The Effectiveness of a Short-Term Implementation of ERI in Improving Phonics Skills in Kindergartners

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Abstract

The purpose of this study was to determine the impact of a supplemental phonics curriculum (Early Reading Intervention, ERI) on reading scores of a small group of kindergarten students. Participants were selected from two different kindergarten classrooms based on their similar DIBELS Next pre-assessment scores. All students received phonics instruction from the *Treasures* reading program. However, students in the researcher's classroom were assigned to the treatment group and also received instruction using the ERI curriculum. The treatment group participated in a total of twelve thirty-minute ERI sessions. These took place three times per week, for a total of four weeks. Results indicated that the ERI group improved on all five DIBELS Next subtests, but the control group actually decreased on three. Five of ten null hypotheses which posited that the ERI and control groups would not make significant gains were rejected as the mean gain scores were significantly larger than zero on the LNF, PSF, FSF, and CLS subtests for the ERI group and on the FSF subtest for the control group. When gain scores were compared across treatment and control groups, results of T-tests for independent samples indicated that the ERI group made significantly larger gains on the LNF and PSF subtests than the control group, so the hypotheses that the two groups' gains would be equivalent gains on those tests were also rejected. Participants' responses to brief survey questions about the ERI intervention suggested they found the ERI activities fairly easy, enjoyable and useful in helping them become better readers. Overall, the results of this study suggested supplementing the *Treasures* program with ERI yielded gains in phonics skills and was well received by students.

CHAPTER I

INTRODUCTION

Overview

Helping students become proficient readers by building a strong foundation in beginning reading skills is one of the most important responsibilities of educators who work with young students. Students who are learning to read and write need knowledge of both phonemic awareness (identifying the sounds) and phonics (associating letters with the sounds they hear) for early reading success. Much instructional time in kindergarten is spent addressing students' phonemic awareness and phonics needs. Students at this age require effective teaching of letter identification, listening for sounds in words, and application of phonics skills. Successful instruction can assist in preventing reading difficulties. Research such as that cited by Durrell, Nicholson, Olson, Gavel, and Linehan (2009) indicates that a using a systematic program of letter knowledge and phonics development will improve students' phonics acquisition.

This researcher became interested in examining the effectiveness of supplemental instruction in helping kindergarten students acquire foundational skills in phonics acquisition in her role as an educator in teaching early reading skills. During the 2011-2012 school year, her school system, Anne Arundel County Public Schools (AACPS), adopted the MacMillan/McGraw-Hill Treasures Reading Program (2011). After putting forth much effort in the implementation of the Treasures program, the researcher observed only slight improvement in student achievement on the Dynamic Indicators of Basic Early Literacy Skills Next (DIBELS Next) (Dynamic Measurement Group, 2011) for those students struggling with phonics and phonemic awareness skills. Although student scores in all three kindergarten classes at the school improved from September to May, these scores were similar to the preceding years'

scores without the use of *Treasures.* Thus, the researcher desired to learn more about the effect of the intervention program on student achievement of foundational early reading skills.

The DIBELS Next assessment is used by AACPS as a benchmark to determine the level of student phonemic awareness and phonics acquisition throughout the course of the school year. The researcher wished to investigate whether supplementing the *Treasures* program, which includes phonemic awareness and phonics activities throughout the kindergarten lessons with a structured program, such as Early Reading Intervention (ERI), would result in greater phonics acquisition for struggling readers. The researcher designed a study to work with a small group of students having difficulty with phonics acquisition. The intervention she provided for the students involved the use of ERI in addition to the *Treasures Reading Program*. The researcher also examined the impact of motivation on the phonics acquisition of the student participants as motivation can influence the effectiveness of an intervention (Morgan & Moni, 2005).

Statement of Problem

Research suggests that phonics and phonemic awareness are foundational skills needed in learning to read (Ehri et al., 2001). The purpose of this study was to determine if supplemental instruction in ERI in addition to the kindergarten *Treasures* curriculum, improved students' acquisition of phonics skills. The study also examined the relationship between motivation and student reading achievement. The researcher desired to determine if students' acquisition of phonics skills increased-when using a supplemental program, and if there was a relationship between motivation and phonics attainment.

Hypotheses

Null hypotheses 1-10 tested whether the gains made by the treatment and control groups on each DIBELS Next subtest were statistically insignificant.

ho1: mean DIBELS gains LNF for the treatment (ERI) group = 0

ho2: mean DIBELS gains PSF for the treatment (ERI) group = 0

ho3: mean DIBELS gains FSF for the treatment (ERI) group = 0

ho4: mean DIBELS gains CLS for the treatment (ERI) group = 0

ho5: mean DIBELS gains WWR for the treatment (ERI) group = 0

ho6: mean DIBELS gains LNF for the control group = 0

ho7: mean DIBELS gains PSF for the control group = 0

ho8: mean DIBELS gains FSF for the control group = 0

ho9: mean DIBELS gains CLS for the control group = 0

ho10: mean DIBELS gains WWR for the control group = 0

Null Hypotheses 11-15 tested whether the gain scores on each of the 5 DIBELS Next subtests for the treatment (ERI) and control group were statistically equivalent.

- ho11: mean DIBELS gains LNF ERI group = mean DIBELS gains LNF control group
- ho12: mean DIBELS gains PSF ERI group = mean DIBELS gains PSF control group
- ho13: mean DIBELS gains FSF ERI group = mean DIBELS gains FSF control group
- ho14: mean DIBELS gains CLS ERI group = mean DIBELS gains CLS control group
- ho15: mean DIBELS gains WWR ERI group = mean DIBELS gains WWR control group

Operational Definitions

This study investigated the effect of using a supplemental program to improve phonics acquisition among beginning readers and the role of motivation as related to phonics attainment. For purposes of this study, the operational definitions presented below are used.

