

The Effect of the Wilson Reading System Intervention Program  
On At-Risk, Second Grade Students Ability to Decode Words

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## Abstract

The purpose of this study was to determine the effects of the Wilson Reading System Intervention Program on second grade students' ability to decode words as measured by select subtests of the DIBELS. This was a quasi-experimental, posttest only, ability matched comparison group design. Students had a history of reading difficulties. There were 7 subjects in each group. The mean Correct Letter Sounds (CLS) score of the experimental group (Mean = 39.43, SD = 11.82) was not significantly different from the mean CLS score of the control group (Mean = 34.57, SD = 20.42) [ $t(6) = 0.51, p = .63$ ]. The mean Word Reads Correctly (WRC) score of the experimental group (Mean = 12.43, SD = 3.69) was not significantly different from the mean WRC score of the control group (Mean = 7.86, SD = 7.82) [ $t(6) = 1.40, p = .21$ ]. Research should continue as the sample size, method of instruction, and length of the intervention due to the COVID-19 pandemic may have impacted the results of the study.

# CHAPTER 1

## INTRODUCTION

### Overview

Learning how to read is one of the fundamental and most important skills that is taught in the early elementary grades. However, according to the National Center for Education Statistics (2013), it is estimated that 65% of fourth grade students in the United States read below grade level. Six years later, data from the National Assessment of Education Progress (2019) shows that the percentage of students that are below level remains the same.

There is an obvious need for supporting students with reading foundational skills in the United States, which was one of the reasons for the focus of this research study. Students need curriculum and instruction that is appropriate for their unique education needs. One program may work for one student but not others, showing a need for supplemental reading programs in elementary schools. By the time students enter Kindergarten, 34% of those students already lack basic literacy skills that they need in order to be successful in reading (Council on Early Childhood, 2014). This percentage only increases with students who are minorities or live in low-income families. The state of Maryland Senate recently passed SB 734, a bill that requires every district in the state to screen Kindergarten students for potential reading difficulties (Maryland General Assembly, 2019). These students would then receive supplemental reading instruction with a more intensive program that is more appropriate for their reading needs. The increased focus on supplemental reading programs and the need to support at-risk students was another reason to evaluate the intervention program in this research study.

As a reading instructional support teacher, this researcher works with students who struggle with phonemic awareness, phonics and decoding skills. The researcher teaches students

with the supplemental reading intervention program Wilson Reading System (Wilson Language Training Corporation, 2020). This program was originally designed for students in third grade through eighth grade. It is used for students with deficits in phonics, decoding and encoding. The intervention takes multiple years to complete and is paced based on student progress. Some students may move through the intervention at a faster pace than others.

This intervention is used for second grade students at the researcher's elementary school. Students who were previously enrolled in Foundations Reading Intervention for Kindergarten or first grade move into Wilson Reading System in second grade rather than in third grade. There is no data or research that supports that this program is effective or not effective for second grade students. This researcher wanted to test the effects of this program on second grade students to determine if it is effective with students who are in a lower grade than is recommended by the program.

### **Statement of Problem**

The purpose of this study is to determine the effect of the Wilson Reading System intervention on nonsense word fluency scores of second grade students who are struggling readers and who previously participated in the Foundations program.

### **Hypothesis**

The null hypothesis is that the DIBELS Correct Letter Sounds (CLS) and Words Read Correctly (WRC) scores of the students receiving the Wilson Reading System Intervention will not differ at a statistically significant level from the scores of ability matched students receiving the general education literacy curriculum.

## Operational Definitions

**Struggling reader** is defined as a student who scored below a second grade level on the iReady diagnostic assessment (Curriculum Associates, 2021). These students scored a grade level placement of Kindergarten or first grade on phonemic awareness, phonics, and high frequency word subtests. Their overall composite scores on the iReady diagnostic were between 375 and 458.

**Student with reading difficulties** is defined as a student who shows weak phonics or decoding skills. This student struggles to understand letter-sound correspondences and has difficulty blending and segmenting sounds to read and spell words.

**General education literacy curriculum** is defined as the research based curriculum that all second grade students receive from their classroom teacher during the literacy block in the school district. This literacy block contains a fifteen-minute Interactive Read Aloud or Explicit Comprehension lesson, where a specific comprehension skill is taught using a previously read text. In addition, this literacy block contains a twenty to thirty minute Foundational Literacy Skills lesson where students are taught decoding skills using the *Fountas and Pinnell Phonics and Word Study Program* (Fountas & Pinnell Literacy, 2021).

**Intervention students** are defined as students who are being taught with the Wilson Reading System intervention program. These students are taught in a small group, due to their below-grade level phonics, decoding and phonemic awareness skills and the fact that they participated in a previous reading intervention in Kindergarten or first grade.

