

The Effects of Integrating Encoding and Decoding Instruction on the Word Attack Skills of  
Second Grade Students Reading Below Grade Level

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Submitted in Partial Fulfillment of the Requirements for the  
Degree of Master of Education

July 2015

Graduate Programs in Education

Goucher College

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## **Abstract**

The purpose of this study was to determine the effectiveness of teaching encoding instruction during spelling lessons in comparison to also integrating decoding instruction in order to strengthen the word attack skills of second grade students reading below grade level. The measurement tool for this study was a Phonological Awareness Assessment of Nonsense Words developed by the researcher. The study employed a pre-experimental design with a convenience sample of a group of fifteen second-grade students from February 2015 to April 2015. The result of the post assessment showed the students scored significantly higher on the word list which was taught with combined encoding and decoding strategies (Word List 2; Mean = 16.40, SD = 2.41) than on the word list taught with just encoding strategies (Word List 1; Mean = 14.40, SD = 3.11 [  $t(14) = 3.20$ ,  $p = .006$ ]. Implications and recommendations for future research are discussed and include continuing to examine these instructional methods, both in isolation and combined.

# CHAPTER I

## INTRODUCTION

### Overview

Decoding is the ability to apply ones' knowledge of letter-sound relationships to correctly pronounce written words. Understanding these relationships gives children the ability to recognize familiar words quickly and to figure out words they haven't seen before. Many students lack the skills needed to breakdown or decode unfamiliar words.

When a student comes to a word they do not know, teachers often tell them to sound it out or break it down. If a student does not have the strategies or ability to do this, they cannot successfully proceed further. The capability of decoding text is the foundation in which all other reading skills build upon. If students cannot decode words, their reading will lack fluency, their vocabulary will be limited and their reading comprehension will suffer.

Reading is often thought of as a hierarchy of skills. Therefore educators have paid enormous attention to the development of children's word-recognition skills because they recognize that such skills are critical to the development of skilled readers. Research has shown that phonological awareness plays a role in reading acquisition. Accumulated evidence shows that children with a stronger knowledge of the foundational sounds of words, tend to be better at reading. This evidence was gathered through concurrent correlational studies, as well as predictive correlational studies, both construing that phonological awareness plays a causal role in reading skill acquisition (Castles & Coltheart, 2004).

There are many essential reading component skills acquired in the primary years of education that are necessary for skilled reading. Phonological awareness, the ability to perceive and manipulate the sounds of spoken words, is one of those skills. This study was initiated

because it is important that educators know the best form of intervention instruction for students who lack these crucial skills. Teaching decoding and encoding simultaneously may provide the most significant gains among students. Encoding, spelling or the ability to build words while transferring speech into writing, is often the only form of instruction used during word study. This study strives to determine the type of instruction sought to be most beneficial to build phonological awareness skills and strategies.

### **Statement of Problem**

The purpose of this study was to determine the effectiveness of teaching encoding instruction during spelling lessons, in comparison to also integrating decoding instruction in order to strengthen students' word attack skills.

### **Hypothesis**

The null hypothesis is that second grade students reading below grade level will show no difference in their word attack skills on a Phonological Awareness Assessment of Nonsense Words for spelling patterns taught solely through encoding methods and spelling patterns taught through encoding and decoding methods.

### **Operational Definitions**

***Encoding Instruction:*** With this approach, students were instructed on a variety of spelling patterns solely on the way the words were spelled. This instruction included manipulating sounds using letter tiles to build words, as well as activities that allow practice writing or spelling words within the intended pattern.

***Encoding and Decoding Instruction:*** With this approach, students were instructed on a variety of spelling patterns on the way the words were spelled, as well as read within a text.

Additional direct instruction was implemented using decodable texts and opportunities for students to decode the patterned word as written.

***Word Attack Skills:*** The students' word attack skills were defined by the students' performance on the Phonological Awareness Assessment of Nonsense Words. This assessment included two word lists, each a representation of four spelling patterns through pseudo words. Students were to correctly decode the pseudo words in order to show their phonological abilities.



## CHAPTER II

### REVIEW OF THE LITERATURE

#### Introduction

This literature review seeks to explore the topic of decoding and its effects on elementary students through their process of learning to read. To facilitate this, the review is organized into three distinct sections. Section one discusses the importance that phonological awareness and decoding have on the reading process. Section two describes the struggles some students may have while trying to decode unknown words and the origins of those challenges. Section three suggests possible interventions for improving decoding weaknesses.