- *Phonics* is the understanding of the relationship between letters and the sounds that they make. Phonics acquisition is the ability to form letter-sound correspondences and spelling patterns to determine unknown words and apply this knowledge to reading. Phonics acquisition is an important element in learning to read (Mesmer & Griffith, 2005)**.**
- *Motivation***,** which also influences reading achievement, is defined as the student's interest and willingness to participate in reading activities. Research such as that cited by McPherson (2007) suggests that motivation helps to keep students engaged in learning opportunities.
- *The Dynamic Indicators of Basic Early Literacy Skills (DIBELS Next***)** (Dynamic Measurement Group, 2011) is an assessment intended to measure student attainment in phonemic awareness, phonics, fluency vocabulary, and comprehension. Schools within the AACPS system must participate in benchmark assessments at the beginning, middle and end of the school year in grades kindergarten through two. Data from the assessments are used to identify students who are having difficulty in any of the areas assessed by DIBELS Next. Additional instruction is provided within the classroom and through intervention programs for those students having difficulty with these skills. DIBELS Next performance helps to identify students to include in the Early Reading Intervention (ERI) program.
- *The Early Reading Program (ERI)* is designed for students who are struggling with letter identification, phonemic awareness, phonics, and/or fluency. It includes 30-minute lessons divided into short activities. The activities vary depending on the lesson. The activities may focus on letter names, letter sounds, sound isolation, segmenting, blending,

reading words and/or writing words (Simmons & Kame'enui, 2003). For this study, ERI is the independent variable. This researcher offered lessons in this program to a group of students in her school. Students in the other class did not have access to ERI.

- *Treasures* (Macmillan McGraw Hill, 2011) is the program AACPS adopted for reading instruction. It incorporates high quality fiction and nonfiction text as well as explicit instruction and practice. Students participate in various types of reading such as modeled, shared, guided, and independent reading. Every lesson in the kindergarten edition includes a phonics and phonemic awareness component. Students are taught the letter names and their corresponding sounds. They also learn how to manipulate sounds in words and to blend/segment sounds. These skills then are-applied to the context of reading. Stories the students read in the study were differentiated to meet the needs of the individual student. The program used books at three different readability levels: approaching, on, and beyond level texts. All participants in this study received phonics and phonemic awareness instruction using the *Treasures* program.

CHAPTER II

REVIEW OF THE LITERATURE

This literature review examines the effect of phonics instruction on early reading development. The initial section discusses what phonics is and the influence that phonics instruction has on reading. Section two considers different kinds of reading difficulties students may have and possible reasons why students have these reading complications. The focus extends to what can be done for those students struggling with phonics acquisition. Section three addresses the impact motivation has on student phonics acquisition and interest in reading.

Phonics and Reading Development

Phonics instruction teaches reading through letter-sound correspondences. The primary emphasis of phonics instruction is to assist beginning readers in understanding that letters are linked to specific sounds. Students then can recognize and use these letter-sound correspondences and spelling patterns to help them apply this knowledge when reading (National Reading Panel, 2001). Phonemic awareness, which is the ability to hear, identify, and manipulate sounds in words, and letter knowledge are the most reliable predictors in determining how well a child will read by the end of kindergarten (Ehri et al., 2001). Phonemic awareness activities in which students participate include those that involve identifying rhyming words, isolating initial, middle, and ending sounds in words, and blending sounds together to determine a word. Once students correlate a letter with a particular sound, which is the basis of phonics knowledge, they start to recognize the beginning letter of a word. Students who can recognize onsets and rime in one word they decode can apply this knowledge to other words with similar patterns (Rasinski, Rupley, & Dee Nichols, 2008). An onset is the initial consonant in a one-

syllable word and a rime includes the remaining sounds. For example, in *bike*, the /b/ sound is the onset, and the /ike/ is the rime.

Students who are learning to read and write need knowledge of both phonemic awareness (identifying the sounds) and phonics (associating letters with the sounds they hear) for early reading success. Much instructional time in kindergarten is spent addressing students' phonemic awareness and phonics needs. Students at this age require effective teaching of letter identification, listening for sounds in words, and application of phonics skills. Successful instruction can assist in preventing reading difficulties. Research such as that cited by Durrell et al. (2009) indicates that a using a systematic program of letter knowledge and phonics development will improve students' phonics acquisition. Programs that are less structured are not as productive. Systematic phonics instruction is a valuable and essential part of a successful classroom curriculum. Kindergarten students improve their ability to read and spell with this type of instruction (Joshi et al., 2009). They need experience with decodable texts but also access to authentic texts. Once students understand the relationship between the letters and the sounds that they represent, many programs are available that incorporate phonics activities, including making words. This is a manipulative activity in which students move letters around to create words (Mesmer & Griffith, 2005). Students use the words that they know to apply spelling patterns to new words, thus working with word families, and they use rhyming patterns to decode and write. Effective phonics instruction takes into account how students decode and spell words. It is important to remember that phonics is only one component of reading instruction in addition to phonemic awareness, fluency, comprehension, vocabulary, and writing (Foorman, 2007).

Reading Difficulties and Interventions

Many students struggle with reading. They have difficulty with phonemic awareness and phonics skills. They tend to read at a very slow rate with numerous miscues. Students who experience these difficulties struggle to read fluently. They do not possess the strategies needed to determine unknown words quickly. They may retain a limited sight word vocabulary but cannot apply phonics strategies to decode unfamiliar words (Whitaker, Harvey, Hassell, Linder, & Tutterrow, 2006). Children with few language experiences are more likely to have deficits in early literacy skills. Therefore, they often have difficulty learning basic reading skills during classroom instruction. Teachers need to identify struggling readers early and include them in a reading intervention, if necessary, focusing on phonological and alphabetic skills to promote reading improvement (Vadasy & Sanders, 2008). One of the most challenging tasks for students learning to read is applying the phonemic awareness, phonics, and other skills they are learning to their reading. They require recurrent exposure to help internalize these skills and generalize them to new contexts.

