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Minnesota State University, Mankato

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Applying Peer Tutoring to Spelling at the Elementary Level

Ashlee Lundberg, M.S.

A Dissertation Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor in Psychology

in

School Psychology

Minnesota State University, Mankato

WE, THE UNDERSIGNED MEMBERS OF THE COMMITTEE, HAVE EXAMINED AND
APPROVED THIS DISSERTATION.

Applying Peer Tutoring to Spelling at the Elementary Level

By

Ashlee Lundberg

COMMITTEE MEMBERS

Shawna Petersen-Brown, Ph.D., Advisor School Psychology

Carlos J. Panahon, Ph.D., Committee Member School Psychology

Daniel Houlihan, Ph.D., Committee Member School Psychology

Dana Wagner, Ph.D., Committee Member Special Education

Minnesota State University, Mankato

April 30th, 2020

Dedication

To my parents and family who were always there to support and encourage me throughout this entire process of obtaining my Doctoral Degree.

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Abstract

Applying Peer Tutoring to Spelling at an Elementary Level

By

Ashlee R. Lundberg, M.S.

In this study, I applied peer tutoring methods to spelling in an elementary classroom to increase spelling performance. Using alternating treatment design with a baseline phase, peer tutoring for spelling was implemented within a 2nd grade classroom. Twenty-one students participated in the study. The primary dependent variables were the increase in words spelled correct and correct letter sequence from weekly pretests to weekly posttests. Baseline data were collected using spelling word lists students had not yet learned. Peer tutoring for spelling was applied to spelling through two activities targeting accuracy (Spell it, Check it) and fluency (a speed spelling activity, Best Spell). Instruction alternated weekly between peer tutoring for spelling and business as usual spelling instruction. Peer tutoring for spelling provided students with additional opportunities to respond and receive immediate feedback based on performance. Both business as usual and peer tutoring for spelling resulted in greater change from pretest to posttest than baseline. There was some evidence that peer tutoring for spelling led to greater spelling performance gains, and it was generally more acceptable to students. This study expanded on the limited literature on spelling, this study supports previous findings that explicit spelling instruction yields greater spelling performance than no spelling instruction.

Applying Peer Tutoring to Spelling at the Elementary Level

Spelling is a skill that involves identifying letters, matching them to their correct sounds, and learning the patterns and rules of the English language. Students then learn how to combine the letters to correctly spell words. Spelling begins to be taught formally when students have learned letter names and letter sounds. This complex sequence creates possible areas of confusion, challenges, and difficulties for children. Spelling has also received less attention in research, legislation, and practice as compared to other areas of literacy, namely reading. However, it is critical for students to learn to spell as this skill influences one's ability to read, write, and communicate effectively (Graham, Harris, & Chorzempa, 2002).

The ability to spell words correctly influences how we communicate and interact with others. For example, if an individual has difficulty spelling words correctly, then he or she will struggle composing an effective note or letter to someone else. One may also have trouble expressing their thoughts and ideas with other individuals. Spelling is also related to success in other academic areas, such as reading and writing, these areas often require spelling skills to demonstrate understanding; researchers have found correlations between spelling and reading achievement ranging from .5 to .9 (Caravolas, Hulme, & Snowling, 2001; Graham et al., 2002; Graham & Stantangelo, 2014; McLaughlin, Weber, & Derby, 2013). The mechanics of spelling influence the development of reading and other early literacy skills (McLaughlin et al., 2013). Spelling is considered a stepping stone for reading and writing as one must first learn the letters of the alphabet and their corresponding sounds before they can be connected (McLaughlin et al., 2013). In fact, researchers have found that students who have difficulties with spelling typically have difficulties with reading (Graham et al., 2002; McLaughlin et al., 2013; Treiman & Bourassa, 2001). The ability to make explicit judgments based on speech-sound correspondence

is important in learning to read and write using the alphabetic system. Phonemic awareness refers to one's ability to recognize and manipulate speech segments (Stanovich, 1986; Cunningham, 1990). Children who cannot explicitly analyze the spoken sounds into smaller sounds will have difficulty learning and understanding the correspondence between letter and sounds. This difficulty then affects one's ability to spell; if an individual has difficulty spelling they often have difficulty expressing themselves through writing, which then is reflected through their school work. An individual that has difficulty identifying letter-sound correspondences typically has difficulty with spelling and has difficulty with writing and reading (Graham et al., 2002, McLaughlin et al., 2013). For individuals to effectively encode words, or put sounds together to make a word, and write the words correctly, they must first master the phonemic awareness and phonic skills to construct the written words.

Writing is impacted by spelling. Graham and colleagues (2002) reported that poor spelling has the potential to hinder the writing process because a poor speller must allocate increased attention to the process of spelling words, and therefore cannot attend to producing sentences correctly. In other words, students who have difficulty spelling must allocate more working memory resources to spelling words as a result of their deficits (Alloway, 2006; McLaughlin et al., 2013). This increased demand of attention to the word and its components hinders the student's ability to plan and connect learned knowledge of word development to accurately spell the word (McLaughlin et al., 2013). Graham and Stantangelo (2014) reported teaching spelling explicitly improves overall writing achievement. Thus, students who struggle to spell generally have great difficulty with more advanced writing tasks, such as writing fluently, using correct syntax, and crafting a meaningful message.

Identifying methods to improve spelling skills is important given that spelling is a critical early literacy skill, which is connected to other literacy skills including reading and writing. Currently, there is a lack of academic interventions that specifically target spelling. When conducting a literature search of key words that focused on academic interventions for the four main academic areas for elementary students, the search yielded 2,920 articles for reading interventions, 1,150 articles math interventions, 859 articles on writing interventions, and only 257 articles on spelling interventions. These results highlight the fact that research in the area of spelling interventions is limited; additional research on spelling interventions is needed given the importance of spelling in the development of broader literacy skills.

