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THE EFFECTS OF PHONOLOGICAL AWARENESS ACTIVITIES ON AT-RISK FIRST GRADE READERS

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Fall 1998

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MASTERS THESIS

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Abstract

The purpose of this study was to look at a variety of phonological awareness studies and their impact on students with reading difficulties and to implement a program to develop student's reading abilities and look at its impact on student's knowledge of vowel and consonant recognition, vowel sounds, and sight words. Phonological awareness can be defined as one's sensitivity to, or explicit awareness of, the phonological structure of words in one's language. A number of researchers (e.g., Liberman, Shankweiler, & Liberman, 1989) have concluded that adequate awareness of the phonological structure of words helps to make learning to read words a more understandable task for the young child. Without awareness of the phonological segments in words, our alphabetic system of writing is not very comprehensible. In fact, most children who experience difficulty acquiring early reading skills can be shown to lag behind in the development of phonological awareness (Felton & Wood, 1989). If a child is not sensitive to the phonological structure of speech, instruction in the use of letters to represent sounds in words will not make much sense. Therefore, a review of the research has indicated that training children in phonological awareness can have beneficial impact on their reading and spelling skills. The purpose of the summer program was to provide early intervention in the area of reading through intensive small group instruction utilizing
multisensory strategies to improve awareness of vowel and consonant recognition, vowel sounds, and the development of sight words.
Table of Contents

Abstract

Table of Contents

Chapter 1: Introduction .............................................................. 1

Chapter 2: Review of Literature
   on Phonemic Awareness Training ........................................ 7
      Impacts on Reading .......................................................... 7
      Impacts on Reading and Spelling ..................................... 13
      Summary ............................................................................. 20

Chapter 3: Methods ....................................................................... 22
      Subjects and Settings ......................................................... 22
      Program Overview ............................................................ 23
      Measures ............................................................................. 27
      Procedures ........................................................................... 27
      Results ................................................................................. 28
      Conclusions ......................................................................... 29

References ....................................................................................... 31

Appendix A: Tables
Chapter One  
Introduction

How much do we really care that children, adolescents and adults are trapped by illiteracy and thus unable to realize their potential? I carry around a memory of an 8 year-old who said to me, "I want to read, but I can't remember the words." A large number of individuals are struggling with learning to read. According to the U.S. Department of Education, 1 in 5 (20%) American adults is functionally illiterate (Michigan Literacy, 1990). That is, more than 20 percent of adults read at or below a fifth grade level--far below the level needed to function fully in an information-based society. The National Adult Literacy Survey found that over 40 million Americans age 16 and older have significant literacy needs. The National Literacy Act defines literacy as "an individual's ability to read, write, and speak in English, compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and develop one's knowledge and potential". In addition to this 20% of American adults, another 34% are only marginally literate (Michigan Literacy, 1990). These statistics clearly indicate that illiteracy is a major problem in the United States.

Impact on Illiteracy

There are many areas in a person's life that are adversely
affected as a result of illiteracy. One area that is adversely affected is school performance. Those who struggle to read most likely will experience failure in school. So much of the content of learning in school is based on the ability to read. As a student gets older, the reading demand intensifies. A student who has great difficulty reading may not be as likely to excel in various academic areas because they simply cannot fully understand the written material that is presented. This difficulty may lead to extreme frustration and, in many cases, behavior disruptions. Therefore, addressing reading difficulties is a vital part of early elementary education because a student most likely will experience more frustration as they go on in school.

A second area that is adversely affected is that many employers say they are unable to find enough workers with reading, writing, mathematical, and other competencies required in the workplace. In order to stay competitive in the global economy, employers need workers who can read, write, compute, solve problems, and communicate well. The National Institute for Literacy argued that lower literacy skills mean a lower quality of life and more limited employment opportunities. As noted in a recent report from the American Society for Training and Development, "the association between skills and opportunities for individual Americans is powerful and growing...individuals with poor skills do not have much to bargain with; they are condemned to low
earnings and limited choices" (National Institute For Literacy, 1990). Thus, those with fewer resources and limited skills will more likely find it more challenging to pursue their goals—whether these involve job advancement, consumer decision making, citizenship, or other aspects of their lives. The National Institute for Literacy (1990) also noted that workers who lack a high school diploma earn 60 cents for every dollar earned by a high school graduate, and 34 cents for every dollar earned by a college graduate.