A variety of interventions and strategies are available to teach beginning reading skills. Students struggling with phonics and phonemic awareness, benefit from direct instruction in decoding (Browder, Ahlgrim-Delzell, Flowers, & Baker, 2012). It is important for interventions to begin early to assist students demonstrating delays. Waiting for students to "catch up" only leaves them further behind as they continue their schooling (Brown, 2010). Students also benefit from opportunities to collaborate with their peers. Collaboration can be beneficial for most students including those with learning disabilities. Providing another student with a good model can be influential in helping that student develop skill with phonics. Teachers must incorporate effective instructional practices and increase time on task to increase the probability that students

will become successful readers (Foorman, 2007). Students also need time to apply these phonics and phonemic awareness strategies to their reading. Learning the skills in isolation is important but students need time to read in order to apply the strategies in context (Boyle, 2008).

An example of an approach that can be used to teach students how to blend and segment sounds is the STOP strategy. In this strategy "S" refers to staring at unknown words, "T" reminds students to tell themselves each letter sound, "O" guides students to open their mouths and say each letter, and "P" reminds students to put the letters together to say the word. Syllabication is another important skill for students to acquire to become successful readers. Students can break words down into smaller chunks to assist them with identifying an unknown word (Boyle, 2008).

It is important to address concerns related to students' acquisition of phonics skills as these skills play an integral part in learning to read. Skills build upon one another in a natural progression from segmenting, blending, and syllabication to examining the structure of unknown words. Possessing poor phonemic awareness and phonics skills leads to difficulty in decoding. Students who struggle with decoding frequently have deficits in fluency and comprehension, which result in reading difficulties (Ukrainetz, Ross, & Harm, 2009).

Motivation for Reading

The key to keeping students actively engaged in learning is through motivation. When a child is motivated he or she works with diligence and persistence and the child seeks success. There is a correlation between reading engagement and achievement. As students start to recognize accomplishments with reading activities, their level of engagement also increases. The more children read, the more likely they are to improve reading skills and comprehension. Self-confidence is a major factor in reading motivation. Students who think they are poor readers

often lack interest in reading. Students need to understand that sometimes they have difficulties because they are unaware of the correct strategies to use to assist them with phonics and reading. Providing students with engaging texts can also be a motivator (McPherson, 2007).

Students who struggle with phonics acquisition often benefit from motivating activities that teach these desired skills. A variety of options are available to assist students so it is important to choose activities that motivate specific students. For example, when teaching letter sound correspondence, instructors can make a meaningful connection with students using food. When discussing the /p/ sound, teachers might make popcorn for students to enjoy. "Phonics Hopscotch" is another way to motivate students to learn phonics skills. When they hop to a specific space on which a letter has been written, students must identify the letter, produce the sound it makes, and share a word that begins or ends with that sound. A phonics "feely box" can be used for letter and sound identification. Students reach into the box and try to determine what letter is associated with the objects in the box. The activities described above represent just a brief sampling of possible activities. Many of these activities can be differentiated easily to meet the needs of the students and to ensure motivation (Morgan & Moni, 2005).

Summary

Research such as that reported by the National Reading Panel (2001) indicates that phonics is an important component in learning to read. Being able to recognize the correlation between letters and the sounds they make impacts decoding. Students who have difficulty with phonics often experience challenges with reading fluency and comprehension. It is important to provide struggling readers with the necessary skills and interventions needed for reading success. Intervening early to provide students with direct instruction with phonics can be beneficial for their reading progress. Teachers can provide opportunities for students to collaborate with peers,

ensuring that students are on task. Motivation often plays a key role in phonics acquisition and reading. Students who are motivated to read demonstrate increased academic achievement. In the primary grades, students need to possess necessary skills in phonics and phonemic awareness to demonstrate proficiency in vocabulary, fluency, and reading comprehension.

CHAPTER III

METHODS

The purpose of this study was to determine if supplemental instruction in the Early Reading Intervention (ERI) program, in addition to the kindergarten *Treasures* curriculum, improved student phonics acquisition. The study also examined the relationship between motivation and student reading achievement.

Design

This quasiexperimental study involved comparing the phonics skills, assessed using DIBELS Next, of two similar groups of students from different kindergarten classrooms, one of which participated in a supplemental phonics program Early Reading Intervention (ERI) in addition to the regular reading program, *Treasures* (Macmillan McGraw Hill, 2011) and one of which did not. The control group consisted of five kindergarten students who received phonics instruction only through the use of the MacMillan/McGraw-Hill *Treasures* Reading Program. The treatment group consisted of six kindergarten students who participated in ERI program in addition to receiving the phonics instruction provided through the *Treasures* Program.

Pre- and post assessments were administered to determine students' phonics skill levels and extent of growth for both the control and treatment groups. The pre-assessment included the January benchmark results from the Dynamic Indicators of Basic Early Literacy Skills (DIBELS Next) (Dynamic Measurement Group, 2011). Students in the treatment group participated in four weeks of intervention using ERI. Following the conclusion of the intervention, all students in both the control and treatment groups took the post assessment, which was again the January DIBELS Next. The pre- and post assessments were identical to provide equivalent pre- and post

measures. The DIBELS Next assessments were given to all kindergarten students in May, following the DIBELS Next administration requirements.