**DIBELS (Dynamic Indicators of Basic Literacy Skills)** is defined as a standardized assessment that is used to measure students' knowledge of early literacy skills. The subtest used



in this study will assess a students' ability to read nonsense words, and identify letter-sound correspondences. (University of Oregon, 2020).

**Wilson Reading System Intervention** is defined as a research-based intervention that is used with students in second grade as a Tier 3 reading intervention. It provides supplemental instruction for students with decoding and encoding difficulties. The intervention is provided to students outside of the general education classroom and with a trained intervention teacher (Wilson Language Training Corporation, 2020).

## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

This literature review focuses on why reading is a critical skill needed for all students and what interventions are used to help students who are considered struggling or at-risk readers. The first section discusses the importance of learning to read. The review then goes on to explain the characteristics of struggling readers and similarities that these students have with one another. The third section will discuss the importance phonics instruction and the different methods of teaching phonics. Finally, the last section in the review will explain the benefits of research-based interventions and more specifically research that supports the use of the Wilson Reading System Intervention to help support students with phonemic awareness and phonics deficits.

#### **Learning How to Read**

Teachers in the primary grades spend most of their instructional time during the school day teaching literacy. Teachers in early elementary grades, which encompass pre-kindergarten through third grade, are tasked with the job of helping students develop their foundational reading skills (Snyder & Golightly, 2017). If students are not able to develop these basic foundational reading skills, such as letter recognition, phoneme identification, and letter-sound relationships, they will be at risk for reading problems in later years. Children who are poor readers have lower self-esteem and motivation to learn; reading impacts all areas of academic achievement (O'Shaughnessy & Swanson, 2000). Mastering the foundational reading skills early in a child's education will help them with reading fluency and comprehension, which is the ultimate goal of learning how to read. Students who struggle with reading typically have difficulties with reading accuracy, fluency, and reading comprehension, the goal of reading itself (Corporation for the Advancement of Policy Evaluation, 2006). Most early elementary teachers

not only have the job of teaching students to read, but the task of determining how to support students who are deemed at-risk or struggling readers.

### **Characteristics of Struggling Readers**

The National Reading Panel (2000) estimated that 17.5% of elementary students had reading problems during their first three years in school. The National Assessment of Educational Progress (2019) estimated that only 35% of the fourth graders in the United States scored at or above a proficient level as determined by the National Assessment of Educational Progress (NAEP). The NAEP is a project that was funded by the US Department of Education in 1969. It is an assessment that is given to representative populations across the country to determine their academic progress in all content areas, including reading. The data from this assessment is used to compare our students' educational progress to that of students in other countries, and to help determine additional policies that are needed to promote academic achievement in the United States. Due to the number of students who struggle with reading and are not proficient readers by the time they are in fourth grade, there is a definite need for reading intervention programs to help students become more successful in developing their foundational literacy skills.

Children who are identified as struggling or at risk readers in Kindergarten lack the understanding of the structure of the English language (Simmons et al., 2007). Research has shown that phoneme segmentation, verbal memory and name retrieval are skills that prove to be difficult for students who are diagnosed with reading disabilities (O'Shaughnessy & Swanson, 2000). When students have difficulty with these foundational skills, they have limited cognitive capacity for higher level thinking processes, like comprehending what they are reading. Students who have reading disabilities or are considered to be struggling readers need to receive direct

instruction in phonics and phonemic awareness skills so they can improve their word recognition and decoding abilities (Stebbins et al., 2012).

English Language Learners have their own set of unique characteristics, which make learning to read difficult for some students. In 2019 the NAEP Nations Report Card shows that 10% of fourth graders who are English Language Learners scored at or above a proficient level, compared to 39% of their native English-speaking peers (National Assessment of Educational Progress, 2019). Students who are English language learners have difficulty understanding academic language and academic vocabulary (Richards-Tutor et al., 2016). English language learners also tend to struggle with decoding, the alphabetic principle and phonological awareness. In order to help these students improve their reading abilities, research conducted by Gersten & Baker (2000) showed that using visuals to help promote vocabulary, graphic organizers, cooperative grouping, discussion of content, and small group explicit instruction are beneficial in helping these students learn to read. These strategies are similar to strategies that are used with students who have reading disabilities, specifically dyslexia.

According to the International Dyslexia Association (2020), dyslexia is defined as a language-based learning disability. Researchers are still unsure what causes dyslexia, but studies have shown that people with dyslexia have differences in the anatomical make up of their brain. Students with dyslexia have a “phonological processing deficit, which is thought to have an adverse effect on the word recognition system by interfering with the ability to establish links between spoken sounds and written letters” (Hwee & Houghton, 2011, p. 143). Students with dyslexia have difficulty decoding, recognizing and spelling words (Wilson Language Training Corporation, 2020). They have these deficits due to their neurobiological differences and need different instructional approaches to help them learn to read. According to the National Reading

Panel, teachers need to provide students with explicit instruction, systematic phonics instruction, and fluency and comprehension strategies. There is no cure for students who have dyslexia but there are proven programs that help students with dyslexia learn to read and become productive members of society (International Dyslexia Association, 2020).

