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An Evaluation of the Effectiveness of Phonemic Awareness Instruction in a Multiply Handicapped Kindergarten Classroom

by
Janice A. Sanders

A Thesis

Submitted in partial fulfillment of the requirements of the Masters of Arts Degree in the Graduate Division of Rowan University May 4, 1998

Approved by _______________, Professor

Date Approved ___________
Abstract


This study is an evaluation of the development of pre-reading skills in kindergarten children in a Multiply Handicapped program. Phonemic awareness activities from the Project ASSIST Kindergarten Curriculum were used to supplement traditional kindergarten instruction in the experimental group. Two kindergarten classrooms for children with Multiple Handicaps comprised the sample (N=13). The control group had five students, while the experimental group had eight. Instruction in phonemic awareness was delivered to the experimental group for a period of approximately four months. A variety of multi-sensory activities were used daily in the classroom in addition to the kindergarten curriculum. The control group utilized only the traditional kindergarten curriculum during the same period of instruction. Four subtests of the Slosson Test of Reading Readiness were used to measure growth in pre-reading skills. Growth was determined by the difference of the post and pre test scores for the subtests and the whole. Due to the small sample size and the varied needs of the population studied, conclusions from this study must be made cautiously. The results of this small group indicate the probability that greater progress in reading readiness skills is attained with the use of this kind of stimulation.
Mini-Abstract


This study evaluates the use of phonemic awareness activities from the Project ASSIST Kindergarten Curriculum in a kindergarten program for children with Multiple Handicaps. Students in the experimental group showed gains in the area of auditory discrimination. Supplementing the traditional kindergarten instruction with specific activities to develop phonemic awareness led to growth in auditory discrimination skills as measured by four subtests of the Slosson Test for Reading Readiness. Since the total population in this study is small (N=13), further research is needed to verify the results.
Chapter I

Introduction

In our nation, reading skills are an area of great public concern. Reading ability is important to fulfilling one’s role as a citizen and realizing aspirations in the job market. According to recent figures for the learning disabled population (1992-93), about 1.8 million students are identified as having a reading disability with some going so far as to describe this problem as an epidemic (Roush, 1995). While the various suggested reasons for this epidemic (brain physiology, social and economic conditions, and/or environmental considerations) are currently under study, parents, administrators, teachers, lawmakers, and others are concerned with taking immediate action to improve literacy rates.

Current Theory in Reading Instruction

One of the recently emphasized approaches to improving reading skills is instruction of phonological skills and the alphabetic code (Felton, 1993; O’Connor, 1996; Snider, 1995). It is well documented that direct instruction in the alphabetic code improves beginning reading. Teaching pre-reading skills to kindergarten students has been proposed as a way to prevent reading failure and stop the downward trend of reading ability.
Need for the Study

This study is needed to determine an effective method to prepare students for reading instruction. Phonics and comprehension skills are interdependent and if decoding is not automatic, reading comprehension will be impaired. Determining effective teaching methods to prepare kindergarten students to become skillful readers is a major task. This study proposes to evaluate the effectiveness of the Project ASSIST methods to facilitate pre-readers’ development of phonemic awareness, which is an important predictor of success in initial reading.

Value of the Study

The Project ASSIST Institute (1997) has recently developed a multisensory, intensive phonics curriculum for kindergarten. The program’s stated purpose is to teach pre-reading skills “when brains are plastic and hearts are excited about learning” (Biasotto, 1997, p. iii). Gathering statistics regarding the efficacy of this program is important to evaluating its success and to refining and improving it. This study can determine the need for modifications in part of the kindergarten curriculum and provide practical applications for its implementation. The results have implications for curriculum development for special education kindergarten students.
Purpose of the Study

This study will evaluate the efficacy of the Project ASSIST Kindergarten Curriculum in developing the pre-reading skills of kindergarten children in a program for Multiply Handicapped children.

Research Questions

1. Does the Project ASSIST Kindergarten Curriculum for phonemic awareness result in meaningful growth of the pre-reading skills of kindergarten students in the Multiply Handicapped program?

