knowledge.

The Science of Reading, Reading Recovery and Really Great Reading are merely three early to emergent reading programs which are common among U.S. schools. However, Allington (2013) supports three strategies which must be integrated transparent to a reading program to prevent future reading failure. The first strategy is to have students reading at their own level, when texts are too difficult for early to emergent readers, students gain little practice utilizing phonic skills, and quickly become unengaged with the text. The next strategy is to allow time spent reading to someone else; time spent engaged reading to another person can often be considered ‘time on task’ or time engaged with the text. Lastly, encouraging reading at home, Krashen (2004) found that good readers often spend more time engaged in silent reading. Reading at home will eliminate independent reading at school and will promote a love for text.

Integration of Phonemic Awareness and Phonics Instruction since the 1900's

The process of teaching reading has puzzled educators and researchers alike since the early 1900's. Early research beginning with Huey in 1908 who embarked on one of the earliest known studies of learning to read (Wyse & Goswami, 2008). Although, mere forgery arose from Professor Huey's research, the call for a nation of readers arose soon after. Early research in reading created an initiative to understand how the brain can best process and learn to read led to many ideals (Lambirth, 2007). Some of which are still considered research-based nearly 100 years later.

Thus, the Basal Reading Series must be considered; this series, which was released in the early 1930's, was one of the first early emergent reading programs to integrate phonemic awareness and phonics as a core piece of instruction. The Basal Reading Series dominated the market throughout the mid-to late 1900's (Wyse & Goswami, 2008). Often referenced as the center of reading instruction in 1st and 2nd grade by many literacy enthusiasts. Although the monopolizing series from the 1930's currently lacks up-to date research, the idea of utilizing phonics has led to grandchildren of the original series to be implemented in St. Louis Missouri, and regions of Illinois (Meyer et al. 1992).

The success of the Basal Reading Series supported the creation of other programs throughout the late 1900's and early 2000's, nearly all of which were based with the same ideal. Due to the popularity of such programs, phonemic awareness and phonics swiftly became supported by educators and researchers alike. Including Professor Chall, who believed schools could improve reading standards by utilizing phonics rather than word-perception programs. Furthered, by Senator Zorinsky's expectation that phonics instruction to be used Kindergarten through 2nd grade in Nebraska (Lambirth, 2007).

As phonemic awareness and phonic programs became popular, the need for consistency of teaching and classroom materials was recognized. In the 1960's Committee for the Economy of Time in Education released expectations for Elson or Basal teacher guidebooks to be used in every early to emergent reading classroom. This was contingent with using concrete materials to teacher letter-sound relationships (Lambirth, 2007). However, as early to emergent programs steadily meld into classrooms, thus, placing greater emphasis on phonemic awareness and phonics, suspicions of such instruction are prevalent. In 2000 the National Reading Panel (NICHD) laid the idea of systematic phonics instruction conditioned against non-systematic phonics instruction, or no phonics instruction in teaching reading.

With merely an iota of fourth grade students in the United States reading at a proficient level, emerging oppositions to phonemic awareness and phonic based programs are prevalent (NAEP, 2019). Including, Chall (1967) which proposed students may further benefit from being taught to read words as wholes. Often through focusing on the meaning of words through the context of the story (Baumann, et al., 2003). Similar acquisitions arose in Goodman (2005) who claimed whole language, or memorizing the whole word, creates print rich environments through culturally diverse literature and high-quality vocabulary.

Yet, through numerous studies phonemic awareness and phonics has continued as the front runner for successful reading programs and interventions. In a study completed by Faust and Kandelshine-Waldman (2011). The implication of using bottom-up, top-down and word compressing processes with at-risk readers was studied. Students detected whole words, and letters in Hebrew texts, success was monitored through comprehension questions. The study found that none of the strategies taught to the struggling students and utilized while reading compensated for the discrepancy between struggling readers and peers. Furthermore, the

strategies used in this study were entirely unsuccessful for target skills after third grade (Faust & Kandelshine-Waldman, 2011).