Through research done with struggling readers and students who are at risk for developing reading difficulties, researchers have found that these students have a lack of phonemic awareness, lack of alphabetic knowledge, and low vocabulary and oral language skills (Snyder & Golightly, 2017). In order to help support these students, it is important that reading interventions target these specific areas of need.

### **Importance of Phonics Instruction**

Phonics skills and decoding are one of the areas that struggling readers have the most difficulty with (Snyder & Golightly, 2017). Students who have learning disabilities, such as dyslexia or who are new to learning the English language, have difficulty decoding words and understanding the alphabetic principle (Richards-Tutor et al., 2016). The alphabetic principle is the concept that letters and letter combinations all have a specific sounds (O'Shaughnessy & Swanson, 2000). Students who have difficulty decoding words and applying the alphabetic principles struggle with being able to recognize words, read words with fluency, comprehend a text, write and spell words. This is an important concept that students need to master in order to become successful readers.

There are two main methods that are used to improve student's word recognition skills (O'Shaughnessy & Swanson, 2000). One approach is a connectionist approach that came from studies done in the field of cognitive neuroscience (Berninger et al., 1999). It is called whole word reading or word-specific learning. This method teaches students to make connections

between the spellings and sounds that words make to words that they have already memorized. This method has been determined to be effective in teaching students sight words: words they must memorize and cannot decode (O'Shaughnessy & Swanson, 2000). The other approach is where students are taught letter-sound correspondences. In this method, students segment and blend sounds in a word to read. They use phonics rules to identify new or unfamiliar words, rather than relying on memorization.

There have been multiple research studies conducted to determine the benefits of using the whole word approach or the approach that teaches students' phonics rules and how to decode words using the alphabetic principle (Berninger et al., 1999). Multiple studies including a study by Vellutino et al. (1996) report that students who were in a phonics based training program, where students were taught to identify phonemes, had a greater transfer of knowledge and were better able to identify and recognize words (Simmons et al., 2007). When students are taught phonological awareness skills directly, and in a systematic order, they improve their reading abilities at a faster rate than students who are taught use the whole word reading approach. Experimental studies that evaluate different programs have been used to develop interventions to help students with disabilities or reading difficulties. Experimental studies with control groups were conducted on both the Phonological Awareness Training (PAT) and the Word Analogy Training (WAT). The PAT focused on teaching students to decode words based on phonemes, while the WAT focused on teaching students to decode based on word parts, and onsets and rimes. The data from the posttest showed that the students who received the PAT intervention had higher levels of phonological awareness skills than the students who received the WAT intervention. Students in both studies experienced growth, but students who were given the PAT intervention were able to read and decode more words than the other students. Most research-

based programs teach students to decode words by phonemes while using their alphabetic knowledge rather than through whole word reading (Chard & Osborn, 2018). Due to research studies like these and many others, many reading intervention programs have been designed to teach students to decode words based off of individual phonemes.

### **Research Based Intervention Programs**

Many different researchers have designed and administered studies that have helped determine effective practices for teaching reading. Reading intervention are programs that students receive if they need more intensive instruction than just the general education curriculum (Denton et al., 2006). Students who are determined to be at risk for reading difficulties are given reading instruction in a small group through an intensive approach, in addition to their high-quality whole group instruction. There have been multiple studies that have determined a correlation between the small group of students, amount of time, and amount of explicit teaching of phonics skills and student achievement. Most interventions for struggling readers focus on the five pillars of reading: phonemic awareness, phonics, word recognition, fluency and comprehension (Goss & Brown-Chidsey, 2012). A study done by Snyder and Golightly (2017) indicated higher levels of achievement for students who participated in a balanced literacy intervention, a program that focuses on multiple pillars and areas of reading, rather than one specific pillar. The National Reading Panel specifically indicated the importance of phonemic awareness and phonics in reading intervention (Stebbins et al., 2012). If students can focus less on decoding words, they can spend more energy focusing on what the words mean and comprehending the text. The programs that have been the most effective in improving students reading abilities are ones that are delivered in small groups, with multiple opportunities for teachers to explicitly model and students to practice concepts. This is supported by a study

from Carroll in 1963. Carroll found that students were more likely to succeed and improve their reading abilities if they had opportunities to practice and be actively engaged in their learning.

