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The Effects of Explicit Modeling of Phoneme Features and Phonemic Awareness Activities on Writing for a Child with a Phonological Disorder

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Running head: EFFECTS OF EXPLICIT MODELING ON WRITING

The Effects of Explicit Modeling of Phoneme Features and Phonemic Awareness Activities on
Writing for a Child with a Phonological Disorder

By

Jennifer L. Heinen

A Graduate Field Experience

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Arts

Reading and Learning Disabilities

At Cardinal Stritch University

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EFFECTS OF EXPLICIT MODELING ON WRITING

This Graduate Field Experience

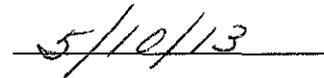
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(Advisor)



(Date)

Abstract

This study examined the effects of explicit teacher modeling during phonemic awareness instruction on a child's orthographic development. The five-year-old child attended K-4 in an urban school, and had been identified with a speech and language disability in K3. He was receiving speech/language services to remediate a phonological disorder at the time of the study.. The child's disability affected his emergent writing abilities; therefore, this study was designed to improve his orthographic knowledge. Intervention included explicit modeling of phonemic awareness instruction in the context of journal writing activities. Writing samples were collected over six weeks and assessed using a rubric for analysis of the number of phonemes represented in his invented spellings. Findings indicated that researched based intervention positively effects emergent writing for a child with a phonological disorder.

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Glossary of Key Terms

The intervention utilized in this case study was based on research. For the purpose of the case study, the following key terms were defined as follows:

Blends: Two- or three-letter sequences that are blended together (Bear, Invernizzi, Templeton & Johnston, 2008).

Conventional spelling: The correct spelling of a word.

Dependent variable: A variable dependent on another variable.

Developmentally appropriate: Activities or instruction that are appropriate to the developmental level of the student (NAEYC, 2009).

Independent variable: Cause a change in the dependent variable.

Invented spelling: The fifth stage of writing development in which the child creates own spelling using letter-sound relationships (Sulzby, 1985).

Letter-like writing: The third stage of writing development in which the child uses separate marks with letter-like characteristics (Sulzby, 1985).

Nonphonetic letter strings: The fourth stage of writing development in which the child writes strings of real letters (Sulzby, 1985).

Orthography: Refers to the writing system of language (Bear et al., 2008).

Phonemes: The smallest unit of speech (Bear et al., 2008).

Phonemic awareness: The ability to hear, identify and manipulate individual sounds in spoken word (Bear et al., 2008).

Phonological awareness: Awareness of the sound structure of speech (Yopp & Yopp, 2000).

Phonological disorder: Occurs when a child does not develop the ability to produce some or all sounds necessary for speech that are normally used at his or her age (McNamara, Van Lankveld, Vervaeke & Gutknecht, 2010).

Picture sort: A task in which pictures are sorted by sound or meaning (Bear et al., 2008).

Scaffolding: A form of support. An instructional technique where the teacher provides graduated assistance to the learner (Wilkinson & Silliman, 2000).

Scribble writing: The second stage of writing in which a child makes wave-like lines to represent words (Sulzby, 1985).

Zone of proximal development (ZPD): A term coined by Vygotsky referring to the skills that partially developed that requires support (Vygotsky, 1978).

Chapter One

Introduction

Children's phonological awareness development during the preschool years is a powerful predictor of later reading and writing success, and phonological awareness skills at the phoneme level are the most predictive of later literacy development (Hulme, Hatcher, Nation, Brown, Adams & Stuart, 2002). Children with identified speech language disability in the area of phonological disorders are at risk for later reading and writing difficulties because of their phonological processing difficulties (Gillon, 2005). These difficulties restrict the development of early printed word recognition and the ability to use phonological information when writing (Hulme et al., 2002). Additionally, preschool children with speech sound disorders may be at risk for later spelling difficulties due to poor phonological awareness skills and a weakness in phonological coding in verbal memory (Lewis, Freebairn, & Taylor, 2002). The purpose of this study is to determine if explicit teacher modeling of phoneme features and specific phonemic awareness activities can facilitate the development of orthographic knowledge during journaling activities in a child with an identified phonological disorder. I am proposing that explicit modeling of phoneme features and other phonemic awareness interventions will improve the participant's orthographic knowledge, and this will be examined through the participant's journaling.

Introduction to the Child

This case study research involves one male student from a kindergarten four-year-old classroom. Dylan (pseudonym used to maintain anonymity) is a five-year-old boy with an identified learning disability in the area of speech and language. Dylan was referred for speech and language intervention while attending Head Start when he was three-years-old due to

concerns in the area of communication development, and more specifically, a phonological disorder. Dylan's mother and teachers both reported that they had difficulty understanding him, and he would show a high level of frustration when not understood. Based on the teacher and parent's concerns a formal Individual Education Plan (IEP) evaluation was performed. Results of formal and informal assessments and observations indicated that Dylan had a significant delay in the area of speech sound production. During the time of this research Dylan was receiving speech and language services once a week for 30 minutes to facilitate his development of age appropriate phonological patterns.

The Individuals with Disabilities Education Act (IDEA, 2004) states that program modifications or supports for school personnel will be provided in order to support the student in meeting his annual goals and be involved in and make progress in general curriculum. Dylan's classroom teacher had regular conversations with his speech and language pathologist to discuss how his speech sound production skills could be supported in the classroom.

The Law

The Individuals with Disabilities Education Act (IDEA, 2004) guarantees that each child with a disability receives a free appropriate education in the least restrictive environment (FAPE). A child with disabilities should be educated in the general education classroom with supplementary aids and services. In addition, the student's placement in the general education classroom is the first option the Individual Education Plan (IEP) team must consider. If the IEP team can determine that a student can satisfactorily be educated in the general education classroom, then that is the least restrictive environment for that student. The least restrictive environment is based on a student's individual needs.

Connections to the Wisconsin Content Standards

After reviewing Dylan's IEP, I felt it was important to support Dylan through phonemic awareness skill building activities that incorporate explicit modeling of phoneme features because phonological awareness skills at the phoneme level are the most critical for literacy development (Hulme et al., 2002). Through activities such as picture sorts, I planned to focus my intervention improving Dylan's phonological awareness skills at the phoneme level. During the time of the intervention Dylan was enrolled in a four-year-old kindergarten classroom; therefore, the Wisconsin Model Early Learning Standards (2011) (WMELS) guided my assessment, planning, and intervention. The early learning standards are aligned with Wisconsin Model Academic Standards (2008) and are used as a guide with the understanding that children's early learning is developmental and multidimensional (2011). According to the Wisconsin Model Early Learning Performance Standard C.EL.1 (2011) it is important to provide instruction and opportunities to develop the child's "ability to detect, manipulate, or analyze the auditory parts of spoken language". As another part of Dylan's intervention program I planned to include the application of the phonemic awareness skill building activities during journal writing. The journal-writing portion of the intervention was in accordance with the Wisconsin Model Early Learning Performance Standard C.EL.4 (2011) "uses writing to represent thoughts or ideas." I planned to provide explicit language models to scaffold Dylan's phonemic awareness development and knowledge of the relationship between sounds and letters in his emergent writing.

Conclusion

The purpose of this case study was to determine if explicit teacher modeling of phoneme features and specific phonemic awareness activities could facilitate the development of

orthographic knowledge during journaling activities in a child with an identified phonological disorder. In consulting with Dylan's classroom teachers and speech pathologist, I determined formal and informal pre- and post-assessment that would be used to measure his progress. The intervention plan used in this study was based on Dylan's needs and supported by research.

Chapter two discusses my theoretical perspective about the importance of sociocultural context support students with learning disabilities and the crucial need for a solid foundation in phonemic and phonological awareness, and cites research studies that support my intervention plan.

Chapter 2: Theories & Research

Children with identified speech language disability in the area of phonological disorders are at risk for later reading and writing difficulties because of their phonological processing difficulties (Gillon, 2005). These difficulties restrict the development of early printed word recognition and the ability to use phonological information when writing (Hulme, Hatcher, Nation, Brown, Adams & Stuart, 2002). This chapter presents crucial components regarding phonological awareness development during the preschool years in children with identified speech language disabilities. The chapter begins with a discussion of my theoretical literacy perspectives and proposes several instructional practices and how the research design supports these theories. The second half of the chapter examines previous research studies relating to the relationship between phonological disorders and phonological awareness development, the relationship between phonological disorders and writing, phoneme grapheme interventions, and scaffolding the writing process related to the intervention plan for the participant in this case study.

Theoretical Perspectives

The participant of this case study was enrolled at a low-income school in an urban area during his preschool and kindergarten years. Many of the children in schools serving low-income populations come to school already at a disadvantage by not having had a lot of rich language and literacy experiences at home. As summarized by Pullen and Justice (2003) children who grow up in a literate rich environment enter school with an advanced understanding of emergent literacy skills. In contrast, children without such experiences start off poorly and typically remain poor readers throughout their schooling. This phenomenon is described as the Matthew Effect, the rich get richer and the poor get poorer (Stanovich, 1986). My specific ideals and views are

intertwined into the curriculum and interventions, and it is important to have knowledge of those views in order to have a full understanding of the intervention described in the subsequent chapters. My theoretical perspective will be presented in this chapter. More specifically, the importance of the sociocultural context to support students with learning disabilities and the crucial need for a solid foundation in phonemic and phonological awareness are the underlying themes throughout this case study and are the foundation of the discussion in this chapter.

Importance of sociocultural context.

The sociocultural context is an important aspect when considering how to best support students with learning disabilities. Sociocultural context refers to the idea that all knowledge is socially and culturally constructed, and what and how the student learns depend on the opportunities provided by the teacher (Tolentino, 2007). Goodman (1992) also states that learning is both a personal and social activity, and the most meaningful learning is done when learners are engaged in purposeful and relevant experiences. The teacher's role is to foster a learning environment that engages students in a meaning making process through the text, teacher, and other students (Unrau & Ruddell, 1995).

Students that are given the opportunity to construct meaning through social interaction are more likely to make deeper and stronger connections to the new material. According to Wilkinson and Silliman (2000) and Vygotsky's (1978) social constructivist theory, learning is a social event, and is further explained that learning first occurs between people and then within people, and therefore interacting with others will strengthen the student's ability to internalize the new information. Tolentino (2007) suggests valuing the significant role that language plays in the process of understanding literacy and using this knowledge to carve out spaces in the curricula that welcome dialogue and experimentation with print in collaboration with others.

It is the responsibility of early childhood educators to make the learning environment one that is socially constructed to support the development of language and literacy. It is important to welcome conversation, and use students' ideas and thoughts as a way to access their lives and further connect the curriculum to their lives (Bodrova & Leong, 2007). Language should be used as a tool for nurturing and promoting thinking and learning. Vygotsky (1978) believed that learning is both socially based, integrated, and requires student interaction and engagement.

Instructional practice that supports sociocultural context.

Implementation of instructional practices that foster social learning is crucial when teaching reading to students with learning disabilities. One example of an instructional practice that utilizes Vygotsky's social constructivist approach is to create contexts in the classroom that nurture talk and meaning making to ensure that the learning taking place is a collaborative process. According to Tolentino (2007) development in understanding takes place through interactive social experiences that allow students to use language to construct, share, and interpret meaning when exploring literacy concepts. This goal can be reached in a variety of ways, one of which is to honor students' conversations and give the opportunity for students to share their personal narratives as a way to connect to the curricula. Tolentino (2007) offers examples of situations in which students that were given the opportunity to make personal connections with curricula, interpersonal connections with each other, and engage with others were able to take their understanding to a whole new level. Teachers should use the narrative as a window into the child's mind to understand what a student already knows, and use the information to scaffold new learning.

It is the responsibility of educators to provide the environment and support necessary for the development of literacy. In doing so, one must realize that learning is socially constructed;

preschool children should be provided scaffolded, individualized instruction in the construction of new knowledge. Wilkinson and Silliman (2000) define a scaffold as an external structure that braces another structure being built. Scaffolding plays a critical role in the language and literacy development of children. Scaffolding according to Pentimonti and Justice (2009) is defined as the process of providing support to a learner and then gradually withdrawing that support as the learner becomes more capable in performing the task independently. Scaffolding gives the learner the opportunity to experiment with new concepts and ideas. “An effective scaffold provides support at the edge of a child’s competence, defining children’s zones of proximal development or their potential for new learning” (2000, p. 4). According to Vygotsky (1978), a child’s zone of proximal development (ZPD) is the difference between the child’s actual ability, or the tasks they can perform independently and their potential abilities (Vygotsky, 1978).