Since 2002, the National Reading Panel, Committee of the Economy of Time in Education has concluded that direct instruction in phoneme-grapheme combination, onset-rimes, and rhyming are necessary for successful reading achievement (Lambirth, 2007). In 2005 the Australian Department of Education Science and Training concluded that systematic, direct and explicit phonics instructions is crucial to a successful early to emergent reading program. Furthered in 2006 by England's Rose Report which recommended every school select a synthetic phonics instruction to be taught (Wyse & Goswami, 2008).

Research-based phonemic awareness and phonics programs are steadily being integrated into early emergent reading programs across states, nations and regions. Grainger (2010) created step by step foundations for successful building blocks of reading which was criticized, reviewed, and supported through action research. Programs such as: Really Great Reading, Sounds-Write, and Sound Waves are common names among educators. While parent-friendly, para-educator based, and at-home phonemic awareness and phonics resources are also being created to support learning to read at home (Rasinki, 2011).

Research of Phonemic Awareness and Phonics

Whole-language savants have diverged the use of phonemic awareness and phonics in early emergent reading programs (Roberts & Meiring, 2006). However, there are few studies which implicate the success of other reading strategies for short-term and long-term success. In an action research completed by Roberts fifty-five first grade students were assigned between two groups. The first group placed focus on learning literacy through phonics. Where, as the

second group utilized a holistic whole-language approach. This study exposed significant increases in short-term reading proficiency with students who learned through phonics. Creating greater gains than their counterparts who were taught through a whole-language approach. Roberts (2006) is enriched through England's Department for Education and Skills (DfES) large scale study commissioned in 2006 which determined systematic phonics instruction as a crucial aspect to literacy acquisition in early to emergent readers (Wyse & Goswami, 2008).

Government, national and school district support to integrate early to emergent reading programs heavily based in phonemic awareness and phonics to acquire reading and writing skills is well earned. Phonemic awareness and phonics interventions have been shown to effectively increase short-term reading skills of at-risk learners, including, students who are low-performing, or students with a disability (Suggate, 2016). Further, such strategies will assist students acquiring a new language, or English Language Learners (ELL). In a study by Solomon and Enyew (2019) phonemic awareness strategies when linked to text, increased reading engagement and motivation of language learners. Meaning, that all students, including students with primary needs, have the capability to meet end of the year reading goals when provided the opportunity to master phonemic awareness and phonics as pre-requisites to reading (Allington, 2013).

However, research shows that implementing scientifically based, reliable and replicable phonemic awareness and phonics strategies expands beyond short-term benefits (Allington, 2013). Cunningham and Stanovich (1997) found that the skills taught to, and type of print presented to early elementary students predicted students' reading proficiency ten years later (Allington, 2013). As defined through the National Reading Panel (2005) reading proficiency includes the ability to accurately utilize previously learned rules of English to read and spell grade-appropriate words. Paige et al., (2018) suggested a relationship among phonemic

awareness, word reading and spelling knowledge. Showing that students with master phonemic awareness in early elementary have a greater advantage when using rules of English in reading and spelling new words in later years.

Further reading proficiency is defined through the ability to comprehend and understand grade-level text (National Reading Panel, 2005). In many action research articles including that by Double et al. (2019), and McGeown and Medford (2014) have found that early phonics instruction is important for predicting later reading comprehension. Double et al. (2019) discovered that students who have mastered phonics, or students who received phonics intervention early in school entry will parade superior comprehension until upper elementary. In comparison to peers who did not master or receive systematic phonics instruction as young readers.

Utilizing research-based strategies which are reliable, and replicable in the classroom environment has positive impacts on students short-term reading proficiency (Suggate, 2016). As well as long term reading proficiency in spelling or decoding new words and comprehension (Allington 2013). This expands to working with students of varying needs, or students with varying preferences in learning styles (Suggate, 2016). Immense research has shown that teaching phonemic awareness and phonics and student mastery of these skills in an early to emergent reading program will have greater impact on student word reading, spelling knowledge, and comprehension (Johnston et al., 2021).

Phonemic Awareness and Phonics Reading Interventions

According to the National Reading Panel (2005), there are 5 essential components of reading: phonemic awareness, phonics, vocabulary, fluency and comprehension. Enriching the

ideal that phonemic awareness and phonics are the foundations to vocabulary, fluency and comprehension. Which has been supported through data, and experience from researchers and educators. Studies, and meta-analysis alike have shown that phonemic awareness and phonics reading interventions can significantly improve students reading proficiency. Many articles have found the impact of utilizing phonemic awareness and phonic research-based intervention strategies. Suggate (2014) discovered that regular phonemic awareness and phonic interventions, which included large and small groups of students led to greater gains in pre-reading and comprehension skills.

