The Effects of Decoding Strategies on Young Readers

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ABSTRACT

The purpose of this study was to determine if the use of a letter, keyword, sound warm-up strategy would increase the decoding ability and reading comprehension of students in a second grade class. The null hypothesis was that the experimental group would not make any improvement after the duration of the experiment. Data supported the null hypothesis indicating that the students did not make any significant growth during the experiment. Research should continue as the baseline data, group selection, and duration of the experiment were all hindered by the restrictions caused by the Covid-19 virus.
CHAPTER I
INTRODUCTION

Overview

Below grade level readers not only struggle with language arts but also in other school subjects due to their reading skills. They struggle to read word problems in math, as well as directions, vocabulary, schedules, and lesson-enhancing texts throughout the day. They are unable to complete assessments and classwork independently. In the virtual world, they are unable to read teacher feedback and make corrections to their work. They are unable to communicate with peers in a virtual chat. Decoding is an important foundational skill in the reading process. Without this skill, students will struggle with fluency and future comprehension tasks. By improving their overall reading ability, they will also improve their academic performance across all other subjects.

The majority of second grade students at a public school in Harford County, Maryland are reading below grade level. Beginning of the year assessments show that some students are reading at a very low kindergarten level. Assessment of the students with the lowest scores show that they have regressed in letter recognition, letter sounds, and therefore decoding skills. Some of this regression appears to be the result of school closure due to the Covid-19 Pandemic. Students were pulled from the classroom in March of 2020 and received little instruction for the remainder of the school year. The students initially received packets from the county with activities for primary students grades kindergarten through second grade. These lessons were not geared toward second grade, much less individual students’ needs. Once school became virtual, student’s struggled to navigate online learning platforms. They struggled to stay on-task and
focused on home distractions. Students’ who should have attended summer school, did not. The current 2020-2021 school year has been a mixture of virtual and hybrid learning.

After consulting the school reading specialist, it was determined that improving student’s decoding skills may help them improve their overall reading skills. Decoding is the student’s ability to apply their knowledge of letter sounds and patterns to read an unknown word. These students worked on decoding skills in kindergarten but seem to have lost some of their knowledge of letter sounds and patterns over the last year. Time will be devoted to the practice of letter sounds and patterns each day. A group of students will partake in letter sound drills at the beginning of each reading lesson.

**Statement of Problem**

The purpose of this study is to improve second grade students’ ability to decode words. Decoding is a foundational skill necessary for students to be strong readers. By building decoding skills, students will make progress toward reading grade-level text.

**Hypothesis**

The null hypothesis is that the group receiving the drill sound warm up strategy will not show any more improvement than the group who did not receive the drill sound warm up strategy after a month’s time.
Operational Definitions

The dependent variable was *reading achievement* that was measured using the Reading Inventory Assessment. This assessment measures students’ reading levels. The *type of instruction* was the independent variable that was operationalized via two groups of participants (control and experimental). One group of students attended school on Mondays and Tuesdays and the other group of students attended on Wednesdays and Thursdays. The experimental group will receive enhanced instruction and the control group will receive regular, daily instruction.
CHAPTER II

REVIEW OF THE LITERATURE

Overview

Today, the academic expectations for students are far beyond what they used to be. It is essential for students to grasp all of the foundational reading concepts in the reading process in order to be successful readers. Many second grade students are reading below grade level and one of the main reasons is because of their lack of basic decoding skills. Making sure that students have strong decoding skills is crucial in the student’s development as a reader.

This literature review will discuss the importance of decoding to the reading process and the reading success of second grade students. The first section will detail current data and typical performance levels of second grade students. Section two focuses on how decoding helps to set the foundation for reading performance and the prior skills needed in order to properly decode. Section three covers various reasons that may be to blame for the lack of decoding skills followed by the risks involved due to poor decoding skills in section four. The last section is about decoding studies and interventions.

Decoding and Student Performance

In an article titled “Word Decoding and Phonics” from the Reading Rockets website, decoding is defined as “the ability to apply knowledge of letter-sound relationships, including knowledge of letter patterns, to correctly pronounce written words.” The article continues by stating that “understanding these relationships gives children the ability to recognize familiar words quickly and to figure out words they haven’t seen before.” It is also worth noting that the article stated most children benefit from explicit instruction in this area.
Student reading performance is often measured using the Lexile scale. Lexile is an important measure that is calculated and used as one indicator to evaluate the effectiveness of schools on the College and Career Readiness Performance Index (CCRPI) (Purvis, 2017). The CCRPI is the instrument used to measure the effectiveness of schools across the country. The Department of Education places an extremely high value on Lexile levels and attention to this measure should not be overlooked. The CCRPI states that “on-track” second grade students have a Lexile score between 420 and 650.