Importance of a Solid Foundation in Phonological Awareness

In addition to the importance of creating classroom contexts that nurture the social nature of learning, it is also crucial for students with learning disabilities to have a solid foundation in phonemic and phonological awareness. The preschool years are critical to the development of emergent literacy skills and preschool children’s performance on phonological awareness tasks has been shown to be a predictor of early reading achievement (Pullen & Justice, 2003). Before a student is able to recognize words they need to develop phonological awareness, or the awareness that spoken words are made up of smaller units, alphabetic principle or the relationship between letters and sounds, have a storage of high frequency words, and possess the ability to decode or recognize familiar combinations of sounds and spellings (McCardle, Scarborough, & Catts, 2001). All of these very important components to learning to read must be taught simultaneously in early literacy instruction. Poorly developed phonemic awareness could

be the source of difficulties for children learning to read. According to Adams and Henry, the knowledge of phonological structure of words serves as the glue that holds together the identities and orders their letters in memory (1997). They further explain that this knowledge serves as the gateway from text to language, which is why phonological and phonemic awareness should be explicitly taught (1997).

Instructional practice that supports strong foundation in phonological awareness.

Specific types of scaffolds have been identified as particularly useful as classroom based instructional conversations which include explicit modeling, direct explanations, invitations to participate, and verifying and clarifying student understanding (Wilkinson & Silliman, 2000). A concept that is introduced for the first time in which the teacher is demonstrating a “think aloud”; an explicit model is being used (Wilkinson & Silliman, 2000). If explicit modeling of a concept has already been used; then, the assumption can be made that the child has a rudimentary understanding based on the observations the teacher makes during interactions. If Dylan needed assistance in understanding the thought process then I would use a direct explanation to support the child in learning the concept. The teacher has a very important job of constantly assessing the child’s zone of actual development (ZAD) and change the type of scaffold to support where the child is in their learning. This shift or changing of the scaffold can happen many times within one interaction with a child (Wilkinson & Silliman, 2000).

Individualizing phonemic and phonological instruction through the instructional practice of explicit modeling is crucial for the student with learning disabilities. One type of scaffolding sequence useful as a classroom based instructional conversation is explicit modeling. Through communication the teacher demonstrates how to construct an understanding of the concept by using the concept of think-alouds (Wilkinson & Silliman, 2000). Think-alouds are when the

teacher explicitly describes the thought processes or inner thinking that takes place during the use of a specific strategy (Antonacci, 2000). Through think-alouds, an educator can model their thinking process by verbalizing their thoughts, information processing, or performance of some learning task. By modeling think-alouds, students learn how to internalize the cognitive process. Ideally the think-alouds provided by the more knowledgeable other will be reduced until the child is able to complete the activity without these supports or scaffolds, the child's own inner speech would now be directing the child's activities. Antonacci (2000) believes as students think out loud with educators and with one another, they will gradually internalize these conversations, in turn establishing the foundation for their own behaviors and problem-solving processes. By modeling inner thinking, students learn how to internalize their actions and conscious thought as well as interact with the thought processes of others.

Summary of Theoretical Perspective

Learning to read and seeing oneself as a literate being is what every teacher wants for their students. This is a big job and becomes bigger when teachers are faced with the challenge of trying to reach all the different learners and abilities in a classroom. Teachers must strive to create an environment that fosters learning for all students, including students with learning disabilities. This cannot and should not be left up to the special education teacher.

The reading instruction of students with learning disabilities needs to incorporate instruction that recognizes the importance of the sociocultural context. Teachers need to recognize and support these contexts to create a social learning environment and support a student's learning through the instructional practice of scaffolding. Students should also be provided explicit instruction of phonological and phonemic awareness skills through modeling and think alouds.

The abovementioned theories, which includes learning, is socially constructed and the need for a strong foundation in phonological awareness-lay the foundation for the intervention of Dylan, the case study in this research. All lessons and activities were designed for him with these theories guiding the instructional practices described in this study. Chapter 3 will describe the research design. The next section of this chapter provides insight into the research supporting an intervention in the relationship between phonological disorders and phonological awareness development. The next section of this chapter provides insight into research supporting interventions in phonological awareness and writing for a child with a phonological disorder.

Research

When developing an intervention plan intended to improve student with an identified speech, it is imperative that the intervention be research based. For this specific case study, the intervention plan focused upon developing Dylan's phonemic awareness, invented spelling, and concepts of writing. The following research articles provide insight into the existing works of the following categories of research: the relationship between phonological disorders and phonological awareness development; the relationship between phonological disorders and writing; and phoneme grapheme interventions.

Phonological Disorders and Phonological Awareness Development

Children's phonological awareness ability at the preschool level is a powerful predictor of later reading and writing success (Bradley & Bryant, 1983; Lundberg, Olofsson, & Wall, 1980; Torgesen, Wagner, & Rashotte, 1994 as cited in Gillon, 2005). A relationship also exists between phonological awareness and reading and spelling development. Children with speech impairment are already at risk for later reading achievement due to their speech output

difficulties. The phonological deficits in children with speech impairments do not fix themselves through general classroom instruction and some forms of speech-language intervention (Gillon, 2005). Preschool children with speech impairment are at risk for later reading and spelling difficulties and they show a deficit in the phonological processing that restricts development of word recognition and the ability to use phonological information when spelling. Interventions are needed to facilitate children's phonological awareness skills in children who are at risk (Gillon, 2005).

Gillon (2005) conducted a study to determine whether early phonological awareness can be stimulated in children with speech impairment during their preschool years. The study also examined whether stimulating the phonological awareness development also helps prevent later reading and writing spelling difficulties. The study explored three hypotheses. The first hypothesis stated that intervention in phonemic awareness and letter knowledge, in addition to intervention to improve speech intelligibility, will ensure that children with phonological disorders will respond to early literacy instruction with appropriate phonological awareness development. The second hypothesis was that early phoneme awareness and letter knowledge intervention could be delivered without compromising improvement in speech intelligibility. The final hypothesis stated that intervention in phonemic awareness development and letter knowledge will result in successful early reading and writing experiences for children with speech impairment. The independent variables were the phonological awareness and early literacy development. The dependent variable was early intervention in the areas of phoneme awareness and letter knowledge.

The participants of the study were divided into two groups. The experimental group consisted of 12 children (three girls and nine boys) with speech impairment, ages three to six

years. The control group consisted of 19 children (seven girls and 12 boys) with typically developing speech, ages three to six years. The participants were assessed using the Preschool and Primary Inventory of Phonological Awareness (PIPA) (Dodd, Crosbie, McIntosh, Teitzel & Ozanne, 2000). This assessment was used as a formal measure of phonological awareness development.

The children received two or three blocks of therapy, with the first block occurring during the initial assessment at three years of age. The blocks of therapy lasted about four to six weeks, which consisted of two 45-minute therapy sessions per week. During the first phase of the study the children in the experimental group received intervention targeting the areas of speech intelligibility, phonological awareness at the phoneme level and letter and letter-sound knowledge. Both groups of children continued to receive their general early education programs. Examples of the phoneme awareness activities incorporated into the intervention sessions included play activities targeting the skill areas of phoneme detection, phoneme categorization, and phoneme isolation. Letter and letter sound knowledge was addressed using recognition game activities. The activities were interspersed with activities targeting speech production goals in order to create an integrated approach to the therapy sessions.

The second phase of the study occurred when the children were six years of age, and compared the children in the experimental group and the children in the control group who had not received phonological awareness intervention during their preschool years. Both groups of children were administered the same assessments which included: a single word articulation test, PIPA, The Burt Word Reading Test, non-word reading test, and a spelling task. The data from these assessments were analyzed to determine the findings of the study.

The findings from the study that Gillon (2005) implemented suggested “strong phonological awareness skills at the phoneme level are indeed a critical factor in determining success early reading and spelling experiences for children with speech impairment” (p 322). Interventions for children with speech impairments should include phoneme awareness and letter knowledge in addition to improving speech intelligibility.

The first hypothesis tested if early intervention to facilitate phoneme awareness and letter knowledge would ensure that the children’s phonological awareness was equal to their peers without speech impairment. This hypothesis was supported by the data, which indicated that the intervention was effective at enhancing the skills targeted: therefore, children with speech impairment can be taught to become sensitive to the sounds within words. The second hypothesis was that early intervention in phonemic awareness and letter knowledge could be delivered without compromising improvement in speech intelligibility. The findings indicated that the inclusion of phonological awareness activities into therapy sessions does not detract from the children making gains in their speech production, but rather phonological awareness intervention that includes knowledge of how speech relates to print may facilitate speech production. The final hypothesis addressed the inclusion of activities to facilitate phoneme awareness and letter knowledge in therapy for children with speech impairments would result in later success in early reading and spelling experiences (Gillon, 2005). In conclusion, the study provides evidence of the importance of integrating phonemic awareness and letter knowledge activities into speech therapy sessions for young children who have a speech impairment.

The previous study suggested that strong phonological awareness skills at the phoneme level are critical for successful early reading and writing experiences for children with speech impairment. According to Harbers, Paden, and Halle (1999) phonological awareness, or the

ability to think about and manipulate the sound system of language incorporates the awareness of phonological strings, awareness of syllables, phonemes, and phonetic features. Phonological awareness is an important skill area for any child, but this team of researchers chose to explore the idea of phonological awareness interventions for children with severe phonological impairment. The purpose of their study was to determine whether awareness of phonetic features, syllable shapes, and production performance change when the children participate in a phonological intervention program. The dependent variable of the study was the phonological intervention program and the independent variable is the change in phonetic feature awareness and production performance.

The sample for this experimental study consisted of four children whose ages ranged from three to four. The children were chosen to be part of the study because they met the requirements of having an identified phonological disorder, were of normal intelligence, and had normal hearing. Three of the four children had not received any previous speech sound intervention.

The study started with a baseline assessment to determine pre-intervention levels of performance on the production and awareness measures of the target patterns. The patterns of clusters, velars, stridents, and liquids were then chosen for intervention in each participant and an intervention program for each of the participants were planned and implemented. Awareness and production was assessed after every two intervention sessions throughout the study. In addition to the production and awareness data collection, each participant had a 10-minute spontaneous conversation recorded to determine the frequency of occurrence of each targeted pattern in speech before, during and after intervention.

The intervention program attended to awareness and production of phonological patterns by following a specific program for each session. The sessions included exposure to rhyme and alliteration, auditory bombardment of word lists, using a concrete verbal description of the features of a target pattern, production practice, and awareness feedback. The intervention sessions lasted 45 minutes two times a week for a total of ten sessions.

The findings of this study were based on a comparison of baseline measures before and during the intervention. The data indicated the participants showed improvement in production for four out of five patterns and improvement in feature awareness in all four participants. The researchers found that there is some evidence of a connection between awareness and production. The data also revealed that phonological acquisition is a gradual process that requires incorporation of both knowledge and production of specific sounds. According to Harbers et al. (1999) children need information to assist them in making changes to their sound systems and the type of information necessary to make the changes differ for each child and each phonological pattern. The study found that it is important to examine both awareness and production to better understand a child's phonological systems to assist in the development of an intervention.

The previous study by Harbers, Paden, and Halle (1999) concentrated on understanding if awareness of phonetic features and syllable shapes change in children with a phonological impairment during an intervention program that includes training in the abovementioned areas. McNamara, Van Lankveld, Vervaeke, and Gutknecht (2010) specifically examined the extent of whether language and/or speech impairments were associated with the development of phonological awareness. The study focused on a subset of children they believed might be at risk for developing reading difficulties in their later elementary school years. Children with speech

impairments have difficulties in their speech production, which impacts their articulation and intelligibility. Children with language impairments may have difficulties with expressive and/or receptive language processes. The researchers, McNamara et al. (2010), explored whether children with speech and/or language impairments are more at risk for phonological awareness difficulties.