#### **The Importance of Phonological Awareness and Decoding in Reading Success**

“Research has shown that phonological awareness appears to play a causal role in reading acquisition...that it is the foundational ability underlying the learning of spelling-sound correspondences.” (Castles et al., 2004 ).

It is undisputed that there is a relationship between performance on phonological awareness tasks and reading ability. Accumulated evidence shows that the more knowledge children have about the fundamental sounds of words, the better they tend to be at reading (Castles et al., 2004). This evidence has been in the form of concurrent correlations, where phonological awareness and reading have been measured at the same time, as well as predictive correlations, where phonological awareness has been assessed at one point in time and reading at a later time. A leading interpretation of these studies has been that phonological awareness plays a causal role in reading acquisition and the acquisition of early reading skills. It is to be understood that it is not the awareness of phonological units that will cause children to be *able* to read but that it will cause them to be better at *learning* to read.

Phonological awareness refers to the ability to perceive and manipulate the sounds of spoken words. The “phonological” aspect of the term refers to phonemes, which are the basic speech units of a language. The “awareness” aspect of the term refers to explicitly and deliberately processing and acting upon those phonemes (Castles et al., 2004).

The focus has been set on phonological awareness, a spoken language skill, and its causal relationship to reading, although it is also important to highlight the role of alphabetic skills, or the knowledge of relationships between letters and sounds, in learning to read. A vast amount of educational research suggests that knowledge about letter-sound relationships correspondences is a building block to reading as well. This knowledge will help children sound out new words and assist them with the formation of lexical representations. Having these skills will allow students to successfully read aloud many new words and also have the opportunity to “self-teach” words that they have not seen in print before.

The National Reading Panel highlighted the five essential reading component skills acquired between kindergarten and third grade necessary for skilled reading. These skills include phonemic awareness, phonics, vocabulary skills, reading fluency and reading comprehension. It was emphasized by the panel that it was a necessity for children to acquire an explicit understanding of the segmental nature of language at the early stages of reading acquisition (Park & Lombardino, 2013).

The alphabetic principal supports these essential reading component skills by describing how sounds (phonemes) are represented by letters (graphemes) and how graphemes represent phonemes. The development of the alphabetic principal is classified into four stages:

- pre-alphabetic phase- children do not form letter-sound connections to read words

- partial alphabetic phase- children have limited phonemic awareness skills; starting to learn names or sounds of alphabet letters, partial decoding
- full alphabetic phase- children form complete connections between spellings and phonemes in pronunciations, word reading becomes more accurate and decoding strategies are used
- consolidated alphabetic stage- children can consolidate grapheme-phoneme connections into larger units and build their bank of words that can be read fluently

It has been theorized that students learn to become fluent readers by forming connections between letters in the spellings of words and the sounds in their pronunciations. (Cummings, Dewey, Latimer & Good, 2011). This understanding provides the foundational knowledge for learning phonics, acquired rapid word recognition and later reading comprehension and fluency. Phonologically- based skills, such as phonemic awareness and phonics, represent the word decoding element of reading (Park et al., 2013). Together decoding and comprehension are believed to lead to reading achievement. The ability to sound out unknown written words is widely viewed as a cornerstone of reading proficiency (Castles, Coltheart, Wilson, Valpied & Wedgwood, 2009). Strong decoding skills are important when children are in the *learning to read* stage, which precedes the *reading to learn* stage; transitioned in later years of childhood. By third grade, early literacy skills should be developed to support the transition from “learning to read” to “reading to learn” (Wang, Algozzine, Porfeli, & Ma, 2011).

Readers need to develop decoding skills to a level of automaticity. *Automaticity* is the ability to do things without having to think about them at a conscious level. Automaticity brings decoding to a higher level, in that it is done with little to no thought. It is a feature of more advanced word recognition. Without knowledge of patterns across words, readers are not able to

move to more advanced decoding. For example it is more beneficial for a student to decode the word *uncomfortable* by its word parts *un-com-fort-able*, instead of its individual letters.

Children read words with frequent of familiar rimes more accurately than those with infrequent of unfamiliar ones (Hudson, Isakson, Richman, Lane, & Arriaza-Allen, 2011). Their understanding of this word recognition process is important in broadening their recognition of words to a much greater level.

### **Problems Associated with Decoding Texts**

“...perhaps the most important single conclusion about reading disabilities is that they are most commonly caused by weaknesses in the ability to process the phonological features of a language.” (Castles et al., 2004).

If a child is poor at reading, the mental information-processing system that is used for reading is abnormal in that child; which is the proximal cause of poor reading. The most common cause of difficulties acquiring skills needed for early reading is a weakness in the ability to process the phonological features of language. This understanding was developed some twenty years ago (Kamii & Manning, 2002). Students who struggle with learning to read at the end of first grade are likely to experience continued academic challenges thereafter. Effective early reading intervention is important to change that statistic (Cummings et al., 2011).

Phonological awareness is spotlighted as an important component to the reading process. Phonological awareness is often understood by the tasks that have been used to measure it. If a student struggles with the tasks related to phonological awareness, they do not have the foundational knowledge needed to decode unknown words. There are various levels of complexity with these tasks and the level that poses difficulty for a student is where their intervention should begin. The mentioned phonological awareness tasks are outlined as:

## Phonological Awareness Tasks

- phoneme deletion- student presented with a spoken word (e.g. “fan”) and is required to mentally delete a particular sound (e.g./f/) and say what remains (e.g.”an”)
- phoneme counting- (e.g. “Tap out each sound in *sing*”)
- phoneme blending- (e.g. “What does /t/ /i/ /p/ say?”)
- phoneme reversal- (e.g. “Say the sounds of *skin* backwards.”)
- syllable segmentation- (e.g. “Say each syllable of *pencil*”)
- rhyme oddity- (e.g. “Which is the odd one out: *fin, win, sit?*”)
- rhyme judgement- (e.g. “Does *sheep* rhyme with *keep?*”)

New efforts are being made to identify children at risk for reading difficulties before reading instruction begins. This is made possible through a close look at a student’s phonemic awareness assessments. Phonological awareness has been shown to be a factor related to the growth of early word reading skills, therefore struggles in that area, predict future struggles. (Kamii et al., 2002).

Another barrier to comprehension is when children do not rapidly recognize words. The theory of automaticity is widely accepted by the educational community. Automaticity is something that human beings are not born with, but rather develop as they continue to learn. When applied to reading, automaticity is the ability to look at words and read them aloud without thinking (Wang et al., 2011). Children who accurately and automatically recognize words tend to have more success during the reading process. Children who struggle with accuracy and word recognition have fewer successful encounters with words and struggle with reading development.

## **Interventions to Ameliorate the Problems Delineated with Decoding**

An estimated eighty to eighty-five percent of students with learning disabilities have a reading disability. Explicit and systematic intervention is needed for those students (Weiser, 2012). Print cannot be understood (comprehended) if it cannot be translated into language (decoded). Choosing a developmental framework for teaching word decoding leaves teachers with various options. Effective reading instruction for students struggling with the reading process includes a focus on specific areas of reading, such as word study. Word study focuses on and supports students' ability to understand patterns in words and decode words based on letter-sound correspondences. In addition to sounding out words, word study instruction will also include the importance of the meaning of the word, which will be skills to later support the comprehension component of reading (Park et al., 2013).

Reading researchers have called on educators to provide intervention to children with poor phonological awareness as early as kindergarten. At the same time, practitioners often are asked to provide phonological awareness intervention to older students who demonstrate poor reading achievement in word decoding skills (Schuele & Boudreau, 2008). The National Reading Panel found that 5 to 18 hours of instruction or intervention provided substantial benefit, with longer programs not necessarily leading to greater benefit. There is general agreement that the sequence of phonological awareness development or learning proceeds from rhyme and the segmentation of words into syllables, to the awareness of individual sounds, with the highest level of phonological awareness being the deletion and manipulation of phonemes.

Another opportunity to develop phonemic awareness is easily accessible within the classroom. Reading to young children can play a critical role in the development of a child's literacy and language skills and can also be easily implemented at home. In order to make gains

from reading aloud to children, quality questioning and commenting during shared reading are necessary. These include comments on vocabulary, story meaning, experiential links and print concepts (Ukrainetz, Cooney, Dyer, Kysar, & Harris, 2000). This is a helpful way to get students with a lower Lexile engaged in a complex text, and with the support of scaffolding, students will begin to successfully manipulate the text. When quality and quantity of shared reading were examined, quality was not a better predictor than quantity.

The process of decoding, or reading words, requires the processing of written symbols into speech. On the other hand, encoding, spelling or the ability to build words, involves transferring speech into writing. Encoding instruction can include learning to add prefixes and suffixes and understanding spelling rules, word patterns and syllable types. Encoding activities can include alphabetic knowledge tasks, manipulating sounds using letters, writing or orally spelling words from dictation and activities that allow for practice of writing unknown spellings by using previously taught phoneme-grapheme relationships (Hudson et al., 2011). The idea behind these tasks is to increase phonological, phonemic and linguistic awareness; an understanding that correlates to the ability to read, as described above.

Teaching decoding and encoding simultaneously may provide the most significant gains among students in need of intervention (Hudson et al., 2011). It is important to allow multiple opportunities to practice manipulating previously taught phoneme-grapheme combinations. This will likely give students the tools for acquiring the alphabetic principle and developing orthographic representations of words. These tools are necessary in learning to read, spell and write for all students of varying abilities.

Although reading fluency can be developed through a variety of evidence-based methods, such as repeated readings, tape readings, and choral reading, only individual student oral reading

allows teachers to provide feedback to students on their errors and assess specific areas of skill deficit (Watson, Fore, & Boon, 2009). It is important that teachers use the most effective method to address identification errors, or miscues, made during oral reading. Teachers often give two types of feedback: (1) corrective feedback, in which some decoding strategy or the actual word is given; (2) in which students are told to simply “try again”. Corrective feedback has resulted in greater success and has been defined in three categories.

- meaning-based- the student is prompted in various ways to think about whether the miscued word makes sense in the context of the sentence
- phonics-based- the student is prompted to sound out or otherwise analyze the miscued word
- modeling/word-supply feedback- in which the word is simply supplied after a designated amount of time following the miscue (Watson et al., 2009).

Deciding which type of feedback is a decision made by the teacher on a case-by-case basis. It is important for teachers to provide feedback to students while reading because otherwise, they may not realize their reading is not correct. Also, as an educator, paying attention to a student’s miscues will provide ideas for instructional practices. Each child’s response provides information on what the child knows or does not know. The nature of the child's errors, as well as successes, indicates the type of scaffolding a child needs (Schuele et al., 2008). Correctly using feedback is informative for both the student and the teacher.

### **Summary**

In conclusion, three important concepts have been presented in this literature review. First, phonological awareness and decoding have been defined. Secondly, the struggles students experience through the aspects of decoding have been discussed. Finally, appropriate



interventions have been proposed to strengthen the decoding ability of struggling students. Educators know that there is a relationship between performance on phonological awareness tasks and reading ability. With this knowledge, it is essential that students are taught phonological awareness in order to properly decode unknown words which is the key to unlocking reading comprehension and success.

## **CHAPTER III**

### **METHODS**

The purpose of this study was to determine the effectiveness of teaching encoding instruction during spelling lessons in comparison to also integrating decoding instruction in order to strengthen the word attack skills of second grade students reading below grade level. The comparative effectiveness of each approach was measured by a researcher-created phonological awareness assessment of pseudo words.

#### **Design**

This study employed a pre-experimental design with a convenience sample of a group of second graders. The students were instructed using two methods during an eight-week period. The independent variables were the type of direct instruction used during the teaching of spelling -either just encoding instruction or encoding and decoding instruction. The dependent variable was the students' performance on the Phonological Awareness Assessment of Nonsense Words. This assessment consisted of two word lists, one in which included pseudo words where the spelling patterns were taught using encoding strategies and the other, where the spelling patterns were taught using both encoding and decoding strategies.

#### **Participants**

The participants of this study were second grade students from an elementary school in a suburban city in central Maryland. The socioeconomic status of these families would be classified as middle to upper-middle class. These students were grouped into a reading class at the beginning of the school year based on their achievement on the Fountas and Pinnell Benchmark Assessment System (2008), as well as teacher recommendations. These students

were all reading below grade level. The experimental group consisted of fifteen students - seven females and eight males. All students were Caucasian.