Further research has determined which strategies are most effective for students with varying needs (a) English as a Second Language (ESL), (b) learning disabilities, (c) low socioeconomic households, and (d) at-risk or low performing readers (Suggate, 2014). There are many strategies which claim to increase a students' understanding of phonemic awareness and phonics. Research based strategies to best teach phonemic awareness and phonics will be explored further to determine how educators may develop a virile foundation in early to emergent reading programs.

Contextualized and Decontextualized Alphabet Instruction

Roberts et al. (2019) investigated the influence of contextualized and decontextualized instruction of letter sounds, and letter names on students' proficiency of identifying letters in isolation. Roberts and supporting authors identify both means of instruction to support learning letter names and sounds to share meaning through reading and writing. Previous research has displayed that contextualized and decontextualized learning of letter sounds are essential to learning to read words (Hulme et al., 2021). Further studies enrich that teaching letter names and

sounds in correspondence produces greater letter-identification (Roberts et al., 2018). Thus, the process of teaching letter names and sounds in affiliation was utilized. Both contextualized and decontextualized instruction, in this study, were taught parallel to students obtaining decoding skills, for storage of whole words in long term memory.

Contextualized instruction places learning of letters in action towards meaning-based, and student focused activities. Such activities included: story book and alphabet book reading, student learning letters in his or her name, and sounding out words when writing. Advocates for contextualized learning claim that such activities are appropriate for students' developmental stages of learning and holds greater potential to increase student engagement and language proficiency. As well as provide print rich opportunities which are meaningful to student autonomy (Robert et al., 2019). A series of studies by Justice et. al. (2000, 2002, 2004) found that print referencing e.g. organization, meaning, letters and words, resulted in greater gains of alphabet knowledge with students (Roberts et al., 2019).

Decontextualized alphabet instruction focuses on students' attention to the letters presented on cards, tiles, and puzzles. Placing student concentration on individual letter's name and sound. Decontextualized instruction provides the teacher with the ability to previously determine instructional sequence of letters. Which may include contiguous clear and repeated presentation of a letter or determined set of letters. Further, such activities avoid student confusion and lack of attention which may arise in more complicated activities. Lastly, decontextualized learning of letters provides clear and consistent instruction in more difficult letters (Roberts et al., 2019).

Roberts' et al. (2019) display the cumbersome impact of contextualized and decontextualized strategies when working with students of high need. Focusing on meaningful

oral and written language instruction at the discourse or word level specifically with students learning English as a second language, or students from low-income households. Within both contextualized and decontextualized instruction, preschool children displayed significant gains in letter name, and letter sound identification and fluency. Further, all students, including, those who had been identified as ‘at-risk’ when entering preschool showed eminent growth in meeting end of the year alphabet knowledge and phonemic awareness benchmarks (Roberts et al., 2019).

Rhythmic Rhymes

One theory of dyslexia contributes dyslexia through early infant sensitivity to speech rhythm. Within this framework, children with reading disabilities often display repetitive neural activity which impacts syllabication of words (Kuppen & Bourke, 2017). Through this theory, it is suggested that rhythmic training could benefit poor readers, or students with reading disabilities including dyslexia. Rhythmic training may also support students from low-income households who may have restricted access to educational materials, print rich environments, and conversations which develop vocabulary (Kuppen & Bourke, 2017).

Spoken rhymes, and music-based interventions for reading have had repeated literacy benefits (Gordon et al. 2015). Musical instruments, and singing are often at the basis of many studies experience with musical rhythm whether taught explicitly or implicitly can serve as a cornerstone to language acquisition. Unlike singing, rhythmic rhymes does not require the matching or a tune, however, aligning patterns of linguistic stress and musical meter can increase linguistic comprehension (Kuppen & Bourke, 2017).

In an action research completed by Kuppen and Bourke (2017) rhythmic rhymes which sung and spoken increased students of low-income households’ mastery of phonemic awareness.