The Importance of Decoding in the Reading Process

Developing a good foundation for reading is crucial. There is a plethora of evidence that proves that improving a young student’s phonemic awareness, knowledge of letter-sound correspondences, and decoding skills will improve their reading (Hudson, Isakson, Richman, Lane, & Arriaza-Aleen, 2011). Children with reading difficulties usually struggle with decoding which greatly impairs their ability to comprehend what they have read.

Decoding helps to set a good foundation for strong reading skills because it is a “mental resource devoted to reading individual words, which impedes a child’s ability to extract meaning from connected text” (Solari, Grimm, McIntyre, & Denton, 2018). Since it is such an important resource, it is “often one of the targets of early reading intervention with struggling readers. In order for a student to properly decode, they must first master phonological awareness. Phonological awareness skills have been identified as a precursor to successful decoding and successful decoding is necessary for accurate fluency – students must be able to decode individual words before they can string them together in connected text. Proficient decoding (specifically segmenting and blending letter sounds) helps support automatic word recognition
and decoding skills which predicts future comprehension skills (Larabee, Burns, & McComas, 2014).

When students have little to no decoding skills, they will face challenges throughout their reading career. Students who do not receive intervention for their lack of decoding skills or other needs, will continue to have difficulties. It is especially important to identify student’s needs in the primary grades because many reading difficulties can be prevented if students are provided with early reading intervention (Wanzek, Stevens, Williams, Scammacca, Vaughn, & Sargent, 2018). Research shows that low levels of initial reading achievement predict low levels of reading achievement in later grades.

**Reasons for Lack of Decoding Skills**

Among the most common reasons for students’ poor reading and decoding skills, are other reading skills. Deficits in phonological awareness, rapid naming, fluency, and the alphabetic principle to name a few (Wanzek et al., 2018). For second grade students, the foundational skills they learn in kindergarten and first grade are essential building blocks – phonemic awareness, phonics, fluency, vocabulary, and reading comprehension (Pace, Lauterback, Murano, & Dembek, 2019).

Studies show the lack of early intervention to be another reason for reading difficulties in later years (Wanzek et al., 2018). Attending preschool and prekindergarten can also impact a child’s reading performance. Research by the Houston Independent School District shows that children who attend pre-kindergarten will outperform their counterparts on kindergarten assessments.
Chronic absenteeism can impact a student’s reading performance. Research was conducted to show that a student who is chronically absent in third grade is significantly less likely to be reading on grade level than a demographically similar peer who is not chronically absent (Attridge, 2016).

Second Language Learners are also ones who struggle with decoding. They tend to lag behind their peers, given the fact that they are confronted with the task of learning to read in a language that they have not yet mastered (Verhoeven & van Leeuwe, 2011).

**Risks Involved with Poor Decoding Skills**

When a student lacks decoding skills, their reading skills suffer. In turn, they are not meeting grade-level expectations. This can impact both the teacher and the student. The more obvious impact is on the student. In an earlier section, it was mentioned that lack of decoding skills impacts a student’s reading level. For this reason, there has been considerable research on early intervention programs for fostering decoding skills and the skills that support decoding – phonological awareness and letter and word identification (Kendeou, van den Broek, White, & Lynch, 2009). There is also “growing recognition that the development of these skills should be complimented by fostering oral language skills”.

Teachers can also be impacted by student’s poor decoding skills. Teachers need to make proper use of teaching methods for students’ better achievement (Hassan & Akbar, 2020). When a teacher has a variety of ability levels in her classroom, she must think outside of the box to accommodate each student’s needs. A teacher’s teaching methods are a good predictor toward students’ success or lack there of (Hassan & Akbar, 2020). When students perform poorly it does not reflect well on the teacher.
Poor performance in reading also impacts other subject areas. Research shows that students who struggle with reading also struggle in other content areas due to the fact that they are unable to comprehend what they are reading (Rivas, 2017). Adequate reading skills have an impact on student’s social skills and life-long intellectual skills such as comprehending, ordering, questioning, relating, and guessing (Kusdemir- Kayiran, & Karabay, 2012).

Decoding Strategies and Interventions

There are a wide range of strategies, and interventions for decoding and its impact on reading performance. Some are more popular than others. One that many people may not have heard of is using music as a strategy. (Rautenberg (2015) conducted a study in which the experimental group received special musical training for 9 months. Due to the rhythmic organization of speech, the experimental group had more success with decoding. A more popular intervention program for grades K-3 is Fundations by the Wilson Learning Training Center. The program covers decoding, blending, acquisition of irregular English words, reading decodable connected text stories, handwriting, and spelling (Goss & Brown-Chidsey, 2012).