### **Instrument**

Students were given the Phonological Awareness Assessment of Nonsense Words. This assessment consisted of two word lists, each with twenty pseudo words constructed from words with four different phonological spelling patterns. Word List One included the spelling patterns ar, ow (long o), tch and t and Word List Two included the spelling patterns oa (long o), ch, sh and ey (long e).

When the original pre-test performances were compared, the students scored significantly higher on Word List 1 (Mean = 10.60, SD = 3.02) than on Word List 2 (Mean = 7.87, SD = 3.76) [ $t(14) = 2.90, p = .01$ ]. The word lists and the pattern of performances on the pre-test were then examined by the researcher and it was discovered that some patterns were harder than others and that by balancing out the harder patterns with the easier patterns on the word lists, it was possible to complete word lists that were matched for difficulty level. When the revised pre-tests were compared, the students did not score significantly differently on Word List 1 (Mean = 9.13, SD = 3.36) than on Word List 2 (Mean = 9.33, SD = 3.92) [ $t(14) = .17, p = .87$ ]. Word List 1, as revised, consisted of the spelling patterns ar, sh, tch and ey (long e) and Word List 2 consisted of the spelling patterns oa (long o), ow (long o), ch and th.

The first word list included the spelling patterns in which instruction was based on encoding strategies alone. The second word list consisted of the spelling patterns that were instructed using both encoding and decoding strategies. The students' score was calculated from the number of words read correctly on each word list. The students had to read the entire pseudo

word correctly for it to be considered correct. Students were not under a time constraint to complete this task. There is no reliability or validity data for this instrument.

### **Procedure**

Every other week, students were taught using encoding instruction, focused on the spelling of written words within a spelling pattern. On the off set of weeks, students continued to be instructed using the encoding instruction previously mentioned, as well as decoding instruction, allowing students the opportunity to decode the patterned words as written. Daily instruction lasted about forty minutes.

Within a whole group setting, students were instructed using an encoding strategy approach for the first two days of each of the eight-week period. If this was the sole approach of that week, the encoding instruction continued for the remainder of the week. If a decoding approach was also included, instruction shifted to decoding for the remainder of the week.

**Encoding Instruction:** On the first day of the week, the researcher who was also the regular classroom teacher, read aloud a Houghton Mifflin Harcourt decodable book, included in the grade two StoryTown instructional materials. The students identified the spelling pattern by finding commonalities within the words presented in the book. Once the pattern was identified, the students wrote the words on a list, focusing on how the words were spelled.

On the second day of the week, students were given letter tiles to be utilized during a word building activity. The teacher presented a clue, from which the students built the spelling word, one letter at a time. Manipulating the letter tiles and sounds of the spoken word enhanced the students' understanding of the spelling pattern.

On days three and four of a week based solely on encoding instruction, additional encoding practice was provided. This took the form of spelling games and activities that included writing or spelling words within the intended spelling pattern.

Day five concluded the week with a review activity of the weeks' spelling pattern. For this activity, the students gathered in a circle on the front carpet. The teacher gave the spelling word aloud to the students and they were to write it correctly on a personal white board. The students then went around the circle, one at a time, giving the next letter of the provided word. This continued until all words were reviewed. This served as a culminating activity for the spelling pattern.

**Encoding and Decoding Instruction:** On weeks where instruction was focused on both encoding and decoding, the first, second and fifth day remained consistent with the implementation as described above. The inclusion of decoding strategies were present on the third and fourth day of the week.

On the third day of the week, decoding instruction began with the students segmenting a list of words that followed the intended spelling pattern. Once they segmented, or broke down the word, they blended the sounds back together to represent the word as a whole. Once this strategy was practiced on words in isolation, sentences were given to the students. The sentences were then decoded, using those same word attack skills.

On the fourth day of the week, instruction began using a decodable book, printed from the Web site [www.ReadingAtoZ.com](http://www.ReadingAtoZ.com). The student and teacher resources on the Reading A-Z Web site have been developed to reflect the instructional practices and reading strategies that are best supported by research findings from a wide variety of sources.

With their personal copy of the decodable book, the students first went on a search for any words that fit the week's spelling pattern. Once their search was complete, the students read the book aloud to an assigned partner. Partners were chosen based on reading ability and behavioral considerations. This activity incorporated the students' decoding skills within an entire text. Students read together until they finished the book.