Another area adversely affected is our prison population. This population represents the single highest concentration of adult illiterates. Though criminal behavior and illiteracy can not be shown to have a causal relationship, the fact that 60% of prison inmates cannot read above an elementary level surely provides some indication of one major reason for their criminal activity (Kozol, 1985). According to the National Institute for Literacy (1990), prisoners generally have significantly lower literacy skills than the general population. Those who improve their skills return to prison less often. Therefore, based on the adverse effects associated with not acquiring adequate reading skills, there is a real need to look at possible causes of illiteracy.

Causes of Illiteracy

A number of factors can contribute to children not attaining high levels of literacy. One clear factor is phonological awareness. Past research has indicated that adequate awareness of the
phonological structure of words helps to make learning to read words a more understandable task for the young child (Mann, 1993). Phonological awareness is the explicit oral awareness of and sensitivity to the phonological structure of words in one’s language. A child who is phonologically aware is aware of the sounds in spoken (not written) words and is revealed by such abilities as rhyming, matching initial consonants, and counting the number of phonemes in spoken words. Without awareness of the phonological segments in words, our alphabetic system of writing is not very comprehensible. In fact, most children who experience difficulty acquiring early reading skills can be shown to lag behind in the development of phonological awareness (Felton & Woods, 1989).

Evidence for the importance of phonological awareness comes from a number of studies. First, correlational studies have shown strong concurrent and predictive relations between phonemic awareness and success in reading (e.g. Liberman, Shankweiler, Fischer, & Carter, 1974; Mann, 1984). In one study (Juel, 1988) researchers found that first grade students who had difficulty blending sounds together to make words, segmenting words into sounds, and manipulating initial and final consonants typically remained in the bottom quarter of their class in reading 4 years later. Another study (MacLean, Bryant & Bradley, 1987) found that children’s knowledge of nursery rhymes at age 3 years strongly
predicted their later development of more abstract phonological knowledge and, more important, their early reading ability.

Other research studies have concluded that a deficit in phonological awareness is both an associate and a predictor of reading problems. For example, longitudinal studies testing phonological awareness during kindergarten and measuring reading ability in the early elementary grades have indicated that phonological awareness strongly predicts reading ability (Mann, 1993). Other researchers have indicated that beginning readers must gain a conscious awareness of the phonemes in words to be able to use an alphabetic language where sounds are represented with graphic symbols (Torgesen, J. K., Wagner, R. K., & Bryant, B. R., 1992).

For some students, this ability is not a natural process like learning to speak but one that requires direct instruction. Research has indicated that how quickly children become proficient in using the alphabet to read is related to their phonological awareness. Phonological awareness training has a positive effect on the development of word recognition and spelling abilities while at the same time reading instruction enhances phonological abilities (eg. Ball & Blachman, 1988; Bradley & Bryant, 1985; Lundberg, Frost, and Petersen, 1988).

**Purpose**

The purpose of this study is to look at a variety of
phonological awareness studies and their impact on students with reading difficulties and to implement a program to develop student's reading abilities and look at its impact on student's knowledge of vowel and consonant recognition, vowel sounds, and sight words.
Chapter Two
Review of Literature on Phonological Awareness

Phonological awareness is an important aspect in the development of reading and spelling. In school, children need to acquire the skill of phonemic awareness in order to achieve in reading and spelling. Phonological awareness can be defined as one's sensitivity to, or explicit awareness of, the phonological structure of words in one's language (Torgesen, Morgan, & Davis, p. 364). Studies have shown that specific training in phonological awareness can have a positive impact on success in early reading (Ball & Blachman, 1988; Bradley & Bryant, 1985; Lundberg, Frost, & Petersen, 1988). That is, when level of phonological awareness has been manipulated experimentally through direct training, it has been shown to have a positive impact on the acquisition of both reading and spelling skills. In this chapter, a number of studies will be described that training children in phonological awareness can have a beneficial impact on their reading and spelling skills.