The participants of the study consisted of 126 preschool children who were referred for speech-language services. Of the 126 participants, 86 were male and 40 were female. The ages of the participants ranged from three to five, and were from primarily a middle-class suburban area. In the beginning of the study the children were assessed individually by a Speech and Language Pathologist using the Goldman Fristoe Test of Articulation (GFTA-2) (Goldman & Fristoe, 2000), Clinical Evaluation of Language Fundamentals-Preschool (CELF-P2) (Wiig, Secord, & Semel, 2004), and Phonological Awareness Literacy Screening-PreK (PALS-PreK) (Invernizzi, Sullivan, & Meier, 2001). The GFTA-2 (Goldman & Fristoe, 2000) provides information about a child's articulation ability by sampling both spontaneous and imitative sound production (McNamara et al. (2010). The CELF-P2 (Wiig et al., 2004) is a tool used for identifying and diagnosing language deficits in children ages 3-6 and evaluates aspects of language necessary for preschool children to make the transition in the classroom (McNamara et al. (2010). PALS-PreK (Invernizzi et al., 2001) is a phonological awareness screening tool that measures a preschoolers' knowledge of important literacy skills and offers teachers information to guide instruction to meet a child's specific needs. The specific subtests of the PALS-PreK that were used in this study included uppercase letter identification, beginning sound awareness, print and word awareness, and rhyme awareness.

This study by McNamara et al. (2010) investigated three questions: First, are there distinct profiles of speech and/or language impairments evident in preschoolers referred for speech and language services? The second, question asked, are particular profiles identified in question one more at risk for future reading difficulties? The third question asked, how is the association between language impairments and phonological awareness different from the association between speech impairments and phonological awareness in preschool children with speech and/or language impairments. The overall results of this study found that children with only speech problems were the least at risk for developing future reading problems and that the language impairments put the children most at risk for developing poor phonological awareness and future reading difficulties. The study also suggested that facilitating phonological awareness and letter identification skills in the preschool years should be focused on for children with speech and language impairments, particularly to those children who are demonstrating early language problems (McNamara, et al. (2010).

Phoneme Grapheme Interventions

Invented spelling is a pre-reading skill, which is defined by children inventing spellings of words by using their knowledge of letter names, letter sounds, and print conventions (Ahmed and Lombardino, 2000). There have been numerous studies that have explored the correlation of invented spelling and reading achievement, which consistently found that invented spelling is a strong predictor of later reading achievement. Ahmed and Lombardino (2000) decided to go a step further and analyze the invented spelling patterns, provide guidelines for the identification of children at risk, and provide guidelines for developing interventions in the area of spelling.

This study consisted of 100 kindergarten children, ages five to six, 57 girls and 43 boys, and one third of the sample was African American, Asian, and other ethnic backgrounds. The

participants were grouped into three levels of spelling acquisition (low, middle, and high) determined by the Early Reading Screening Instrument (ERSI). All of the participant's spellings on the ERSI invented spelling subtest were analyzed and coded based on five basic spelling features, consonant blends, silent letters, consonant and vowel digraphs, morpho-phonemic endings, and phonemes that do not have a corresponding letter name. The error categories were letter omission, letter substitution, and letter voicing/devoicing.

The results of the study by Ahmed and Lombardino (2000) showed that the predominant error patterns were letter omissions and letter substitutions in all three acquisition levels. It was also discovered that common errors were the omission of silent vowels and consonants and vowel deviation. In summary, kindergartners at the low acquisition level were characterized by omission of vowels and representation of the salient consonant or a letter with a name that has the target sound. The mid acquisition level is characterized by fewer vowel and consonant omissions than the low acquisition level. The high spelling acquisition level is characterized by vowel errors and errors in endings like –ed.

Once the acquisition level of the student is determined the important next step would be to determine intervention goals and provide support to bring the student to conventional grade-level spelling and develop the child's spelling skills to the next acquisition level (Ahmed & Lombardino, 2000). A variety of activities should be incorporated into the intervention plan to further expose the student to letter-sound associations so the student becomes more familiar with concepts and then can apply the knowledge to new words. This study emphasized that children learn to read and write through experimentation and instruction and the role of the instruction is to target the weaknesses and develop strengths. Finally, Ahmed and Lombardino identified the relationship between phonological disorders and reading and writing achievement in later years

and promoted the role of the speech-language pathologist to incorporate phonological awareness activities as a part of the their intervention programs.

The previous study by Ahmed and Lombardino (2000) analyzed the invented spelling patterns, provide guidelines for the identification of children at risk, and provide guidelines for developing interventions in the area of spelling. Tangel and Blachman, (1992) were interested in determining if children trained in phoneme awareness in kindergarten would differ in their invented spelling abilities from children who did not have training in that specific area. Invented spellings of young children are an indication to what degree the children have started to develop an awareness of the phonemic segments represented by an alphabet. Tangel and Blachman designed a study to examine the relationship between phonological awareness and invented spellings of prereading children and whether training in phonological awareness has an impact on the quality of the invented spellings. Their study was designed to (1) create a scoring system to evaluate invented spelling and (2) use the scoring system to explore the influence of phoneme awareness instruction on the quality of invented spellings (1992). The independent variable is the phonemic awareness intervention and the dependent variable is the change in invented spellings

The participants of the study were selected from the total population of 18 kindergartens in low-income, inner-city schools. The treatment group consisted of 77 children (42 boys and 35 girls), with the average age of 5.6. The control group consisted of 72 children (36 boys and 36 girls), with the average age of 5.6. The treatment and control groups were selected from different schools to avoid possible exposure of the control group of children to the treatment activities.

The pretests that were administered to all children included the Peabody Picture Vocabulary Test-Revised (PPVT-R), phoneme segmentation, letter name and letter sound knowledge, and the Woodcock Word Identification subtest. The treatment group of children

participated in 11 weeks of phoneme awareness training, four times a week for 15-20 minutes. The phoneme awareness training included phoneme segmentation activities, segmentation related activities, and letter name and letter sound activities. Either the teacher or the teacher assistant implemented the phoneme awareness lessons in the regular kindergarten classroom. In May, at the end of the 11 week phonemic awareness training, all kindergarten children participating in the study were re-administered the assessments of phoneme segmentation, letter name and letter sound knowledge, and the Woodcock Word Identification subtest. In addition, the participants were asked to read a list of phonetically regular words and non-words and to spell the words on the developmental spelling test (DST). A scoring procedure was developed for this study to rate the invented spellings of the dictated words given on the DST.

The data from this study revealed several informative aspects in respect to the effect of phoneme awareness training on invented spelling. The findings indicate that children who participated in the phoneme awareness intervention outperformed the control children on the following measures: phoneme segmentation, letter name and sound knowledge, and beginning word recognition. The invented spellings of the treatment group were rated developmentally superior to those of the control group. According to Tangel and Blachman (1992), the invented spelling finding is especially important because invented spellings offer a concrete representation of how children understand the sound system of their language prior. For a child to be able to spell they must first break the words into phonemic segments and then select the alphabetic symbol that corresponds with that sound. The treatment group's more sophisticated spellings indicate that with their phoneme awareness intervention they performed better at this complex skill.

The researchers from this study explored the effect of phoneme awareness on invented spelling, but also believe it is likely that children with repeated opportunities to invent spellings will enhance their phonemic awareness. In conclusion, “for those children whose phonetic awareness does not yet permit this kind of word composition (invented spelling), the thing to do is to work on developing the awareness” (p. 256, 1992).

The previous study focused on using a child’s invented spellings to assess their acquisition of phoneme awareness and the importance of phoneme awareness instruction on a child’s invented spelling attempts. The study by Craig (2006) researched the effects of two instructional approaches on phonological awareness and other literacy skills. Craig’s rationale for conducting the study was based on the relationships between phonological awareness, reading and spelling. Studying children’s awareness of the sounds in speech gives insight into their attempts to acquire written language. Children’s early-invented spellings provide a window into their emerging understandings of the phonological and alphabetic systems of written language and also predict their future reading and writing performance (Craig, 2006).

The participants of the study consisted of 87 kindergartners, 43 were boys and 44 were girls. All participants were from a white middle class population in a rural-suburban public school system. The children were assigned to one of two comparison groups to examine two treatment conditions: adapted interactive writing instruction and metalinguistic games instruction. The independent variables were phonological awareness, alphabetic knowledge, and early reading skills. The dependent variables were the two programs that the children participated in which was either the adaptive interactive writing instruction or metalinguistic games instruction.

The participants of the study were divided into small intervention groups consisting of four to five children according to the pretest results and common strengths and needs. Pretests were administered in the fall and posttests in the spring of their kindergarten school year. During the 16-week intervention the children met with tutors outside of the regular classrooms for four 20-minute lessons per week. The interactive writing treatment consisted of text experience, interactive writing, and letter sound instruction. The comparison group participated in a structured phonological awareness and alphabetic training using *Phonemic Awareness in Young Children: A Classroom Curriculum* (Adams, Foorman, Lundberg, & Beeler, 1998). This curriculum provided an outline of language games ordered according to complexity. The categories the games fit into included listening, rhyming, words and sentences, awareness of syllables, initial and final sounds, phonemes, and letters and spellings.

This study that examined the effects of two instructional approaches on phonological awareness, alphabetic knowledge, and early reading of kindergarten children and found that both groups made progress in phonological awareness, spelling ability, and word identification. Both instructional approaches produced comparable performances; however the children who participated in the interactive writing group showed greater progress on measures of real word identification, passage comprehension, and word reading development. In conclusion, writing instruction that supports children's invented and conventional spellings provide a rich context for developing phonological awareness and alphabetic knowledge (Craig, 2006). It was also suggested based on the results of the study that although different phonological and phonics programs are a valuable resource for teachers, it is important for teachers to understand developmental milestones in literacy acquisition and instruction should be built based on the children's abilities to extend the children's performances (2006).

The previous study by Craig (2006) focused on two specific writing interventions and the effects those writing interventions would have on phonological awareness and other emergent literacy skills. Researchers Bodrova and Leong (1998) conducted a case study to investigate the impact of scaffolded writing on emergent writers. The researchers believed that the use of scaffolded writing would support the next level of their development, increase the length of their stories, increase their messages' quality, and increase the use of advanced writing forms. Scaffolded writing is described in the article as an "innovative method of supporting emergent writing based on Vygotsky's theory of learning and development (1998).

The zone of proximal development is the Vygotskian concept that defines development as the space between what the child can do independently without assistance and what the child can do with assistance (as cited in Bodrova & Leong, 1998). Instruction is only considered useful when it moves ahead of development until the task eventually is a new skill or concept that is mastered. The researchers further explain that scaffolding makes it possible for learners to function at higher levels of their zones of proximal development. Scaffolding is a way for an expert to facilitate new learning to independent performance (1998).

The two types of supports used in the study were materialization and private speech. Materialization (Galperin, 1969) refers to the use of tangible objects and physical actions to represent a concept or strategy as the new skill is being learned (as cited in Bodrova & Leong, 1998). For example the use of a word window in which there is a frame the child can place around each word as they read is an example of the concept materialization. Private speech can be used in conjunction with materialization and is defined as self-directed, regulatory speech giving audible directions to self on how to proceed (1998). Both materialization and private speech are temporary supports and the goal is to remove them once the skill is internalized.

Scaffolded Writing is described as the combination of materialization and private speech to support emergent writing.

The case study investigated the impact of Scaffolded Writing on emergent writers. The participants were a group of 34 kindergartners who used the technique during the school year. The participants attended half-day kindergarten in a low-income, multi-ethnic, urban school. The teachers of the participants were trained in the use of the Scaffolded Writing technique; the technique was used twice a week with small groups of four to six children.

A baseline-writing sample was collected from a normal journal writing activity conducted in the fall. This baseline-writing sample was compared to two examples of Scaffolded Writing samples. The first Scaffolded Writing sample was collected after one month of use of the approach and again in the spring of their kindergarten school year after they have been using the approach independently. Gentry's Scale of Writing (Gentry & Gillet, 1993) was used to examine the children's progress in forming letters, representing sounds, and use of conventional spelling. Writing samples were also analyzed for meaningful quality of the message or whether or not the message made sense (1998).

At the start of the case study 20 of the 34 children were at the level of writing in which they used scribbles and pictures to represent their thoughts. Fourteen of the children wrote messages that were not related to the picture. Most of the children made no attempt to use invented spelling and the letters used in their written messages did not correspond to the phonemes they were supposed to represent.

After the Scaffolded Writing was used for a month a second writing sample was collected and analyzed. At this point all of the children but one was writing at a level higher than their initial level. Most of the children began to represent some sounds and letters and all of the

children consistently wrote beginning sounds and some would include ending consonants and middle vowels.

In the spring after the children had been using the Scaffolded Writing approach for eight months, the children no longer needed extensive help. Their progress of the use of phonetic representation of words and invented spelling increased and all representations were phonetic.