In this study, the independent variable was the ERI. The group of students in the researcher's classroom received phonics instruction from ERI in addition to receiving the kindergarten curriculum using *Treasures.* In the other classroom, the control or comparison group of students who received similar pretest scores on the DIBELS Next, received phonics instruction only through the *Treasures* Reading Program. The dependent variable in this study was students' success with phonics acquisition which was measured using the students' scores on the DIBELS Next post assessment after the four-week intervention.

Participants

The participants in this study consisted of kindergarten students from two different classrooms at a small, public elementary school in Pasadena, Maryland. Nearly half of the students in the school qualify for free and reduced price meals. The school is not ethnically diverse as more than 95 percent of students are Caucasian. Students in both classes were selected for the groups based on their pre-assessment scores. Students were ranked in order of achievement based on a composite score from all DIBELS Next subtests: First Sound Fluency, Phoneme Segmentation Fluency, Letter Naming Fluency, and Nonsense Word Fluency. Students who received relatively low composite scores in the range of 97 to 151 from the two classes were assigned either to the control or treatment groups. Composite scores from both classes ranged from 97 to 310.

Six students (three girls and three boys) in the treatment group received ERI instruction from the researcher in addition to the regular *Treasures* intervention. These students, five of

whom were Caucasian and one of whom was Latino, came from a variety of socioeconomic backgrounds and two of these students were eligible to receive free and reduced price lunches.

The control group consisted of five students (three girls and two boys) located in the adjacent kindergarten classroom. Their ethnic backgrounds were similar to the experimental group. Four students were Caucasian and one was an African American. Three students in the control group were eligible to receive free and reduced price lunches.

ERI, the *Treasures* Reading Program, DIBELS Next and a teacher-made rating scale/survey were the interventions and instruments used in this study. The Scott Foresman ERI is a research-based program designed by Dr. Edward J. Kame'enui and Dr. Deborah C. Simmons. Kindergarten and first grade students identified as having deficits in early reading skills such as letter identification, phonemic awareness, phonics, and oral reading fluency participate in this intervention to improve reading achievement.

ERI is designed to help make placement decisions and monitor progress to tailor instruction based on a child's needs (Simmons & Kame'enui, 2003). ERI is characterized by an explicit and systematic approach to teaching reading skills. The lessons are scripted and include various multi-sensory activities. Anne Arundel County Public Schools (AACPS) uses this program as a Tier Two intervention for students in kindergarten. Tier Two interventions are strategies or programs designed to use with students who are struggling to make adequate progress with Tier One interventions (classroom lessons and modifications) to help them develop early reading skills. Each ERI lesson is divided into seven different activities. The lesson activities vary depending on the level. Activity one focuses on a letter name and sound, which is incorporated throughout the other activities. The objective of the second activity is to enable the student to isolate the initial sounds. This is done in a variety of ways including orally and

viewing picture cards. Activity three involves working with letter sounds. This activity may include a few specific sounds or a review of letter sounds learned. The fourth activity deals with segmenting, blending, and reading words. The students hold up three fingers for consonant-vowel-consonant words. They use their pointer finger from their other hand to point to each finger as they segment the sounds in words. Activity five involves writing letters in some way. The sixth activity requires students to segment three-phoneme words and connect the sounds to the letters. They use letter tiles that correspond with the letter sound to manipulate words. For example, students made the word 'map' using the letter tiles. Then they would change one tile to make the word 'mat'. Activity seven usually is a game, which involves writing words. The entire lesson, including all seven activities, takes about 30 minutes. Based on the pre-assessment results, the treatment group started with lesson 73, part three of the program (Simmons & Kame'enui, 2003).

The second instrument used in the study was the DIBELS Next (2011) assessment (Dynamic Measurement Group, 2011). All kindergarten, first and second grade students in AACPS participate in DIBELS Next assessments in September, January, and May. DIBELS Next was designed to measure acquisition of early literacy skills that include phonemic awareness, phonics, fluency, vocabulary and comprehension. DIBELS Next also is used to identify students who are experiencing difficulty acquiring these skills so that additional instruction can be provided to these students and their progress can be monitored. In the January kindergarten assessment, students take the following subtests: first sound fluency, phoneme segmentation fluency, letter naming fluency, and nonsense word fluency, which is comprised of two subtests, CLS-correct letter sounds and WWR-whole words read.

Because determining students' motivation is included in this study, a brief rating scale/survey was developed and used with the treatment group to determine student interest in and opinions about the ERI activities. Students completed one rating scale following each lesson. The ERI Activity Rating Scale (see Appendix B), had students rate the level of difficulty of the day's ERI activity. Students rated the activity as (1) very easy; (2) somewhat easy; (3) just right; (4) somewhat hard; and (5) hard. The researcher read all of the choices to the students to be certain that students understood how to complete the scale. Each student then needed to explain to the researcher why that selection was made. The researcher recorded students' responses. Using the ERI Enjoyment Scale (see Appendix C) students rated how much they liked one of the activities in the lesson and the researcher documented their reasoning for why they selected that response. Students rated their own performance using the ERI Performance Scale (see Appendix D), by indicating if they did their best, could improve, or needed to try harder on an activity from the lesson. Each student also indicated on the ERI Reader Survey (see Appendix E) whether or not he or she could use the information to become a better reader. Students were required to provide a reason why they thought they could or could not use the information. With the ERI Interest Survey (see Appendix F), the students had the opportunity to provide a verbal response regarding the activity that they enjoyed and why they enjoyed it. Each student completed the rating scale/survey individually to prevent peer influence.