The Wilson Reading Program is based off of the research findings of the Orton-Gillingham approach (Corporation for the Advancement of Policy Evaluation, 2006). It is a balanced literacy program that focuses on all five pillars of reading (Stebbins et al., 2012). This program takes a multi-sensory approach to get students engaged by having students use “finger tapping” to blend and segment words. The intervention program focuses on helping support students who have deficits in phonemic awareness and phonics (Wilson Language Training Corporation, 2020). The materials used to help students understand the letter-sound correspondences help facilitate a transfer of learning when reading. Wilson Reading presents the information in a cumulative, systematic manner, which helps students retain previously taught skills (Corporation for the Advancement of Policy Evaluation, 2006). Research studies on multiple groups of students indicated gains in student achievement and reading abilities after participating in the Wilson Reading Program (Stebbins et al., 2012). One study even indicated that after a year of participation in the program, the student group made a gain of 1.9 grade levels in reading on average. In the experimental study conducted by Stebbins et al., the group of students who were monitored were students with disabilities. This study showed that the students made significant growth in their word analysis skills, nonsense word reading, word reading fluency and decoding. This intervention helped monitor effectiveness for students with disabilities and students who are determined to be at-risk readers, and for that group of students, it proved to be successful.

### **Summary**



Reading is a critical foundational skill that students need to learn in order to be successful. Learning to read involves learning many different skills and using that knowledge to comprehend what one is reading. Students who are struggling readers or are at risk for reading difficulties can still learn to read; however, they need explicit programs and interventions that focus on providing a balanced literacy approach and target specific reading skills that they struggle with. The Wilson Reading Program is an intervention program that was developed based on research and provides appropriate instruction for students with decoding and phonemic awareness deficits. Students who have these deficits can learn to read and have shown major growth in their reading abilities after participating in this program. Not all intervention programs are the same, and it is important for teachers and school personnel to determine what intervention is most effective and appropriate for their students.

## **CHAPTER III**

### **METHODS**

#### **Design**

This study was designed as a quasi-experimental, post-test only ability matched comparison group design. The students were matched together based on their composite score from the iReady reading diagnostic assessment. Each pair of students had composite scores that were within one standard error of measurement of each other. The standard error of measurement for this assessment was +/- 9 points. The pair of students needed to be within 9 points of each other to be considered as having the same reading level. The researcher compared the iReady reading diagnostic assessment scores to confirm that the groups of students did not have any statistical differences at the beginning of the study. The researcher decided to use the iReady reading diagnostic scores to match the students in the control group and experimental group because the iReady diagnostic assessment had already been administered prior to the start of the intervention.

The researcher used the DIBELS Nonsense Word Fluency subtest to assess the students' reading abilities as the post-test. The data from the post-test determined whether or not the students differed statistically after receiving the intervention. The independent variable for this study is the type of intervention or instruction. Students in the experimental group received the Wilson Reading System Intervention Program. Students in the control group received the general education second grade literacy curriculum. The dependent variable is the student's scores on the DIBELS nonsense word fluency subtest.

## Participants

The subjects in this study were second grade students who were enrolled in a suburban elementary school in Maryland. Fourteen students participated in the study, with the average student age being 7 years old. The school is a Title I school where most of the students come from low-income families. At this school, 68% of the students qualify for free or reduced meals, 12% of the students receive special education services and 13% of the students are identified as English Language Learners. At the time of this study, the school population consisted of 53% female and 47% male students.

The fourteen students who participated in this study were students who were considered struggling readers. These students scored either on a kindergarten or first grade reading level as a second grade student. In the experimental group, there were seven students. One of the students in this group received special education services due to a disability. Four out of the seven students identified as African American, two students identified as Caucasian and one student identified as Hispanic. In the control group, there were also seven students. Of these seven students, two were English Language Learners, one student identified as African American, two students identified as Caucasian, three students identified as Hispanic and one student identified as Asian. The students who were in the experimental and control groups all came from three second grade classrooms in the building. All classroom teachers were tenured teachers with more than three years of teaching experience. All three of the classroom teachers were also rated highly effective in their instruction in the previous school year by their administration. This rating was based off of multiple instructional observations and student data.

The students in the experimental group were assigned to the Wilson Reading System Intervention Program prior to the study for educational programming, rather than research,

purposes. They were placed in the group based off of school data and decisions within the leadership team. Due to the nature of virtual learning secondary to COVID-19 precautions, only students who previously participated in a reading intervention in kindergarten or first grade were eligible to participate in the Wilson Reading System Intervention Program in second grade. The control group participants were identified as struggling readers based on their performance on the iReady diagnostic assessment and paired with students with the closest scores. These students participated in the general education literacy curriculum since they were ineligible for participation in the Wilson Reading System Intervention due to lack of prior participation in the Foundations program. The students who were deemed eligible for Foundations in kindergarten or first grade were identified based on their scores on the Fountas and Pinnell Benchmark Assessment System. The students who were previously enrolled in the Foundations program received approximately three weeks of instruction with this program prior to schools moving to virtual learning due to the COVID-19 pandemic.