2. How does the growth of students using this curriculum compare to that of Multiply Handicapped kindergarten students in a program of traditional instruction?

Definition of Terms

The following terms have a specific definition within the context of this thesis.

**Project ASSIST**: Project for Alphabetic Sound Symbol Instruction Systematically Taught (Biasotto, 1997)

**P.A. (Phonemic Awareness)**: the understanding that speech is composed of individual sounds displayed in the ability to manipulate the sounds of the spoken word by blending, segmenting, rhyming, or other ways

**Phonological Awareness**: can be used interchangeably with Phonemic Awareness (Torgesen, 1996)
Scope and Limitations of the Problem

Teaching pre-reading skills to kindergarten students with multiple handicaps is an important focus of the current curriculum for Multiply Handicapped students enrolled in kindergarten. Implementing an effective curriculum that is multisensory and developmentally appropriate is a major task. The total population in the Multiply Handicapped program is small. Results will not necessarily be generalizable to other Multiply Handicapped kindergarten students. The time limitations for the study place additional constraints on the interpretation of results. The actual treatment will occur for three months. Finally, the Phonemic Awareness portion of the Project ASSIST Kindergarten Curriculum represents only one of four parts of the program. Further study will be needed to determine the efficacy of the curriculum in its entirety.
Developing a nation of competent readers has been a concern since the early days of our country. Jefferson, Franklin, and Webster felt that education should prepare citizens for the republic. The way to ensure a free country was through an informed citizenry, a public that could read and formulate independent opinions. Educators in this country have been seeking effective methods for teaching reading since colonial times. The best way to teach children to read has been debated for many years. As the number of poor readers and nonreaders has increased, an increasing emphasis has been placed on reading. The various components of reading and the varied methods of teaching it have been studied and researched. While developing a nation of readers is a national concern, there is no general agreement on the preferred methods for attaining this goal. In fact, there is often much controversy as to the best method for teaching reading.

Reading appears to follow an observable developmental progression. In the early stages, readers focus on phonology and letter and word recognition; in the later stages, language and reasoning are the focus. Some have referred to this development as the shift from learning to read and reading to learn. Our nation seems to be slow to recognize the developmental nature of reading. Current educational practice seems to ignore beginning reading research and theory.

The current debate about teaching children to read has divided teachers into two opposing camps, i.e. code emphasis and meaning emphasis. Arthur (1990) addresses the
interdependence of meaning appreciation and orthographic facility, and concludes that both are important. Stanovich (1993-4) has found that exposure to print is valuable to all children. Students will build valuable vocabulary and cognitive structures through immersion in literacy activities, but some students will require systematic phonics instruction in order to acquire the alphabetic code. Early instruction is important in order to avoid the negative emotional side effects that begin to be associated with school experiences as a child’s energies are focused on word recognition processes leaving little energy for comprehension.

Jeanne S. Chall has tackled the controversy surrounding beginning reading in the three editions of her classic book, *Learning to Read: The Great Debate* (1996). She has reported the research evidence and theories of beginning reading and has attempted to analyze the direction of preferred instructional practice in light of current evidence. She notes that the early gains seen in students taught to read by a meaning-emphasis approach often erode as the students get older. Automaticity in decoding is needed in order to concentrate on gaining meaning from text. She suggests that the meaning-emphasis approach to teaching reading has gained in popularity because it allows teachers great autonomy and it confirms a cultural view of learning that is loving and hopeful. Unfortunately, some children require direct instruction on the “mysteries” of decoding in order to advance to the stages of comprehension that require higher mental processes. Instruction that teaches the skills and tools of reading is essential for students who tend to be at risk for learning to read.

Marilyn Jager Adams in her work, *Beginning to Read* (1990), has gathered and scrutinized all the major research on beginning reading. Her book focuses on developing
basic reading and reading readiness in young children. Skilled readers possess a system of skills and knowledge. Adams' study substantiates the importance of both automatic word recognition and comprehension in reading. Furthermore, many findings indicate that the more children read, the better readers they will become. The dilemma is circular; teachers need to teach children to read well so that they will read a lot. In attempting to design a successful program for beginning readers, the factors that contribute to success in reading need to be considered.