In the study, nine rhymes or songs were built upon the curriculum e.g. building materials, body parts, using the classrooms sight word lists. Each written rhyme was short, with the rhyming word at the end of each line. Throughout the songs, pitch or melody changes took place in correspondence to syllables.

When rhyming the student holds a target word in phonological working memory while searching their mental lexicon for a word which fits the task. Silverman (2010) proposes that when content is sung does comprehension and retaining of information increase. This will include singing the ABC's when learning alphabet letter names. Kuppun and Bourke (2017) aim to feature linguistic segments, in matching rhyming words as an essential task to phonemic and phonological awareness. This study resulted in a large impact on students' abilities to produce rhymes, detects rhymes and delete phonemes from words. Thus, displaying that rhyme awareness is a necessary skill for literacy development.

Decodable Texts

Beverly et al. (2009) provides insight to the ideal that explicit phonics instruction, when reviewed through decodable texts can be a prerequisite to successful development of reading comprehension in later years. Within this study, Beverly proposes that decodable texts, when used consistently with pre-taught grapheme-phoneme combinations suffices greater results than other reading enrichment programs. Many decodable texts utilize controlled, and repeated letter-sound correspondences, spelling patterns, and sight words. This often takes place through lesson to text, and or letter to sound correspondences identified within the title or cover page (Beverly et al., 2009).

Support for decodable text arose many years ago, often making headline through national and state advocacy, including the California Department of Education. Beverly et al. (2009) who quotes a lack of decodable texts in a print rich environment as a melting pot of doom of students' later reading proficiency. Research has shown that decodable text can reinforce students alphabet knowledge, increase word identification, corroborate phonemic awareness, spelling proficiency, fluency and increase early reading skills. Beverly et al. (2009) and Jenkins (2004) found that the isolation of phonics instruction and decodable texts increased student chances of meeting end-of the year reading goals, on assessments such as: FAST and DIBELS.

Decodable texts serve as a research-based, reading intervention when utilized in controlled groups, through previously taught and understood phonics skills in a balanced literacy program. Decodable texts display the importance of phonics skills to readers, throughout the books (Beverly et al., 2009). Further, these texts serve as a transition during text-leveling, from controlled stories to realistic nonfiction and fiction, books (Jenkins, 2004). Lastly, decodable texts can help emergent to early readers achieve automaticity and fluency for letter-sound knowledge and spelling rules (Beverly et al., 2009).

Code Based and Meaning Based Strategies

To obtain word solving strategies, students must have an understanding of the alphabet principal. Scanlon (et al., 2017) supports the use of systematic and explicit phonics skills prior to learning to read. Through systematic phonics instruction, students may become familiar to irregularities in spelling rules. Thus, developing a greater potential to learn new words, and to learn about the phonemes of words in texts. Word solving strategies is one use of phonics skills

to grow student sight word vocabularies and develop the ability to read words without stopping or using phonic knowledge to sound out new words (Anderson, 2019).

Learning to word solve, teaches student effortless and automatic identification of words, through spelling rules already obtained during phonemic awareness and phonics lessons. These strategies allow students to apply word, grapheme and language knowledge. Creating independent readers, whom, can apply self-learning strategies when encountering a new word in text (Scanlon et al., 2017). Anderson (2019) states the benefit of learning to read through word solving strategies, as continual expansion of students' vocabulary and sight word knowledge during reading. This provides greater opportunity for students to to focus time on comprehension, and fluency throughout the text.

Code-based strategies are best utilized before, during and after reading. A common code-based strategy is to ask students to look at the beginning letter-sound to determine an un-known word, e.g. identifying that *cat* begins with /c/. Further code-based strategies encourage students to analyze grapheme-phoneme combinations in new words (Anderson, 2019). A challenge to apply phonemic awareness, and phonics knowledge to identify un-known words will lead to long-term storage of sight words, and written representations. When using code-based strategies students must be given the opportunity to reflect after reading, this creates meaning, and a sense of accomplishment through the strategies utilized (Scanlon et al., 2017). Studies, including Anderson (2009, 2019) have found that students, whom, use code-based strategies increase fluency, and report a greater sense of enjoyment during reading.