### **Instrument**

The instrument used for this study was the *DIBELS 8th edition, Nonsense Word Fluency Subtest*. The *DIBELS Nonsense Word Fluency subtest* is designed to assess student knowledge of the alphabetic principle, letter-sound correspondences and a students' ability to segment and blend sounds in a word (University of Oregon, 2021). The students are presented with a list of consonant-vowel-consonant (CVC) words and vowel-consonant (VC) words. The students are directed to verbally say the individual sounds in the word or read the whole word. All of the words that are presented to the students are "nonsense" words, which mean they are not real words. The students have one minute to read as many of the words as they can. The more fluent the student is, the higher their score. The test administrator scored student responses and the

student received two scores. One score was Correct Letter Sounds (CLS), which is the number of letter sounds the student was able to identify accurately. The other score students received was Words Read Correctly (WRC). This is the number of whole words a student could read without needing to segment and blend the sounds in the word. If the student reads the whole word correctly, they also get points for correct letter sounds for that word. The goal is that students read whole words fluently without needing to segment and blend every time they encounter an unfamiliar word.

According to the DIBELS 8th edition Technical Manual (2018-2020), different types of reliability were measured for each subtest. For the Nonsense Word Fluency subtest, the concurrent alternate form reliability had a median coefficient of .89 for the Correct Letter Sounds (CLS) score and a median coefficient of .88 for the Words Read Correctly (WRC) score (University of Oregon, 2018). These scores are very close to .90. A coefficient greater than .90 is considered to indicate a strong correlation. The test-retest reliability was also measured to determine the correlation between scores on the same test administered at different times. For the NSF-CLS score the median coefficient was .77 and the median coefficient for NSF-WRC was .72. These coefficients also show a positive correlation and indicate that they are reliable tests.

The technical manual for the 8th edition of DIBELS also included data on the validity of each of their subtests. Concurrent validity was measured to determine if there were correlations between the DIBELS 8th edition subtests and the DIBELS Next assessment. A strong correlation would indicate that the DIBELS NWF subtest does actually measure what it is intended to measure. The correlation coefficient for NWF-CLS ranged from .73-.87 and the coefficient for NWF-WRC ranged from .66 to .90 (University of Oregon, 2018). The last type of validity that was assessed was predictive validity. The correlation coefficients for both scores of the NWF

subtest ranged from .54 to .79. This shows that the DIBELS 8th edition subtests are good predictors of elementary reading achievement.

The matches were based on composite scores from the iReady reading diagnostic assessment. The iReady reading diagnostic is an adaptive, computer-based assessment that determines students' overall reading levels and grade level equivalent scores (American Institutes for Research, 2021). For the iReady assessment, research was conducted to determine the concurrent validity of the iReady language arts assessment and DIBELS. For second grade students, the median co-efficient was .80, which indicates a strong correlation. This indicates that the iReady assessment does measure what it is intended to (phonological awareness, phonics, vocabulary, comprehension and overall reading levels). Research conducted also shows that the iReady assessment is reliable. The marginal reliability for second grade students was 0.96.

### **Procedure**

None of the students who were in the experimental group had received the Wilson Reading Intervention Program prior to the start of this study. The students in the experimental group met with the researcher for a total of thirty minutes a day, for three times a week in an online format. The students received this intervention during the Academic Flex period of time in their schedule. This time was designated for small group reading instruction. During this time the classroom teacher met with small groups of students and focused on comprehension skills using leveled texts. The students who were not meeting with the classroom teacher engaged in online reading lessons through the iReady platform. Students who participated in the Wilson Reading System Intervention met with their classroom teacher for small group instruction on the other two days of the week when they did not meet with the researcher. The students did not miss any of their whole group literacy instruction to participate in the intervention. The

experimental group received the intervention for 16 weeks prior to being given the post-test. The researcher was a trained teacher and is approved to teach the Wilson Reading System Intervention program in an online format. Due to students' initial scores on a Wilson Reading screening assessment, all students in the experimental group started at the Wilson substep 1.3. This substep focuses on teaching students how to read and spell consonant-vowel-consonant (CVC) words and words that contain digraphs such as, /sh/, /th/, /wh/, /ck/, and /ch/. Students started at substep 1.3 because they demonstrated their ability to identify at least twenty of the twenty-six letter sounds on the screening assessment.

The lessons for the reading intervention alternate between decoding and encoding. Each lesson has specific steps that help students learn letter-sound correspondences and improve their reading decoding skills (Wilson, 2018). A decoding lesson has the following steps: Sounds Quick Drill, Teach and Review Concepts for Reading, Word Cards, Wordlist Reading, Sentence Reading. For the Sounds Quick Drill, the researcher asked students to identify different letter sounds when given a picture of a letter or letter combination. Teach and Review Concepts for Reading in substep 1.3 involved teaching students how to “tap” words. Tapping is a strategy used to help students understand that each letter has a sound that corresponds to it. This strategy is used to also teach blending and segmenting. The next part of the lesson is Word Cards. The students were given different word cards that are focused on both past and present skills. The students practiced reading the words utilizing the strategy that was taught earlier in the lesson. The next part of the lesson is Wordlist Reading. The students were given a list of fifteen words that focused on the current skill. Students took turns reading the word list to the researcher. This allowed the researcher to collect data on the students and determine areas of focus for future lessons. The last part of the lesson is Sentence Reading. The researcher showed 5-8 sentences on

the screen, the students practiced reading them first on their own, then all together as a group. The sentences have words that the students have learned previously. This helps the students to learn to read words in context, not just isolation.