While prereaders' ability to name letters is a good predictor of their future success in learning to read, teaching young children to name the letters of the alphabet does not improve their reading ability. Adams' (1990) analysis of the research in this area indicates that fluency in letter naming is indicative of familiarity with letters. This familiarity facilitates beginning readers' efforts in several ways. (1) Prereaders have an easier time learning letter sounds and word spellings when letter identification is automatic. (2) As an older reader, letter identification speed contributes positively to seeing words as patterns of letters. (3) A child's learning of sounds and their correspondence to letters (the alphabetic principle) is supported by the close relationship between letter names and sounds. (4) The predictive nature of letter naming speed may reflect a capacity for automaticity that differs among individuals, but is important for fluent reading. The relative importance of letter naming in each of these areas is not as critical as providing students with appropriate training to increase their fluency with letters.

The next best predictor of early reading success is phonemic awareness (P.A.). Reading research during the last twenty years has established a positive link between phonemic awareness and beginning reading. The Bowman Gray Program Project, part of
the National Institute of Child Health and Human Development Research Programs in Learning Disabilities, has conducted research to develop a definition and subtyping system for dyslexia. Felton (1993) demonstrated that young (kindergarten and first grade) children with phonological problems were able to experience success in reading when given direct alphabetic code instruction. Teaching to automaticity was important for these students to become successful readers. Among the findings reported was that phoneme segmentation ability is the best predictor of reading ability from kindergarten and first grade performance (Lyon, 1995). Shaywitz (1996) has collected data from a longitudinal study that indicates that phonological awareness was the best predictor of reading ability, even in high school! Lyon and Chhabra (1996) analyzed research data from many studies and concluded that phonological awareness seems to be the language skill most lacking in disabled readers. They noted that recent longitudinal studies of treatments or interventions of kindergarten and first grade students indicate that programs need to offer direct and explicit instruction to develop sound-symbol relationships. They concluded that early identification and early treatment are critical. Since phonological deficits are identifiable in the early years of schooling, early intervention should be implemented. Walton (1995) demonstrated the positive relationship of phonemic awareness and reading success even when the variables of age, language ability, social class, I.Q., and memory were controlled. Stanovich (1993/1994) considered phonemic awareness a good predictor of reading acquisition because it underlies the learning of spelling-sound correspondences. Training studies demonstrate that preschool and kindergarten children exposed to phonological awareness programs become better readers.
Snider (1995) concluded that P.A. can be developed prior to reading ability and that it facilitates the acquisition of reading skills. Snider has also derived from a study of the two decades of P.A. research that effective instruction in phonemic awareness must be explicit and logically sequenced. Arthur (1990) proposed phonemic awareness training as an important part of early sound-symbol instruction. O’Connor, Notari-Syverson, and Vadasy (1996) recommended teaching phonological skills in kindergarten. Their research implemented developmentally appropriate, teacher-led, whole classroom activities to increase phonological skills. Felton’s (1993) review of early studies also supported the view that early training in P.A. positively impacts the acquisition of reading skills. Among the instructional implications noted were that intensive instruction leading to automaticity is needed to develop skilled readers.