Procedure

The study began with administration of the DIBELS Next pre-assessment to all kindergarten students in both classes in January 2013. The researcher compared the assessment results from the two classes to determine which students acquired similar scores. Students in the two classes with comparable low scores (in the range of 97-151) were selected for inclusion in

the study. A group of five students from another kindergarten class was assigned to the control condition and received phonics instruction through the school system - mandated *Treasures* reading program. In addition to receiving phonics instruction from the *Treasures c*urriculum, the six students from the researcher's class who were in the treatment group also participated in the ERI program. The treatment group met three times a week for 30 minutes for a total of 12 sessions to receive instruction in the ERI program. The focus of the ERI lessons included phoneme isolation/manipulation, segmenting, blending, and writing words.

Following each session, students completed a brief motivation survey to determine their perception of and interest level related to an activity from the lesson. The researcher also recorded anecdotal notes regarding student behavior, including attention to the task and acting out. After the completion of the intervention period, the researcher assessed the students in the control group and treatment group using the same DIBELS Next assessment that had been administered in January. The post-assessment included the following subtests: Phoneme Segmentation Fluency, Letter Naming Fluency, First Sound Fluency and Nonsense Word Fluency (CLS and WWR).

Gain scores on the DIBELS Next (posttest/pretest results) were calculated for both groups to learn if any of the gains made by students in the two groups on the DIBELS Next tests were significant and to determine whether the treatment group's gains differed from the control group's gains on any of the phonics skills assessed by DIBELS Next. Mean ratings about the ERI sessions as gleaned from student surveys also were calculated and plotted across the study interval to discover if there were any trends in the treatment group's perceptions of the ERI. Finally, the teacher's anecdotal notes were summarized to ascertain if they contributed to the understanding of the DIBELS gains or student perceptions of the ERI lessons**.**

CHAPTER IV

RESULTS

This study examined the effect of providing supplemental instruction in the Early Reading Intervention (ERI) program, in addition to the kindergarten *Treasures* curriculum, on the acquisition of phonics skills by kindergarten students. The study also examined the relationship between motivation and student reading achievement among the study participants.

Initially, January DIBELS scores were compared for the ERI and control groups to determine if the two differed at the outset of the study. Descriptive statistics follow in Table 1.

Table 1

Descriptive Statistics January DIBELS Scores for ERI and Control Group

DIBELS Test	Group	N	Mean	s.d.	Std. Error of Mean
January LNF	ERI	6	37.67	5.391	2.201
	Control	5	46.00	9.618	4.301
January PSF	ERI	6	41.17	6.795	2.774
	Control	5	24.00	11.726	5.244
January FSF	ERI	6	38.17	4.622	1.887
	Control	5	28.00	5.477	2.449
January CLS	ERI	6	22.50	3.507	1.432
	Control	5	22.60	12.054	5.391
January WWR	ERI	6	0	0	0
	Control	5	0	0	0

The DIBELS subtest means for the two groups were compared using T-tests for Independent Samples. The results are presented in Table 2 and indicate that despite efforts to select comparable samples for each condition in the study, the differences between the mean PSF (17.17 points) and mean FSF (10.17 points) scores of the ERI and control groups were statistically significant in January, with the ERI group performing better on both assessments.

However, the group means on the LNF, CLS and WWR subtests did not reveal a statistically significant difference.

Table 2

Results of T-test for Independent Samples Comparing January DIBELS Scores

	t-test for Equality of Means						
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
						Lower	**Upper**
January LNF	-1.725	6.038	.135	-8.33	4.83	-20.138	3.471
January PSF	3.044	9	.014	17.17	5.64	4.408	29.926
January FSF	3.344	9	.009	10.17	3.04	3.290	17.044
January CLS	-.020	9	.985	-.10	5.12	-11.676	11.476

Significance of DIBELS Score Gains for ERI and Control Group

Hypotheses 1-10

Following are the hypotheses tested in this study. Null hypotheses one-ten posited that the gains made by the treatment and control groups on each DIBELS Next subtest would be statistically equivalent to zero (insignificant).

ho1: mean DIBELS gains LNF for the treatment (ERI) group = 0

ho2: mean DIBELS gains PSF for the treatment (ERI) group = 0

ho3: mean DIBELS gains FSF for the treatment (ERI) group = 0

ho4: mean DIBELS gains CLS for the treatment (ERI) group = 0

ho5: mean DIBELS gains WWR for the treatment (ERI) group = 0

ho6: mean DIBELS gains LNF for the control group = 0

ho7: mean DIBELS gains PSF for the control group = 0

ho8: mean DIBELS gains FSF for the control group = 0

ho9: mean DIBELS gains CLS for the control group = 0

ho10: mean DIBELS gains WWR for the control group = 0

To test null test hypotheses one-ten, one-sample T-tests were run to determine whether the mean gains on any of the DIBELS subtests were significant for either group. Gains scores were calculated by subtracting the January DIBELS subtest scores from the May DIBELS scores. Table 3 presents the descriptive data by group for May. These data were used to compute the mean gains.

Table 3

Descriptive Statistics for ERI and Control Group May DIBELS Scores

Group	DIBELS Subtest	N	Mean	Std. Deviation	Minimum	Maximum
ERI	May LNF	6	49.17	5.565	44	58
	May PSF	6	51.83	5.565	47	61
	May FSF	6	50.00	3.347	46	54
	May CLS	6	30.67	4.502	26	37
	May WWR	6	4.50	4.324	0	10
Control	May LNF	5	43.20	11.189	27	58
	May PSF	5	21.60	7.266	13	30
	May FSF	5	33.40	6.465	26	42
	May CLS	5	22.40	9.813	11	34
	May WWR	5	.00	.000	0	0

Descriptive statistics for the gain scores are presented in Table 4 below. From the mean gains, it can be noted that the ERI group improved on all subtests, whereas the control group decreased on three. The control group's LNF, PSF and CLS subtests all had negative "gains". In addition, the ERI gains exceeded those of the control group on the FSF and

WWR subtests.