In conclusion, the use of materialization and private speech in the form of Scaffolded Writing produced more advanced writing, increased use of invented spelling, and increased quality and length of messages written. The researchers suggest that Scaffolded Writing provides teachers with a tool to examine children's learning of literacy skills and an effective way to support emergent writing (1998).

Phonological Disorders and Writing

The previous four studies explored how writing interventions can impact children's phonological awareness development and other areas of emergent literacy. The next study goes a step further and explores the relationship of children with speech sound disorders and their writing abilities. The relationship of early speech sound disorders and later spelling impairments have not been extensively studied. The current research suggests that children with speech sound disorders may be at risk for spelling difficulties due to spelling abilities being so closely related to phonological processing abilities (Richgels, as cited in Lewis, Freebairn, & Taylor, 2002). Children with histories of language problems in addition to speech sound disorders may be at a higher risk for spelling problems than children with speech sound disorders only (Lewis, Freebairn & Taylor, 2002).

The goal of the study conducted by Lewis et al. (2002) was to examine the correlates of spelling skills in children with histories of speech sound disorders. The first hypothesis was

children with early speech sound disorders would exhibit later weaknesses in spelling. The second hypothesis was preschool children with combined speech sound disorders and language disorders would be at a higher risk for spelling problems than those children with just speech sound disorders.

The participants of the study were children ages four to six years old recruited from the caseloads of speech/language pathologists working in the greater Cleveland area. There were ultimately 87 families recruited and they met the following criteria: (1) preschool speech sound disorder; (2) normal hearing; (3) normal peripheral speech mechanism; (4) absence of developmental delays other than speech and language; and (5) normal intelligence. Fifty-two of the eighty-seven children were followed to school age and consisted of 33 male and 19 female. Children were assigned to one of two groups based on their preschool language status: speech sound disorder in isolation or speech sound disorder with language impairment.

The participants were assessed individually in two sessions. Phonological awareness was assessed using the Nonsense Word Repetition Test (Kahmi & Catts, 1986), the Elision Task-Experimental Version (Torgensen & Wagner, 1994), and the Goldman-Fristoe-Woodcock (Goldman, Fristoe & Woodcock, 1974). Written spelling was assessed using the Test of Written Spelling, Third Edition (Larsen & Hammill, 1994). The child's ability to read short passages and answer questions in context was assessed using the Wechsler Individual Achievement Test (WIAT, 1992).

The Word Attack and Word Identification subtests of the Woodcock Reading Master Test-Revised (Woodcock, 1987) were used to assess reading decoding skills.

The findings of the study support previous research that suggest children with speech sound disorders are at risk for later spelling difficulties and the studies that have shown that

children with speech sound disorders in addition to language problems have poorer spelling outcomes than those children with only speech sound disorders (Lewis et al., 2002). One implication of the study was “since the stages of spelling development closely parallel the development of phonological awareness, teaching children to apply phonological strategies to spelling may be one method for improving this skill. A Second implication is that careful follow-up of children with both disorders would appear to be especially critical even after the speech sound disorder has been resolved (Lewis et al., pg. 403, 2002).

Conclusion

This chapter began by building the foundation of the reading intervention program designed for Dylan. By reviewing my own personal theoretical perspectives a philosophical background of the intervention plan was established. The research discussed also provides concrete evidence for providing instruction in phonological awareness and the benefits this instruction has for a child with a phonological disorder that is learning to write. The following chapter describes the details of the intervention for Dylan, the participant in this case study.

Chapter Three

Children's phonological awareness development during the preschool years is a powerful predictor of later reading and writing success, and phonological skills at the phoneme level are the most predictive of later literacy development (Hulme, Hatcher, Nation, Brown, Adams, & Stuart, 2002). Children with an identified speech language disability in the area of phonological disorders are at risk for later reading and writing difficulties because of their phonological difficulties (Gillon, 2005). The purpose of this study was to determine if explicit teacher modeling of phoneme features and specific phonemic awareness activities could facilitate the development of orthographic knowledge during journaling activities in a child with an identified phonological disorder. This chapter describes the sample population used in this case study, the data collection methods used to determine the present level of performance and the effectiveness of the intervention, and the specific procedures used in the instructional intervention.

Sample Population

The participant of this case study was Dylan, a five-year-old boy who attended four-year-old kindergarten for the 2010-2011 school year. Dylan is a very personable and friendly boy who is eager to learn and interacts positively with the adults at the school. Dylan has an older brother who is very artistic who he looks up to and aspires to be like. According to Dylan's teacher he enjoys journaling but often becomes frustrated and does not take risks in his writing because he is too concerned with the correct spelling of words, often asking his teachers how to spell the words for his journal entry. If the teacher is not directly working with him during journal writing, he writes strings of random letters.

Prior to the beginning of the research, I was able to obtain IEP information from Dylan's speech and language pathologist. Dylan was referred for speech and language intervention while

attending Head Start when he was three-years-old due to concerns in the area of communication development, and more specifically, speech articulation. Dylan's mother and teachers both reported that they had difficulty understanding him, and he would show a high level of frustration when not understood. Based on the teacher and parent's concerns a formal IEP evaluation was performed, and Dylan qualified for speech and language services. During the time of this research, Dylan was continuing to receive speech and language services as prescribed in his IEP.

Data Collection

The data from the existing Individualized Education Plan (IEP) were gathered and used before the intervention for this case study research began. The IEP data that were reviewed included goals, present level of performance, and results of the articulation assessment. According to the IEP, Dylan had age appropriate receptive and expressive language abilities. He was able to follow a variety of directions in the classroom and uses 5-8 word sentences for a variety of pragmatic functions. The IEP also states that Dylan had a significant delay in the area of speech sound production. Sound errors include /k/, /g/, /s/, /z/ and some consonant cluster reductions of /s/ blends. The delays in articulation are reported to interfere with his ability to express himself and make himself understood by adults and peers.

Additionally, existing data from the *Phonological Awareness Literacy Screening* (PALS) (University of Virginia, 2007), which is the required classroom assessment in Dylan's school, were reviewed before and during the intervention. The subtests of this assessment that are relevant to this study are the letter sounds subtest and beginning sound awareness subtest. The letter sounds subtest assesses whether or not the student can produce the sounds associated with 23 letters and three consonant digraphs. The beginning sound awareness subtest assesses the

student's ability to produce and match the beginning sounds for words that start with the following sounds: /s/, /m/, and /b/.

Data were also gathered from the pre and posttest assessment, the *Primary Spelling Inventory* (PSI) (Bear, Invernizzi, Templeton, Johnston, 2008). The PSI assesses the student's knowledge of words, key spelling features, and aids in planning instruction. When this assessment was administered, Dylan was encouraged to write down all the sounds he heard in each word presented. The recommendation of the spelling inventory is to only call out the first five words from the inventory list for kindergarten students or emergent readers. I read each of the suggested five words to Dylan, and he was expected to write each word as he thought it was spelled. The purpose of this assessment was to determine Dylan's developmental spelling stage and to determine appropriate instruction based on his strengths and errors. The PSI was also administered during the eighth week of the study as a posttest to gather information on Dylan's developmental spelling patterns and word knowledge in response to the intervention.

Finally, I obtained a pre-test writing sample from Dylan as baseline data for his independent level of performance in writing and to determine appropriate interventions for this case study. An initial writing sample was collected and analyzed using a rubric I designed. The first writing sample and all subsequent writing samples were analyzed using the rubric. The rubric was organized into the following categories: initial and final phonemes, ratio of correct phonemes, ratio of phonemes represented, number of syllables represented and use of the targeted phonemes in words that include one of the identified speech sound errors. Dylan was also audio-recorded while reading his writing to track whether or not his speech sound patterns are reflected in his phonetic writing. The audio recording was transcribed and analyzed to

determine whether or not Dylan was using the targeted phonemes in words correctly. A final independent writing sample was collected during the eighth week to measure growth.

Writing samples were also collected twice a week during the six-week intervention period. Two types of writing samples were collected: with support and independent. During the supported journaling session I modeled, and assisted Dylan's application of the new concepts. I modeled a variety of phonemic awareness skills including, phoneme segmentation of words, isolating individual phonemes, explicitly modeling phoneme features, and guiding basic writing rules. During the independent and supported journal writing session Dylan was asked to think of a sentence he wanted to write. I wrote the sentence down and read back the words one at a time for him to write. During the independent journal writing no other assistance was provided beyond the following prompt: "Say the word to yourself. What sounds do you hear?" Both types of writing samples were analyzed according to the pre and posttest writing sample procedures described above and designed to measure progress over the course of intervention.

Description of Procedures

The intervention was provided over an eight-week period in the spring of 2011. The eight-week intervention consisted of two weeks of pre and post assessment administration, and six weeks of instruction and data collection. The pretest of PSI, the writing sample, data from the PALS assessment subtests of letter sounds and beginning sounds, and goals and objectives from the IEP were used to plan the intervention. After the assessments were administered, and the data were analyzed, I engaged Dylan in phonemic awareness skill building activities that incorporated explicit modeling of phoneme features. For example, I modeled the /s/ sound, "the long hissy sound that sneaks out of your teeth" (O'Keefe, 1999). I used this type of modeling for the phoneme features of the targeted sounds identified in the IEP. Intervention for phonemic

awareness development was provided for 30 minutes each session, three sessions per week, for the duration of six weeks.

The phonemic awareness skill building activities were provided on the first three days of each week and included activities to support development of sound/letter correspondences, sorting pictures by initial and final sounds in words, explicit modeling of phoneme features as described previously, and use of manipulatives to indicate number of sounds Dylan heard in a target word. I chose these activities because children must first understand how to negotiate sounds before they can make sense of the alphabetic nature of spelling. Therefore, pictures sorts are appropriate for the emergent stages of spelling development to facilitate development of phonological and phonemic awareness (Bear, et al., 2008). I modeled a beginning sound picture sort for Dylan the first week, and every week a new picture sort was implemented in the intervention. One or more of the identified sound speech errors were included in the picture sorts to give Dylan additional practice with individual letter sounds he has difficulty with.

On the fourth day of the intervention week, I scaffolded Dylan's application of the phonemic awareness skill building activities during journal writing. After Dylan wrote in his journal he would read the journal entry to me, and his reading was audio recorded to track whether or not his speech sound productions matched his phonetic writing. On the fifth day of each intervention week, Dylan would independently journal write with minimal prompts. Dylan read his writing to me, and his reading was audio recorded to assess and analyze whether Dylan's speech sound productions matched his phonetic writing. I monitored and analyzed the writing samples using the rubric to gather information to plan subsequent interventions and measure growth.

In summary, Dylan was engaged in a variety of phonemic awareness activities and supported and independent journal writing sessions to facilitate his development of orthographic knowledge.

Chapter Four

Introduction

This case study research was designed to facilitate the development of Dylan's orthographic knowledge during journaling activities through explicit modeling of phoneme features and specific phonemic awareness activities. Intervention included explicit modeling of phoneme features through phonemic awareness skill building activities. During the phonemic awareness activities, the student sorted pictures by initial and final sounds in words, used manipulatives to indicate number of sounds in a target word, and participated in two types of journal activities. I explicitly modeled phoneme features in words and scaffolded segmenting of words by individual phonemes. Intervention was based on analysis of data collected from goals from existing Individualized Education Plan (IEP), existing data from the *Phonological Awareness Literacy Screening (PALS-PreK)* (2007), pre and posttest data from the *Primary Spelling Inventory* (Bear et al., 2008), and writing samples analyzed using a rubric designed by me. This chapter presents the data gathered to measure the effectiveness of the interventions used in Dylan's study.

Pre-Existing Data

The data gathered prior to the intervention, included information and goals from Dylan's existing IEP. Dylan received speech/language intervention for a phonological disorder, which impacted his ability to communicate effectively with adults and peers and to participate fully in classroom activities without frustration. The goal, as stated from the IEP, was to increase his speech intelligibility from less than 70% to 90% by targeting age-appropriate sounds and patterns including but not limited to: velars /k/and /g/, stridents /f/, /v/, /s/, /z/, and /s/ blends, for

example /st/. Dylan received speech/language remediation during small group instruction with a speech pathologist once a week for 30 minutes.