Research indicates that creating phonological awareness in prereaders is important to becoming a skillful reader. Children lacking in the perception of words as sequences of sounds can not benefit from traditional phonics instruction. A direct method of training young children in phonology (Howard, 1987) provides the basis for further instruction in the alphabetic code. Oral motor awareness can be a simple and powerful tool of instruction. Torgesen (1996) insists that the most important knowledge gained about early reading skills in the last twenty years is the vital role of phonological awareness. His research substantiates that early development of P.A. is critical for children who are at risk for reading. Juel (1993) asserts that research indicates that first graders who are behind their classmates in word recognition generally remain poor readers throughout their school careers if they do not receive intensive intervention.
There have been recent studies involving phonemic awareness training. Walton (1995) concluded that relevant prereading skills based on rhyming words were important in fostering prereaders’ ability to read new words easily and quickly. The results suggested that words with segmented spelling may enhance the learning process. His study, however, utilized research personnel as instructors and did not consider retention over time. O’Connor, Notari-Syverson, and Vadasy (1996) utilized an intervention using classroom personnel to deliver phonological activities. They used developmentally appropriate activities suitable for the kindergarten population. They also included in their study children with a wide range of abilities and in both self-contained and included settings. Their findings indicated that students’ individual disabilities do not necessarily limit phonological growth when instruction is given. They also discovered that students with disabilities improved their phonological performance more than those in the control groups, but not enough to raise them to the level of their typically developing peers. The authors concluded that kindergarten teachers can improve their students’ P.A. prior to formal reading instruction. For students with disabilities to achieve significant gains in phonological skills, the authors suggest a more intense instruction than that delivered to large classroom groups.

The Project ASSIST Approach

The Project ASSIST (Alphabetic Sound Symbol Instruction Systematically Taught) Institute has recently (1997) developed a kindergarten curriculum. The program has four focal areas of instruction: alphabet activities, phonemic awareness, sound/symbol, and comprehension. Biasotto (1997) has incorporated the auditory
discrimination work of Phyllis Lindamood and the visualization techniques of Nanci Bell into the program. The kindergarten curriculum is an outgrowth of twenty years of work developing a program of instruction for disabled readers / dyslexic students based on the work of Samuel Orton and Anna Gillingham. Instruction in the new program is alphabetic, systematic, intensive, and multisensory. Each of these areas are based in current research and theory in beginning reading. The instant recognition of the letters of the alphabet is necessary as a basis for automaticity in decoding. A student will be hindered in learning to read if s/he has trouble identifying the letters in words.

Adams’ (1990) research synthesis supports the importance of accurate and automatic letter recognition in pre-readers. Stanovich (1993-4) supports direct teaching of the alphabetic code to facilitate beginning reading. A systematic and intensive course of instruction will help develop automaticity. Felton (1993) agrees that automaticity is important because reading is not a pleasurable activity without it. Multisensory activities include the use of moving individual tokens either along a line or into boxes (Elkonin boxes) as each sound is produced. Both of these techniques are addressed in Snider’s (1995) synthesis and summary of P.A. research.

Research also addresses several troublesome areas that the Project ASSIST kindergarten curriculum does not. Lyon & Chhabra (1996) indicate that some children are resistant to even a highly and intensive program of treatment. Large classroom groupings make individualization and specialization difficult for some learners (O’Connor, 1996). In this study this issue will not be addressed because the classroom population is small. Stanovich (1993-94) has identified the “Matthew Effect” as a problem for students with low / less skilled reading abilities. The student who learns to read easily, reads more and
therefore increases his/her ability. The student who has difficulty learning to read, struggles, finds reading a chore, reads less, and therefore falls further behind. It is hoped that early intervention will equip students with the skills that will enable them to read, they will enjoy reading, read more, and become better readers.

The body of research on pre-reading skills and beginning reading indicates the importance of teaching students phonological awareness. Project ASSIST has developed a tool that addresses the areas research has defined as critical to beginning reading success. Collecting data on the progress of students taught using the phonemic awareness portion of the Project ASSIST Kindergarten Curriculum is important in measuring its success and refining it to better suit the needs of kindergarten students, especially those with disabilities.
Chapter III

Methodology and Procedures

The sample to be studied is a kindergarten classroom for Multiply Handicapped students. Two classrooms exist in the school district. Both are located in the district’s early childhood center. Each classroom has a special education teacher and one instructional assistant. (One to one aides are supplied as per individual’s needs.) The enrollment numbers are similar and the programs follow the district’s kindergarten curriculum as well as focusing on the goals and objectives set forth in the students’ Individualized Educational Plans (IEPs). Both programs are full day. There are currently 8 students in the control classroom and 9 in the experimental group. Some students from each group are part of a regular kindergarten program for half of the day (control = 1; experimental = 4). All students are mainstreamed for physical education, library, and music at least once a week. All students are within the kindergarten age range as defined by the district (at least five years of age by October 15th of the current school year). At the time of the beginning of the study, one of the students (in the control group) was six years of age.