After participating in a decoding lesson, the next lesson the students received focused on encoding, or spelling. The steps for this lesson are as follows: Sounds Quick Drill, Teach and Review Concepts for Reading, Quick Drill in Reverse, Teach and Review Concepts for Spelling, and Dictation. The researcher again presented 5-8 letters and asked students to identify the sound, the researcher used discretion as to which letters and sounds to review but chose sounds that students had difficulty with in previous lessons. For the Teach and Review Concepts portion of the lesson, the researcher reviewed the reading skill and had students practicing reading words that review the skill from the prior day. The next step, Quick Drill in Reverse, was when students are given a sound and they had to identify the letter that makes that sound. The researcher orally named different letter sounds and the students said the letter name that made that sound. For the Teach and Review Concepts part of the lesson, the researcher modeled how to use decoding strategies such as “tapping” to spell words. During this part of the lesson the researcher modeled how to think aloud spelling a word. The last part of the lesson is Dictation. The researcher gave students various words to spell that focused on the same spelling pattern or strategy that the students had been working on previously. The students spelled the words by either writing with a pencil or typing the word (Wilson, 2018).

After the researcher administered the Wilson Reading System Intervention for sixteen weeks, the students were tested using the DIBELS nonsense word fluency subtest. Each student was given this subtest online, individually with the researcher. The researcher read the standardized directions to each of the fourteen students, and each student was administered using



the same progress monitoring form. The Correct Letter Sounds (CLS), and Words Read Correctly (WRC) scores were then compared by non-independent samples t-tests.

## CHAPTER IV

### RESULTS

The purpose of this study was to determine the effect of the Wilson Reading System intervention on nonsense word fluency scores of second grade students who are struggling readers and who previously participated in the Foundations program. The DIBELS nonsense word fluency subtest was used to assess student abilities.

A non-independent samples t-test was conducted with the independent variable being the type of instruction the students received and the dependent variable being the student scores on the DIBELS nonsense word fluency subtest. The mean CLS score of the experimental group (Mean = 39.43, SD = 11.82) was not significantly different from the mean CLS score of the control group (Mean = 34.57, SD = 20.42) [ $t(6) = 0.51$ ,  $p = .63$ ]. Please see Table 1. The mean WRC score of the experimental group (Mean = 12.43, SD = 3.69) was not significantly different from the mean WRC score of the control group (Mean = 7.86, SD = 7.82) [ $t(6) = 1.40$ ,  $p = .21$ ]. Please see Table 2. Consequently, the null hypothesis that the DIBELS Correct Letter Sounds (CLS) and Words Read Correctly (WRC) scores of the students receiving the Wilson Reading System Intervention will not differ at a statistically significant level from the scores of ability matched students receiving the general education literacy curriculum was retained.

**Table 1**

*Means, Standard Deviations, and t-statistic for DIBELS CLS scores*

Condition	N	Mean	SD	t-statistic
Wilson Reading	7	39.43	11.82	0.51 (NS)
Control	7	34.57	20.42	

NS = non-significant at  $p \leq .05$

**Table 2**

*Means, Standard Deviations, and t-statistic for DIBELS WRC scores*

<b>Condition</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>t-statistic</b>
Wilson Reading	7	12.43	3.69	1.40 (NS)
Control	7	7.86	7.82	

NS = non-significant at  $p \leq .05$

## **CHAPTER V**

### **DISCUSSION**

The purpose of this study was to determine the effect of the Wilson Reading System intervention on nonsense word fluency scores of second grade students who are struggling readers and who previously participated in the Foundations program. The null hypothesis that there would be no statistical difference between the DIBELS Correct Letter Sounds (CLS) and Words Read Correctly (WRC) scores of the students receiving the Wilson Reading System Intervention from the scores of ability matched students receiving the general education literacy curriculum was retained. There was no significant difference between the two groups after the intervention.

#### **Implications of the Results**

The results suggest that participation in the Wilson Reading System intervention did not have a significant effect on the decoding abilities of participating students compared to their ability matched peers who received the general education literacy curriculum. Findings of this study suggest that student participation in the Wilson Reading System intervention program alone may not be enough to increase their decoding skills without supplemental instruction as well.