Conclusion

In previous studies, there have been many experiments that have provided very helpful information in the case of poor decoding skills. One study concluded that the features of effective reading and spelling intervention include the use of systematic, explicit instruction in phonological skills, onset and rime-based spelling patterns, and analogy strategies integrated with contextual reading practice, discussion, and written response (Evans, Arrow & Greaney, 2014). Another method says that primary reading and writing starts with phonemes – followed by phoneme chunks, syllables, words, sentences, and texts (Kusdemir-Kayiran & Karabay,
2012). The findings of these methods and studies tell us that there is not one specific method that is best and most appropriate for all. However, most all studies show that building a child’s reading foundation and decoding skill is imperative to their success in reading.
CHAPTER III

METHODS

This study attempted to determine the impact of drill sound warm-ups and building decoding skills on the comprehension skills and reading ability of second grade students.

Design

The research utilized a quasi-experimental design. Utilizing Covid-19 restrictions that implemented an alternative attendance system for students, two groups of participants (control and experimental) were created for this design. One group of students attended school on Mondays and Tuesdays and the other group of students attended on Wednesdays and Thursdays. The students were assigned their days based on whether they had siblings that attended the same school and the number of students attending on the given day in said sibling’s class. The group of students attending Mondays and Tuesdays were placed in the experimental group that received a drill sound warm up at the beginning of the day to review letter sounds using a letter-keyword-sound strategy. The group of students attending school on Wednesdays and Thursdays were placed in the control group and received normal daily instruction without the drill sound warm up. Students were given the Reading Inventory assessment a second time at the end of two weeks/4 days of exposure. Baseline data from the Reading Inventory assessment was used to determine students’ current reading Lexile score.

Participants

The experimental group consisted of the second grade students who attended school on Mondays and Tuesdays. There were eight students in this group. Of the eight students, 38% were female and 63% were male. Seventy-five percent of participants in this group were white and
25% were Asian. Eighty-six percent of students in this group were 8 years old and 13% were 7 years old.

The control group consisted of the second grade students who attended school on Wednesdays and Thursdays. There were six students in this group. Of the six students, 33% were female and 67% were male. Fifty percent of these students were white, 33% were Hispanic, and 17% were African American. Fifty percent of the students in this group were 8 years old and 50% of the students were 7 years old.

**Instrument**

The Reading Inventory (RI) by Houghton, Mifflin, and Harcourt was previously known as the Scholastic Reading Inventory (SRI). The Reading Inventory Professional Learning Guide defines the assessment as a computer-adaptive reading assessment program that provides immediate, actionable data on students’ reading levels and growth over time.

The content validity of this assessment was measured by an expert panel and it was determined that the skills assessed (main idea and key details, drawing conclusions, and establishing logical connections between ideas and text) were all component skills of reading comprehension (Houghton et al., 2014). The assessment was measured for construct validity using two measures: developmental changes in test scores for traits that are expected to increase with age, and correlations with similar tests that measure reading comprehension. Growth in reading is uneven because the most growth usually occurs in earlier grade. The assessment shows a decreasing trend as a result. The Reading Inventory has been directly correlated with numerous state assessments and therefore has criterion-related validity.
The algorithm that controls the Reading Comprehension Assessment uses prior information about students’ levels to control the selections of questions and the calculations of each student’s reading ability after the questions are answered. Each student’s test is unique and therefore the standard error of measurement is also unique to each student (Houghton et al., 2014).

Procedure

The experimental group began their reading lesson with the drill sound warm-up strategy. This drill was an attempt to build decoding skills that would help students to sound out words when they are reading. As a result, students would be able to better comprehend what is being read. The teacher used a set of laminated flashcards. Each flashcard had a letter or diagraph, and a picture of an object that was spelled with the corresponding letter or diagraph. Students would recite the letter keyword sound for all letters of the alphabet, long and short vowel sounds, and diagrams ch, sh, ck, wh, and th. The teacher would begin by reciting the letter, keyword, and sound. For example: for the diagraph ch, she would say “c-h, chin, ch”. Students then echo back the letter, keyword, and sound in unison. The teacher would recite the letters and diagrams in random order. Vowels were printed on pink cards instead of the tan color the other letters were printed on. These cards were presented with both their long and short sounds. The length of the procedure is approximately 5 minutes. The students in the experimental group received the drill sound warm up on the days they attended classroom instruction – a total of four days (Monday and Tuesday, two consecutive weeks).