Prior to the study, all students were administered four subtests of the Slosson Test of Reading Readiness: letter identification, upper case; letter identification, lower case; auditory discrimination, rhyming; and auditory discrimination and memory, beginning sounds. This instrument was used to establish a baseline for the individual students. The same test will be administered at the conclusion of the study to determine individual progress and compare it with that of the control group.
The control group will receive traditional kindergarten instruction as determined by the established curriculum and the students’ IEPs. The experimental group’s instruction, in addition to traditional, will be supplemented by the phonemic awareness portion of the Project ASSIST Kindergarten Curriculum. Both groups’ teachers (control and experimental) received training in the Project ASSIST Kindergarten Curriculum in the summer of 1997. The teacher of the control group is delaying implementation of the program in order to make this data collection possible. The teacher of the experimental group is implementing the phonemic awareness portion of the curriculum earlier than outlined in the sequence chart in order to facilitate the purposes of this study. Notes will be made on program implementation and adjustments as part of the study. The individual students’ progress will be noted as well as the progress of the experimental group as compared with the control group.

Some possible problems are foreseen in the area of data collection and analysis. The regular kindergarten experience of the “mainstreamed” students will vary. Teacher report will be the source of information of types and amount of phonemic awareness activities for those students. Student instruction will not be as “controlled” as that of the students who are in the self-contained environment for the entire day. (Currently, specific regular phonemic awareness instruction is not part of the district’s curriculum. The current reading series offers some activities to promote phonemic awareness, but not in a systematic way.)

The composition of the student population may change during the course of the study. A new student has been added to the experimental group since the study was
proposed. Data will be kept on all such students, but their results will be interpreted with limitations.

The characteristics of the children in the multiply handicapped classrooms is varied. Students will not be matched one to one for purposes of analysis. Their pre and post test scores will be compared on the basis of individual growth and possibly ranking. The small numbers will make statistical analysis impractical.

The introduction of the phonemic awareness activities earlier than suggested by the Project ASSIST Kindergarten Curriculum may impact the success of the program. This accommodation was made to facilitate the study. Baseline data was gathered prior to the “treatment” by the experimenter but due to absences, it was not obtained on the same day. New entries were administered the appropriate parts of the Slosson Test of Reading Readiness as soon as possible.

The Project ASSIST Kindergarten Curriculum for Phonemic Awareness consists of developmentally appropriate, multisensory activities for rhyming, sentence parts, multisyllable word parts, initial and final consonants, and the formation of consonant and vowel sounds. Literature, games, music, drills, and scripted instruction are part of the program. The sounds will be presented in alphabetical order to minimize confusion and to maintain consistency within the district’s curriculum.

Treatment of the Data

In order to answer the research questions posed in this study, the following design and method of data analysis were used. In the first research question, the growth of the experimental group was measured by subtracting total pretest from total post test scores.
for the test group in the four administered sections of the Slosson Test of Reading Readiness. The comparison of the experimental group with the control group in the second research question was made in the same manner with both total test scores and with section scores divided into letter identification and auditory discrimination components. Due to the small sample size (N=13), no statistical analysis was made.
Pre and post test data were collected on 13 students (control group, n=5; experimental group, n=8). Scores were obtained for each of the four subtests used from the Slosson Test of Reading Readiness (letter identification, uppercase; letter identification, lowercase; auditory discrimination, rhyming; and auditory discrimination and memory, beginning sounds). A total score was obtained for each subject (N=13). The individual pretest scores were subtracted from the post test scores to determine growth (gain) for each student. Table 1 displays the results for the total group. Tables 1a and 1b present a comparison of the pretest and post test scores for the control (1a) and experimental (1b) groups. All subjects in the experimental group demonstrated an overall gain in total test scores.