Perspectives on Spelling Development

It is critical to understand the typical progression of skills for children to develop into successful spellers. When one understands the typical development, then specific deficits can be identified to develop targeted interventions. When one breaks down the stages and steps of spelling development, this helps to identify age appropriate milestones for spelling development. Therefore, this section of the paper will discuss different theories that pertain to spelling development.

Typical Development of Early Literacy Skills

One's spelling skills are impacted by the accumulation of different skills and their development. From birth to age three, children begin to recognize letters, make sounds, and associate words they hear frequently with meaning. Also, during this time individuals develop their motor skills by scribbling, which at times may resemble letter-like forms (Critten, Sheriston, & Mann, 2016; Department of Education, 2005; Shaffer & Kipp, 2013). When a child is three to four years old, or preschool aged, children begin to understand that print carries a

message. Children make attempts to read and write, identify letters, make some letter-sound matches, and use known letters to represent written language. Errors are likely and expected at this time in the child's development (Department of Education, 2005; Shaffer & Kipp, 2013). Around age five, or kindergarten, children become more proficient at recognizing letters and letter-sound matches, understanding that print is read left-to-right and top-to-bottom, and begin to match spoken words with written ones. In addition, children begin to write letters of the alphabet and some short words they see and hear often (Department of Education, 2005). They begin to write basic stories. In kindergarten, they also begin to use punctuation marks and capitalization (Department of Education, 2005). Around age six, children begin to identify new words by using letter-sound matches, parts of words, and their understanding of the rest of a story or printed item. They begin to identify an increasing number of words by sight; they sound out and represent major sounds in a word when trying to spell (Critten et al., 2016).

To understand one's progression through spelling development, an understanding of how one learns to spell is needed. The Three Progressive Layers to Learning and the Stage Theory identify the progressive layer's individuals progress through to develop adequate spelling habits and skills. Both of these theories identify that each individual does not progress through the stages or layers at the same time, but the process or strategies of learning to spell develop in the same sequence for all children. The Stage theory provides age ranges in which each stage is appropriate for the development; the Three Progressive Layers does not provide age ranges of progression just states that each child progresses through these stages at different paces. Each theory identifies a different initial step in the spelling development process.

Three Progressive Layers to Learning. The Progressive Layers to Learning theory posits that children progress through learning words by navigating through three general stages.

To determine if a student is having difficulty with spelling, a better understanding of how spelling skills develop is needed. The English language consists of three progressive layers that impact spelling development: alphabetic, pattern, and meaning (Williams, Walker, Vaughn, & Wanzek, 2017). Alphabetic encompasses one's ability to accurately name the letters of the alphabet, along with correctly identifying correct letter-sound correspondences. Letter naming knowledge influences a student's success with spelling, as a child must be able to recognize the letters that make up a word. The pattern layer is when an individual learns about patterns of letters, or how individual letters interact with other letters within a word. For example, the letter "t" makes a /t/ sound on its own and the letter "h" makes a /h/ sound on its own; however, when combined as "th" the letters make a different sound, /th/. Within the alphabetic stage, children also learn the effect of replacing letters in a word with different letters. For example, replacing the last letter in the word "cat" can make the words "cap" or "can". The meaning layer focuses on the connection between words, which are made up of groups of letters, and their correspondence with a word meaning, such as identifying words that go together to create a full sentence "the dog is white" (Williams et al., 2017). As individuals progress through these layers, there are many areas in which they may develop incorrect habits, including inconsistencies with letter identification, letter patterns, and meanings of words that can cause difficulty when learning new words (Williams et al. 2017).

In addition to potential challenges faced when progressing through the three layers, difficulties may arise when learning phonemic skills. Phonemic skills include sound and word discrimination, rhyming, syllable splitting, blending, phonemic segmentation, and skills that require an individual to understand the basics of letter identification and letter sounds (Lundberg, Olofsson, & Wall, 1980). Students must be able to hear and correctly identify the letter matching

a particular sound in order to learn to spell. This poses another challenge to learning to spell correctly, one must listen then transcribe the correct information. In other words, they must select the appropriate letter symbol (or grapheme) to match the sounds they hear (or phoneme; Treiman & Bourassa, 2001). Another challenge when learning to spell correctly is that in many instances, one must ignore the role of letter-name knowledge to learn letter-sound relations to learn how to appropriately spell a word (Treiman & Bourassa, 2001). For example, when learning the letter “B” one states “bee.” When learning letter-sound relationships the letter “B” makes the /b/ sound. The name of the letter and the sound make two separate sounds when spoken aloud. Some consonant sounds have more than one possible spelling, and the correct choice depends on factors such as the position of the phoneme in the term (Treiman & Bourassa, 2001). The rules of the English language present additional possible areas of confusion for children as they learn to spell. When breaking down the developmental steps of spelling, one can identify the specific area that causes challenges and confusion for individual students. Spelling is a complex and integrative skill to master; to spell correctly one must master progressive skills to effectively master the art of spelling.

Stage Theory. The most widely accepted approach to spelling development is the Stage Theory in which children begin using their knowledge of letter names and phonology to spell words (Nunes, Bryant, & Bindman, 1997; Treiman & Bourassa, 2000; Varnhagen, McCallum, & Burstow, 1997). This theory believes children develop their spelling skills through five stages. The five stages include precommunicative spelling, semi-phonetic spelling, phonetic spelling, transitional spelling, and correct spelling (Treiman & Bourassa, 2000). Students’ progress through these stages at different rates. Thus, age ranges are provided corresponding to when students may be in each stage. Within stage theory, spelling development occurs in stages, and

individuals must advance from one stage to the next to master the skill of spelling (Varnhagen et al., 1997). Typically, children between the ages of 1 and 7 years old are within the precommunicative spelling stage, which may include scribbles and may or may not resemble letter forms. They also begin to write from left to right. Children in this stage are beginning to develop their motor skills and their connection to written language and expression. However, the visual representations they depict may not resemble correct letter formation (Lindley, 1982).