Table 4

Descriptive Statistics for DIBELS Subtest Gain Scores by Group

Gain	Group	n	Mean	Std. Deviation	Std. Error Mean
LNF	*ERI*	6	11.500	5.244	2.141
	Control	5	-2.800	13.989	6.256
PSF	*ERI*	6	10.667	4.761	1.944
	Control	5	-2.400	7.893	3.530
FSF	*ERI*	6	11.833	7.195	2.937
	Control	5	5.400	2.792	1.24900
CLS	*ERI*	6	8.167	4.916	2.007
	Control	5	-.200	12.31666	5.50818
WWR	*ERI*	6	4.500	4.324	1.765
	Control	5	.000	.00000[a]	.00000
a. *t* cannot be computed because the standard deviation is 0.					

The mean gains for each group then were tested with ten one-sample T-tests to determine whether either group made significant improvements on any of the DIBELS subtests. Results follow in Table 5.

Table 5

One-Sample T test Results for DIBELS Subtest Gain Scores by Group

Group		Test Value = 0					
		t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence Interval of the Difference**	
						Lower	Upper
ERI	LNF Gain	5.372	5	.003	11.500	5.9967	17.0033
	PSF Gain	5.488	5	.003	10.667	5.6704	15.6630
	FSF Gain	4.029	5	.010	11.833	4.2827	19.3839
	CLS Gain	4.069	5	.010	8.167	3.0077	13.3257
	WWR Gain	2.549	5	.051	4.500	-.0381	9.0381
Control	LNF Gain	-.448	4	.678	-2.800	-20.1700	14.5700
	PSF Gain	-.680	4	.534	-2.400	-12.2005	7.4005
	FSF Gain	4.323	4	.012	5.400	1.9322	8.8678
	CLS Gain	-.036	4	.973	-.200	-15.4931	15.0931

The results of the ten T-tests indicated that four of the subtest gain scores were significant, or statistically greater than zero, for the ERI group. These were the LNF, PSF, FSF, and CLS gains, all of which were positive and ranged from 8.167 to 11.833. The only subtest with a significant change in mean scores from January to May for the control group was the FSF subtest, for which the gain was also positive (mean gain = 5.4 points, $p < .012$). Gain scores on the LNF, PSF and CLS for the control group were actually negative, meaning those scores decreased from January to May for the control group. No result was calculated for the control group's WWR gain as its mean gain score was zero, meaning it did not change from January to May.

Comparison of Gains across the ERI and Control Groups

Hypotheses 11-15

The second set of post-intervention hypotheses (Null Hypotheses 11-15) posited that the gain scores on each of the five DIBELS Next subtests for the treatment (ERI) and control

group would be statistically equivalent. Five T-tests for independent samples were run to test the veracity of those hypotheses, the results of which are presented in Table 6. These results are derived from comparing the mean gains, which can be found in Table 4, on the five DIBELS tests for the two groups.

ho11: mean DIBELS gains LNF ERI group = mean DIBELS gains LNF control group

ho12: mean DIBELS gains PSF ERI group = mean DIBELS gains PSF control group

ho13: mean DIBELS gains FSF ERI group = mean DIBELS gains FSF control group

ho14: mean DIBELS gains CLS ERI group = mean DIBELS gains CLS control group

ho15: mean DIBELS gains WWR ERI group = mean DIBELS gains WWR control group

Table 6

Results of T-test for Independent Samples Comparing the ERI and Control Groups' DIBELS Gain Scores

Gain Score	**t-test for Equality of Means**						
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
						Lower	Upper
LNF	2.335	9	.044	14.300	6.123	.448	28.152
PSF	3.400	9	.008	13.067	3.843	4.373	21.761
FSF	1.872	9	.094	6.433	3.437	-1.343	14.209
CLS	1.537	9	.159	8.367	5.445	-3.950	20.683
WWR*	2.549	5	.051	4.500	1.765	-.038	9.038

*Equal variances not assumed for the WWR comparisons

The results of the T-tests indicated that the gain scores on the LNF and PSF differed significantly (p value < .05) across the groups. The ERI group, as noted earlier, demonstrated larger gains than the control group on all of the DIBELS subtests.

Student Reactions to ERI: Survey Results

Surveys were developed to assess student interest and motivation during the ERI sessions. Students in the ERI group completed each survey twice over the 12 days of the intervention. Two surveys, found in Appendix E and F were actually administered on 3 occasions as there were absences on the first two dates those questions was posed. This resulted in 14 and 16 versus 12 replies to them, respectively. Following in Table 7 are descriptive statistics of those ratings, which give a sampling of how the ERI interventions were perceived. The motivation item, found in Appendix B, had students rate how difficult the activity was to them from 1 (*very easy*) to 5 (*hard*). The enjoyment item, found in Appendix C, had students rate how much they enjoyed the ERI activity from 0 (*no*) to 2 (*yes*). The Performance item, found in Appendix D, had participants rate the effort they expended from 0 (*I need to try harder*) to 2 (*I did my very best*). The final survey item, found in Appendix E, asked students to rate whether they felt the ERI activity could help them become a better reader. Possible responses ranged from 0 (*no*) to 2 (*yes*).

Below are tables with descriptive and frequency data which summarize the ERI groups' perceptions of the interventions. Table 7 lists the descriptive statistics for the ratings given to each motivation survey item. Mean ratings suggested that, on average, the students found the ERI activities fairly easy, they enjoyed them, they felt they exerted a good degree of effort, and that the ERI lessons were useful in helping them become better reader.