Next, the scores were viewed as two subsets: letter identification (uppercase and lowercase) and auditory discrimination (rhyming and memory and beginning sounds). Gain in each subset was calculated for each student by subtracting pretest subset scores from post test subset scores. Table 2 illustrates the gains for the total group in each of these
two components. Tables 2a and 2b present a comparison of each student’s gain in these
two areas for the control (2a) and experimental (2b) groups.

The final sample group (N=13) was smaller than originally anticipated (N=17). The data collected on new entries to the program was not utilized in the analysis because they were not in the subject pool from the onset. The students in the two classrooms were not matched for classification, age, sex, or “mainstreaming” experience. Due to these factors and the very small sample size, one must be very cautious in any conclusions drawn from this study.

A visual inspection of the data indicates that students in both groups made gains in the areas examined during the course of this study. All of the students in the experimental group made gains between 3.0 and 20.5 points, while all but one of the students in the control group demonstrated gains between 4.0 and 20.0 points. One student in the control experienced a loss of 0.5 points.

An examination of the results for the control group needs to consider some extraneous factors. Subject C1 identified fewer lowercase letters in the post test session. In both the pretest and post test situations, this subject would sing parts of the alphabet song at random when viewing the letter page of the stimulus book. In the pretest setting, the subject happened to identify three of the letters by chance using this technique. In the post test situation, none of the student’s singsong responses matched the letters presented for identification. Subject C1’s identification of uppercase letters remained consistent in both the pre and post test situations.

Subject C4 was unable to respond correctly to any of the test items in the pretest. The examiner was unable to determine whether the subject did not know any of the
information or was not comfortable with the examiner and/or the testing situation. When the classroom teacher was consulted, she indicated that at that point in time she had not been very successful in eliciting appropriate responses from the subject. Prior to the administration of the post test, the subject approached the examiner with a parent in a public out-of-school setting. This student-initiated social contact surprised both the examiner and the subject’s parent. When the subject was given the post test (a few days after this meeting), the subject responded enthusiastically. Therefore, this subject’s “growth” may be the result of a faulty baseline.

One should also take into consideration that the letters of the alphabet had not been formally introduced to the experimental group prior to the pretest, while the control group was already on the letter “E” at the time of the pretest. Neither class had completed its study of the letters of the alphabet by the time of the post test; the control group was on the letter “P” and the test group was on the letter “O.” A measure of “growth” was utilized in recording the results to allow for these variances.

Comparison of the results needs to be qualified due to the small numbers, the varied abilities of the subjects, and the suspect baseline of one of the controls. Examining the data from the experimental group shows that while all of the test subjects made positive total gains, five of the eight test subjects made overall gains greater than the average overall gain of the control group (7.3 points). See Table 3.

Subdividing the data into letter identification and auditory discrimination components enables another view of the results. When looking at the area of letter identification, it can be noted that one of the test subjects (T7) made no gain in this area. It must be recognized here that this student correctly identified all the upper and lower
case letter of the alphabet at the pretest session. This “ceiling effect” is registered as no
gain (no visible column for letter identification for T7 on the graph). In like manner, no
gain for a subject is represented by the absence of a column in that area. Only T7,
however, shows no gain due to having already achieved the maximum number of points in
an area. Some subjects in the control group (C1 and C3) registered a loss in the areas
tested.

Examining the results in this manner allows one to observe the growth subjects in
the experimental group made in the area of auditory discrimination compared to the
control group. There were no instances of a loss in the area of auditory discrimination for
the test subjects (although one subject’s scores remained constant). In the control group,
two subjects’ scores remained constant while one experienced a loss. The average
gain in this area for the test subjects was 4.0 points compared to an average gain of less
than 1.0 for the control group.

Since both classrooms utilized the kindergarten curriculum which stresses letter
identification and only the experimental group used the supplemental Project ASSIST
activities for phonological awareness, it is beneficial to note if there are greater gains in the
experimental group in this area. The results of this very small sample indicate a likelihood
that using the activities from the Project ASSIST Kindergarten Curriculum for Phonemic
Awareness will increase a student’s growth in this area as opposed to using just the
regular kindergarten curriculum. It may be cautiously concluded that Project ASSIST
Kindergarten Curriculum activities for phonemic awareness have a positive impact on
students’ auditory discrimination skills.
Table 1a

Total Growth: Control Group

n=5

Subjects

LAPreTest
PostTest

Total Score

Pre
Post

C1
C2
C3
C4
C5
Table 1b

Total Growth: Test Group

n=8

Subjects

<table>
<thead>
<tr>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
<th>T7</th>
<th>T8</th>
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<tr>
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<td>PostTest</td>
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<td>PostTest</td>
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<td>PostTest</td>
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</table>

Total Score
Table 2

Comparison Growth Letter Ident/Aud Disc

N=13

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<tr>
<th></th>
<th>Letter Ident</th>
<th>Auditory Discrim</th>
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<tr>
<td>C1</td>
<td>18</td>
<td>-2</td>
</tr>
<tr>
<td>C2</td>
<td>18</td>
<td>-2</td>
</tr>
<tr>
<td>C3</td>
<td>16</td>
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<tr>
<td>C4</td>
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<td>-2</td>
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<tr>
<td>T8</td>
<td>6</td>
<td>-2</td>
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</table>
Table 2a

Letter Ident vs Auditory Discrim
Control Group n=5

Subjects
- Letter Ident
- Auditory Discrim
Table 2b

Letter Ident vs Auditory Discrim
Test Group n=8

<table>
<thead>
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<th>Subjects</th>
<th>Letter Ident</th>
<th>Auditory Discrim</th>
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</thead>
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<td>12</td>
<td>14</td>
</tr>
<tr>
<td>T2</td>
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<td>12</td>
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<td>T8</td>
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Table 3

Growth in subtests and total
N = 13

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<tr>
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<th>Subtest 1 uppercase</th>
<th>Subtest 2 lowercase</th>
<th>Subtest 3 rhyming</th>
<th>Subtest 4 beg sound</th>
<th>Total gain</th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td></td>
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<td>C3</td>
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</tr>
<tr>
<td>C4</td>
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Chapter V

Summary

This study was an attempt to evaluate the development of pre-reading skills in kindergarten children in a Multiply Handicapped program. Phonemic awareness activities from the Project ASSIST Kindergarten Curriculum were used to supplement traditional kindergarten instruction in the experimental group. The sample (N=13) comprised students in two kindergarten classrooms for children with Multiple Handicaps. The control group had five students, while the experimental group had eight. Instruction in phonemic awareness was delivered to the experimental group for a period of approximately four months. A variety of multi-sensory activities were used daily in the classroom in addition to the school district’s kindergarten curriculum. The control group utilized only the traditional kindergarten curriculum during the same period of instruction.

Four subtests of the Slosson Test of Reading Readiness were used to measure growth in pre-reading skills. Growth was determined by the difference of the post and pretest scores for the subtests and the whole. Due to the small sample size and the varied needs of the population studied, conclusions from this study must be made cautiously.
In general, the students in the experimental group achieved scores in the area of phonemic awareness that were equal to or greater than those of the control group. The results of this small sample indicate the probability that greater progress in reading readiness skills, especially in the area of phonemic awareness, is attained with the use of the kind of stimulation offered in the Project ASSIST Kindergarten Curriculum. A visual inspection of the test results indicates greater growth in the area of auditory discrimination in the experimental group. The average total gain for the control group was 7.3 points, while the average total gain for the experimental group was 11.2 points. If the results of subject C4 (faulty baseline data) are not considered in the control sample, the average gain of the experimental group exceeds that of the control group by over 7 points.

Further study utilizing the entire school year (or at the minimum the introduction of all the letters of the alphabet) would be beneficial to determine the efficacy of the phonemic awareness portion of the Project ASSIST kindergarten curriculum in a special needs classroom. A larger sample size would provide opportunity for statistical analysis of results and the possibility of matching students in the experimental and control groups according to classification, severity of handicapping condition, age, and other factors that could impact the findings.
References