Some children enter the semi-phonetic stage by age 4 while others enter this stage later, around age 9. Semi-phonetic spelling focuses on children understanding the concept that letters have corresponding sounds. Children begin to identify the connection between auditory sounds and the letters that usually make those sounds. It is also critical for individuals to identify the connections between individual letter sounds within a spoken word (Lutz, 1986). They eventually begin to match larger units of sounds to groups of letters. Within this stage, invented spelling is common. In invented spelling, individuals attempt to spell a word based on their best judgement, arranging letters to “invent” the spelling of the word (Lutz, 1986).

Stage three, phonetic spelling can include children from 6 years old to 12 years old. Children refine their ability to correctly connect letters to their corresponding sounds. The phonetic stage also embraces sight-words. Children at this point develop a repository of between 200-400 sight words that they can spell from memory. The fourth stage is the transitional spelling stage. Between the age 8 and 18 individuals begin to use short and long-vowel patterns and can apply more sophisticated spelling concepts such as consonant doubling. The final stage of correct spelling is the application of previously mastered skills and components of spelling to correctly spell the word. Individuals can enter this stage as early as age 10 and continue to

develop their skills within this phase throughout adulthood (Caravolas et al., 2001; Treiman & Bourassa, 2000).

During later stages, additional information and sources come into play such as knowledge of orthographic patterns and morphological relationships among words (Treiman & Bourassa, 2000). Orthographic patterns refer to the letter combination rules within the English language (Treiman & Bourassa, 2000). There are certain words in the English language that are not spelled how they sound; in other words, individual sounds in the spoken word correspond to multiple letters or to a letter that the sound does not often correspond to. Writing the word “school” correctly requires knowledge of orthographic patterns; a speller without this skill would likely write the word as “skul” or another similar spelling. Morphological relationships refer to the exceptions due to affixation, assimilation, and the influx of new words (morphology) within the English language (Varnhagen et al., 1997).

According to a stage-like development of spelling, young or early learners of spelling rely on an alphabetic or letter name strategy where the letter of the alphabet is used to directly represent the sound. For example, in spelling the word bee, a child may use just the letter ‘B’ (Varnhagen et al., 1997). As children develop their phoneme-to-grapheme correspondences, their spellings reveal less reliance on the letter name strategy. They begin to rely more on sounding out words and matching the sounds with specific letters, representing each respective phoneme with a grapheme. Once a child begins using a phoneme-to-grapheme strategy, they must also understand that there are inconsistencies, irregularities, and ambiguities. Thus, if a child only relies on the phoneme-to-grapheme strategy, misspellings would be common. A phoneme-to-grapheme strategy includes the correlation between sound and written language or letter-sound correspondences. According to Morris and Perney (1984), as children notice the inconsistencies

of fixed phoneme-grapheme relationships, they also notice common patterns of letters. This comes as children are also learning more about semantics, syntax, and phonology (Varnhagen et al., 1997). Although the stage theory and the normative development of spelling development can help to understand when and how a student becomes an accurate speller, it does not suggest how to instruct children in spelling. Understanding the stages and steps children progress through when learning to spell provides a foundation to identify students who are struggling and performing behind their peers. The stages can also be used along with elements of effective instruction to determine which spelling concepts should be taught when, and how.

The Progressive Layers to Learning theory divides one's spelling development into three main stages which individual progress through at their own pace; through the alphabetic layer (identifying letter-to-sound relationships), to the pattern layer (identifying groups of letters), then to the meaning layer (relating word parts to one another and relating this to word meaning; Williams et al., 2017). The Stage Theory is another theory in which describes the progression of learning spelling through a total of five stages. This theory uniquely begins with letter or symbol formation and understanding left-to-right sequencing of items prior to developing the alphabetic principle.

Each of these theories identify letter-sound correspondence as one of its initial steps as a beginning stepping stone of the development of spelling. Both of these theories incorporate other aspects of literacy that contribute and are often correlated to spelling skills. For example, the Progressive Layers to Learning Theory incorporates reading, specifically vocabulary, in its last layer (meaning layer) in which individuals identify the meaning of the word and how to use the word correctly. Although the Stage theory does not identify its initial stage being letter-sound correspondences, it is one of its beginning developmental stages. The stage theory does

incorporate writing as a stepping stone into the development of spelling, its initial step includes identifying scribbles and then the formation of scribbles that resemble or represent letters and words.

These theories differ in variety of methods and beliefs; the stage theory divides the spelling development process into a greater number of stages but also incorporates the component of writing into the development of spelling. The Three Progressive Layers to Learning Theory also concludes with the meaning layer in which students are to understand the words themselves and their meaning where the Stage Theory ends with individuals being able to spell most words correctly, rather than the meaning of the word itself. Both theories include different spelling components of spelling into the development of spelling, the Progressive Layers to Learning Theory incorporates a reading and comprehension component in its last layer (meaning layer) in which individuals are to identify the meaning of the word and how to use the word correctly. The Stage Theory incorporates writing into the development progression of spelling, in its first stage, precommunicative begins when children can produce large scribbles then to produce scribbles that mimic letters and words. Writing is also addressed in the last stage, correct, which individuals can spell words correctly in writing.

Spelling Instruction at the Elementary Level

As was discussed in the previous section, spelling involves the processes of segmenting the spoken word into its phonemic components and then selecting the appropriate graphemes to represent the phonemes (Treiman & Bourassa, 2001). Within the typical spelling curriculum, students are taught spelling through explicit and implicit methods. Those who emphasize explicit methods believe spelling must be “taught”, while those who emphasize implicit methods believe that spelling is “caught”. Explicit instruction is intentional; the information students must

understand is clearly stated in the curriculum or method (Kemper, Verhoeven, & Bosman, 2012). Explicit instruction often includes the use of word lists with weekly assessments to determine the learning, understanding, and application of typical rules and irregularities (Kemper et al., 2012; Wanzek et al., 2006). Explicit instruction for spelling includes a specific set of words that illustrate a specific spelling pattern or rule. Explicit instruction would include targeted practice of the spelling pattern or rule, such as word drill in which students practice spelling each individual word. Explicit instruction in spelling has been found to provide strong and consistent support for improving spelling performance as compared to incidental approaches with an effect size of 0.43 (Graham & Stantangelo, 2014). Spelling performance gains were also maintained over time ($d = 0.53$) and generalized to writing ($d = 0.94$).

Implicit instruction is incidental; this method does not include direct instruction on how to spell. Rather, students are exposed to spelling patterns and rules through instruction in other areas, including exposure to worksheets, textbooks, or assigned readings (Kemper et al., 2012). Implicit instruction exposes individuals to information but does not require specific efforts to ensure students learn the specific spelling patterns or rules. An example of this would be providing students with a book that includes their spelling or vocabulary words to expose them to the words and then assuming that students understood and learned that spelling of words they are exposed to through the use of other materials.

Typical spelling instruction often includes elements of both explicit and implicit instruction. Depending on the teacher, classroom, and students, spelling instruction may look different. Some teachers explicitly practice each spelling word with their class (a focus on explicit instruction), while others focus instruction on learning new vocabulary, but require students to write words as they learn them (a focus on implicit instruction, with spelling

practice). Typically, students will participate in a pretest on the week's spelling words to establish baseline performance. Then, improvement is assessed using an end of the week spelling test. The end of the week spelling test typically includes verbal presentation of spelling words by the classroom teacher, and student is responsible for writing the spelling words on a piece of paper. Student performance is generally assessed on whether they spell the entire word correctly. These typical assessment practices are most consistent with explicit instruction. Spelling is often not a targeted skill practiced throughout the week in the classroom but rather included as a component of other instruction, often writing and reading practices. In these cases, spelling is not the targeted skill, but rather a method of how the students express themselves. When the targeted skill is writing, misspellings may or may not be corrected as they occur. Spelling instruction may also be integrated into reading instruction; teachers expose their students to unfamiliar words by using other texts to support their development, such as having them read texts that cover different topics and integrate a variety of terms (Fulk & Stormont-Spurgin, 1995; Graham, 2000). This method introduces students to new words; however, it often overlooks spelling-specific instruction. It does not just focus on spelling itself rather focuses on reading and comprehension development (Fulk & Stormont-Spurgin, 1995). These common instructional methods are most consistent with implicit instruction.

Explicit instruction is important for children to effectively and efficiently learn to spell. A meta-analysis by Graham and Santangelo (2014) examined the impact of explicitly teaching students spelling, the results indicated more correct spelling in writings when explicit spelling instruction was implemented, with moderate to large effect sizes favoring explicit instruction as cited above. Effective spelling instruction should include explicit instruction, careful selection of spelling words, and repeated and cumulative practice (Kemper et al., 2012; Reed, 2012).

Immediate corrective feedback is another element of explicit instruction which researchers have found to be effective for spelling; corrective feedback has been used to increase the accuracy of academic responses and serves as an immediate reinforcer (Skinner, Shapiro, Turco, Cole, & Brown, 1992). Prompt correction has been found to lead to better outcomes than students who receive no feedback or delayed error correction feedback (Reed, 2012). Implicit instruction provides students with additional exposure to words through broad exposure through reading and writing, although this generally does not provide specific practice on spelling a specific word list or spelling pattern.

Spelling Interventions for Elementary Students

Just as research-based spelling curricula including explicit instruction in spelling is often lacking, interventions for students who struggle in spelling are also lacking (Fulk & Stormont-Spurgin, 1995). This may be especially true beyond the early elementary grades, based on the belief that spelling skills are already learned by this point. When this skill is assumed as being previously acquired, the students who have not yet mastered the skills continue to fall behind. Students who struggle with spelling skills in early elementary grades will continue to struggle because they are unable to effectively progress to later stages of spelling development. As was previously mentioned, spelling instruction is either embedded in reading and writing instruction or directly taught using curriculum focused on phonology, morphology, and syntactic rules (Fuchs & Fuchs, 2005; Okyere & Heron, 1991). Explicit instruction on spelling is critical for those experiencing early spelling difficulties, as spelling difficulties may have a long-term impact on writing and reading skills (Graham et al., 2002).

For students who are identified as struggling with spelling skills, there are limited empirically-supported interventions for elementary students specifically aimed at spelling.

Eckert, Coddling, Truckenmiller, and Rheinheimer (2009) explored empirically-supported instructional practices that have been implemented within the classrooms and revealed that the most common spelling interventions include: (a) modeling, (b) time delay, (c) error drill, (d) interspersing procedures, (e) instructional ratios, (f) high-probability sequencing, (g) cover-copy-compare methods, and (h) performance feedback and self-correction procedures. Interventions a-d are considered to be single-step instructional enhancements, e-g are considered teacher content modification interventions and g-h interventions would be considered multicomponent interventions. Each of these uses explicit instruction.

In modeling, one individual demonstrates the task while the other observes, then the observer completes the task (Hitchcock, Dowrick, & Prater, 2003). Modeling provides the individual with an example of the skill, expectation, or task, prior to having them do it on their own. This is a pre-teaching technique. Time delay incorporates time as a factor to complete the task, the individual must wait a specified amount of time before completing the task (McCallum, Skinner, Turner, & Saecker, 2006). Time delay assesses if the information or skills were learned by assessing one's ability to recall at a later time. Error drill is the repetition of an error (misspelling or misread) until it is completed correctly (Jenkins, & Larsen, 1979). Error drill requires that students demonstrate correct spelling a specified number of times to reduce the likelihood of future errors.

Interspersing procedures, instructional ratios, and high-probability sequencing are similar because they each involve the inclusion of known items to facilitate learning unknown items. Researchers suggest this is effective because it maintains student engagement by having words previously learned and mastered, it has been shown to increase rate of task completion and increase rate of task acquisition (Cates, Skinner, Watson, Meadows, Weaver, & Jackson, 2003).

These methods provide the student with a review of materials, review of previously learned information, and a confidence boost by including review of items they are confident in knowing. Interspersing procedure is the process of mixing known skills with unknown skills, for example if a student has mastered spelling CVC words (e.g., bat, pop) and is learning to spell CVCe words (e.g., line, vote), the interventionist would intersperse some CVC words into a worksheet facilitating practice of CVCe words (Cates et al., 2003). Instructional ratios specify a specific ratio of unknown to known material, which is then gradually increased so that there are more unknown items relative to known items (Roberts, & Shapiro, 1996). Using the previous example, an interventionist may state that spelling words practiced would include 75% previously mastered material (CVC words) and 25% unmastered material (CVCe words). Then, the interventionist would present 50% previously mastered material and 50% unmastered material. Using this method, the students would still receive encouragement and confidence boost when an item they have previously mastered is reviewed. Another method used to provide students with a boost of confidence is to use a high-probability sequencing. Using high-probability sequencing is manipulating the materials so the student has a high probability of success (Lee, Belfiore, Scheeler, Hua, & Smith, 2004). Using high-probability sequencing is a method that ensure the student is successful but manipulating the information/content to ensure success is obtained by the student.

Cover-copy-compare and self-correction are most commonly implemented at the elementary level and have been shown to be effective (Eckert et al., 2009; Reed, 2012). Cover-copy-compare (CCC) is an intervention that has been used with struggling spellers (Eckert et al., 2009). CCC teaches students a strategy aimed to increase their accuracy in spelling words (Reed, 2012). CCC is a simple, efficient, and semi-independent learning approach that involves five

steps in which the student: (a) reviews the targeted spelling word; (b) covers the word; (c) writes the word; (d) uncovers the original word; and (e) compares the written response to the correct word (Skinner, McLaughlin, & Logan, 1997). If the response is accurate, the student moves onto the next spelling word. However, if the student made an error in their initial, the CCC procedure is repeated with the same word (Jaspers et al., 2012). CCC is the most well-known spelling intervention used throughout the education system (Jaspers et al., 2012). Studies that have explored the implementation and effectiveness of CCC have found that participants have improved their ability to spell words correctly when compared to their performance prior to CCC being implemented (Erion, Davenport, Rodax, Scholl, & Hardy, 2009; Skarr, McLaughlin, Derby, Meade, & Williams, 2012).

Self-correction with performance feedback is another spelling intervention used with elementary school students. It can be implemented as an intervention at the individual, small group, or whole group level. This intervention requires a teacher-dictated or student-mediated approach to instruction (Eckert et. al., 2009; Okyere & Heron, 1991). This intervention can be implemented by either a teacher reading the words or a student that is trained appropriately. Spelling words are read aloud to the student and then the student attempts to spell the word. The teacher or individual guiding the intervention provides immediate feedback on the student's performance by identifying specific spelling mistakes (i.e., omissions, repetitions, transpositions). The student then corrects their errors as needed. Students continue with this procedure until they achieve three consecutive trials with no errors (Eckert et al., 2009; Okyere & Heron, 1991; Wirtz, Gardner, & Bullara, 1996). Okeyre and Heron (1991) found that these procedures along with others were effective in improving spelling performance over time.

According to the literature, most spelling interventions have been implemented for students with learning disabilities, but many more students may struggle with spelling and need remediation (Bourassa & Treiman, 2001; Darch, Eaves, Crowe, Simmons, & Conniff, 2006). Therefore, students who struggle with spelling are often not being provided support until they are well behind their peers and are identified as having a learning disability (Bourassa, & Treiman, 2001; McLaughlin et al., 2013; Williams et al., 2017). Students who are not successful in mastering the early stages of spelling often see short-term success through memorization, but then struggle with long-term success, which is likely connected to deficits in those early stages, including phonemic awareness and phonological encoding skills. Implementing components of effective intervention methods into daily or weekly spelling practice in the classroom could yield effective academic outcomes in performance. These students may benefit from explicit spelling specific intervention that incorporates effective academic intervention components.

Peer Tutoring

Through peer tutoring, students play the role of tutor and tutee to facilitate mastery of academic skills (Annis, 1983; Delquadri, Greenwood, Whorton, Carta, & Hall, 1986). Peer tutoring has been found to be beneficial for all participants including the tutor, the tutee, and the teacher. The benefits for all members participating are numerous including improvement in social skills, increased access to the material, and increased opportunities to practice and respond to the material (Annis, 1983; Delquadri et al., 1986). Researchers have also found that students participating in peer tutoring also improve their communication skills, self-confidence, and self-efficacy as they practice the material more (Cohen et al., 1982; Delquadri et al., 1986).

Features of Peer Tutoring

The success of peer tutoring for both tutor and tutee, as compared to typical classroom instruction, is likely a result of the integrated components of opportunities to respond, increased time on the skill, and immediate corrective feedback, which have all been linked to increasing academic achievement (Lisa et al., 2013; Oddo et al., 2010). Peer tutoring integrates having additional opportunities to respond to the material, which yields significant benefits for all students who are participating (Delquadri et al., 1986). Students receive additional practice time when using peer tutoring, providing every student who participates in peer tutoring more practice with the skill. Peer tutoring trains students to provide effective corrective feedback to their peers, which increases their social skills and performance in the targeted skills (Annis, 1983; Delquadri et al., 1986).

Peer tutoring has been implemented and found to be effective in a wide variety of settings. These settings include general education classrooms, resource rooms, self-contained classrooms, alternative placements, and group homes. It has also been found to be effective at universal and targeted levels, in addition to cross-age (Lisa et al., 2013). There are also a variety of peer tutoring methods that can be found in the literature, including reciprocal peer tutoring, non-reciprocal peer tutoring, cross-aged, and utilizing cross-ability or same-ability peer tutoring. Reciprocal peer tutoring is a method in which each student alternate between tutor and tutee; it has been shown through the literature to be effective in producing cognitive gains, lowering subjective distress, and enhancing course satisfaction. In non-reciprocal peer tutoring only one student would be assigned to be the tutor and one the tutee to practice the specific skills or task (Dioso-Henson, 2012). Non-reciprocal peer tutoring has yielded effective results as it provides an increase in opportunities to respond and additional practice on the skill, along with providing social interaction (Dioso-Henson, 2012). Cross-age peer tutoring utilizes an older individual as

the tutor and the younger individual as the tutee, the tutor ‘teaches’ the younger peer a new skill. This method provides a mentor-like relationship and thus provides social interaction and responsibility for the older student (Topping, & Bryce, 2004). Each of these methods of peer tutoring can be implemented using cross-ability or same-ability (Topping, 2005).

Peer Tutoring for Spelling. Peer tutoring procedures have been applied in at least two published studies. Studies by Delquadri and colleagues along with McDonnell and colleagues explored peer tutoring at the elementary level (Delquadri, Greenwood, Stretton, & Hall, 1983; McDonnell, Thorson, Allen, & Mathot-Buckner, 2000). Delquadri and colleagues explored spelling productivity with peer tutoring incorporating a token economy and team competition. This study found that peer tutoring increased spelling performance for “low achievers” while also increasing the performance of the class as a whole. McDonnell and colleagues applied cross-ability peer tutoring to three dyads of 4th and 5th graders. This study examined spelling performance along with competing behaviors including aggression, disruptive behaviors, self-harming behaviors and self-stimulatory behaviors. They found that the spelling performance for the students with disabilities increased in accuracy, along with a decrease in competing behaviors. Thus, there is some evidence that peer tutoring can be applied to spelling to increase spelling performance and improve behavior.

Acceptability and Feasibility of Peer Tutoring. Previous peer tutoring studies have assessed the acceptability and feasibility of peer tutoring. Kamps and colleagues studied peer-mediation programs and what peers’ opinion were to work with classmates to learn or practice a skill, found that 88% of the students in the class indicated they would like to participate in peer paired groups again (Kamps et al., 1998). Specifically, 87% indicated that they learned about sharing, 84% indicated that they learned about names, 84% indicated they learned about problem

solving skills and cooperation and 87% indicated they learned how to help others due to participating in peer tutoring methods targeting social skills with students diagnosed with Autism. Kourea and colleagues conducted student interviews, in which all but one student indicated that they liked participating in peer tutoring “very much”. Students indicated enjoying being the tutee (64.2%) and the tutor (78.5%) (Kourea, Cartledge, & Musti-Rao, 2007). Fuchs and colleagues studied student interactions throughout peer tutoring activities and found that students in peer tutoring groups completed additional problems in a shorter amount of time and provided explanatory prompts or questions ($M=47.13$) more frequently than non-peer tutoring groups ($M=12.00$). One would expect student acceptability to be high for participation in peer tutoring procedures as students get the opportunity to actively work with their peers, students get to actively “teach” their peer something new. These components should be motivating for most students (Fuchs, Fuchs, Hamlett, Phillips, & Bentz, 1994).

Applying Peer Tutoring to Spelling

With peer tutoring leading to increased student success across several academic areas, applying this intervention to spelling may yield similar positive results. The benefits of peer tutoring include the ability to individualize instruction, increase active student engagement, and increase the extent to which students receive immediate feedback (Greenwood, 1997; Delquadri, et al., 1983). There are several components of effective spelling instruction that can be readily integrated within a peer tutoring model.

Immediate Feedback

Immediate feedback is one feature of generally effective spelling instruction. Applying peer tutoring to spelling would provide students with immediate feedback on their performance and increased exposure that may increase their memorization and mastery of the words. When

students participate in peer tutoring they are able to receive immediate corrective feedback to encourage correct practice of the materials. With the integration of immediate feedback into spelling instructional methods, this provides explicit instruction to the student on their spelling performance on one specific word at a time.

Increased Opportunities to Respond

Increasing opportunities to respond is an element of explicit instruction that is effective when applied to spelling. Participating in peer tutoring provides each student with; additional opportunities to explicitly practice the targeted skill, specific allotted time to practice, and additional opportunities to practice the word correctly. These components increase the likelihood of mastering the skill and specific words. Providing an increase in the number of opportunities to respond provides students additional opportunities to practice the skill in response to a prompt, and to receive reinforcement and/or corrective feedback to help them improve their responding.

Modeling

Modeling is an effective component of spelling intervention. Within peer tutoring, the more skilled student in the dyad may serve as a model; they perform the skill first to model the task correctly. The more skilled student is also likely to be able to effectively provide modeling through error correction procedures.

Cover-Copy-Compare

Cover-copy-compare is an effective spelling intervention, one that students may implement with very little supervision. Once students learn the procedure of cover-copy-compare they are able to practice this on their own. However, in a peer tutoring context, the tutor can improve cover-copy-compare procedures by providing targeted feedback to help the tutee identify and correct errors.