Although the weeks alternated between encoding and decoding instruction, the weeks flowed and a visible disconnect was not apparent from the view of the teacher or her students. After the eight-week intervention period, the students again completed the two revised Phonological Awareness Assessment of Nonsense Words word lists. The scores on the post-test were compared using a non-independent sample *t*-test.

## CHAPTER IV

### RESULTS

The primary purpose of this study was to determine whether there was a statistically significant difference in teaching encoding instruction during spelling lessons, in comparison to also integrating decoding instruction in order to strengthen students' word attack skills. The students' word attack skills were assessed using a researcher-created assessment consisting of two word lists, each with twenty "pseudo" words constructed from words with four different phonological spelling patterns.

Table 1 contains the mean word list scores on the researcher-created assessments as well as the results of statistical analysis.

**Table 1**

**Means, Standard Deviations, and *t*-test Results for Word List Scores under Decoding and Encoding/Decoding Instruction**

| <b>Word List Condition</b> | <b>Mean</b> | <b>Std. Deviation</b> | <b>t statistic</b> |
|----------------------------|-------------|-----------------------|--------------------|
| <b>Encoding</b>            | 14.40       | 3.11                  | 3.20*              |
| <b>Encoding/Decoding</b>   | 16.40       | 2.41                  |                    |

N = 15

\*Significant at  $p < .05$

The students scored significantly higher on the word list which was taught with combined encoding and decoding strategies (Word List 2; Mean = 16.40, SD = 2.41) than on the word list which was taught with just encoding strategies (Word List 1; Mean = 14.40, SD = 3.11;  $t(14) = 3.20$ ,  $p = .006$ ). Thus, the null hypothesis that second grade students reading below-grade-level will show no difference in their word attack skills on a Phonological Awareness Assessment of

Nonsense Words for spelling patterns taught solely through encoding methods and spelling patterns taught through encoding and decoding methods was rejected.



## **CHAPTER V**

### **DISCUSSION**

The purpose of this study was to determine whether there was a statistically significant difference in the effectiveness in strengthening student word attack skills between using only encoding instruction during spelling lessons in comparison to using a combination of encoding and decoding instruction. The researcher focused on a small class of students and determined that the null hypothesis, that second grade students reading below grade level will show no difference in their word attack skills on a Phonological Awareness Assessment of Nonsense Words for spelling patterns taught solely through encoding methods and spelling patterns taught through encoding and decoding methods, was rejected. The students were more successful at using word attack skills for spelling patterns taught through combined encoding and decoding strategies.

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

Teachers may want to consider that the most efficient way to improve their students' word attack skills is to include both encoding and decoding instruction during spelling instruction time. It is also most beneficial if the teacher explicitly teaches word patterns. This shows the common patterns available in the English alphabet writing system. It allows students to make generalizations about spelling rules and read words with common sounds found in the beginning, middle and/or end of words. It is an efficient way to teach words because they can be grouped and many words can be taught at the same time.

The relationship between the processes was discussed as supporting skills for one another. It is important that teachers provide ample opportunities to practice manipulating previously taught phoneme-grapheme combinations. If so, it is probable that students will be

equipped with the tools needed for acquiring the alphabetic principle and developing orthographic representations of words. These tools are necessary for students of varying abilities in learning to read, spell, and write (Hudson et al., 2011).

### **Theoretical Implications**

In theory, teachers need to provide an opportunity for word study that focuses on and supports students' ability to understand patterns in words and decode words based on letter-sound correspondences (Park et al., 2013). The idea behind these opportunities is to increase phonological, phonemic, and linguistic awareness, an understanding that correlates to the ability to read. Students need to be able to see the relationship between encoding and decoding and that their ability to do each, correlate to one another. In order for students to see this connection, purposeful instruction needs to be implemented by the teacher.

Previous research shows that there is a relationship between performance on phonological awareness tasks and reading ability. Accumulated evidence shows that the more knowledge children have about the fundamental sounds of words, the better they tend to be at reading (Castles et al., 2004). A leading interpretation of these studies has been that phonological awareness plays a causal role in reading acquisition and the acquisition of early reading skills. Teachers need to be understanding of the fact that it is not the awareness of phonological units that will cause children to be *able* to read but that it will cause them to be better at *learning* to read.

Educational theory also states that students learn to become fluent readers by forming connections between letters in the spellings of words and the sounds in their pronunciations. (Cummings et al., 2011). This understanding provides the foundational knowledge for the purpose of students learning phonics as a precedent of learning to read. Phonologically-based

skills, such as phonemic awareness and phonics, represent the word decoding element of reading (Park et al., 2013). The ability to sound out unknown written words is widely viewed as a cornerstone of reading proficiency. It is essential that teachers use spelling instruction time to explicitly teach these phonologically-based skills in order to improve their students' word attack skills.

### **Threats to Validity**

This study contained some threats to internal validity. A convenience sample of fifteen students was used in the study. Due to the small sample size, the statistical power was extremely limited, which made it difficult to detect success within the two teaching methods. If a larger sample of students had been used, more valid results would have been achieved. Also, within the sample that was used, all students were middle-to upper-middle class Caucasian students. There was not much diversity within the sample, leaving the results based on a small population of students.

Using a convenience sample also eliminated random assignment. As a result, the inferences made from the study are suspect. Using an entire reading class also eradicated the possibility of a control group. In this study, a control group could have been instructed solely with encoding instruction. This would have moved the influence of any variable, other than the independent variable, that may affect performance on the dependent variable- The Phonological Awareness Assessment of Non-Sense Words. An additional concern is that the assessments were researcher-created and not norm-referenced, or used with a variety of different students. Although the researcher worked hard to ensure that the assessments were appropriate measures of the word patterns, the data may not be as accurate as it would be with a nationally norm-

referenced or widely used assessment that has gone through a rigorous development process. This caused an instrumentation risk to internal validity.

When conducting the study, this researcher did not make the students aware that they were using alternating methods. The movement from one method to the next was carried out seamlessly, as would be the case for an experienced reader. It was noted that the students did not see them as separate, unrelated skills and that this became evident when they were utilizing their abilities interchangeably through their word study. It was also apparent during the post assessment when students were using decoding skills on words they were taught solely using encoding instruction. Because ones' ability to read, spell, and write used overlapping skills, it is natural to instruct them in this way. However, the fact that the students were carrying over the decoding strategy presents a multiple-treatment interference, which is a threat to external validity. Within this experimental design, it was difficult to get an accurate measure of the differential effectiveness of adding in decoding, since the students were using it anyway.

### **Connections to the Literature**

The results of the current study are consistent with the proposal that teaching decoding and encoding simultaneously may provide the most significant gains among students in need of intervention (Hudson et al., 2011). A successful reader involuntarily overlaps their ability to spell and decode unknown words while reading. The skills needed to do this are done simultaneously, so teaching it in this manner seems logical.

Through prior research, the National Reading Panel found that 5 to 18 hours of instruction or intervention provided substantial benefit. Programs incorporating longer time did not necessarily lead to greater benefit within reading (Schuele & Boudreau, 2008). The time

spent on intervention in this study fell within this range, approximated at the higher end within the range.

### **Implications for Future Research**

Implications for future research would be to address the limitations set forth from this study. A larger sample determined by random assignment would help researchers understand if the benefits from teaching word study in this combined method would be consistent. Future research might use students from different populations to determine if this methodology is an effective approach to improving word attack skills for students in various types of backgrounds. Future research may also want to use a different dependent variable than the wordlists or else an opportunity to do more item analysis on the wordlists before administering to study subjects.

An additional future study could try to delineate what type of instruction is most important: encoding, decoding or teaching both encoding and decoding simultaneously. This would allow the researcher to look at all three types of instruction conducted during the same time period, using the same word patterns. A researcher could also conduct another study to look at what the impact is on the spelling success using the different strategies--since this was taught during a spelling block, it would be beneficial to know how it impacted the students' spelling abilities.

### **Summary**

This study provided evidence that teaching decoding and encoding instruction during spelling lessons will strengthen students' word attack skills. Practice implications suggest that it is important for teachers to provide numerous opportunities to build their students' phonological skills; a preceding factor in ones' ability to read. Future research could examine what type of instruction is most important: encoding, decoding or teaching both encoding and decoding

simultaneously. By using these explicit strategies, students will become better readers. Being able to read is essential in ones' life successes. Reading is important; spoken and written words are the building blocks of life. People, families, relationships, and even nations are built from words.

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