Pre-existing data from the *Phonological Awareness Literacy Screening* (PALS-PreK), which was the required classroom assessment in Dylan's school, was also collected and analyzed. The PALS-PreK assessment is a scientifically based phonological awareness literacy screening that measures preschoolers' developing knowledge of early literacy skills. This standardized assessment requires it to be administered at three specific points in time a year (Invernizzi, Juel, Swank, & Meier, 2007). Children's phonological awareness development during the preschool years is a powerful predictor of later reading and writing success, and phonological awareness skills at the phoneme level are the most predictive of later literacy development (Hulme et al., 2002). The assessment reflects skills that are predictive of future reading success and measures name writing ability, upper-case and lower-case alphabet recognition, letter sound and beginning sound production, print and word awareness, rhyme awareness and nursery rhyme awareness (Invernizzi et al., 2007). The PALS-PreK assessment provides developmental ranges and expectations for four-year-olds in the spring of their PreK school year. PALS-PreK is designed to guide instruction and highlight individual emergent literacy needs.

The subtests of the PALS midyear assessment period that were relevant to this study were the letter sounds subtest and the beginning sound awareness subtest. The letter sounds subtest assesses the student's ability to produce the sounds associated with 23 letters and three consonant digraphs. Dylan was able to accurately produce 12 of the 26 letter sounds during the midyear assessment period administered during his kindergarten four-year-old school year. The PALS-PreK assessment provides developmental ranges and expectations for four-year-olds in the spring of their PreK school year. The developmental range for this subtest is the ability for K4

students to produce four to eight letter sounds, which Dylan exceeded. However, Dylan was unable to produce the /k/ and /g/ phonemes in correspondence with the respective graphemes. These two phonemes were identified in the IEP as target sounds for speech/language intervention. Dylan had more success matching the strident phonemes identified on his IEP (f, v, s, and z) with the corresponding grapheme. He accurately produced all but /f/. Dylan was not able to correctly produce the corresponding phonemes for the three consonant digraphs /ch/, /sh/, and /th/. The information gathered about Dylan's knowledge of letter sounds from the Pals-PreK assessment matched the identified phonological processes to target outlined in the goals from the IEP. Dylan had a solid foundation of letter sound knowledge.

The *PALS Beginning Sound Awareness* subtest assesses the student's ability to produce beginning sounds of words and to sort 10 pictures by the beginning sounds for words that start with /s/, /m/, and /b/. The spring four-year-old Pre-kindergarten developmental range for this subtest is 5-8 as demonstrated by the student's ability to sort five to eight pictures correctly by their beginning sound. There were ten pictures to be sorted and Dylan accurately sorted five according to their beginning sound, which is within the spring developmental range target. Dylan was able to accurately sort three of the pictures that began with /s/. Conversely, he was able to sort two of the /m/ pictures and none of the /b/ pictures. I developed an intervention based on the data from letter sounds subtest and the beginning sound awareness subtest; he was ready for explicit instruction in these areas to further develop these skills.

Pre-Assessment Results and Findings

The *Primary Spelling Inventory* (Bear et al., 2008) was administered to assess Dylan's knowledge of key spelling features and patterns, including beginning sounds, ending sounds, short vowels, long vowels, blends and digraphs. The primary spelling inventory assigns points

based on correct spelling of word features and correct spelling of an entire word. The inventory was used to examine Dylan's spelling patterns present in the spelling of the words given in the assessment. The total number of orthographic features used accurately was recorded and analyzed to determine the spelling stage in which Dylan was functioning.

When learning to write, young children exhibit six different stages of development (Sulzby & Teale, 1985). This is a natural progression that occurs as children gain an understanding of what written language is and how it is used. At the first stage, drawing as writing, the child tells his or her story through pictures they draw. The second stage, scribble writing, the child make wave-like lines on paper to represent words. In this stage there are no letters or breaks to look like words. The third stage, letter-like writing, the child uses a series of separate marks with letter-like characteristics. The fourth stage, nonphonetic letter strings, the child writes strings of real letters in random groups or repeated clusters. The fifth stage, invented spelling, the child creates his or her own spelling, using letter-sound relationships. The sixth stage, conventional spelling, the child spells most words correctly (Sulzby & Teale, 1985). According to Sulzby, most kindergarteners primarily function within the drawing as writing, scribble as writing, and non-phonetic stages of writing. The use of invented spelling at this age is rare in general, but some children begin to mix invented spelling in their non-phonetic strings of letters (as cited in Bodrova & Leong, 1998).

The spelling inventory was used to gain insight and use Dylan's spelling attempts to analyze what level of emergent writing he was functioning in and use that knowledge to inform intervention. When describing the results of the spelling inventory, I used the term accurately to describe some of the attempts, with the understanding that children progress through levels of emergent writing. The expectation was not that Dylan spell the words "accurately" but make

note of the individual phonemes he accurately represented in the words to use as data for the intervention.

During this test, I verbally presented the first five words of the 26 words in the spelling inventory, and the student attempted to write the words. Of the five words presented, he did not spell any accurately. Analysis of conventional spelling, revealed he did write a beginning and final consonant for each of the words attempted. Dylan accurately wrote two beginning consonants and four final consonants out of five potential consonants in the conventional pattern. Three of the words attempted contained the middle vowel. Analysis of emergent writing indicated Dylan was beginning to attend to the vowel sounds in words. For example, one of the words he was asked to spell was *pet* and he wrote *pat* (Table 1). The data from the inventory showed Dylan's strength was in his ability to represent final consonants in his spellings, which demonstrated his ability to isolate individual phonemes; consequently, interventions were designed to support his developing ability to identify and isolate phonemes in other positions in words such as the initial position (Bear et al., 2008). The data also indicated that intervention was needed in identification and use of long and short vowels in conventional spellings. Dylan was functioning in the early emergent spelling stage according to the feature guide of the spelling inventory. Dylan was functioning in the invented spelling stage of writing, evidenced by his use of letter sound knowledge in his creation of the spelling of the words given. In the invented spelling stage, act of writing is more important than correct spelling (Sulzby, 1996, as cited in Bodrova & Leong, 1998).

Table 1

Primary Spelling Inventory Pre Assessment Data

Teacher Prompt	Student Written Response	Ratio of Phonemes Represented	Ratio of Accurate Phonemes Represented	Accurate Initial Phonemes	Accurate Final Phonemes	Word Spelled Accurately?
fan	sac	3/3	1/3			no
pet	pat	3/3	2/3	X	X	no
dig	dg	2/3	2/3	X	X	no
rob	lb	2/3	1/3		X	no
hope	op	2/3	2/3		X	no
		12/15 80%	8/15 53%	2/5 40%	4/5 80	0/5 0%

Writing Sample Data

Throughout the course of this case study, two writing samples were collected every week. The writing samples were collected after three consecutive days of phonemic awareness skill building activities. Each week I supported Dylan's application of these concepts during a supported journal writing session in which I modeled and scaffolded phoneme grapheme correspondence. A second journal-writing sample was collected each week to monitor Dylan's independent application of the new skill of attempting to phonetically write words. For each type of writing sample, Dylan read his journal entry to me. His reading was audio recorded to determine if his speech sound productions matched his phonetic writing.

The writing samples were analyzed using the rubric designed by me for analysis of initial and final phonemes, ratio of accurate phonemes, and Dylan's use of the targeted phonemes in words that include one of the identified speech sound errors. After analyzing the data previously described, I felt that more data were needed to get an accurate picture of Dylan's writing skills. Although the ratio of accurate phonemes was useful to track whether or not Dylan was using the correct phonemes in words, I also went back through the writing samples to record the ratio of

phonemes represented and the number of syllables represented for each word in the writing sample. I thought it was important to see if this emerging writer was writing the actual number of phonemes in each word, not just whether or not the phoneme was correct. The ability to hear and identify the individual phoneme segments in words is a more difficult skill along the continuum of phonological awareness tasks (Pullen & Justice, 2003) that Dylan was just beginning to use in his writing. I wanted to see if he was attempting to represent each sound he heard in his writing. Collecting and analyzing this aspect of his writing would give me evidence of Dylan moving from the invented

The writing samples that were collected each week demonstrated how Dylan was using his knowledge of graphemes and phonemes correspondence and how they make up spoken words. This is also known as the alphabetic principal or the understanding of the systematic relationship between letters and sounds. The alphabetic principal is the child's ability to understand that individual phonemes in words are represented by letters and these sounds can be analyzed to decode and spell words (Justice & Pullen, 2003). It is imperative that the student has an understanding that letters represent individual phonemes in words and that those sounds can be analyzed in the decoding process (Pullen & Justice, 2003). During the first week of intervention, Dylan demonstrated difficulty choosing a topic for his writing, but eventually he was more able to generate topics from a book his teacher read in his classroom or from his personal experiences. In the beginning he gave more time and attention to the illustrations that accompanied the journal writing. I believed that as the weeks of intervention continued, picking topics became easier for Dylan because journal writing was modeled as a functional way of recording his thoughts. The journal writing became a way for Dylan to express himself through writing and it became an outlet for his emotions and feelings while practicing his writing skills.

Each week during the intervention, two types of journal writing samples were collected: supported and independent. Both writing samples were collected and analyzed using a rubric designed by me (Table 2).

Table 2

Writing Sample Analysis Rubric

Word Attempted	Student's Written Response	Phonemes Represented	Syllables Represented	Accurate Initial Phonemes	Accurate Final Phonemes	Accurate Phonemes	Word Spelled Correctly?
Totals		Ratio of phonemes represented in writing:	Ratio of syllables represented in writing:	Ratio of accurate initial phonemes in writing:	Ratio of accurate final phonemes in writing:	Ratio of accurate phonemes in writing:	Total number of words spelled accurately in writing:

The structure of the intervention consisted of the following procedure: I would engage Dylan in a conversation and then brainstorm topics for journal writing. Dylan would tell me the sentence he was going to write, and together they would sound out each word in the sentence. During the adult supported journaling, I provided verbal prompts and scaffolded support to stretch out the words and isolate each phoneme. For example, *best* was a word Dylan was attempting to write in his journal. The research stretched out the word isolating each phoneme /b/, /e/, /s/, and /t/ as Dylan wrote the corresponding grapheme. I provided oral prompts by saying, “What sound do you hear first? I hear the /b/ sound at the beginning of the word *best*, what letter goes with the sound /b/.” After Dylan wrote each word in the sentence, he was

prompted to go back and read what he wrote. This reading was audio-recorded to document Dylan's oral speech sound patterns in comparison to his written sound patterns.

Much like the supported journaling samples, I engaged the student in conversation to generate ideas for the independent journal writing session. Dylan would again tell me his sentence or sentences, and I would write his sentence down to be able to read back one word at a time. The only prompt Dylan was given during this type of journal writing was, "Say the word to yourself and write the sounds you hear. Say the word to yourself again." After Dylan wrote the sentence, he was prompted to go back and read what he wrote. This reading was audio-recorded to document Dylan's oral speech sound patterns in comparison to his written sound patterns.

Initial Phoneme Data

Initial phonemes or beginning sounds were identified as an area of targeted instruction during the intervention. Picture sorts and other beginning sound activities were incorporated into the intervention sessions to explicitly model for Dylan how to attend to the beginning sound of words. After picture sorts were modeled for Dylan, he was given an opportunity to practice attending to the beginning sounds of words by independently engaging in picture sorts. Dylan was consistently attempting the beginning sounds of words in his writing and this area showed improvement over the course of the intervention. Pretest data indicated that Dylan's accuracy in using beginning sounds was about 60% in both his supported and independent writing samples (Figure 1). Posttest data indicated that Dylan's use of beginning sounds increased to 93% in the supported writing samples and 88% in the independent writing samples (Figure 1).

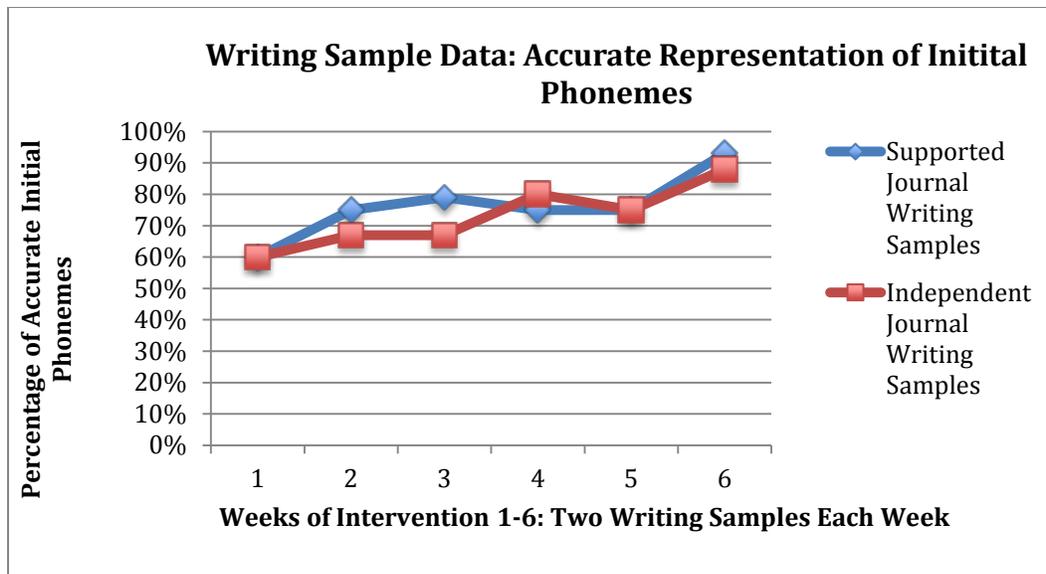


Figure 1: Percent of accurate initial phonemes in supported and independent writing samples.

Final Phoneme Data

Final phonemes or the ending sound in words was an area identified as a skill to work on in the intervention. An activity such as picture sorts by the final consonant was incorporated into the sessions for Dylan to practice attending to the final sounds in words. The explicit modeling and scaffolding of this skill transferred to his writing and was observed in the writing samples. Dylan did not consistently write the ending sounds of words in his writing; however, this area showed improvement over the course of the intervention. Pretest data indicated that Dylan's accuracy in using ending sounds was 40% in the supported writing samples and 0% in the independent writing samples (Figure 2). Posttest data indicated that Dylan's use of ending sounds increased to 50% in the supported writing samples and 63% in the independent writing samples (Figure 2).

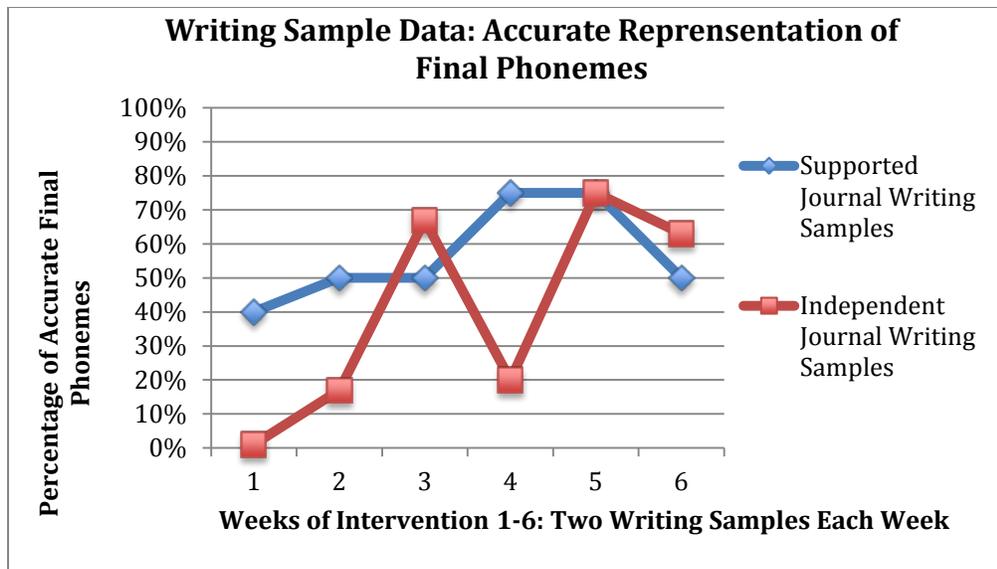


Figure 2: Percentage of accurate final phonemes from independent and supported writing samples.

Ratio of Phonemes Represented

The ratio of phonemes represented in Dylan's writing was recorded to determine if he was acquiring the skill of listening for the individual phonemes in words and attempting to write something for each individual phoneme. These data illustrated whether or not Dylan was making an attempt at each individual phoneme in the words he was writing. The data below show an inconsistent picture of how Dylan applied this skill in his writing. The data illustrated growth in Dylan's ability to represent the accurate number of phonemes in the words he was attempting to write. Pretest data indicated that Dylan's accuracy in the ratio of phonemes represented was 89% in the supported journal writing and 39% in the independent writing samples (Figure 3). Posttest data indicated that Dylan's accuracy in the ratio of phonemes represented decreased to 63% in the supported journal writing samples and increased to 83% in the independent writing samples (Figure 3).

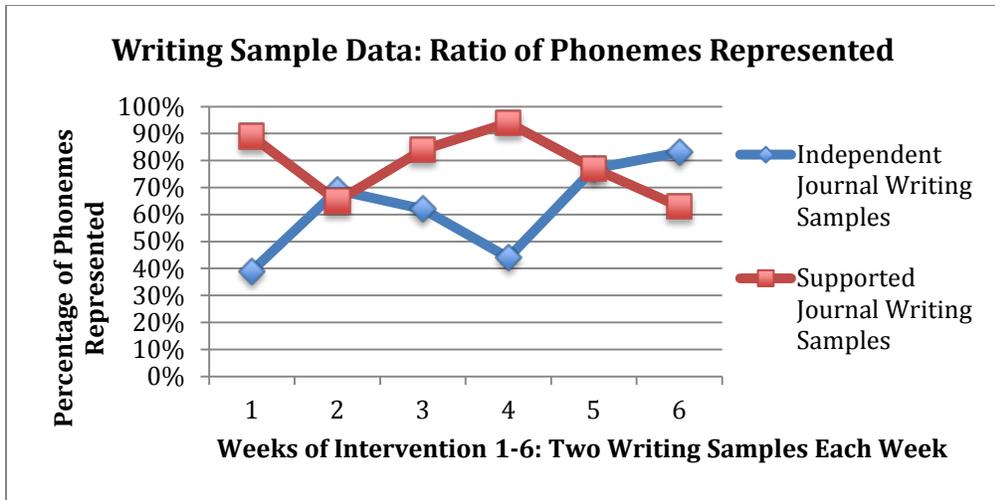


Figure 3: Percentage of phonemes represented in independent and supported writing samples.

Ratio of Syllables Represented

Additional data gathered from the writing samples were the ratio of syllables represented in the writing. Moats identified that, “Words comprise phonemes, but those phonemes are organized into coarticulated units, or syllables, that always have a vowel sound. Syllables are not units of print but are units of speech organized around a vowel” (2010, p. 50). Dylan consistently had the correct number of syllables represented in both his independent and supported journal writing. Pretest data indicated that Dylan’s accuracy of syllables representation was 88% in the supported journal writing and 83% in the independent journal writing (Figure 4). Posttest data indicated that Dylan’s accuracy of syllable representation increased slightly to 89% in the supported journal writing and increased to 100% in the independent writing samples (Figure 4).

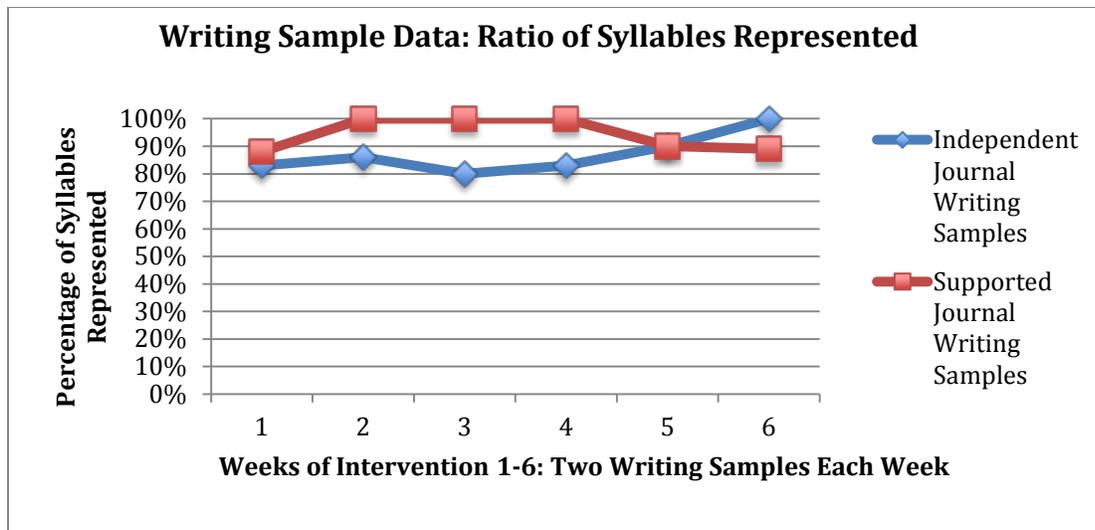


Figure 4: Percentage of syllables represented in independent and supported writing samples.

Speech Sound Patterns

Dylan was audio recorded while he read his writing, both independent and supported writing samples, to track whether or not his speech sound patterns were accurately reflected in his phonetic writing. The specific speech sound patterns of interest were the velars (k and g), stridents (f, v, s, z), and s blends. After analysis of all the writing samples and the dictations of Dylan reading his writing aloud, Dylan consistently used the correct orthographic representation in his writing of the identified speech sound errors. However, his speech sound patterns did not match his phonetic writing. For example, he wrote *girlfriend* as *grlfd* in a writing sample. He correctly wrote the initial phoneme, but, when he read his writing to me, he pronounced the word girlfriend with the initial phoneme as /d/, pronouncing it as *dirlfriend* (Figure 5). This information was consistent with his IEP, which stated that he was making progress in producing the velars (k and g) at the word level but carryover into everyday speech was still an area of concern.

Conventional and Invented Spelling	Dictation of Writing Sample
My (mi)	my
Girlfriend (grlfd)	dirlfriend
Is (s)	is
Pretty (prt)	tretty

Figure 5: Week 2 supported journal sample dictation

Post-Assessment Results and Findings

Post-assessment occurred during the eighth week of the intervention. The *Primary Spelling Inventory* (Bear et al., 2008) was administered again to give me the ability to compare the results and measure Dylan's growth during the intervention. Dylan was asked to write the same five words that he spelled on the pre-assessment (Figure 11). Dylan did not spell any of the words accurately according to conventional spelling; however, he had the correct beginning and final consonants for all five words. Two of the words attempted contained a vowel and, of the two he attempted, one was accurate. He was not able to score a point for the accurate vowel representation because the vowel was part of a long vowel pattern and Dylan only wrote one vowel and did not include the silent e. I observed Dylan saying the word to himself and paying close attention to the beginning and final consonant of each word but still having difficulty with vowels in words. The post-assessment showed growth and indicated Dylan was at the early emergent spelling stage and moved to the late emergent spelling stage.