Table 7

Descriptive Statistics of Participant Ratings of Perceptions of the ERI Interventions

	N	Mean	Std. Deviation	Range	Maximum Possible range
Appendix B: Motivation (ERI activity rating scale from very easy to hard)	12	1.67	.888	1-3	1-5
Appendix C: Enjoyment (ERI enjoyment scale - Did you like the activity? No, somewhat, yes)	12	1.8333	.57735	0-2	0-2
Appendix D: Performance (ERI performance scale – How did I do today? My very best, could improve, need to work harder)	12	1.92	.289	1-2	0-2
Appendix E: ERI Reader Survey (Can I use what I learned to become a better reader?)	14	1.93	.267	1-2	0-2

ERI participants also responded on two occasions each to an open-ended question, which asked them what they enjoyed about the ERI lesson on those days. A summary of their responses is presented below in Table 8.

Table 8

Tally of Enjoyable Aspects of ERI Lessons

Activity	Number of students who reported enjoying the activity	What students enjoyed about the activity
Monster Words	6	Writing big letters in words using the dry erase markers, words they were able to write, and pretending to be a monster while writing
Sound Dash	2	Saying the sounds, practicing the sounds to finish the race, and making it to the end so the bunny could eat the carrot
Jack and the Beanstalk	4	Writing the words, meeting the monster at the top, sounding out words
Treasure Hunt	4	Enjoyed the challenge, writing the letters, checking to make sure the letters were not backwards

Overall, the responses suggest that the participants enjoyed activities that were interactive. They pretended to be monsters and wrote large letters, as a monster would, on a dry erase board. They appeared to enjoy the challenge of racing the clock in the Sound Dash. Students were familiar with the story "Jack and the Beanstalk." They seemed to enjoy applying the necessary skills to reach a goal they perceived as success in a game, i.e., they wanted to write words correctly "so Jack could get to the top of the beanstalk" and to write letters correctly "so that they could follow the maze to the buried treasure". Finally, the teacher/researcher made anecdotal notes about the students' participation in the ERI intervention twice per student. The anecdotal notes taken suggested that the students enjoyed the various activities. For example, some students asked to do the Sound Dash activity on multiple occasions to try and "beat" their original time. They also imagined finding a buried treasure as they wrote different letters/words. The students who participated in the ERI intervention appeared to enjoy being

part of a “special” group. Many would ask if the group was meeting and were disappointed on days it was not. On the last session they wanted to know why the group could not continue.

CHAPTER V

DISCUSSION

This study examined the effect of providing supplemental instruction in the Early Reading Intervention (ERI) program, in addition to the kindergarten *Treasures* curriculum, on the acquisition of phonics skills by kindergarten students. The study also examined the relationship between motivation and student reading achievement among the study participants.

Implications of Results

This study used a quasi-experimental pretest/posttest design to compare improvement on DIBELS Next scores of two groups of students, one of which received the ERI intervention in addition to the regular reading curriculum and one of which did not. The researcher attempted to select students with similar pretest scores for comparison. However, results of T-tests comparing the pretest scores indicated the ERI group performed better on the January PSF and FSF subtests than the control group.

Null hypotheses 1-10 for this study stated that the gains made by the treatment and control groups on each DIBELS Next subtest would be statistically insignificant. Null hypotheses 11-15 posited that the gain scores on each of the five DIBELS Next subtests for the treatment (ERI) and control group would be statistically equivalent.

To test hypotheses 1-10, gain scores were calculated for the five subtests for both groups and one sample T-tests were run to compare those gains to zero. Results indicated that the ERI group improved on all subtests, but the control group actually decreased on three. The null hypotheses were rejected for four of the subtests (LNF, PSF, FSF, and CLS) for the ERI group and for one subtest, FSF, for the control group, as the gain scores on these subtests were significant or greater than zero. Gain scores on the LNF and PSF and CLS tests for the control

group actually were negative, indicating that the DIBELS scores on them decreased over the intervention period. The control group's WWR score of zero did not change from January to May.

Hypotheses 11-15 posited the gains on each subtest would be statistically equivalent for the treatment and control groups. The hypotheses were rejected for the LNF and PSF subtests as the ERI group made significantly greater gains on both of those subtests. Although the ERI group performed better and made larger gains than the control group on the FSF and CLS and WWR subtests, the difference was not statistically significant.

Theoretical Consequences

Browder et al. (2012) report that students struggling with phonics and phonemic awareness skills can benefit from direct instruction in decoding. This information is supported by the results of this study. Students in the treatment group increased their DIBELS Next scores to a greater extent than those who did not receive the intervention. It is important to implement interventions promptly for students exhibiting delays in early reading skills (Brown, 2010). Vadasy and Sanders (2008) also support the early identification of struggling readers and including them in a reading intervention focusing on phonological and alphabetic skills. ERI is designed for students in kindergarten and first grade. It may be an appropriate program to implement with beginning, struggling readers since the participants who received it in addition to their regular reading curriculum, demonstrated greater gains.

Threats to the Validity

Threats to the validity of this study included its sample size, sample selection, time and duration of the intervention, as well as teacher instruction. The sample was limited in size, consisting of only six students in the treatment group and five students in the control group. Had

a greater number of individuals been involved in the study, the sample demographics may have been more representative of the school and general population of kindergarteners and the results may have been more accurately generalizable to other students. The selection methods used to gather the sample group may have affected the validity of the results as well. DIBELS Next scores were compared after the January assessment. A range of scores was used to determined participants' eligibility for participation in the study. However, despite random assignment to the ERI and control group conditions, the two groups' DIBELS Next subtest pretest scores were not all statistically equivalent, as noted in Chapter IV. This may have impacted the validity of conclusions reached after comparing the groups' gain scores.