Each of these features has the potential to enhance student performance in that area of spelling. Peer tutoring can be modified and adjusted based on the students' age, ability, and individual needs. This versatility makes peer tutoring an appropriate intervention for students who struggle with spelling. Applying peer tutoring could be an effective strategy to help students who need additional assistance in the area of spelling.

As mentioned previously, spelling is an area that has received less attention than other academic areas. Research that focuses on interventions for students who struggle in spelling is warranted. Therefore, future research should examine the effects of applying peer tutoring to the area of spelling. Research has shown that effective spelling interventions target spelling skills specifically, provide corrective feedback, and an increased opportunity to respond. These features can be found within peer tutoring as it uses immediate corrective feedback on a student's performance, along with one-one-one practice sessions with the skills and presents additional opportunities to practice the skill. Therefore, peer tutoring may be an effective intervention when applied to the area of spelling as it integrates components of previous effective spelling interventions.

Purpose

A plethora of research has been conducted revolving around implementing peer tutoring within the classroom, and it has been modified and applied to a variety of subjects, including math and reading, in addition to positive behavior modeling (Delquadri et al., 1986; Hawkins, Musti-Rao, Hughes, Berry, & McGuire, 2009; Oddo, Barnett, Hawkins, & Musti-Rao, 2010). Peer tutoring has also been applied at various levels, from a single dyad to classroom wide (Delquadri et al., 1986; Oddo, Barnett, Hawkins, & Musti-Rao, 2010). Although there has been a variety of subject and topics along with participants there is a gap in the literature of applying

peer tutoring to the subject area of spelling. This study aims to answer the following research questions:

1. When peer tutoring methods are applied to the area of spelling at the classwide level, does student spelling performance increase in comparison to traditional spelling instruction?
2. To what extent do students believe that peer tutoring is an acceptable, feasible, and effective method to practice spelling?

Methods

The objective of this study was to identify the effectiveness of applying peer tutoring methods to the subject area of spelling within an elementary classroom. This assisted in identifying an effective way in which spelling skills can be enhanced for young spellers without additional resources from the teacher and school support staff.

Participants and Setting

Participants were recruited from one elementary classroom in a school district classified as rural, distant (Gevert, 2015). The elementary school's enrollment was about 205 students in preschool through 4th grade. Within the school, 88.4% of students identified as White, 4% as Hispanic, 3% as Black or African-American, 3% identified as two or more races, and 1.5% identified as American Indian or Alaska Native. Two-percent of students were English learners, 18.6% qualified for special education, 30.7% of the student population received free/reduced-price meals, and 0.5% of the student population were considered to be homeless or highly mobile.

After the administrator at the school approved the study, then a 2nd grade teacher volunteered to participate. The teacher implemented peer tutoring classwide during the study,

and participants included those students who provided assent to participate after their parents provided their consent. Participants met the study's only inclusion criterion: they received grade-level spelling instruction currently within the curriculum. In a 2nd grade classroom of 23 students, 21 students (11 males and 10 females) participated in the study (parental consent was not provided for the two students who did not participate). All students in the class participated in the study procedures, but I only collected and analyzed data of students with parental consent and student assent. Four students were receiving special education services. Two students met criteria for special education services under the category of Specific Learning Disability, one under Other Health Disabilities, and one under Speech/Language Impairment. Two students (with pseudonyms John and David) performing below the 25th percentile were identified for individual analysis to investigate the effectiveness of peer tutoring for spelling for struggling spellers. Both of these students were male and receiving special education services, although they did not have a spelling goal. A third student was also identified as struggling but was not included in individual-level analyses as a result of one treatment phase missing half of WSC and CLS weekly change data points.

At the time of the study, the female classroom teacher had 26 years of experience teaching at the elementary school level, and held a Tier 4 Minnesota Elementary Education license. The classroom teacher implemented business as usual practices. The researcher implemented the peer tutoring intervention for spelling. The researcher was a doctoral candidate in a school psychology program completing her pre-doctoral internship. The researcher developed this set of peer tutoring for spelling procedures and had previous experiencing implementing them.

Dependent Variables and Measures

The primary dependent measures were words spelled correctly (WSC) and correct letter sequences (CLS) on weekly spelling tests. WSC was measured as the number of words spelled correctly, out of a total of 12 words practiced each week. CLS was measured as the number of adjacent letters spelled correctly within the week's spelling list. Social validity data were measured and served as a dependent variable.

Weekly Spelling Assessments

Each week students completed two spelling assessments, a pretest at the beginning of the week to assess baseline performance and a posttest at the end of the week to evaluate mastery of spelling skills. Each assessment was scored using Words Spelled Correctly (WSC) and Correct Letter Sequences (CLS) to assess the student's spelling performance. Participants were provided a total of 12 spelling words each week. Therefore, the maximum WSC for each spelling assessment was 12. The maximum CLS varied weekly as a function of the length of the spelling words.

Reliability estimates for WSC and CLS in written expression are moderate to high (Shinn, 1989). Correlations of WSC and criterion measures have been found to range between .45 and .92 (Marston, 1989). Evaluating spelling performance using WSC is most consistent with how spelling performance is measured in practice. Thus, reporting WSC is likely to be more acceptable to a broad audience. However, CLS is a more sensitive measure of spelling skills since spelling is evaluated at the level of individual letter sequences rather than the whole word. CLS may be helpful for distinguishing students with more minor misunderstandings of specific spelling rules from students who have more significant spelling deficits. For both WSC and CLS, weekly change in performance served as the dependent variable for consistency.