Impacts of Phonemic Awareness Training on Reading

Phonemic awareness is an important aspect in the development of reading and spelling. In school, children need to acquire the skill of phonemic awareness in order to achieve in reading and spelling. The following studies examined the importance of phonemic awareness and how phonemic awareness training can improve both reading and spelling.
In the first study, Torgesen, Morgan, and Davis (1992), examined the effects of two types of oral-language training programs on development of phonological awareness skills and word learning ability. The purpose of this study was to provide a direct test of the relative effectiveness of a training program that involved both segmenting and blending skills in comparison with one that involved training in blending only. If blending is an enabling skill for reading (Perfetti et al., 1987) then training in blending alone may have as powerful an effect on subsequent reading performance as training in both segmenting and blending skills. If segmenting and blending skill have important elements in common, intensive training in phonological blending might produce growth in blending skills as well. Thus, if this proves to be the case, the authors then felt prereading training programs in phonological awareness might be made more efficient by focusing primarily on blending skills.

The first (Group AB) of the training programs were provided explicit instruction on both segmenting (analytic) and sound blending (synthetic) phonological skills. The second training program (Group B) focused on blending skills only. The effects of the programs were contrasted with a language-experience control group (Group C) that received no phonologically oriented training. Forty-eight kindergartners from seven classes of schools serving students from a predominantly working class district were chosen.
due to scores obtained on the Screening test of Phonological Awareness that fell between the 15th and 50th percentile. Pretest measurements assessed consisted of segmentation and blending abilities as well as skill in alphabetic reading and general verbal ability. Students were put in groups of 3 to 5 for 20 minute sessions three times a week. Groups AB and B received warm-up activities which focused on games with a variety of rhyming and beginning sounds prior to training. The training for Group AB included activities designed to help students learn to segment and blend individual words. Focusing first on identification and pronunciation of beginning, middle, or ending sounds in two- and three-phoneme words. Secondly, they were taught to pronounce all the sounds of a word separately. Thirdly, they were taught to pronounce words after hearing their phonemes presented in order or sequentially. Group B students were trained in identifying the words represented by sequences of separately presented phonemes. Here, students were introduced to blending through multiple choice activities. Group C was engaged in a variety of activities which emphasized reading and enjoyment of books. Post test measures consisted of segmentation and blending measures used on the pretest along with a reading analog task.

Results of the study indicated that the training program that involved both segmenting and blending skills did produce significant improvements in children's ability to segment words
into phonemes. In contrast, the blending-only group did not show significant improvements in segmenting skill in comparison with the control group. The authors noted that this finding was of interest in light of previous assertions that both analysis (Liberman, Shankweiler, & Liberman, 1989) and synthesis (Perfetti et al., 1987; Torgesen & Morgan, 1990) tasks require a correct conceptual understanding of the phonological structure of words.

In a second study, Byrne and Fielding-Barnsley (1991) evaluated a new program designed to teach young children about phonological structure. This program emphasized recognition of phoneme identity across words. The study attempted to answer two questions: (a) Does the program raise levels of phonemic awareness on phoneme identity tests? and (b) Is there evidence that successful recognition of phoneme identity transfers to reading activities? An experimental group of 64 preschoolers was trained with the program for 12 weeks, with one 25-30 minute training session per week and 62 controls were exposed to the same materials, stripped of reference to phonology. The children were pretested in the areas of verbal facility, rhyme recognition, and phoneme identity. In the phonemic awareness program nine phonemes were targeted.

The results of this study showed comparison of pre-training and post training measures of phonemic awareness showed greater gains by the experimental group in comparison with the control
group. The increased levels of phonemic awareness occurred with untrained as well as trained sounds. The forced-choice word-recognition test showed that most of the children who possessed phonemic awareness and who knew relevant letter sounds could use their knowledge to decode unfamiliar printed words. Therefore, the results are consistent with the claim that phonological awareness and letter knowledge in combination are necessary but not sufficient for acquisition of the alphabetic principle.