Meaning-based strategies allow the reader to use context clues to determine if a word fits within the sentence, or with a picture. When the correct word is chosen, meaning-based strategies make the text easier to comprehend. Common meaning-based strategies may include to

move past the new word, to read the following sentence (Anderson, 2019). Looking at pictures, or look at previous words, each of which will allow the reader to return to the un-known word with an understanding of context from what was read or seen. Meaning-based strategies challenge students to think of what makes sense, and can be used interdisciplinary in writing (Anderson, 2017).

Vellutino and Scanlon (2002) suggest a well-rounded reading intervention with both code-based and meaning-based word solving strategies. Arguing that students who are explicitly taught to decode un-known words and develop a large sight word vocabulary are at a greater advantage than students who do not. Although Anderson (2017) suggests teaching strategies one at a time, students can learn to chunk words, sound out CVC words, and use picture clues within one text. Code-based and meaning-based strategies are research-based interventions which can be utilized in each tier of RTI. To allow students to build sight word vocabulary and create greater opportunity to comprehend and enjoy reading.

Components of Phonemic Awareness and Phonics Instruction

Letter Naming Knowledge

Printed letters represent sounds in speech, the ability to immediately and accurately recognize the 26 upper and lowercase letter shapes is known as letter naming knowledge (LNK) (Paige et al., 2018). Letter naming knowledge is a key predictor to kindergarten and first grade reading proficiency and phonics. Letter naming knowledge also served as a predictor of spelling accuracy of second and third grade students. Letter naming knowledge requires students to match names and sounds to letters during reading, thus building a strong foundation of learning and recognizing letter patterns across words (Paige et al., 2018).

As most graphemes are represented by a sound, the understanding of grapheme-phoneme combinations is crucial to the development of a large sight-word vocabulary (Paige et al., 2018). Research has shown that students who can recognize the name and sound of a letter, have a greater ability to read words in text than students who have yet to master letter naming knowledge (Ehri, 2014). Children who have not yet been diagnosed with dyslexia, may develop letter naming knowledge at a slower pace than peers. And will require immediate remediation to help prevent future reading issues (Snel et al., 2016).

In a study of first grade students' ability to accurately and fluently recognize words, letter naming knowledge was found to be the best predictor of students' later word reading ability (Snel et al., 2016). Students in first grade who have greater letter naming knowledge, display the ability to accurately blend sequences of letters to sounds with less frustration than peers who lack letter naming knowledge (Solomon & Enyew, 2020). More so, students who struggle with reading in later reading stages, typically knew less letter names and sounds in Kindergarten (Snel et al., 2016). However, Adams (1990) implies that students must be taught letter naming knowledge in correspondence with phonics skills. Thus, teaching early to emergent readers that isolated graphemes are utilized to decode unknown words in reading (Snel et al., 2016).

Teaching early to emergent readers to identify the name and sound of a letter requires explicit intervention. Using mnemonics, and letter-picture pairs is a common approach. This may include showing the letter /m/, with monkey while pronouncing the sound /mmm/, acting out eating an apple while pronouncing /aaa-apple/. Ehri et al. (1984) used drawing letter shapes, and while pronouncing sounds to correspond phoneme-grapheme e.g. drawing the letter T as a table, or M as mountain. Giving young readers extensive opportunities to represent the letter shape,

with sound and name through a mnemonic or visual cue will give greater memory of letter naming knowledge (Ehri, 2014).

Orthographic Mapping

Orthographic mapping is a process in which early to emergent readers utilize phonics skills to memorize and learn new or unknown words, as well as store sight words in long-term memory. As stated through Ehri (2014) orthographic mapping (OM) uses letter naming knowledge to create connections of spelling, pronunciation and meaning of words. Early readers use orthographic mapping to learn to read words by sight, spell words from memory, and develop a large vocabulary during reading. While further evolving a vast sight word knowledge by learning relation of letter to phoneme mnemonics. Using orthographic mapping during phonemic awareness and phonic interventions has been shown to significantly increase young readers, and students learning a new languages', vocabulary and spelling of words (Krepel, 2020).

As shown through Ehri (2014) orthographic mapping takes place when students make connections between written units of words, to the sounds these units make. After explicit instruction, and long-term storage of sight words early to emergent readers will gain greater opportunity to evolve comprehension during reading, rather than placing efforts towards decoding words. When readers hear the pronunciation of a new word, a connection among spelling and pronunciation becomes 'glued' to memory e.g. learning that *what* is pronounced /wh/ /u/ /t/ (Ehri, 2014).