Although the two groups of students' scores did not differ significantly on the DIBELS nonsense word fluency subtest, the researcher did notice several benefits from participation in the intervention program. The students who participated in the intervention program seemed more engaged in their learning. These students were taught in a small group, with no more than five students in a group. The students in the intervention had more opportunities to participate, and receive individualized support from the researcher. Each student in the experimental group

was excited and motivated to participate in each lesson. Many students often asked to stay longer at the end of the thirty minute lesson rather than returning to class. The students who participated in the intervention were also notably engaged in the various activities during the lessons. This may have been due to the fact that the intervention program was multi-sensory, predictable, and focused on skills that were appropriate for the students current reading abilities. If this study had continued for more than sixteen weeks, the levels of engagement and motivation may have translated into more of a statistical difference in the data.

While administering the post-test, the researcher noted that the students who participated in the Wilson Reading System intervention used strategies to approach an unfamiliar word. Many of the students used the strategy “tapping” to segment the sounds of the nonsense word. Students who did not participate in the intervention did not have a strategy to use to determine the unknown words. These students either skipped the word entirely or stated “I do not know.” The use of strategies does not necessarily translate to having a higher scores on the DIBELS nonsense word fluency subtest; however, it is important to note students are showing application of strategies they learned during the intervention.

Educators should consider several factors when choosing a reading intervention program to implement. Students should be identified based off of data that supports the need for a program. The students who participated in this program previously were identified as needing intervention and participated for a few weeks in the Foundations intervention program prior to school closures. Educators should consider the amount of time needed for an intervention program. The Wilson Reading System intervention should be taught five days a week for forty-five to sixty minutes for each lesson. The researcher only had students for thirty minutes a day, three days a week due to scheduling constraints with virtual learning. This research based

intervention can take two to three years for students to complete. The researcher only had students participating for sixteen weeks. This research based intervention is also mainly used with students starting in third grade. There is not a lot of research on whether or not this program is effective for second grade struggling readers or younger students.

### **Theoretical Consequences**

Bottom-up reading theories explain that students learn to read from learning letter and sound correspondences and then gradually move to understand the whole text and gain meaning (Reutzel & Cooter, 2004). This study focuses on teaching decoding first but does not support that teaching decoding first helps students comprehend texts later due to some of the limitations of the study, which will be discussed in a subsequent section. Theorist Lev Vgostsky determined that students need to be taught in their “zone of proximal development” in order to move forward cognitively. This study focuses on the Wilson Reading System, which teaches and supports students in small groups and is focused on their specific reading needs. Students are taught at this instructional level in order to improve their reading abilities in the Wilson Reading System intervention. Even though the results of the study do not support the idea that teaching students in a small group setting and at their zone of proximal development is beneficial, this is likely due to the limitations of this study. Consequently, the results of this study should not be considered as proof that this intervention was ineffective.

### **Threats to Validity**

There were both threats to internal and external validity in this study. The threats to validity were mostly due to the fact that this research was being conducted during the COVID-19 pandemic, and teaching and learning were virtual.

One threat to internal validity was the differential selection of participants. The participants in the study for the experimental group were determined based on their previous experience of being in the Foundations program in first grade. The knowledge they gained from that program could have influenced their post-test scores. Since subjects were not randomly assigned to groups and since there was no pre-test, it is unknown whether the groups differed significantly prior to the intervention.

Selection-maturation interaction is another threat to internal validity. The participants were chosen from three different second grade homeroom classes. The teachers have varying levels of experience. One teacher is a veteran teacher with 11 years of experience, one teacher has 5 years experience, and the last teacher has only 2 years of experience. Their levels of experience could have impacted how they delivered the general education literacy curriculum to the control group of students. This could have impacted how students performed on the post-test.

Another threat to internal validity may be the instrumentation used. The DIBELS nonsense word fluency subtest was not designed to be given virtually over the computer. The instrument was designed to have the student in person with the teacher. Certain aspects of the instrument were difficult to administer virtually, such as having the students point to each word as they read it. This may have impacted student scores due to the administration of the post-test.

One threat to external validity could have been the selection-treatment interaction. The students for this study were not randomly selected. They needed to be students who previously participated in the Foundations program for the experimental group. The students for the control group needed to be of similar ability to the students in the experimental group. Due to the fact that the selection was not random, this makes it difficult to generalize the results for a larger population of students.

Other threats to internal validity were due to various constraints that were put in place due to the COVID-19 pandemic. The experimental group received their intervention three times per week for thirty minutes. The recommended time for the program is five times a week for forty-five to sixty minutes. The intervention can take two to three years to complete, and this study only collected data for sixteen weeks. If the study had been longer, there may have been more significant differences between the two groups. The lessons and activities are designed for students in third through twelfth grade. It was not originally intended for younger students. This would mean that the results from this study will not be able to be generalized for students who this program was initially intended for. The lessons were taught virtually with students being in their own homes. The intervention was intended for students to be taught in person. Student absences, testing schedules, and distractions from the home environment played a role in the quality of the lessons taught. This could have impacted the internal validity of this research study.