In the another study, Weiner (1994) examined the effects of phonemic awareness training on the phonemic awareness and reading ability of low- and middle-achieving first-grade readers. The 79 first grade students (41 males and 38 females) from seven classrooms in two predominantly white, middle class, suburban elementary schools were randomly assigned to a control group, a phonemic-skill training group (Treatment 1), a phonemic-skill training plus decoding group (Treatment 2), and a phonemic-skill training plus decoding and reading group (Treatment 3). During the six week intervention the training was administered to groups of four or five students during two 25-minute sessions each week. The phonemic awareness training only group (Treatment 1) received a series of phonemic skill lessons which gave students explicit training in both simple phonemic awareness (segmentation and blending) and compound phonemic awareness (phonemic
deletion, and phonemic substitution). Each lesson introduced, demonstrated, and provided practice in a single phonemic skill using a "skill and drill" versus a "conceptual" approach (training did not provide students with a conceptual connection between the phonemic skill and decoding or reading). The phonemic awareness training with decoding group (Treatment 2) participated in exactly the same phonemic awareness training activities as those described above except lessons were considered semi-conceptual in approach because each lesson was followed by opportunities for students to link the phonemic skill training to a decoding activity. The phonemic awareness training with decoding and reading group (Treatment 3) focused on the activities described above in treatment 2 as well as having the opportunity to apply phonemic awareness during the reading of narrative text. This training was considered conceptual in nature because the trainer explicitly linked specific words in the text back to the earlier phonemic skill lesson and pointed out the connection between the skill and learning to read. The control group remained in their classrooms during the intervention phase of the study and did not receive additional training of any kind.

The results indicated no significant differences among the experimental and control groups on measures of phonemic awareness or reading. However, there was a difference noted in the ability to segment. Results indicated that training subjects to
develop a conceptual connection between phonemic skills and reading was generally ineffective for low-achieving readers and that phonemic awareness training for low- and middle-achieving beginning readers may not necessarily be beneficial.

**Impact of Phonemic Awareness Training on Reading and Spelling**

Studies have shown that specific training in phonological awareness can have a positive impact on success in early reading (e.g. Ball & Blachman, 1988; Bradley & Bryant, 1985; Lundberg, Frost, and Petersen, 1988.) That is, when the level of phonological awareness has been manipulated experimentally through direct training, it has been shown to have a positive impact on the subsequent acquisition of both reading and spelling (Torgesen, Wagner, and Bryant, p. 114). Other studies have consistently shown that good readers do better than poor readers on a wide variety of phonological awareness tasks, even when the effects of intelligence and social class are controlled (Torgesen, Wagner, and Bryant, p.114). The following studies will show how phonemic awareness training impacts reading and spelling.

In this first study, Castle, Riach, and Nicholson (1994) evaluated the effects of whether early training in phonological awareness within a whole language program would get children off to a better start in reading and spelling. This experiment involved 30 children in their first few months of school. In the first experiment, 15 children were trained in phonological awareness
skills, and 15 matched children were trained in process writing. In the second experiment, which focused on reading acquisition, 17 children received phonemic awareness training, a second matched group of 17 children participated in language and reading activities that did not involve phonemic instruction. A third matched group of 17 children received no instruction. Children received instruction twice weekly for 20 minutes over a 10 week period. Each lesson covered specific topics and activities aimed at increasing phonemic awareness. Topics covered in the lessons included phoneme segmentation, phoneme substitution, phoneme deletion, and rhyme. Skills were taught and incorporated into a variety of games like “concentration” and “say it and move it”.

At the end of the ten week training period, the children were retested using Roper’s measure of phonemic awareness test, Wide Range Achievement Test of Spelling, and the author’s also devised an experimental spelling test to compare children’s performance across different word types and assess the percentage of phonemes correctly attempted. Also, used were tests designed by Clay (1985) such as dictation, word writing, and a letter identification tests along with the Peabody Picture Vocabulary Test-Revised, which was not used for pretesting.

The results of both experiments indicated that phonemic awareness instruction had positive effects on spelling and reading performance as part of a regular whole language program. The
results for each measure showed a significant increase in scores from pretest to post test. However, the interactions (Group X Time) for phonemic awareness, informal spelling, and WRAT-Spelling showed that the gains on these measures were significantly greater for the experimental group (Castle, Riach, & Nicholson, 351). The results overall showed that both groups made significant gains in phonemic awareness.

In the next study, Lundberg, Frost, & Petersen (1988) conducted a training program consisting of metalinguistic games and activities which aimed to stimulate preschool children to discover and attend to the phonological structure of language. This longitudinal study included 235 Danish preschool children (who received no reading instruction prior to or during training) in daily training sessions of 15 to 20 minutes over a period of 8 months. The control group consisted of 155 children which followed the regular preschool program. At the beginning of the preschool year, all children were pretested with a number of linguistic and metalinguistics tasks. By the end of May, both groups were post tested using the same tests as before. The effects of the metalinguistics training were assessed by comparing the changes in the scores from pretest to post test for the two groups. A third measure of assessment which focused on the level of phonological awareness (transfer test) was used at the beginning of first grade. Following seven months into the first grade year, reading, spelling
and math assessments were measured. Again, the reading and spelling assessments were repeated in the middle of the second grade.

Although the training focused on phonological awareness skills, it did not include training in the connections between the sound segments and letters. Results indicated that no differences were found between the trained and untrained kindergarten groups on post tests of prereading ability. However, significant differences in spelling skills were found the following year between first graders who had participated in the kindergarten training and those who had not, and significant differences in spelling and reading skills were found between the groups in the second grade. These findings seem to suggest that phonological awareness training in kindergarten without attention to the relations between sound segments and letters sounds may eventually increase reading and spelling scores, even if the effect on the reading is not immediately apparent.

In another study, Ball and Blachman (1991) explored (a) whether groups of kindergarten children can be taught to segment words into phonemes, (b) the effects of segmentation training in kindergarten on early reading and spelling ability, and (c) the effects of letter-name and letter-sound training in kindergarten on segmentation skills and on early reading and spelling ability. Ninety kindergarten children from three urban public schools in
Syracuse, NY were randomly assigned to one of three groups. The first group received training in segmenting words into phonemes, as well as training in correspondences between letter names and letter sounds (phoneme awareness group). The second group received only the training in letter names and letter sounds (language activities group). The third group received no intervention (control group). Prior to instruction, the children were pretested in the last week of January and the first 2 weeks in February during the kindergarten year. Pretesting consisted of the PPVT-R and Woodcock pretests were used for subject selection, other pretests included a phoneme segmentation test and a test of letter-name and letter-sound knowledge. Prior to the intervention, no significant differences were found. Post testing was conducted at the end of the 7-week training, children were retested on phoneme segmentation, alphabet letter names and sounds, and the Woodcock Reading Mastery Word Identification Sub test. In addition, the children were asked to read a list of 21 phonetically regular words selected for the study and to spell a list of 5 words.

Results concluded that the phoneme awareness instruction, combined with instruction connecting the phonemic segments to alphabet letters, significantly improved the early reading and spelling skills of the children in the phoneme awareness group. The results of the study did indicate that groups of kindergarten children can be taught to segment words into phonemes.
Specifically, the examiners found that the group which received segmentation training significantly outperformed both the language activities group and the control group on the phoneme segmentation post test (Ball & Blachman, 1991). However, instruction in letter names and letter sounds alone did not significantly improve the segmentation skills, the early reading skills, or the spelling skills of the kindergarten children who participated in the language activities groups, as compared with the control group. The spelling results were similar to the reading results. That is, the group that received segmentation training plus letter-name and letter-sound instruction spelled significantly better than either the language activities group or the control group. These results show a strong correlation between spelling achievement and phoneme awareness training.

In the last study, Bradley and Bryant (1983) conducted a large-scale training to demonstrate a causal relationship between phoneme awareness and reading and spelling acquisition. The study consisted of 65 kindergartners and first-grade children who had low scores on a sound categorization pretest. The children were divided into four groups matched on IQ, age, sex, and sound categorization ability. The first group learned to categorize words on the basis of common sounds. In the second group, children also learned to categorize words on the basis of common sounds but, in addition, were taught to represent the common sounds with plastic
letters. The third group, children were taught to categorize the identical pictures on the basis of semantic categories (e.g., hen and dog were grouped together because both are animals). The three groups participated in 40 individual lessons over a two year period. The fourth group received no intervention.

After the intervention, the children who were trained in sound categorization consistently outperformed the untrained children in reading and spelling. The results indicated, however, that the children who were the most successful on measures of reading and spelling were the children who learned both to categorize words by their common sounds and to represent the sounds with plastic letters.

In a longitudinal study completed by Juel, Griffith, and Gough (1986) aimed to test a model of early literacy acquisition. This model focused on development in word recognition, spelling, reading comprehension, and writing, and on the interrelation of growth in each of these skills. Longitudinal data was collected as students went from first through second grade. The original sample consisted of 129 first-grade children which attended a large, lower middle-class school. The children continued to be tested through second grade. Only 80 children remained by the end of their second-grade year. In first grade, children were spread amongst eight classrooms and in second grade, among seven classrooms. Children were placed in one of two basal reading series. Fifty-eight children
were placed in the 1980 American Book Company (ABC) series, and seventy-one children were placed in a 1980 Scott Foresman (SF) series. Both series consisted of blending sight words, phonics, and used content approaches to word identification. They were also supplemented with a synthetic phonics program developed by the local school district. Twenty to thirty minutes daily were spent on each reading series in a whole-class phonics approach.

Results strongly suggested that without phonemic awareness, exposure to print does little to foster spelling–sound knowledge. Word recognition and spelling relations showed strong results due to the development of both skills relying on similar sources of knowledge. However, the relationship between reading comprehension and writing appeared less strong due to the idea generation involved in story production did not appear isomorphic to the processes involved in reading comprehension.

Summary

Several conclusions can be drawn from the research reviewed. Phonemic awareness has been shown consistently to be related to success in both early reading and spelling development. Studies in which children have been trained to segment words into phonemes have been successful; however, other studies that have also included instruction in the relations between sound segments and letters appear to have demonstrated a greater effect on early reading and spelling. It is unclear from previous research whether
instruction in letter names and letter sounds alone would be sufficient to heighten phoneme awareness and increase early reading and spelling skills. In one study, Ball and Blachman (1991) found that children who received segmentation training plus letter-name and letter-sound instruction spelled significantly better than students who did not receive the training. In another study, Bradley and Bryant (1983) showed that prereaders trained over a 1-year period outperformed a matched sample of peers in reading and spelling acquisition for over 2 years. The greatest benefit was experienced by those children who received training that involved learning how to segment and blend sounds and how to relate these sounds to alphabetic letters. Byrne and Fielding-Barnsley (1991) found that phonological awareness training was more successful when combined with letter-sound correspondence training. (Both studies training was given prior to school entry and prior to formal reading instruction.) Phonemic awareness is a skill that can be developed over a student's school years.
In the summer of 1989, Lowell Area Schools was granted the funds for a summer reading clinic for at-risk first graders. The purpose of this program was to provide early intervention in the area of reading through intensive small group instruction utilizing multisensory strategies because the district believes that: (a) first grade is a critical time for establishing solid foundations in reading abilities and that reading ability or lack of profoundly impacts the success of the entire school experience, (b) providing a low student to teacher ratio and attending to student learning styles increases student success which in turn boosts confidence, (c) the teacher training involved with this program will benefit future students in the classroom, (d) first grade students will be better prepared to meet the demands of second grade curriculum, and (e) this program will be cost effective in the long run as the majority of special education referrals are generated due to reading difficulties.

Subjects and Setting

The 24 students participating in the program were identified as first grade at-risk readers who were not currently receiving special education services. Students were from a middle class school district. The age range of the students was six to eight years with 15 males and 9 females participating. Student identification was determined by input from teachers, a title one reading consultant,
a resource teacher, a school psychologist, and scores on pretest measures. Pretests included an informal blending and analysis tasks assessment created by Grand Rapids Public Schools, the Torgesen Test of Phonemic Awareness, and the SanDiego Sight Words test.

The staff included one director and four lower-elementary teachers, who received two-days of training in methods prior to program start-up. Curriculum content consisted of structured and intensive small-group instruction in phonological awareness, decoding, encoding, vocabulary and sight-word development, listening and reading comprehension. The program took place at Cherry Creek Elementary school in Lowell, MI.

**Program Overview**

The program ran for six weeks on Tuesdays, Wednesdays, and Thursdays from 9:00 a.m. to 12:00 noon. The daily instruction consisted of 20 minutes of a whole group instruction, and 28 minutes of small group instruction at four stations: Phonemic Awareness and Phonics Instruction, Written Expression and Art, Sight Word Development, and Reading in Context.

The first station’s activities focused on phonic instruction and increasing phonemic awareness. Phonics instruction concentrated on reviewing and introducing individual letters and/or letter combinations through visual, auditory, and blending drills. It also focused on teaching syllable types through the use of
colored blocks with hand signals. Within this phonics instruction, a strategy for reading was introduced. "Passports to reading" was a key which emphasized 4 ways to unlock a unknown word. The four strategies encouraged the reader to: (a) find a pattern(tells the vowel sound for green words or words that follow the rules and says what they should), (b) skip it and reread, (c) look at the pictures, and (d) tap it out.

The next part of this station focused on phonemic awareness activities. Phonemic awareness was broken into four main sections: rhyming, blending, segmenting, and deleting tasks. The rhyming tasks focused on words that sound the same in the middle and end. Three activities were used in teaching rhyming. Reading poems or nursery rhymes and having students tells words that rhyme, picture matches, and picking out the word that does not rhyme. Blending focused on activities from a training manual written by Torgesen and Bryant, "Language Remediation", and "Reading Teacher's" books. These exercises consisted of using Rocky the Robot. Segmenting activities also incorporated the use of Rocky the Robot. These activities focused on matching pictures according to similarities in beginning, middle, ending, and middle sounds, identifying the position of a given phoneme in 3-phoneme words, and pronouncing phonemes in specified position(isolate). The deleting activities consisted mainly of Rosner's Analysis exercises. Students were informally given the Test of Auditory
Analysis (TAAS) to determine levels and decide which level the student should begin with. The TAAS targets the student's ability to identify the separate sounds in spoken words and the temporal sequence of those sounds. Rocky the Robot was also used to practice blending and segmenting words from miscellaneous lists.

The second station focused on sight word instruction with emphasis on building automaticity with high frequency lists through multisensory introductions and game formats for review. Each student group had a See & Say Word Review deck which was practiced daily. New words were introduced weekly. The sight words were compiled by the title one reading teacher and were taken from a list of pre-primer, primer, and first grade level basals along with high frequency words. Words introduced were phonetic words (green words) and/or words that did not follow the rules or non-phonetic (red words). Six steps were used to practice all non-phonetic words while only steps 1 through 3 were used for phonetic words. In the first step, the teacher wrote a word in black marker on an index card (put a red dot in upper corner for nonphonetic words/green dot for phonetic words) and said the name of each letter as he/she wrote it then underlined as they said the whole word ("S-A-I-D spells SAID"). Students do the same with the marker, and took the card home to practice. The second step involved having each student say the word. In the third step, the teacher gave an example of a sentence which used the sight word
correctly, and then asked each student to use the word in their own sentence and recorded it on the back of their flash card. The next step focused on having the students trace and say the word three times in a sand tray. The fifth step involved arm tapping the word three times. For example, the student would hold the card in extended left arm, looking at each letter they would pronounce in unison "S-A-I-D" (as they tap each letter out down the arm) and "spells"(bring arm back up to top of arm) "SAID"(slide arm down quickly). The last step involved writing the sight word three times using lined paper on top of a screen. Other activities were used to practice sight words like Dolch puzzles and stories, and teacher-made game activities.

The third station consisted of reading in context activities. This station emphasized the application of learned phonics skills through use of controlled vocabulary readers with emphasis on fluency and comprehension. Readers used were the Primary Phonics series. One story was read per day. In order to increase oral reading, students first individually read the story, then participated in small group readings like choral, radio or rehearsed, and/or paired readings. Reading in context used Project Read story mapping manipulatives, and teacher-made board game activities.

The last station focused on written expression and art activities. Activities at this station emphasized writing language experience stories and poems, written and artistic responses to
listening activities, picture dictionaries, print concepts, and story mapping.

Measures

For this study three measures were used to assess the students. The first measure used was called the Vowel and Consonant Screening Test. This test was designed to measure student's ability to categorize alphabet letters into vowels and consonants. Students were shown 10 single magnetic letters of the alphabet and were asked to categorize the letter as a vowel or a consonant. The second measure used was called the Determining the Vowel Sound Test. This test was used to assess if the student could correctly determine if a word contained a long or short vowel sound. For this test each student silently read the list of ten words and was told "use what you've learned about sounding out words to tell me if the vowel sound is long or short". The third test used was called the Sight Word Test. This test compiled a list of 120 sight words at the pre-primer to first grade levels. For this test, students began reading aloud the pre-primer list and continued to read words aloud until all words had been attempted.

Procedures

In order to implement the summer program, four procedures took place. First, the recruitment of participants took place. To recruit participants for the summer program, parents of first grade student at-risk for reading failure were contacted by their child's
classroom teacher at parent/teacher conferences. These students were targeted based on pretesting conducted in the spring of 1998. The pretests consisted Vowel and Consonant Screening Test, Determining the Vowel Sound of a Word Test, and Sight Word Test. Personal phone calls were also made to parents as a follow-up, and student placements in the summer program were finalized on May 1, 1998. Thirdly, transportation was arranged with Lowell’s transportation director to have students transported on Tuesdays, Wednesdays, and Thursdays for six consecutive weeks to and from home to school. The students arrived at Cherry Creek school just before 9 a.m. each morning and departed at noon. Third students engaged in the daily instructional program. The daily routine consisted of a whole group session from 9:00 to 9:20 a.m., four rotating station times(each 28 minutes in length) from 9:25 a.m. until 11:45 a.m., snack/exercise break time from 10:25 a.m. until 10:45 a.m., and a clean-up and closing activity from 11:45 a.m. to 12:00 noon. Lastly, in the sixth week of the program, the part-time director post tested all students on the Vowel and Consonant Screening Test, Determining the Vowel Sound of a Word Test, and Sight Word Test.

Results

The results indicated the summer program interventions positively impacted the at-risk first graders reading ability. When comparing the results of the Vowel and Consonants Screening Test,
only 8 of 21 students were able to correctly distinguish between vowels and consonants at pretest. At post test all 21 students were able to correctly identify the vowels and consonants. When comparing results on the Determining the Vowel Sound of a Word Test, no students were able to correctly determine the vowel sound at pretest. At post test, 11 students were able to correctly determine vowel sounds. The ten remaining students were able to correctly determine the vowel sounds on the test with an eighty percent or better. Overall, students improved 32.85% on average on this test. On the Sight Word Test, students at pretest were able to only read 84.3 words on the average correctly. At post test, students were able to read 103.9 words on the average correctly. Overall, students were able to read 19.6 words more words on the average at post test than pretest.

Conclusions

The summer program had positive impacts on providing intervention in the area of reading to the at-risk first graders. First, students made great gains in the ability to recognize and categorize letters correctly as vowels and/or consonants on the Vowel and Consonants Screening Test from pre- to post-testing. Secondly, the students made an overall average gain of 32.85% on the Determining the Vowel Sound of a Word Test. Thirdly, students were able to read 19.6 sight words more on the average at the post test than pretest. These testing results provide a positive gain for
the at-risk first graders in the summer intervention program. Not only did students make gains in the area of reading, parent input at the conclusion of the program provided positive feedback on their child's accomplishments and boost of confidence in the area of reading.

As for recommendations for improving the summer intervention program, the length of the program should be considered. First, the intervention program ran for only three mornings per week for six consecutive weeks. More time allotted for the program could be beneficial to the at-risk readers since most studies researched ran from ten to sixteen weeks. A second recommendation would be inservicing and training for the first and second grade teachers in the intervention activities utilized in the summer program. The last recommendation would focus on the pre- and post-testing measures. A Vowel Test which focuses on four areas of awareness; 1) Does the vowel have a long or short sound? 2) Why does the vowel have a long or short sound? 3) What would that long or short vowel sound be? 4) Pronounce the word. This test would be a more thorough way to gain information about the student's understanding and ability to apply the concept.
References


Michigan Literacy Inc. Okemos, MI. 1990


### 1998 SUMMER READING PROGRAM - WORLD OF WORDS (WOW)

**Results**

<table>
<thead>
<tr>
<th>Student's Name</th>
<th>Categorizes Letters as Vowels or Consonants</th>
<th>Correctly Determines Vowel Sound (in percentages)</th>
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<tbody>
<tr>
<td></td>
<td>Pre: Y N</td>
<td>Post: Y N</td>
<td>Pre-Test</td>
</tr>
<tr>
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<td>X X</td>
<td></td>
<td>30</td>
</tr>
<tr>
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<td></td>
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<tr>
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<tr>
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<tr>
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</tr>
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<td>William</td>
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<td></td>
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</tr>
<tr>
<td>Zachary</td>
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</tr>
<tr>
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<td>Brennan</td>
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<td></td>
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<tr>
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<tr>
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</tr>
<tr>
<td>Alex</td>
<td>X X</td>
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**RESULTS**

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Average differ. 32.85
### 1998 SUMMER READING PROGRAM - WORLD OF WORDS (WOW)

Results

<table>
<thead>
<tr>
<th>Student's Name</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Word Increase</th>
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</tbody>
</table>

**Average Words**
- Pre-Test: 84.25
- Post-Test: 103.85
- Increase: 19.6 words

**This score was not figured into the average increase.**

Statistics\WOW Results