Time also played a factor in the validity of the results. The ERI group had 30 minutes to complete each lesson and surveys. More time for lessons would have allowed more surveys to be conducted and perhaps would have yielded more accurate data about how the intervention was perceived. The lesson frequency also was limited to three times a week for four weeks. Offering students more frequent lessons might have resulted in different or larger gains from the ERI intervention.

Another consideration regarding potential threats to the validity of the study is teacher instruction. Although all participants in the study received instruction in the *Treasures* reading program, they received this instruction from their respective classroom teachers. Variation in teaching styles and student engagement may have affected student performance on the outcome measures.

Relationship to Previous Studies and Existing Literature

The results of the study appear to support other researchers' conclusions about the benefits of structured prereading and phonics interventions. According to research by Durrell et

al. (2009), using a systematic program of letter knowledge and phonics development improves students' phonics acquisition. The ERI intervention program follows an explicit and systematic approach to teaching reading skills. It includes multi-sensory activities and scripted lessons. Supporting Durrell, et al.'s conclusion, students who received the ERI intervention in this study performed better than the control group on all five DIBELS Next subtests. However, only the gains made by the ERI group on the LNF and PSF measures were statistically significant.

Joshi et al. (2009) found that kindergarten students improved their ability to read and spell with systematic phonics instruction. The results of the study suggest students in the ERI group did increase their understanding of phonics. This improvement was evident in the DIBELS Next post assessment as well as in classroom observations. Students from the ERI group were starting to apply what was learned in the lessons to authentic reading material in their regular classroom instruction. For example, students were observed starting to blend sounds together to read unknown words.

Ukrainetz et al. (2009) report that poor phonics skills lead to difficulty in decoding. When students struggle with decoding, they often have deficits in fluency and comprehension that result in reading difficulties. Based on the generally positive outcomes from using the ERI which were evident in this study, involving struggling readers in the ERI intervention program may prevent this downward spiral from occurring by improving phonics skills early.

Implications for Future Research

Additional research should be conducted to develop a better understanding of how interventions like such as ERI help early readers. Studies initiated at the beginning of the school year and culminating in May with the final DIBELS Next assessment might result in more detailed trends in the development of reading skills. It also would be helpful to determine the

impact of ERI if the intervention were conducted with a much larger sample. For example, if all kindergarten classrooms in the school system participated, the results likely would be different. With a larger sample such as this, the level of ethnic and socioeconomic diversity would increase, ant this could affect the results of the study. Including more students who are English Language Learners and students with more varied educational backgrounds might reveal specific benefits for these students.

Including authentic assessments in addition to DIBELS Next might help clarify how reading skills are affected by ERI. For example, the Kindergarten DIBELS Next does not include a reading passage. Assessing students' ability to read aloud and comprehend an actual book or passage would provide insight to their ability to apply phonics skills to an authentic reading context and how that ability might be influenced by ERI.

Results of this study suggest it would be beneficial to include more students in the ERI program in kindergarten. Unfortunately, the grade level participation is often quite limited due to eligible staffing and time constraints. If more struggling readers in kindergarten could be included, more students may increase their reading skills and test performance.

Conclusion

Based on results of this study, the use of ERI in addition to teaching the *Treasures* curriculum appears to have increased kindergartners' phonics acquisition. Students in the treatment group outperformed the control group on all of the DIBELS Next subtests in May. In addition, their gains on four of the subtests were statistically significant (all but WWR) and their gains were significantly greater than those for the control group on two subtests (LNF and PSF). According to research reported by the National Reading Panel (2001), phonics is an important component of learning to read. Students who have difficulty with phonics often experience long-

term challenges with reading fluency and comprehension. Therefore, it is important to recognize struggling readers in kindergarten and get them involved in programs like ERI, which may help them develop essential prereading skills as early as possible.

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Appendix A: Anecdotal Notes

Student: _____ **Date: _____**	**Student: _____** **Date: _____**
Student: _____ **Date: _____**	**Student: _____** **Date: _____**

Appendix B: ERI Activity Rating Scale

How would you rate the activity?

1 2 3 4 5

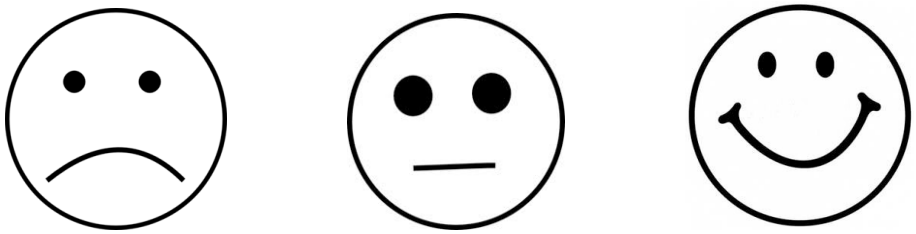
1 = very easy
2 = somewhat easy
3 = just right
4 = somewhat hard
5 = hard

Name: _____

Date: Lesson:

Appendix C: ERI Enjoyment Scale

Did you like the activity today?



no somewhat yes

Name: _____

Date: Lesson:

Appendix D: ERI Performance Scale

How did I do today?

 = I did my very best.

 = I tried but could improve.

 = I need to work harder

Name: _____

Date: Lesson:

Appendix E: ERI Reader Survey

Can I use what I learned today to become a better reader?

?

yes I'm not sure no

Name: _____

Date: Lesson:

Appendix F: ERI Interest Survey

What did you like about today's activity?

Response:

Name: _____

Date: Lesson: