

The Effects of Two Types of Reading Interventions on the Test Scores of Students who Have
Intensive Special Needs

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Abstract

The purpose of this study was to determine which of two types of reading interventions, phonics-based or sight word-based, was more effective with improving reading scores of students with intensive special education needs on the TOWRE assessment. A quasiexperimental design was used, utilizing a pretest, posttest, and quarterly progress monitoring checks. Participants in the study included 14 students enrolled in a Multiple Intensive Needs Classroom between kindergarten and fourth grade from a midsize elementary school in Anne Arundel County, Maryland. Six of the participants took part in the phonics-based intervention, while eight participated in the sight word-based intervention. Data was collected between 2010 and 2012 and was subsequently analyzed. It was hypothesized that there would be no difference between the scores of the two groups; however, the null hypothesis was rejected when, after analysis, it was determined that the mean posttest scores of the sight word group were significantly higher than the mean posttest scores of the phonics group. Recommendations for future research include duplication of the study using a true experimental design and conducting the research with various age groups to determine whether the results would remain consistent.

CHAPTER I

INTRODUCTION

Overview

Intensive needs students are becoming more and more prevalent in school systems around the country. In 2012, the Center for Disease Control and Prevention reported that 1 in 88 children are born with autism (New Data on Autism Spectrum Disorders, n.d., para. 3). Likewise, 1 in 691 children are born with Down syndrome (Facts about Down Syndrome, n.d., para. 4). These disabilities, along with mental retardation/intellectual disability (MR/ID) and cerebral palsy are among the most common types of intensive disability.

Within the last 25 years, several laws have changed where and how students with intensive disabilities are taught. The Individuals with Disabilities Education Act (IDEA) was enacted by the United States Congress in 1997. This law made federal funds for states contingent upon providing special education students with instruction that was consistent with state standards. Prior to this, many students with intensive disabilities received instruction focusing on life skills in a setting primarily outside the traditional classroom. IDEA contains provisions that entitle all children to a Free and Appropriate Public Education (FAPE) in the Least Restrictive Environment (LRE). FAPE must include involvement with an appropriate public school in order to carry out the student's Individualized Educational Program (IEP). The intention of the LRE provision is to allow students with disabilities to participate with their same-aged peers without being segregated to another setting due to their disability and special education status.

More recently, the No Child Left Behind Act (NCLB) of 2001 set high requirements for all students, including those in special education with intensive disabilities. NCLB maintained

that all students would pass mandated state assessments by the year 2014 (McCormick, 2007). When IDEA was reaffirmed in 2004, it included a provision requiring students with intensive disabilities to participate in the state-wide assessments, even if the test took on an alternative format such as a portfolio of student work to demonstrate academic growth.

As a result of these laws, students with intensive disabilities are commonly placed in a traditional school where their instruction may be conducted in one or several settings within the school. The student may (1) be mainstreamed into a general education inclusion classroom, (2) receive partial inclusion with time spent in a resource room for individualized or small-group instruction/remediation, or (3) be placed in a self-contained classroom with 60% or more of his/her instruction delivered by trained special educators.

Once the student has been placed in the appropriate LRE, a multidisciplinary school team must determine which curriculum best addresses the student's needs, based upon the IEP. Participation on state-wide assessments requires students with intensive disabilities to be instructed in reading, math, and science, the topics measured by the assessments. For reading, remedial instruction for students with intensive needs often takes one of two forms: either phonics-based instruction or sight word-based instruction.

Phonics-based instruction is based upon the sounds made by letters in the English language. There are 26 letters in English which produce 44 phonemes. These phonemes can be spelled in as many as 250 different ways. Phonics instruction includes teaching letter names and shapes as well as phonemic awareness and letter-sound relationships (Ball & Blachman, 1991). The Kaplan Spell Read program was the phonics-based reading intervention used in this study. The following phonemic strategies are implemented within the Kaplan Spell Read program: analyzing, blending, building, synthesizing, listening, spelling, and speed reading.

Analyzing is a phonemic activity in which a student hears a word/syllable and orally separates its individual sounds in the order in which those sounds are heard. Blending is a phonemic activity in which two or more sounds are orally combined to form a syllable or word. Building is a phonemic activity in which a student hears a syllable, identifies the individual sounds, and then constructs the syllable using phoneme cards. Synthesizing is a phonemic activity in which single sounds are blended to form a syllable or word. Listening is a phonemic activity in which a student indicates the initial, medial, or final position of a specific sound in a spoken syllable on an analyze/listening card (MacPhee, 2005). Spelling is a phonemic activity in which the student must recall sound/symbol relationships in order to spell orally-presented syllables or words. A final phonemic activity used in the Kaplan Spell Read program is speed reading. When speed reading, students are provided with nine nonsense word card packs and are challenged to read through them within a designated number of seconds. This activity is the clearest indicator of automaticity as the students are forced to read syllables at a fast rate without time to think through the sounds (MacPhee, 2005).

Sight word-based interventions are reading programs that involve teaching complete words rather than breaking words down into phonemes. Therefore, knowing the alphabet is not a precursor to sight word-based programs. Students must simply be able to use visual discrimination to tell the difference between words and letters. Successful visual discrimination requires the students to recognize the shape, length, order, directionality, and sequence of letters within a word (Haugen-McLane, Hohlt, & Haney, 2007).

The PCI Reading Program was the sight word-based intervention used for this study. The PCI program is presented systematically by introducing words one at a time. Repetition and review are stressed in each lesson. According to the PCI Reading Program manual (Haugen-

McLane et al., 2007), each word introduced is practiced more than 100 times using a variety of learning modalities such as visual, auditory, and tactile/kinesthetic. Students take a posttest each time five lessons have been completed. If the students are unable to correctly read any of the words on the posttest, they are directed back to the lesson for the words that they missed. Students do not progress to the next grouping of five words until proving that they have mastered the five previous words. Upon successful completion of the posttest, students read a book created entirely from the words that they have learned in the PCI Reading Program. PCI Reading also stresses sight word identification by having students trace dotted lines to form words in a tactile/kinesthetic manner, match pictures to words and words to pictures in guided word practice activities, listen to words cards on a card reader device to generate auditory input, and use their sight words to verbally discuss comprehension of the books (Haugen-McLane et al., 2007).

This problem of sight word-based interventions versus phonics-based interventions is of interest because many special education teachers in the United States have taught both varieties of reading interventions but with different groups of students. Often, intensive needs students are only taught using a sight word approach and mainstreamed special education/general education students are only taught using a phonics-based approach. This study aims to expose intensive needs students to both types of interventions to learn which will be more valuable to this specialized population. The results will enable special education teachers to tailor instruction in a way that will be of greater benefit to these students.

Statement of Problem

The focus of this study is on determining whether sight word-based reading intervention programs are more appropriate and effective for special education students with intensive needs

than reading interventions based upon a phonics approach. The results could be used by special educators and shared with those in educational leadership roles to make future academic decisions for students with intensive special needs.

Hypothesis

This study proposes that there will be no difference between the scores earned on the Sight Word Efficiency subtest of the TOWRE assessment by the group of elementary-aged students with intensive needs taught using a sight word-based reading intervention and the scores earned by the group of elementary-aged students with intensive needs who are taught using a phonics-based reading intervention.

Operational Definitions

Phonics-based reading interventions – highly repetitive, explicit instruction in letter/sound correspondence used so that students can understand that letters represent sounds and letters make words

Sight word reading interventions – highly repetitive, explicit instruction in high frequency sight words used so that students may recognize words on sight without having to rely on phonic cues

Students with intensive needs – students who have significant academic, communication, or behavioral needs. Examples could include intellectual disability (ID – also known as mental retardation/MR), Down syndrome, cerebral palsy, autism, etc.

TOWRE Assessment – an assessment used to measure a student's ability to accurately and fluently pronounce printed sight words and phonemic nonsense words when those words are taken out of the context of text (Torgesen, Wagner, & Rashotte, 1999).

CHAPTER II

REVIEW OF THE LITERATURE

Special education students with intensive needs are a subgroup of the overall student population that is often overlooked in the literature regarding reading strategies. There is copious information about strategies for helping students with learning disabilities learn to read, but finding information on this topic for students with mental retardation/intellectual disabilities (ID), Down syndrome, cerebral palsy, autism, and other intensive special needs is difficult. While students with intensive needs are often capable of becoming readers, finding the appropriate forms of instruction can be challenging. The literature points to two major categories of reading programs or interventions: phonics-based interventions and sight word-based interventions.

This literature review will examine reading strategies to use with intensive special needs students. Section one will review what is meant by intensive needs special education and why reading skills are important for this population of students. Section two identifies the components of the reading process with a focus on phonemic awareness and phonics acquisition. Section three presents an appraisal of multiple phonics-based and sight-word based reading intervention programs. Finally, section four highlights several assessment techniques designed to measure student achievement.

Intensive Needs

For the purposes of this literature review, an understanding of what is meant by intensive needs special education is in order. The term *significant cognitive disabilities* is used generally to refer to students classified as having moderate to severe mental retardation/intellectual disabilities and who may have additional disabilities such as autism or physical disabilities. The

term *mental retardation* is used to refer to the population identified as such in specific research studies or reviews. Individuals with severe cognitive disabilities may use nonlinguistic communication and exhibit learning characteristics that require greater time to learn and intensive forms of instructional support (Browder, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzine, 2006).

Learning to Read

Learning to read is one of the most important skills a student will learn at school. According to the report of the National Reading Panel, “Teaching Children to Read,” (National Institute of Child Health and Human Development [NICHD], 2000), there are five major areas children must master in order to become successful readers. *Phonemic awareness* refers to a student’s ability to focus on and manipulate sounds in spoken words. *Phonics* helps students to understand the relationship between sounds and letters. *Fluency* is the ability to read a text both quickly and accurately. *Vocabulary* refers to the words required for effective communication, and *comprehension* is the overall understanding of what has been read. Collectively, these reading components are referred to as the big five (NICHD, 2000).

Phonemic Awareness Comes First

Phonemic awareness requires students to understand that spoken words are made up of phonemes (sounds), and that the separate units of sound can be represented by letters. According to the report of the National Reading Panel, (as cited in NICHD, 2000), “Correlational studies have identified phonemic awareness and letter knowledge as the two best school-entry predictors of how well children will learn to read during the first two years of instruction” (p. 7).

Typically, children develop phonemic awareness through the oral and written language that they are exposed to in their preschool years. Phonemic awareness involves hearing and

producing the separate sounds in words, blending sounds together when pronouncing words, dividing or segmenting words into their component sounds, and recognizing words that sound alike or different (NICHD, 2000). Most phonemic awareness tasks are purely oral.

A student's preschool background has a strong impact on his/her phonemic awareness development. Unfortunately, some students enter school with limited exposure to oral language. It is the teacher's responsibility to diagnose a student's level of awareness, and then to make the distinction between activities that initially develop phonemic awareness and those that reinforce it. Without an understanding of basic phonemic principles, students have difficulty applying them.

Once the level of understanding has been determined, systematic instruction should follow. For students lacking basic phonemic awareness, there are several classroom activities teachers can use to initially develop an understanding of phonemic awareness, including reciting the alphabet, listening to shared reading and writing, recognizing rhymes and alliteration, and orally counting sounds and syllables in words. After students become familiar with the concept, phonemes can be manipulated through isolating, blending, and deleting activities, and then later progress to more advanced practices including segmenting words into phonemes and adding and substituting phonemes. According to Gunning (2008), words become sight words when the reader has formed a strong connection between the sequence of letters in the word's spelling and the word's pronunciation and meaning as it is stored in the reader's oral vocabulary.

Phonemic Awareness Leads to Phonics Acquisition

According to Gunning (2008), students do not advance in their understanding of the alphabetic nature of language until they begin to use letter-sound relationships to read words. All phonemic awareness activities should transfer to reading and writing. Phonics and word

study activities should be short so that children spend the vast majority of their time engaged in real reading and writing.

The goal of phonics instruction is to help children learn and apply the alphabetic principle, which is the understanding that there are systematic and predictable relationships between written letters and spoken words (Gunning, 2008). Knowing these relationships enables readers to accurately and automatically recognize familiar words and to decode unfamiliar words. Knowledge of the alphabetic principle has a direct correlation to a child's ability to read words both in isolation and in connected text.

Systematic phonics instruction produces significant benefits for students in kindergarten through sixth grade, as well as for students with reading disabilities. Phonics instruction is most effective when taught in small groups and has its strongest impact in kindergarten and first grades. Best practices include integrating phonics with instruction in phonemic awareness, fluency, and comprehension.

Teaching phonics, like all other best teaching practices, involves determining what is best for each student. It is essential for teachers to regularly monitor their students' knowledge of letters and sound-letter correspondences along with their ability to decode as they read words and text. This can be accomplished through the use of informal reading inventories and listening to students read instructional-level text aloud, as well as through standardized assessments including DIBELS.

Phonics-Based Intervention Programs

Scott Foresman Early Reading Intervention

For students who have not had the luxury of a preschool experience rich in oral language, the development of phonemic awareness is often impeded. These students therefore often

require intervention in order to develop phonemic awareness appropriately. One intervention program used for developing phonemic awareness is the Scott Foresman Early Reading Intervention (ERI) program. It provides for thirty minutes of daily, explicit, interactive instruction in phonemic awareness activities. Students are given a placement test in order to determine proper instructional placement. According to the Pearson/Scott Foresman Education website, the lessons are interactive, explicit, and systematic with a carefully selected hierarchy of skills sequenced to meet student needs (Early Reading Intervention, n.d., para. 1). Progress is monitored through the use of checklists and periodic progress monitoring tests.

Kaplan Spell Read

Although phonemic awareness is a critical skill in learning to read, the speech-sound correspondences must be enhanced with the spelling-sound correspondences in phonics in order to facilitate the decoding process.

For students who struggle with the application of the alphabetic principle, Kaplan Spell Read Phonological Auditory Training (PAT) is an intervention used for instruction and remediation. Phonological automaticity is the ultimate goal of Kaplan Spell Read, so sound-symbol activities are taught 60-90 minutes a day in small pull-out groups of three to six students. This intervention relies heavily on the use of pseudo-words and syllables so that students do not depend on the sound patterns within their visual memory. Activities include building, blending, synthesizing, and analyzing (Spell Read P.A.T., n.d., paras. 1-2). Students enter into this intervention after being screened with the TOWRE (Test of Word Reading Efficiency) assessment for homogenous grouping and are assessed again with the TOWRE at the middle and end of the school year to determine growth in the areas of sight word efficiency and phonemic decoding. Progress on DIBELS is also noted for the purposes of this intervention.

Failure Free Reading

Failure Free Reading is a high intensity program for first- through twelfth-grade students in the lowest 15% of the reading population. It is implemented for 60 minutes daily with a group of no more than six students. It aims to assist students to read comprehensively from quality reading passages (Failure Free Reading, n.d., para. 1). Failure Free Reading is taught through the implementation of computer-based, talking software and a repetitious independent reading text. The diagnostic component of the computer program effectively places a student within the correct level of the program. Ongoing progress monitoring occurs by way of pre- and posttests incorporated into the computer program. These benchmarks enable the instructor to track individual student progress from beginning to end and print out certificates of completion for each unit (Failure Free Reading, n.d., para. 2).

In Failure Free Reading, the text models correct sentence structure along with stories that are interesting to students. Instructional procedures include previewing, listening, presenting, reading, and reviewing. The preview serves as the anticipatory set of the lesson. During the listening stage, the instructor models appropriate reading of the text. The students respond to factual and inferential questions related to the text during the presenting phase. The students first experience the text during the reading portion of the lesson. In this phase, the instructor reads one sentence aloud and each student reciprocates in turn. This recitation continues until the paragraph is complete. Immediately following the reading, the students utilize the talking computer software. Vocabulary is presented with illustrations, and the story is read to the student through headphones, one sentence at a time. After the entire paragraph is displayed, the students are prompted to locate words within the text. They answer selected response questions based on the passage and complete an activity that involves differentiations in spelling of the

same vocabulary word. Finally, the students are asked to place the vocabulary words in alphabetical order. The students finish the lesson during the review phase when they independently complete two workbook pages (Failure Free Reading, n.d., para. 7).

Sight Word Interventions

Edmark Reading Program

The Edmark reading program teaches 150 words chosen from the Dolch Word List and first-grade readers, as well as regular plural, tense, and gerund endings, capitalization, and punctuation (Edmark Reading Program, n.d., para. 7). It is intended for students with learning or developmental disabilities and for those who have not succeeded with other reading methods. All learning modalities are incorporated into this program. Edmark uses a whole-word approach, with short instructional steps, consistent repetition, and positive reinforcement (Edmark Reading Program, Print Level 1, n.d., para. 2). The typical sequence of a lesson in the Edmark reading program is (1) teaching a word, (2) introducing its meaning, (3) providing comprehension practice, and (4) using the word in the story context (Edmark Reading Program, n.d., para. 4). Language development is built through the order in which words are introduced and explicit teaching of sentence structure. Review and test activities are provided after the introduction of ten words. Short instructional steps, repetition, and constant positive reinforcement build student self-confidence, according to the Edmark Reading Program website (n.d., para. 5) promotional materials. Edmark is intended to be taught one-on-one. In a Louisiana study evaluating the usefulness of the Edmark reading program, qualitative data indicated that more experimental group students than control group students exhibited significantly improved reading ability, attitudes toward reading, attitudes toward school, and attitudes toward self (Mayfield, 2007).

PCI Reading Program

The PCI Reading Program teaches nonreaders to automatically recognize 140 sight words and common nouns and verbs through visual discrimination. It is intended for non reading students of all ages. There are three levels to the PCI reading program. Level One utilizes a systematic, whole-word approach to reading with a large amount of built-in repetition and review (PCI Education, n.d., para. 4). The repetition used in this program is varied, involving every major learning modality including visual, auditory, and tactile/kinesthetic. This program is not intended for general education. It was developed for students with special needs who have not learned to read in traditional or multisensory phonics curriculums. PCI is predominantly print-based and includes lessons in word building, word tracing, guided word practice, and independent practice through activity sheets. There are also word and picture cards so that students can construct and read phrases and sentences. The guided word building lesson, the trace and read workbook, the guided word practice, and activity sheets are used with each word that is introduced. Words are taught in groups of five so that students are able to quickly see the connections between the words. Posttests are provided after every five words to ensure mastery before moving forward. Posttests allow the teacher to assess both short and long-term retention of the newly-learned words and previously learned words. Students are expected to score 100% on each posttest. Any word missed is to be reviewed and then reassessed (PCI Education, n.d., para. 25). After mastering the posttest, students read a book featuring the newly-learned five words and other previously learned words. The books focus on real-world characters and situations, adding an important life skills feature to the program. Characters featured in the books include a girl with Down syndrome who lives on a farm, an African American boy who lives in a small town, and a Hispanic boy who lives in a big city (PCI Education, n.d., para. 27).

Guided Word Practice books are also used to foster and assess comprehension. Each book comes with suggested pre-reading questions, a script to follow for introducing the book and guiding the student to read it, and suggested post-reading comprehension questions (PCI Education, n.d., para. 15). The PCI Reading Program is intended for use as a one-on-one program. All of the lessons and materials are structured for an adult facilitator to use with one student at the student's own pace.

Assessment

DIBELS

Phonemic awareness can be assessed informally, through the use of observational checklists or surveys, or through more formal assessments. An instrument for assessing phonemic awareness is DIBELS, the Dynamic Indicators of Basic Early Literacy Skills. The Initial Sounds and Phoneme Segmentation subtests are specifically designed for assessing a student's understanding of phonemic awareness and can be used to assist teachers with instructional decision-making (Walpole & McKenna, 2004).

The DIBELS Nonsense Word Fluency subtest is one measure for determining student understanding of the alphabetic principle, including letter-sound correspondence and the ability to blend letter sounds into words. By utilizing assessment data, teachers are equipped for planning explicit phonics and word study activities, pacing of instruction, and grouping students for differentiated learning (Walpole & McKenna, 2004).

TOWRE

The Test of Word Reading Efficiency (TOWRE) is used to monitor growth in a subject's knowledge of phonemic decoding and sight words, to diagnosis reading difficulties in older children and adults, and to conduct research on the development of reading skills. The purpose

of this test is to measure a subject's ability to accurately and fluently pronounce printed sight words and phonemic nonsense words when they are taken out of the context of text. There are two separate subtests, one for sight word efficiency and the other for phonemic decoding efficiency (Mental Measures Yearbook, 1999).

Conclusion

Prior to the No Child Left Behind Act (NCLB) of 2001, students with intensive needs were not required to take state assessments. Thus, the focus of education for these students was on functional life skills important for daily living activities (Browder et al., 2006). After NCLB was enacted, however, academic skills such as reading became much more of a focus for educators working with this subgroup. Many students with intensive needs can be taught to read. The challenge for special educators lies in determining the best methods of reading instruction for this special student population.

CHAPTER III

METHODS

Design

The purpose of this study was to determine which of two types of reading interventions, phonics-based or sight word-based, had the desired effect of improving the study participants' reading scores on the TOWRE assessment. This study was quasiexperimental in nature. Two groups of students participated in this study; however, the participants were not randomly selected. Each group experienced a different treatment/intervention. Pre- and posttests, along with quarterly progress monitoring checks, were used to determine student growth in reading.

Participants

The participants for this research study included 14 students between kindergarten and fourth grade from a midsize elementary school in Anne Arundel County, Maryland. These participants were all enrolled in the Multiple Intensive Needs Classroom (MINC) between the years 2010 and 2012. The participant group was comprised of 7% from kindergarten, 7% from first grade, 21% from second grade, 36% from third grade, and 29% from fourth grade. Twenty-one percent of the participants were female, and 79% were male. These percentages showed a higher number of male students participating in the study than was representative of the school population as a whole (49% female and 51% male). Fifty-seven percent of the total study participants were Caucasian, 29% were African American, and 14% were Asian. The sample used for this study showed a higher percentage of African American and Asian ethnic groups than was typical of the entire student population of the study school. The demographic statistics reported for this school by Anne Arundel County Public Schools showed that more than 95% of the school's student population was Caucasian, .05% were Asian, and fewer than ten African

American students attended this school, so no data was reported in relation to this subgroup (Demographics, n.d., figure 1). The overall socioeconomic status of families with children attending this school was upper middle class, while the families of the study participants represented more varied socioeconomic levels, ranging from lower to upper middle class. During the two school years in which the study was conducted, the study school had a < 5% mobility rate within the student population (Demographics, n.d., figure 2). The attendance rate of the students was greater than 95% (Demographics, n.d., figure 4). Of the teachers at the school, 88.9% held an advanced professional certificate, while 5.6% held a standard professional certificate. Only 5% of classes were taught by teachers who were not highly qualified (Demographics, n.d., figure 5).

The study school is consistently one of the top-performing schools in the state of Maryland on the state assessment. According to website greatschools.org, which reported the Maryland School Assessment (MSA) data for the 2010-2011 school year, 95% or higher of the students in Grades 3 and 4 scored in the proficient or advanced range in reading and math, and 95% or higher of fifth graders scored in the proficient or advanced range in reading, math, and science (MSA Results, n.d., figures 1-7). The student subgroups that participated in the MSA at the study school during the 2010-2011 administration were White and special education (MSA Results by Subgroup, n.d., figures 1-7). According to mdreportcard.org, which reported the MSA data for the 2011-2012 school year, 95% or higher of the students in Grades 3 and 4 scored in the proficient or advanced range in reading and math, and 95% or higher of fifth graders scored in the proficient or advanced range in reading, math, and science (Assessments, n.d. figure 1). The student subgroups that participated in the MSA at the study school during the

2011-2012 administration were White, Asian, Hispanic/Latino and special education (Demographics, n.d., figure 1).

Study Group 1 consisted of the six students who comprised the MINC class of 2011-2012. Thirty-three percent of this group was female, and 67% was male. Fifty percent of this group was Caucasian, 33% was African American, and 17% was Asian. The participants in this group ranged in grade level from kindergarten to fourth grade. Sixteen percent of participants in group 1 were in kindergarten, 17% were in first grade, 17% were in third grade, and 50% were in fourth grade. There were no second graders. All members of this group participated in the phonics-based reading intervention.

Group 2 consisted of the eight students who comprised the MINC class of 2010-2011. Thirteen percent of this group was female, while 87% was male. Sixty-two percent of this group was Caucasian, 25% was African American, and 13% was Asian. The participants in this group ranged from second grade to fourth grade. Thirty-eight percent of the participants in Group 2 were in second grade, 50% were in third grade, and 12% were in fourth grade. All members of this group participated in the sight word-based intervention.

Instrument

The Sight Word Efficiency (SWE) subsection of the Test of Word Reading Efficiency (TOWRE) was the instrument used to determine progress within this study. It was created by Joseph K. Torgesen, Richard K. Wagner, and Carol A. Rashotte and initially published by PRO-ED in 1999. The TOWRE is used to monitor growth in a subject's knowledge of phonemic decoding and sight words, to diagnosis reading difficulties in older children and adults, and to conduct research on the development of reading skills (Mental Measures Yearbook, 1999). The intended purpose of this test is to measure a student's ability to accurately and fluently

pronounce printed sight words and phonemic nonsense words when those words are taken out of the context of text. There are two separate subtests, one for sight word efficiency (SWE) and the other for phonemic decoding efficiency (PDE). The PDE subsection of the TOWRE was not used for this study.

The TOWRE is intended for individuals between 6 and 24 years of age. In the original publication of the TOWRE, there were two forms of the assessment, Form A and Form B. The test is conducted by a trained administrator and is administered one-on-one to each student. The student is given a list of eight sight words with which to practice. If the student cannot read any of the practice words, testing is discontinued. After completing the practice, the student is given a card featuring four rows of increasingly difficult sight words. The student is given 45 seconds in which to read as many words of the 104 words as possible. If the student hesitates for more than three seconds on any word, the examiner instructs him/her to continue on to the next word in order to maximize word reading opportunities. The examiner marks any words that are misread or skipped by the student. Testing is discontinued if the student cannot read any of the words, or if he/she indicates that he/she cannot read any more words before the time expires. After 45 seconds elapse, testing continues with the Phonemic Decoding Efficiency subtest. The procedure used for the sight word efficiency subtest is repeated – practice words are presented, then 45 seconds are allowed for the subject to read a list of increasingly difficult nonsense words such as “ba,” “gan,” and “luddy.”

The first administration of this assessment creates a baseline for students by allowing them to demonstrate how many untaught words they can read in 45 seconds. The second administration of the assessment shows growth, or lack thereof, by asking the student to read a second set of words (Form B) within the same time parameters. The administration of the

TOWRE is quick, which is important with the relatively low attention spans of many intensive needs students. In this study, Form A was used three times and Form B was used twice with every student in the following sequence: baseline/pretest – Form A, marking period one – Form B, marking period two – Form A, marking period three – Form B, marking period four/posttest – Form A. Since the conclusion of this study, a new version of the TOWRE has been published to include four versions of the assessment: Forms A, B, C, and D.

The original TOWRE was normed between 1997 and 1998 using a sample of 1,507 people in 30 states (Torgesen et al., 1999). Psychologists and speech-language pathologists conducted the research. The normative sample was representative of the United States in terms of geographic region, gender, race, rural/urban areas, ethnicity, family income, parental education, and disability when compared to 1997 statistical information from the U.S. Bureau of the Census (Torgesen et al., 1999). The only area found to be unrepresentative was the geographic location of the adults in the norm group.

Prior to the printing of the new edition of the TOWRE in 2012, reviewers from the University of Oregon and the University of Delaware reviewed the TOWRE for the *Buros Mental Measures Yearbook*. In the first review, conducted by the reviewer from the University of Oregon, the reviewer described how the authors of TOWRE conducted three types of validity research. These included content description, criterion prediction, and construct identification. The reviewer felt that the predictive validity of the measure could have been emphasized more but indicated that that was the only drawback to the validity of the assessment.

The reviewer from the University of Delaware noted that the validity scores presented in the examiner's manual were only marginally acceptable and that the authors of the TOWRE recognized the need for further research.

The University of Oregon reviewer found the TOWRE to be reliable. He explained that multiple types of reliability data were presented in the examiner's manual. These included content sampling, time sampling using test-retest stability, rescoring to address interscorer differences, and demonstrating consistency between form A and form B of the test. The only caveat that the reviewer mentions is that the content sampling plan for both subtests could be more descriptive.

The University of Delaware reviewer was more cautious with his interpretation of reliability. He emphasized caution when examining the statistics related to reliability due to limited participation in the test groups for the assessment, particularly among minority populations. He felt that further studies should be conducted to ascertain if the statistical data was representative. He also felt that more time should have passed between test and retest when taking data for time sampling. He again felt that further studies should have been conducted, this time with longer time lags to assure stability of the TOWRE over time. The University of Delaware reviewer also felt that inter-rater reliability could have been stronger if there had been more than thirty reviewers.

Both reviewers agreed that the TOWRE was a useful assessment; however, the University of Delaware reviewer was much more cautious. He felt that more studies should be conducted to determine reliability and validity more concretely. The first reviewer only found problems with predictive validity and the descriptiveness of the content sampling plan. Both reviewers felt that administration and scoring were easy, but that those interpreting the score should supplement the age-based results with another measure to show grade equivalence.

The TOWRE assessment was renormed prior to the publication of the TOWRE-2 in 2012. This time, the assessment was normed on over 1,700 individuals ranging in age from 6 to

24 years and residing in 12 states and Washington D.C. (TOWRE-2, n.d., para. 4). Over 700 of the participants in the norming sample were children of elementary school age, where the TOWRE-2 was anticipated to be used most frequently. The Pearson Education website (TOWRE-2, n.d.) reported that “the average alternate forms reliability coefficients (content sampling) for the subtests exceed .90” (para. 4). Pearson Education goes on to say that “the average test–retest (time sampling) coefficients for the same form exceed .90” and that “the average test–retest (time sampling) coefficients for different forms of the subtests are .87. The magnitude of the coefficients reported from all the reliability studies evidenced little measurement error in the TOWRE-2” (TOWRE-2, n.d., para. 4).

Procedure

This study was conducted with two different classes of students with multiple intensive needs. These students were not randomly selected. Group 2 was the entire MINC class of 2010-2011, and Group 1 was the entire MINC class of 2011-2012. The same teacher administered the treatments and pre- and posttests to each group. Directions and instruction were consistent for all students because the TOWRE test, PCI reading and Kaplan Spell Read are all scripted. The study began in August of 2010 when the teacher administered the pretest (Form A of the TOWRE) to all students in Group 2. After the scores were recorded, students were grouped according to their scores. The four students who had scored 30 or higher on the pretest became one group and the four students who had scored lower than 30 on the pretest became another group. The group that scored higher contained one third-grade Caucasian female, two third-grade Caucasian males, and one fourth-grade African American male. The second, lower-scoring group contained one second-grade African American male, two second-grade Caucasian males and one third-grade Asian male. Regardless of their scores, all students began with lesson

one in PCI Reading Program. Each group received 45 minutes of instruction per day in PCI Reading during reading rotations. At the end of the first marking period, the teacher again administered the TOWRE assessment (Form B). The teacher examined the scores and reevaluated the grouping of students. She found that the students remained appropriately grouped, with the higher group performing at a 40 or higher on the TOWRE, and the lower group scoring a 16 or lower on the TOWRE. The grouping remained intact and instruction in PCI Reading continued for the second marking period. At the conclusion of the second quarter, the teacher administered Form A of the TOWRE to all students. She again examined the data, and again found that the students were appropriately placed. The higher group of students scored a minimum of 48, while the lower group scored a maximum of 31. Instruction resumed in PCI Reading for the third marking period. At the end of the third quarter, the teacher administered Form B of the TOWRE to all students. Upon examination of the data, the students were again found to be appropriately placed, with the higher group scoring a 53 or higher on the TOWRE, and the lower group scoring a maximum of 46. Instruction in PCI Reading resumed for the fourth marking period. Finally, at the end of the school year, the teacher again administered Form A of the TOWRE to obtain a posttest score for each student. All students showed improvement over their pretest/baseline scores, and three of the students in the higher group were able to read words indicative of their grade level for the following fall.

The study continued in August 2011 when the teacher administered the pretest (Form A of the TOWRE) to all students in Group 1. Following the same pattern as the previous year, students were grouped according to their scores. The three students who scored an eight or higher became one group, while the three students who scored a five or lower became another group. The higher group contained one third-grade Asian male, one fourth-grade Caucasian

male, and one fourth-grade African American female. The lower-scoring group contained one kindergarten Caucasian male, one first-grade Caucasian female, and one fourth-grade African American male. All students began with lesson one in Kaplan Spell Read per the scientifically-based instructions of the program. Each group received forty-five minutes per day of instruction in Kaplan Spell Read during reading rotations.

Again following the routine established during the previous school year, the teacher administered alternating forms of the TOWRE assessment at the end of each grading period to monitor the progress of all students and assure their correct placement within small groups. A change in grouping was made after the second marking period when the TOWRE data indicated that one student in the lower group was achieving at a faster rate than the others in his group, while one student in the higher group was achieving at a slower pace than his group mates. The two students were switched to accommodate the pacing of their learning styles. The higher group then contained one third-grade Asian male, one fourth-grade African American male and one fourth-grade African American female. The lower group then contained one kindergarten Caucasian male, one first-grade Caucasian female and one fourth-grade Caucasian male. Both groups remained consistent through the end of the school year after the change was made. Data ascertained from the TOWRE posttest indicated that all student scores improved over the pretest/baseline, and that one student in the lower performing group was able to read words indicative of his grade level for the following fall.

CHAPTER IV

RESULTS

The purpose of this study was to determine which of two types of reading interventions, phonics-based or sight word-based, had the desired effect of improving the study participants' reading scores on the TOWRE assessment.

The pretest and end of marking period posttest results on the sight word efficiency subsection of the Test of Word Reading Efficiency for the multiple intensive needs students receiving the phonics-based or sight word-based interventions were analyzed using a t test for independent groups. The two groups differed significantly ($p < .000$) on the pretest so the post test results were reanalyzed and adjusted for the differences in their pretest scores using an analysis of covariance. The results are presented in Table 1 below.

Table 1

Pre- and Posttest Results for Multiple Intensive Needs Students Receiving Phonics-Based or Sight Word-Based Instruction

	Group	Mean	Number	Standard Deviation	F	Significance
Baseline	Sight Word	22.3	8	21.52		
	Phonics	6.7	6	6.5		
Marking Period 1	Sight Word	27.9	8	19.48	82.64	.000*
	Phonics	10.83	6	7.94		
Marking Period 2	Sight Word	35	8	17.94	43.26	.000*
	Phonics	14.3	6	10.19		
Marking Period 3	Sight Word	42.6	8	19.15	23.21	.000*
	Phonics	19.8	6	12.27		
Marking Period 4	Sight Word	48.5	8	13.13	17.05	.000*
	Phonics	24	6	16.66		

* $P < .000$

The hypothesis that there will be no difference between the scores earned on the Sight Word Efficiency subtest of the TOWRE assessment by the group of elementary aged students with intensive needs taught using a sight word-based reading intervention and the scores earned by the group of elementary aged students with intensive needs who were taught using a phonics-based reading intervention was rejected.

CHAPTER V

DISCUSSION

The results of this study indicate that the null hypothesis should be rejected. The elementary-aged intensive needs students who participated in the sight word-based reading intervention scored significantly higher on the Sight Word Efficiency (SWE) subtest of the Test of Word Reading Efficiency (TOWRE) assessment than did the elementary-aged intensive needs students who participated in the phonics-based reading intervention. While both groups made gains at each progress monitoring check, the sight word group consistently produced higher scores. When comparing the end-of-year scores for both groups, the sight word group's mean scores on the posttest were 24.5 points (102.1%) higher than the mean posttest scores of the phonics group.

Implications

Intensive needs classrooms in Anne Arundel County, Maryland currently use sight word-based intervention as a supplement to modified grade-level reading content. Students included within these classes often demonstrate delayed skill acquisition or have gaps in their understanding of the concepts associated with reading. This study emphasizes the point that repetition along with observing a pace that takes into account the need for extended time to learn a skill is essential within this special population of learners. While the phonics-based intervention used in this study, Kaplan Spell Read, was repetitious within the context of the daily lessons, the sight word-based program, PCI Reading, required students to actually repeat lessons as many times as necessary if they were unable to read words on the progress monitoring checks. The outcome of this study suggests that Multiple Intensive Needs Classrooms (MINC) should continue to use sight word-based intervention as a supplement to modified grade-level reading

content. In this way, students are able to learn and practice skills within the intervention and then apply their reading skills within context.

Threats to Validity

Multiple factors threaten the validity of this study, the first of which being that the two interventions examined in this study did not run concurrently. Each intervention was conducted with an intact class, and students were not randomly assigned to the classes. Also, the age/grade levels varied between the two groups. The participants in group one, who received the phonics-based intervention, ranged in grade level from kindergarten to fourth grade, while the participants in group two, who received the sight word intervention, ranged from second grade to fourth grade. Therefore, the population which was exposed to the sight word intervention was slightly older and potentially more mature and receptive to learning than the population which was exposed to the phonics intervention. In addition, it was impossible to adjust for the differences in cognitive ability levels between the students in both groups, since the nature of a MINC classroom is having students with various disabilities in one setting. Finally, the assessment instrument threatened the validity of this study because each group had to be tested with Form A of the TOWRE on three occasions and Form B on two occasions, creating a potential familiarity with the assessed words. This could have been remedied had the TOWRE-2 been published prior to the start of this study. Since the TOWRE-2 has four forms rather than two, baseline data could have been gathered using Form A, and then Forms B, C, and D could have been used for progress monitoring after marking periods one through three, and Form A could have been used again as the posttest to show gains over the pretest.

Connections to Previous Studies and Existing Literature

The results of this study were consistent with Browder et al.'s (2006) findings in which it was noted that individuals with severe cognitive disabilities may use nonlinguistic communication and exhibit learning characteristics that require greater time to learn and intensive forms of instructional support. PCI Reading, the sight word-based intervention used for the current study, utilizes various nonlinguistic forms of presentation, such as visual imagery as well as tactile/kinesthetic and auditory experiences. In addition, PCI Reading is intended to be an intensive intervention taught over a lengthier period of time than traditional reading instruction, emphasizing repetition and review.

Mayfield (2007) found that students who participated in the sight word-based reading intervention, Edmark Reading, exhibited significantly improved reading ability, attitudes toward reading, attitudes toward school, and attitudes toward self than did the control group who did not participate in Edmark Reading. Likewise, the current study found that students who participated in the sight word-based intervention, PCI Reading, also demonstrated significantly improved reading ability over their baseline scores.

The results of this study contrasted with the finding of Ball and Blachman (1991) who emphasized that “children who received training in phoneme segmentation and in letter name and letter sounds were more able than children in either control group to match the written symbols to the sound segments of the word” (p. 63). While the participants in the phonics-based intervention of the current study did show gains over their initial scores, the scores of the students in the sight word intervention demonstrated significantly higher scores. It is important to note, however that Ball and Blachman compared kindergarten students who attended traditional classrooms and not special education students with intensive needs. Ball and Blachman also did not include a group in their study that targeted sight words. One of their

groups received training in segmenting words into phonemes as well as training in correspondences between letter names and letter sounds, while a second group received only the training in letter names and letter sounds, and a third group was a control group.

Implications for Future Research

Sight word-based reading interventions appear to be a viable method and/or supplement for teaching students with intensive disabilities to read. Further research is necessary to determine whether the results of this study could be duplicated with students using a true experimental design, in which study subjects could be randomly selected and study groups could be running simultaneously. It would also be beneficial to conduct this research with various age groups to determine whether the results would remain the same if, for example, all of the subjects were kindergarteners or if all of the subjects were fourth graders. Additionally, from a motivational standpoint, it would be noteworthy to determine whether the technology component of intervention programs such as PCI Reading, Edmark Reading, and Failure Free Reading would produce higher posttest scores than intervention programs which do not include technology, such as Early Reading Intervention and Kaplan Spell Read.

Conclusions

Intensive needs students comprise a subgroup of the overall student population that is often overlooked when determining strategies for learning. There are companies, such as PCI Education, which specialize in producing curriculum for this specialized population; however, these companies are few and far between. Finding appropriate learning materials for students with mental retardation/intellectual disabilities, Down syndrome, cerebral palsy, autism, and other intensive special needs is difficult. This is unfortunate because students with intensive needs are often capable of becoming readers. The results of this study suggest that sight word-

based interventions such as PCI Reading and Edmark Reading are superior to phonics-based interventions, such as Kaplan Spell Read and Failure Free Reading, when students with intensive needs are the targeted audience.

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