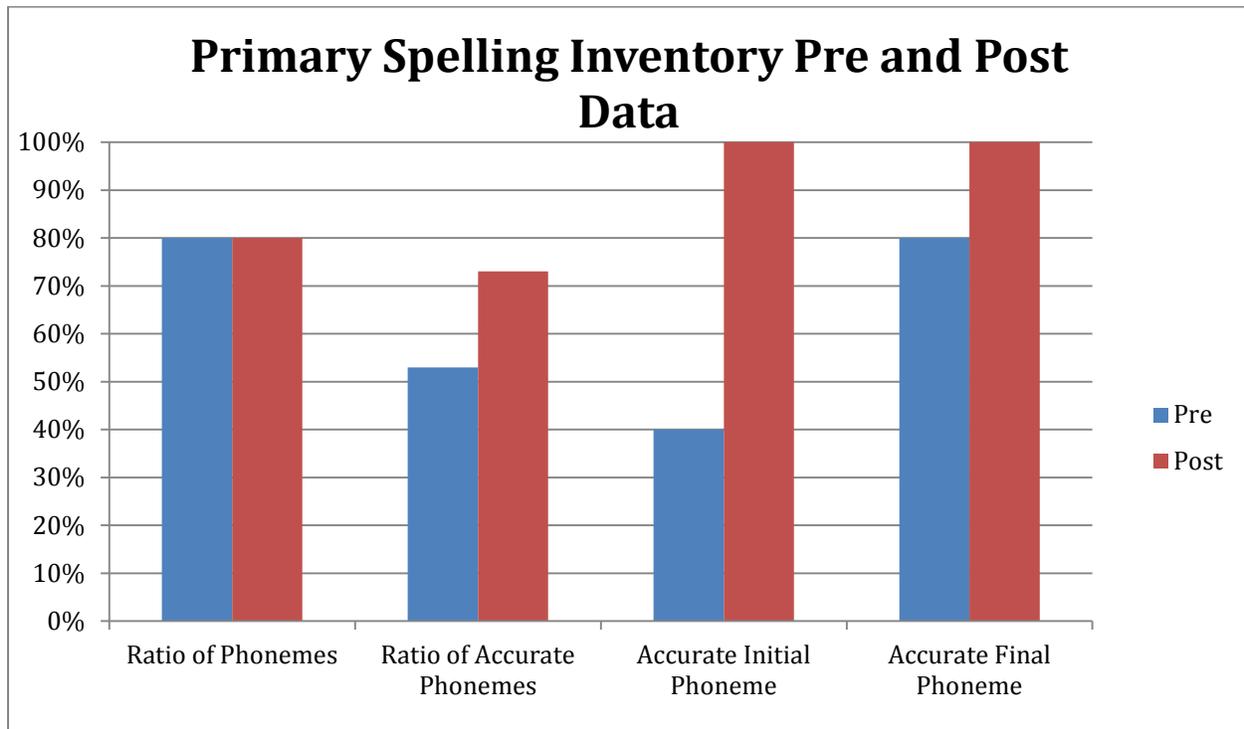
Table 3

Primary Spelling Inventory Post Assessment Data

Teacher Prompt	Student Written Response	Ratio of Phonemes Represented	Ratio of Accurate Phonemes	Accurate Initial Phoneme	Accurate Final Phoneme	Word Spelled Correctly?
fan	fn	2/3	2/3	X	X	no
pet	pat	3/3	2/3	X	X	no
dig	dg	2/3	2/3	X	X	no

rob	rb	2/3	2/3	X	X	no
hope	hop	3/3	3/3	X	X	no
		12/15	11/15	5/5	5/5	0/5
		80%	73%	100%	100	0%

Primary Spelling Inventory Pre and Post Assessment Data



Conclusion

In conclusion, according to the data summarized above, Dylan demonstrated an increased ability to accurately represent initial and final phonemes in his writing over the course of the intervention. He also showed an increased ability to isolate individual phonemes in words and represent the correct number of syllables in words he attempted to write. The results of this case study, strengths, and limitations are further explained in chapter 5.

Chapter Five

Introduction

This chapter establishes the connection between published research and the results of this case study as described in chapter four. As the researcher, I also looked more closely at the results of this case study and discussed the strengths and limitations. Finally, recommendations for ways to best meet Dylan's literacy needs both at home and in school are made.

The participant in this study was a five-year-old boy who was in a kindergarten four-year-old classroom. At the time of the study, Dylan received speech and language services in the area of speech articulation. Dylan's mother and teachers reported that they had difficulty understanding him, and he would show a high level of frustration when not understood. Dylan had age appropriate receptive and expressive language abilities and was able to follow simple directions. Dylan's delay in the area of speech sound production, which included the sound errors /k/, /g/, /s/, /z/ and reduction of strident clusters, e.g. /sp/, /st/ and /sk/. The delays in phonological development were reported to interfere with his ability to express himself and make himself understood by adults and peers. Dylan was functioning in the early emergent spelling stage and had difficulty with letter and sound associations within the context of his writing. Dylan became easily frustrated during journaling writing because he was overly concerned with the correct spelling of words and did not take risks in his writing. At the time of the study, Dylan's writing consisted of random strings of letters. As Dylan became more secure with the phoneme segmentation of words, his spellings within the context of his writing improved. It was therefore necessary to create an intervention plan that focused on facilitating the development of Dylan's orthographic knowledge during journal activities through explicit modeling of phoneme features through phonemic awareness skill building activities. To ensure that the results of the

intervention would be effective, it was essential that all the components of the plan were based on existing research. I reviewed the research on the relationship between phonological disorders and phonological awareness development and the relationship between phonological disorders and writing and the findings from these studies informed the design of the intervention.

Connection to Existing Research

The results of this case study, as reported in chapter four, report the effects of the intervention plan. The intervention plan was designed based on research findings as summarized in chapter two. Children with identified speech language disability in the area of phonological disorders are at risk for later reading and writing difficulties because of their phonological processing difficulties (Gillon, 2005). These difficulties affect the development of early printed word recognition and the ability to use phonological information when writing (Hulme, Hatcher, Nation, Brown, Adams & Stuart, 2002).

As explained in chapter two, my theoretical perspective supports the idea that it is important to construct instructional conversations (Wilkinson & Silliman (2000) and use students' ideas and thoughts as a way to access their lives and further connect the curriculum to their lives (Bodrova & Leong, 2007). The intervention was designed to use Dylan's personal narratives for journaling so writing was personal and relevant to his life. Many journal entries were based on specific things happening in his life at home or extensions of books that were being read in his classroom. The research by Tolentino (2007) suggest that valuing the significant role that language plays in the process of understanding literacy and using this knowledge to carve out spaces in the curricula that welcome dialogue and experimentation with print in collaboration with others. In accordance with the research by Tolentino (2007) and Bedrova and Leong, (2007), Dylan's stories and life were honored as he was given the

opportunity to journal and share his personal narratives, which helped to deepen the understanding and connection to the new skills he was learning through writing. Dylan was engaged in the writing process and learning because I was eliciting his story and modeling the writing process.

The intervention emphasized phonemic awareness activities such as sorting pictures by initial and final sounds in words, using manipulatives to indicate the number of sounds in a target word, modeling of phoneme features in words, and segmenting of words by individual phonemes. The participants of Gillon's (2005) research received interventions in the area of phonological awareness at the phoneme level, which included activities that targeted the skill areas of phoneme detection, phoneme categorization, phoneme isolation, and letter sound knowledge. Gillon (2005) found that in the population she studied, strong phonological awareness skills at the phoneme level are a critical factor in successful reading and spelling experiences for children with speech impairment. I intentionally planned activities to strengthen Dylan's phonological awareness skills at the phoneme level. One way this was done was through the use of picture sorts. Early in the intervention, I modeled my thinking during picture sorts and then as the intervention weeks went on, then I gradually released the responsibility for regulating the activity to Dylan to conduct the sorts independently (Vygotsky, 1978). I chose these sorting activities because children must first understand the alphabetic principle or the concept that letters and letter combinations are used to represent phonemes in orthography (Bear, Invernizzi, Templeton, Johnston, 2008). Therefore, picture sorts were an appropriate for the emergent stages of spelling development to facilitate development of phonological and phonemic awareness.

The study by Harbers, Paden, and Halle (1999) explored the idea of determining whether awareness of phonetic features, syllable shapes, and production performance change when the

children participate in phonological intervention program. An important part of the study was to use concrete verbal description of the features of a target pattern, production practice, and awareness feedback (1999). This research supported my decision of modeling of phoneme features during the intervention sessions. For example, I modeled the /s/ sound “the long hissy sound that sneaks out of your teeth”

(O’Keefe, 1999). I used this type of modeling for the phoneme features of the targeted sounds identified in Dylan’s IEP.

The study by Ahmed and Lombardino (2000) analyzed the invented spelling patterns and provided guidelines for developing interventions in the area of spelling. The study emphasized that children learn to read and write through experimentation and instruction and the role of the instruction is to target the weakness and develop strengths. I used the assessment data and invented spelling error patterns that were tracked using the writing rubric to determine strengths and weaknesses to address in the intervention activities. Dylan was engaged in a variety of phonemic awareness activities to facilitate his development of orthographic knowledge during supported and independent journal writing sessions.

The intervention activities were a skill-based approach of the best of all the research that was contextualized and developed in the meaningful context of journaling. I provided very specific activities and then supported him in the practice of those skills in a meaningful and relevant context. Dylan was provided explicit language and modeling during the activities. I modeled a variety of phonemic awareness skills including, phoneme segmentation of words, isolating individual phonemes, explicitly modeling phoneme features, and guiding basic writing rules. The basis of this intervention model was supported by the research of Wilkinson and Silliman (2000) on instructional conversations, which include explicit modeling, direct

explanations, invitations to participate, and verifying and clarifying student understanding. I used the scaffolding sequences of explicit modeling and think alouds (2000). Additional research on this topic by Antonnaci (2000) supports the use of think alouds to support the students' internalization of the cognitive process.

Explanation of Results

Through the following assessments: the *Primary Spelling Inventory* (Bear, Invernizzi, Templeton, & Johnston, 2008) and the writing sample data collected and analyzed using the writing sample analysis rubric created by me, many observations were made about the results.

Primary spelling inventory. Dylan showed improvements on the post-test of the *Primary Spelling Inventory* (Bear et al., 2008). I was looking at the assessment data for developmental progress not necessarily improvement in accuracy of spelling the target words. Of the five words presented in both the pre and posttest Dylan did not spell any of the words accurately according to conventional spelling; however, he still showed improvements. Dylan had 100% accuracy in initial and final phonemes of the words in the posttest. This was an improvement from the pretest and I attributed to the activities during the intervention that focused on identifying the beginning and ending phonemes of words. Two of the words attempted contained a vowel and, of the two he attempted, one was accurate. He was not able to score a point for the accurate vowel representation because the vowel was part of a long vowel pattern, and Dylan only wrote one vowel and did not include the silent e.

Although Dylan did not spell any of the words accurately, I observed that on the posttest he was much more aware of what he was writing and was not just randomly writing letters. I observed him sounding out each one of the words and listening closely for each sound, which is one thing he did not do for the pretest. I attributed this ability to attend to and manipulate the

individual phonemes of words from the intervention activities that explicitly modeled segmenting and blending words by their phonemes. Bedrova and Leong's (1998) study supports that scaffolding writing facilitates the transition to independent writing by helping the child to distinguish the word within the flow of the message and stabilizes the link between oral speech and the written word.

Writing sample data. As the researcher, I had very specific data that I wanted to track. I could not find an assessment tool that gave me the ongoing monitoring information I needed to inform my instruction and examine the overall effects of the intervention. The writing samples were analyzed using a rubric I designed based for analysis of initial and final phonemes, ratio of accurate phonemes, and Dylan's use of targeted phonemes in words that include one of the identified speech sound errors. The writing samples collected each week demonstrated Dylan's growth in using his knowledge of grapheme and phoneme correspondence and how they make up spoken words. Additional data of the ratio of phonemes represented and the number of syllables represented for each word in the writing sample was also collected and analyzed. In retrospect, I have come to value research as a guide for developing assessments that are very specific to a child's ongoing needs versus commercial assessments that might be more of a point in time measure.

At the beginning of the intervention Dylan demonstrated difficulty choosing a topic for his writing, but eventually he was more able to generate topics from a book his teacher read in his classroom or from his personal experiences. The journaling experience was modeled as a functional way of recording his thoughts and working through feelings. There were a couple sessions that Dylan showed signs of frustration and unhappiness, which made it difficult to work with him, and journaling gave him an outlet. During a pre-journal conference Dylan expressed

his feelings about something that happened at home. I suggested he write about what happened and explained how writing about things can make people feel better. Modeling this for Dylan showed him that writing has a functional purpose, and many of his journal writing sample topics were about his personal experiences. This provided a very relevant context for Dylan to apply the phonemic awareness skills he was learning to writing. Giving Dylan a relevant context for him to express his thoughts and feelings changed my frustration in working with him.

Dylan was audio recorded while he read back his journal writings to track whether or not his speech sound patterns were accurately reflected in his phonetic writing. Dylan consistently used the correct orthographic representation in his writing of the identified speech sound errors. However, his speech sound patterns did not match his phonetic writing. For example he wrote *girlfriend* as *grlfd* in a writing sample. He wrote the correct grapheme but, when he read his writing back, he pronounced the word girlfriend with the initial phoneme as /d/, pronouncing it as *dirlfriend*, which is consistent with his articulation patterns. Dylan was successful at producing the correct sounds for the identified speech sound errors in isolation and at the word level, but this did not successfully transfer when reading his journal writing or in conversation. To be able to explain why this did not transfer to his speech I would need more research on phonological disorders.

Initial and final phoneme data. Dylan also showed improvement over the course of the intervention in his accurate representation of initial phonemes or beginning sounds in his writing samples. His accurate use of initial phonemes was consistent throughout the intervention. This consistent growth can be attributed to the activities that supported the acquisition of that skill such as picture sorts by beginning sounds. Final phonemes or the ending sounds in words also increased in the supported journal writing but his independent use was not as consistent. These

data showed that this new skill needed additional support through explicit instruction and Dylan was not ready to use this skill independently. I would not do anything differently in the intervention; I believe that more supported practice in this skill would increase his independent correct representation of final phonemes in his writing.