Henbest and Apel (2018) found that orthographic mapping heavily relies on the grapheme-phoneme or orthotactic properties of words. Implying that for early to emergent

readers to learn and develop a sight word vocabulary through orthographic mapping phonemic awareness and a foundation of common phoneme-grapheme combinations is a prerequisite.

Share (2008) referred to orthographic mapping as a self-teaching mechanism, in which, words that repeatedly display common phonic rules will be retained through spelling patterns and pronunciation in memory (Ehri, 2014).

Teaching Phonics: Teachers Readiness

Long term integration of a successful early to emergent reading programs proves to be a greater defeat than short-term integration of similar programs. Yet with the growing access to phonemic awareness and phonics programs many classrooms have yet to integrate research-based strategies, whether due to lack of funding, resources, time or most often, training on how to teach the program (Campbell et al., 2011). Yet, these variables, specifically teacher training have been shown to have direct impacts on student reading outcomes (Nixon et al., 2020).

Teaching phonemic awareness and phonics in an early to emergent reading program has been shown to increase students' word reading, spelling and reading comprehension (Johnston et al., 2012). Teaching a well-founded early to emergent reading program requires knowledge of phonemic awareness and phonics that many teachers lack. Preschool teachers often report teaching early reading as an isolated skill, or one which is practiced using drill and repeat strategies. Ideas often mistaken for appropriate phonemic awareness or phonics instruction include flashcards and the thematic and accidental acquisition of letter sounds (Campell, 2018). However, Campbell et al., (2011) reports preschool reading instruction as social and play-based activities which can be utilized continually throughout a school day.

In a study by Ehri and Flugman (2018) a year-long mentoring program which consisted of in school-training, modeling and teacher feedback led to significant gains of reading skills in the classrooms which participated in the mentoring program in which, classrooms whom, did not, could not compare to. Similar findings took place by Scanlon (2008) in which two intensive reading strategies were use with Kindergarten teachers. Strategy 1: provided intensive professional development and mentoring on phonemic awareness and phonics for one year to the teachers. Strategy 2: mentors guided the teachers through implementing Tier II phonemic awareness and phonics interventions. This study led to the decrease of at-risk readers in Kindergarten through a one-year time period, and an increase of Kindergarten students who met the end of year goal in comparison to students proficient in previous years.

These findings showed success to placing intensive mentoring program prior and during the implementation of early to emergent reading programs in Kindergarten through 3rd grade (Ehri & Flugman, 2018). Current teacher misconceptions regarding successful phonemic awareness and phonics instruction implicates the rate at which research-based reading programs are used in prior to school, and early education classrooms (Campbell et al., 2011). Campbell (2018) found that many daycare, preschool or pre-school service teachers utilized early to emergent reading programs provided with a lack to the programs' suggested scope and sequence.

As pre-service, professional development and mentoring programs begin to explicitly teach the art of learning to read. Early to emergent reading programs are pressured to implement phonemic awareness and phonics strategies which are grounded in research. Allington (2013) suggests the use of The Science of Reading, Reading Recovery and Really Great Reading due to their diligence to research the impact of phonemic awareness and phonics strategies after one

year of use. Other programs, Jolly Phonics and Letterland, are becoming widely used in Australia, New Zealand and parts of Europe (Campbell et al., 2011).

Much of which will explicitly teach students skills necessary to become successful readers (Campbell, 2018). Rhyming, phoneme isolation, blending and segmenting withstand as four important aspects to a successful phonemic awareness and phonics curriculum. Displaying direct correlation to student acquisition of letter sound knowledge and further grapheme-phoneme correlations (Burns, et al., 2018). Although these four components merely hold a small portion of crucial skills for students to develop in an effective early to emergent reading program. Rasinski (2011) offers aid to previous research which promotes word knowledge or word study, as foundational. Further promoting prosody or focusing on the rhythmical and tonal features of speech during stress, pitch and duration as a dividend core to successful early to emergent reading programs. Providing the resources necessary to implement research-based early to emergent reading programs, through a climate which fosters print-rich learning environments. While providing continual, and systematic professional development programs will improve the professional practice of educators and student reading success in low elementary and later reading proficiency (Nixon et al., 2020).