### **Connections to Previous Studies/Existing Literature**

Several research studies have been conducted to evaluate the effectiveness of the Wilson Reading System intervention program for different populations of students. The results of this study did not indicate a significant difference in the nonsense word subtest scores of students who received the intervention and students who received the general education literacy curriculum; however, multiple studies did show statistical significance in terms of students' decoding abilities, and overall reading comprehension.

The Wilson Reading System intervention program indicates that it may take several years for students to complete the program. On average it takes students two to three years to complete the program if the intervention is being done regularly and with fidelity. In a study conducted by



Duff et al. (2016), students who received the Wilson Reading System intervention for a year showed significant increase in their average oral reading fluency and reading comprehension scores. The students were progress monitored through Aimsweb. The students in this study could have shown more growth due to the amount of time the study was conducted for.

In 2012, Stebbins et al. conducted a study to determine the effectiveness of the Wilson Reading System intervention program for students with disabilities. This research study showed that after a year there was a significant linear trend in students' word attack skills, reading fluency and basic reading skills. The students who participated in this study were in very small groups (1-3 students) or the students received the intervention one on one. The results of this study and statistical significance may be due to the time frame or the number of students per group. The results from this study were based on students with diagnosed learning disabilities. It appears that the intervention may prove effective for students with learning disabilities rather than students who are considered struggling readers.

Synder and Golightly (2017) conducted a research study on a balanced literacy approach for reading interventions for a second grade student. The phonics portion of their intervention was based on Orton-Gillingham strategies, on which the Wilson Reading System is also based. The results from this study showed that the second grade student made significant gains in nonsense word reaing, decoding and overall reading comprehension. Despite this being a different intervention, the student was in the same grade and saw positive results from using an Orton-Gillingham based reading intervention. More research would be needed to generalize the results, but this type of intervention was proven to be successful with a second grade student.

## **Implications for Future Research**

There is not a lot of research studies and information that support the effectiveness of the Wilson Reading System on second grade students. The majority of the studies are done with students in third through fifth grade, middle school, high school or college. More research is needed to determine the effectiveness of the intervention for younger learners in the primary grades. There are some changes that will need to be made to the design of the study in order to improve the validity.

The first change to consider in future research would be sample size. The sample size should be larger and more representative of the school or district population. A larger sample size would give the study more statistical power and allow the results from the study to be generalized to a larger population. Due to the small sample size, the ability to generalize the results is limited.

Another implication for future research would be the length of the study. Wilson Reading System takes multiple years to complete all twelve steps of the program, and a longer length of time for a study may show more student growth. It may also indicate the time that students begin to show growth and statistically differ from their peers who are not receiving the intervention.

This research study was conducted during the COVID-19 pandemic. This led to many threats to validity that were discussed previously. Future research studies should conduct the Wilson Reading System intervention in person as it was intended. Teaching the program online may have skewed the results due to students missing the hands-on component of the intervention. Another idea for research may be to determine if the Wilson Reading System intervention is effective for students while teaching the program virtually as opposed to students receiving the instruction in person.

Researchers in the future may be interested to determine whether or not group size has an impact on the scores of the participants. A smaller group size for instructional delivery may indicate more student growth while completing this intervention.

Due to time constraints, the researcher administered a post-test only. Future studies should include an instrument that can be used as a pre-test as well as a post-test. The pre-test data would have made it possible to know if the groups differed prior to the intervention. The pre test data would allow the researcher to have a benchmark in which to compare the student's growth throughout the intervention.

### **Conclusion**

This study used an experimental post-test design to determine the effect of the Wilson Reading System intervention on nonsense word fluency subtest scores of second grade students who previously participated in the Foundations program. Although students were motivated and engaged throughout their participation in the intervention, the results showed that there was no statistical difference between the students who participated in the intervention program and students who participated in their general education literacy curriculum. When assessed on their ability to read and decode nonsense words, the students who received the Wilson Reading System intervention had a higher mean score for both Correct Letter Sounds (CLS) and the Words Read Correctly (WRC) score. The scores however did not show a significant difference. Observational data showed that students who received the Wilson Reading System intervention had more word attack strategies and were able to determine how to approach an unfamiliar word as opposed to the students who did not receive the intervention. Even though the data retained the null hypothesis, the researcher does believe that the Wilson Reading System program was beneficial to the second grade students who participated. Further research is suggested as this

study had several limitations. Most importantly, due to virtual learning as a result of the COVID-19 pandemic, the intervention as implemented did not match the recommended procedures for length of lessons and duration of the program. Reading intervention programs are essential in supporting struggling readers with explicit teaching in targeted literacy skills. Reading interventions can be used to help eliminate the achievement gap between struggling readers and their peers.

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