After the warm-up, students began their regular, daily reading lesson. Students participated in word sort activities for word work. These activities focused on specific word and letter patterns. The final part of the reading lesson was comprehension. Student learned reading
strategies for reading nonfiction text. Then, they used the strategies while reading aloud or independently. Students responded to text-based questions.

The control group did not receive the drill sound warm-up activity before the regular daily lesson. Students participated in word sort activities for word work. These activities focused on specific word and letter patterns. The final part of the reading lesson was comprehension. Students learned reading strategies for reading nonfiction text. Then, they used the strategies while reading aloud or independently. Students responded to text-based questions.
CHAPTER IV
RESULTS

Baseline data was collected for both the control group and the experimental group. The baseline mean score of the experimental group was 642.5 which is slightly lower but not statistically different from the control group mean scores of 651, \( t(7) = -.048, p = .96 \). This information indicates that the two groups started at a similar academic standing.

After the experiment, a post-assessment was given to both groups. The post mean score of the experimental group was 710.75 which was not statistically higher than the mean score of the control group 571.2, \( t(7) = .899, p = .40 \).
CHAPTER V

DISCUSSION

The null hypothesis in this research study stated that the group receiving the drill sound warm up strategy would not show any more improvement than the group who did not receive the drill sound warm up strategy after a month’s time. In this experiment, the null hypothesis was supported. Although the results showed some increase in score from baseline to post data, the results were not statistically significant.

Implications of Results

The results of this study indicate that the use of letter, keyword, sound, drill sound warm-ups, 2 days a week, did not help to improve the decoding skills and therefore reading comprehension skills of the second grade students in the experiment. First assumptions were that the length of the experiment was too short and that the students were not exposed to the intervention for a long enough time for it to make a significant difference in their decoding skills and reading ability.

Theoretical Consequences

In other studies, there have been experiments that have provided very helpful information in the case of poor decoding skills. One study concluded that the features of effective reading and spelling intervention include the use of systematic, explicit instruction in phonological skills, onset and rime-based spelling patterns, and analogy strategies integrated with contextual reading practice, discussion, and written response (Evans, Arrow & Greaney, 2014). The strategy used in
this research included the use of systematic, explicit instruction of phonological skills and therefore should have been effective according to this theory.

**Threats to Validity**

A threat to the validity of this experiment was differential selection. As stated in Chapter III, students were not randomly selected. Due to Covid-19 restrictions, which implemented an alternative attendance system for students, students were given a cohort based on needs. Administration also had to consider whether or not they had siblings in the school and their siblings’ class sizes. Siblings were to be in the same cohort so they attended school on the same days. Some students attended four days per week if they were a teacher’s child or if they had special needs. These students were excluded from the experiment. Other students were either assigned to the Monday/Tuesday cohort or the Wednesday/Thursday cohort. The control group had a decrease in score from baseline to post assessment. This is a result of the switch from online instruction and parent support (due to Covid19) during baseline assessment and total independence in the classroom during the post assessment.

The number of students initially included in the groups changed once baseline data was collected. The reading comprehension score was measured in Lexile. The Reading Inventory Assessment gives students with a Lexile score less than 10 a rating of “BR” or “Beginning Reader”. Since an actual number is not given for these students, they were removed from the final results. There were a total of four students removed from the experimental group and one student removed from the control group.
Connections to Existing Literature

The Fundations intervention program by Wilson Language Basics is an intervention program that uses the letter, keyword, sound, drill sound warm-ups such as the one used in this research. According to their implementation overview, such warm-ups should take place for 2-3 minutes, 5 days a week. The overview also goes into detail of how sound mastery is a key component of phonics and how research has shown the use of keywords works as a memory device to help students associate the sound relationship to the letter (*Fundations Implementation Overview* 2018). The purpose of including this information in this section is to show how the intervention used in the experiment may have been more effective had it been implemented like others of its kind; 2-3 minutes, 5 days a week.

Implications for Future Research

As previously stated, the students in this experiment only attended school twice a week. With the Covid-19 restrictions, students do not attend school at all on Fridays. In order for this experiment to be more efficient, students would have to do the warm-up on their own on the days they are asynchronous. In addition to increasing the frequency of the warm-up, this experiment would need to have more accurate baseline data for future research. Post data would also be more accurate if all students took the assessment on the same day.

Conclusion

Although this research supported the null hypothesis, other research studies cited in Chapter II support the use of decoding interventions in the aid of reading comprehension. Had the circumstances been different and more time dedicated to the intervention, the result may have
proven the intervention to be successful. Although the scores were not statistically different, the individual scores did show some student growth.


Grading Scales / Lexile Level Bands / MAP RIT Ranges - lowcountryleadership. (n.d.). Retrieved from:  
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