Conclusion

Reading is an active process, which requires students to be engaged in strenuous mental activities (Ghazizadeh & Fatemipour, 2017). Yet, despite the turmoil reading may cause this skill is essential to academic, economic, social and emotional success for career, and higher education (Pikulski, 2002). To eradicate later reading problems, and promote reading proficiency, phonemic awareness and phonics are integral in an early to emergent reading program (Paige et al., 2018). The ability to detect and produce rhymes, delete or isolate phonemes, and segment sounds, defined as phonemic awareness through Kuppen and Burke (2017). An ability which research has exposed leadsto greater opportunities for students to develop word reading skills, and spelling knowledge (Paige et al., 2018 and Duchovicova et al., 2019). Phonemic awareness, when taught in linear fashion to phonics can further support the development of comprehension when reading challenging and meaningful literature (Beverly et al., 2009, Double et al., 2019, and McGeown and Medford 2014).

Recognizing, and learning to decipher the relationship among phonemes and graphemes serves as a predictor of later reading success and may be employed to identify learning disabilities at an early age (Paige et al., 2018). Thus, ensuring research-based, reliable and replicable phonemic awareness and phonics strategies are essential when targeting whole-group, or small-group interventions (Allington, 2013). Letter naming knowledge, and orthographic mapping are scientifically based as two components of phonemic awareness and phonics enriched towards mastering reading success (Snel et al., 2016 and Ehri 2014).

Numerous strategies may be employed to teach letter naming knowledge, orthographic mapping or other components of phonemic awareness and phonics, including, rhyming or segmenting. Strategies may include, alphabet instruction through story books, puzzles, and

picture to letter connections (Roberts et al., 2016). Rhythmic rhymes which may include singing, with movement or pictures (Kuppen & Burke, 2017). Decodable texts, the systematic connection of phonics skills and texts (Beverly et al., 2009). Followed by code based and meaning based word strategies to decode and store new words in long-term memory. Utilizing research-based strategies will promote sight word vocabulary for students to develop fluent reading, thus, allocating greater mental efforts towards comprehension and enjoyment of reading (Anderson, 2019).

Cataloging to the frontiers in reading research, Edmund Burke Heuy, the Basal Reading Series, and Jeanne Chall have created a foundation in which current reading practices have advanced (Wyse & Goswami, 2008). However, just as young students are expanding their mental capacities, educators and researchers alike must continue to follow in suit. Beginning with offering systematic, mentoring and professional development programs for current and pre-service educators. In a study by Campbell (2018) merely a handful of early childhood teachers report an accurate understanding of phonemic awareness and phonics. In the same study, even less of the teachers who had an early to emergent reading program available to their classroom were following the scope and sequence of the program. With many of the nations' children struggling to read at grade level, momentous effort must be placed in ensuring that teachers understand and have the training to teach proven by research strategies to increase short-term and long-term reading proficiency (Nation's Report Card, 2019).

Although phonemic awareness and phonics has been proven to display short-term and long-term impacts on students' reading proficiency (Paige et al., 2018, Duchovicova et al., 2019, Beverly et al., 2009, Double et al., 2019, and McGeown and Medford 2014). Whole-language approaches have also shown positive impacts on phonemic awareness and phonics development.

Goodman (2005) proposes that when learning words as a whole, students will develop a greater ability to effectively use phonics strategies. Goodman (2005) furthered support towards whole language by presenting that this strategy will allow students to communicate and understand meaning at greater ease. In comparison to deciphering the individual parts of language. Rather than supporting a reading war, as developed by Chall (1968) between whole language approaches vs. phonemic awareness and phonics programs (Wyse and Goswami, 2008).

Determining how whole language strategies can be utilized in an early to emergent reading programs in contingency to research-based phonemic awareness and phonics to increase student understanding of skills taught, memorization of sight word vocabulary and determining meaning of language. Research must be placed towards gathering a plethora of strategies to teach reading for emergent to early readers, this will promote later reading proficiency. Further, create greater opportunity for teacher effectiveness and student success (Nixon, 2020).

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