Phonemes and syllable representation data. The ratio of phonemes represented in Dylan's writing was recorded to determine if he was acquiring the skill of listening for the individual phonemes in words and whether or not he attempted to write something for each phoneme. The data showed an inconsistent picture of his ability in this skill. There was some growth in his supported journal writing samples but it decreased slightly in week 5. The independent journal writing sample data for this skill were also inconsistent. Inconsistency is expected during development of a new skill and I attribute this inconsistency to additional support and modeling needed for Dylan in this skill.

Dylan showed more confidence and strength with shorter words than longer ones. For example, one of the words he wrote in his journal was *my* and he wrote *mi*. The word had two phonemes that were easy to hear and therefore Dylan's attempt was accurate. Another word Dylan wrote in his journal was *elephant* and he wrote *elfn*. This word was longer and more difficult to isolate each individual phoneme because of the demands on working memory. In a study by Van Kleeck, Gillam, and Hoffman (2006) evidence was found that using phonemic awareness instruction resulted in improved phonological working memory. Dylan was functioning in the fifth stage writing development, which is invented spelling when the child creates his or her own spelling using letter sound relationships (Sulzby & Teale, 1985).

The ratio of syllables represented data was also gathered and analyzed. Dylan consistently had the correct number of syllables represented in both his independent and

supported journal writings. This indicated he could hear and identify the correct number of syllables in words and was able to accurately represent the syllables in words he was attempting to write.

Strengths and Limitations

Effective interventions for children with an identified speech language disability in the area of phonological disorders who are struggling with their spelling in the context of their writing must make use of practices that are supported by research. Each part of the intervention I designed was based on well-documented research findings. When looking at the most effective and reliable practices to use with students who are struggling, it is important that an educator refer to practices supported by research. The following section describes the strengths and limitations of the intervention.

A strength of the intervention plan was the consistent structure of the lessons and activities planned for each week. The consistency and routine of the intervention reduced Dylan's time off task and therefore his focus and effort was usually good. Dylan's confidence in his ability grew because he knew his role and the expectations. There were no surprises, and he appeared very comfortable with the format of the sessions after the third week of interventions. I also felt that Dylan's active engagement attributed to his success in the intervention. Dylan really seemed to enjoy the one-on-one time and attention because his teachers often reported that in large group instruction he would dominate the discussion and became upset when other children were given a chance to participate. He was being instructed at a level that he was able to be successful and he was slowly able to take over the responsibility of the learning, which appeared to affect his confidence as a writer.

Another strength of the intervention was the amount of time I was able to work with Dylan. The phonemic awareness skill building activities were provided on the first three days of the week. The time dedicated to these activities planned specifically with his age and attention span in mind. The sessions were short and occurred every week to maximize Dylan's productivity and engagement. The fourth and fifth day was spent doing supported and independent journal writing. I felt the intervention schedule and variety of activities during that schedule contributed to his growth and his ability to utilize the strategies independently during writing sessions and the post assessment.

A strength and highlight of the intervention was the use of explicit modeling during the phonemic awareness activities and supported journaling experiences. The use of explicit modeling was important because many of the skills and concepts Dylan was learning were new to him. Dylan's thought processes were developed as I talked through my thought processes while I modeled specific skills. His frustration decreased as his ability to segment and blend phonemes in words increased as was demonstrated his writing samples.

An area of the case study that was both a strength and limitation was researching and understanding the area of speech and language disorders. I needed to step out of the traditional educational research and delve into speech and language research, which was out of my comfort zone. I realized this area was not an area of strength for me and needed to research and study his disability. In addition to delving into the research on this topic I also sought guidance of a speech and language professional to help understand and guide my case study. Unfortunately this collaboration was not with Dylan's speech and language pathologist. The special education department at the school was not conducive to collaboration, which could have impacted Dylan's growth during the intervention. This is a part of the intervention I would change by taking the

initiative to collaborate more with his speech and language pathologist. I believe having her sit in on some of the intervention sessions and model for her the new skills and strategies he was learning so that some of those same techniques could be used in his sessions with her.

In the planning and implementation of this case study, I tried to control any factors that may impact the results of the research. One of the factors I could not control was the number of weeks the intervention was carried out. There was two weeks of data collection both pre and post intervention and then six weeks of intervention instruction. I felt that additional weeks of intervention time would have positively impacted the results of the study. David was beginning to become more independent in using the strategies on his own. This time may have impacted his ability to utilize the strategies more independently during the independent writing sessions.

Another limitation of the case study was that I was not Dylan's classroom teacher; therefore, he was not supported in the strategies and skills he was learning in the intervention sessions throughout other parts of his day. I feel more time collaborating and mentoring his classroom teachers, special education staff and his parents on the specific skills and strategies that were being taught in the intervention would have benefitted his growth.

Recommendations

This case study indicated an improvement in Dylan's writing and ability to use phonetic spelling. The findings of this case study can be used to suggest specific recommendations for ways to meet Dylan's needs both at home and in a school setting.

Recommendations for home. It would be helpful for Dylan to continue to use writing as a way to express himself. Dylan should be encouraged to keep a journal at home that he can use to write about his experiences. It is important for Dylan's parents to be guided in this practice and so they can consistently encourage support his developing writing ability. As the researcher,

I could have supported Dylan's parents' awareness of his developmental process and provided them with strategies to further strengthen his new skills. At the beginning of the intervention Dylan's teacher reported that he did not take risks in his writing because he wanted to spell every word correctly. Dylan should be encouraged to say the word to himself that he is attempting to write, listen for all the sounds in the word, and write the corresponding letters. Dylan should be assured that beginning writers do not always spell every word accurately and that is all right. Dylan enjoyed adding illustrations to his writings, which should be encouraged. Dylan should also be invited to read his writing back to someone so that he continues to develop his identity as a reader and writer.

Recommendations for school. Dylan would benefit from additional modeling of writing strategies and explicit instruction and scaffolding during phoneme segmentation as the number of phonemes in the words increases when phonetically writing. The idea of listening for all the sounds in words he is attempting to write is still a new skill for Dylan that needs to be supported so that he continues to show growth in that area. Dylan came to the intervention with knowledge of letters and sounds and needs continued instruction on sound symbol correspondence in the context of his writing to facilitate the alphabetic principal. Dylan's teachers would benefit from collaboration in which I model the strategies and explicit instruction of segmenting words during writing so that he can be supported in the classroom.

Dylan would also benefit from additional explicit modeling of phoneme features of the targeted sounds identified in his IEP. He was successful on the word and sound level but was still using phonological processes typical of a younger child in conversational speech and when reading back his writing. The goal would be that Dylan would eventually internalize the adult form of the phonological code through continued practice and modeling. Additional

collaboration with his speech and language pathologist and other IEP team members would have supported Dylan in his new skills.

The writing sample data indicate that Dylan needs additional instruction in isolating and identifying the final phonemes in words. This could be done through picture sorts by ending sounds. The data also indicated that he needs continued instruction and support in the development of phoneme segmentation of words and isolating individual phonemes of words.

Conclusion

This case study research was designed to facilitate the development of Dylan's orthographic knowledge during journaling activities through explicit modeling of phoneme features and specific phonemic awareness activities. This case study was successful as Dylan demonstrated increased ability in phonemic awareness abilities shown through his writing over the course of the intervention. It is important to also take away from this case study research the importance of developing phonemic and phonological awareness skills for those children with identified speech language disabilities in the area of phonological disorders to lessen their risk of later reading and writing difficulties.

References

- Adams, M. J. & Henry, M. K. (1997). Myths and realities about words and literacy. *School Psychology Review, 26*, 525-436.
- Ahmed, S. T. & Lombardino, L. J. (2000). Invented spelling: An assessment and intervention protocol for kindergarten children. *Communication Disorders Quarterly, 22*, 19-28.
- Antonacci, P. A. (2000). Reading in the zone of proximal development: Mediating literacy development in beginner readers through guided reading. *Reading Horizons, 41*, 19-33.
- Bear, D. R., Invernizzi, M., Templeton, S. & Johnston, F. (2008). *Words their way: Word study for phonics, vocabulary, and spelling instruction*. Upper Saddle River, New Jersey: Pearson.
- Bodrova, E. & Leong, D. J. (1998). Scaffolding emergent writing in the zone of proximal development. *Literacy Teaching and Learning, 3*, 1-18.
- Craig, S. A. (2006). The effects of adapted interactive writing intervention on kindergarten children's phonological awareness, spelling, and early reading development: A contextualized approach to instruction. *Journal of Education Psychology, 98*, 714-731.
- Gillon, G. T. (2005). Facilitating phoneme awareness development in 3- and 4-year-old children with speech impairment. *Language, Speech & Hearing Services in Schools, 36*, 308-352.
- Goodman, K. S. (1992). I didn't found whole language. *The Reading Teacher, 46*, 188-199.
- Harbers, H. M., Paden, E. P., & Halle, J. W. (1999). Phonological awareness production: changes during intervention. *Language, Speech & Hearing Services in Schools, 30*, 50-60.

- Holm, A., Farrier, F., & Dodd, B. (2008). Phonological awareness, reading accuracy and spelling ability of children with inconsistent phonological disorder. *International Journal of Language and Communication Disorders, 43*, 300-322.
- Hulme, C., Hatcher, P., Nation, K., Brown, A., Adams, J. & Stuart, B. (2002). Phoneme awareness is a better predictor of early reading skill than onset-rime awareness. *Journal of Experimental Child Psychology, 82*, 2-28.
- Invernizzi, M., Sullivan, A., Meier, J. & Swank, L. (2004). *Phonological awareness literacy screening*. Richmond, VA: University of Virginia.
- Lewis, B. A., Freebairn, L. A., & Taylor, H. G. (2002). Correlates of spelling abilities in children with early speech sound disorders. *Reading and Writing: An Interdisciplinary Journal, 15*, 389-407.
- McCardle, P., Scarborough, H. S. & Catts, H. W. (2001). Predicting, explaining, and preventing children's reading difficulties. *Learning Disabilities Research and Practice, 16*, 230-239.
- McNamara, J. K., Van Lankveld, J., Vervaeke, S. L., & Gutknecht, N. (2010). An exploratory study of the associations between speech and language difficulties and phonological awareness in preschool children. *Journal of Applied Research on Learning, 3*, 1-17.
- O'Keefe, C. (1999). Feature awareness: Making explicit connections between how speech "feels", "sounds", and "looks" [Class handout]. Department of Language and Literacy Development, Cardinal Stritch University, Milwaukee, WI.
- Pentimonti, J. M. & Justice, L. M. (2010). Teachers' use of scaffolding strategies during read alouds in the preschool classroom. *Early Childhood Education Journal, 37*, 241-248.

- Pullen, P. C. & Justice, L. M. (2003). Enhancing phonological awareness, print awareness, and oral language skills in preschool children. *Intervention in School and Clinic, 39*, 87-98.
- Schuele, C. M. (2004). The impact of developmental speech and language impairments on the acquisition of literacy skills. *Mental Retardation and Developmental Disabilities Research Reviews, 10*, 176-183.
- Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in acquisition of literacy. *Reading Research Quarterly, 21*, 360-407.
- Sulzby, E. & Teale, W. H. (1985). Writing development in early childhood. *Education Horizons, 64*, 8-12.
- Tangel, D. M. & Blachman, B. A. (1992). Effect of phoneme awareness instruction in kindergarten children's invented spelling. *Journal of Literacy Research, 24*, 233-261.
- Tolentino, E. (2007). "Why do you like this page so much?" Exploring the potential of talk during preschool reading activities. *Language Arts, 84*, 519-529.
- Unrau, N. J. & Ruddell, R. B. (1995). Interpreting texts in classroom contexts. *Journal of Adolescent & Adult Literacy, 39*, 16-27.
- Vygotsky, L. S. (1978). *Mind in society: The development of psychological processes*. Cambridge, MA: Harvard University Press.
- Wilkinson, L. C., & Silliman, E. R. (2000). Classroom language and literacy learning. *Reading Online*, 1-23. Retrieved from <http://www.readingonline.org/articles/handbook/wilkinson>.
- Yopp, H. & Yopp, R. (2000). Supporting phonemic awareness development in the classroom. *The Reading Teacher, 54*, 130-143.