Spelling lists were taken from the spelling curriculum the teacher was using. During the treatment phase, the words assessed were the ones assigned and practiced that week. During the baseline phase, the words assessed were from the following week. This practice was to ensure the words were unpracticed at the time they were assessed for the purposes of this study (except in the last week of the baseline phase, when the teacher provided a different spelling list exhibiting a pattern that had not yet been learned but which she judged to be of equivalent difficulty).

Kids Intervention Profile

The Kids Intervention Profile (KIP) is a rating scale designed to measure academic intervention acceptability from the perspective of students (Eckert, Hier, Hamsho, & Malandrino, 2017). Each student completed a questionnaire individually after each question was read aloud to the class. Response option for each question were on a 5-point Likert scale ranging from “Very, very much” to “not at all” to measure the acceptability and perceived effectiveness of the two types of spelling instruction in this study, peer tutoring and business as usual (See Appendix E for KIP used for this study). The KIP’s Likert scale included a visual component to represent the scale “Very, very much” to “not at all” for each student, with a large box representing “Very, very much” and a small box representing “not at all” for each question.

Research indicates that the KIP contains two factors, general intervention acceptability and skill improvement, and it has adequate internal consistency ($r = .79$) and stability across a three-week time period ($r = 0.70$) (Carter & Wheeler, 2019; Eckert et al., 2017). Eckert and colleagues (2017) also suggested a modest, positive relationship between students’ intervention acceptability ratings and their intervention outcomes.

Materials

Materials included the AIMSweb spelling pretest, grade level spelling lists, pencil, peer tutoring materials, and business as usual spelling materials.

AIMSweb Spelling Pretest

A classwide AIMSweb spelling assessment to determine each student's overall spelling performance on words not specifically included in the spelling curriculum. These assessments are considered to be leveled, thus the words are considered appropriate for 2nd grade students. Student performance on the AIMSweb spelling pretest was scored based on both WSC and CLS. Each form of the AIMSweb spelling assessment includes 12 words. Each student was given a pre numbered piece of paper with 12 lines, one for each spelling word. The researcher then followed the AIMSweb spelling instructions by verbally stating,

“We’re going to take a 2-minute spelling test. I am going to say some words that I want you to spell on the sheet of paper in front of you. Write the first word on the first line, the second word on the second line, and so on. I’ll give you 10 seconds to spell each word. When I say the next word, write it down, even if you haven’t finished the last one. You will receive credit for each correct letter written. Are there any questions?” (Pause) “Let’s begin.”

Then, the researcher verbally stated the first spelling word and started a stopwatch. The word was stated twice during a 10-s period of time. Once 10 s elapsed, the second word was read aloud. Prompts were given to the student to ensure they did not miss a word: “you should be on the fifth word which is...” The researcher and the classroom teacher walked around the classroom to ensure students were writing on the correct line on their paper. At 2 min the researcher stated, “Stop. Put your pencils down,” and collected the pieces of paper for scoring.

The data from this assessment were used to assign students to peer tutoring dyads as described below in Procedures.

Grade Level Spelling Lists

Weekly spelling word lists followed the classroom, grade level spelling curriculum. This study followed the pre-determined curriculum spelling list schedule. Each week's spelling list included 12 spelling words that followed the same spelling pattern or rule. All spelling lists focused on vowel patterns spelling lists during the baseline phase included long "i" vowel patterns (e.g., nine, high), words with r-controlled "a" (e.g., car, star), and words with the /aw/ sound (e.g., pause, lawn). The business as usual spelling lists included words with "ou" (e.g., round, shout), "ew" (e.g., new, grew), r-controlled "a" (e.g., shark, square) and "oo" (e.g., cook, book). Peer tutoring for spelling lists included r-controlled "i" (e.g., girl, third), long "e" vowel patterns (e.g., here, clear), long "u" vowel patterns (e.g., blue, too), and "ee" (e.g., cheer, deer).

Peer Tutoring Materials

Each dyad received a designated folder, which they used each week; their folders had all materials to perform peer tutoring. Each student brought their own pencil to their spelling practice. This folder included the list of 12 spelling words, an error-correction card (see Appendix B), a window card, cover-copy-compare worksheets (Appendix A), and two blank sheets of lined paper, one for each student. The list of spelling words was printed in black, 20-point font and provided on a vertical half-sheet of paper. The error-correction card was a laminated piece of white standard printer paper with specific verbiage for students to use when they were serving as the tutor and their partner made an error during either of the activities. The window card is a laminated 4" by 6" index card with a window rectangle cut into it, approximately 3" by 0.5" to ensure only one word on the spelling list was being studied at a time

during cover-copy-compare. The cover-copy-compare worksheets were white standard printer pieces of paper, which had the words already printed in black 14 pt. Times New Roman font on the left side with a fold line approximately 3.5” from the left edge to cover the correctly written word, then on the right side two designated lines for each word to be spelled. The blank wide-ruled lined paper was for the second activity of peer tutoring, with one sheet of paper provided for each student for each peer tutoring session. In each folder a point sheet was included for the dyad to document their points for each activity and bonus points on, the point sheet had the day number (1-20) on the bottom and numbers from 1-50 in columns where dyads could color in their points earned (see Appendix A-C for samples of all peer tutoring materials).

Business As Usual Materials

During weeks in which business as usual spelling instruction was conducted, the folder contained the list of 12 spelling words for the students to practice designated by the teacher. During these weeks, the classroom teacher provided each student with a worksheet targeting the week’s spelling words during both of the week’s practice sessions. These worksheets contained sentences with word blanks where one of the week’s words would fit. A word bank was included on the worksheet. Students were to identify which word was the most appropriate in each blank, then write the spelling word.

Research Design

This study utilized an alternating treatments design with a baseline phase. The phase for the first week of the treatment phase was randomly selected (peer tutoring), and thereafter was counterbalanced. Thus, peer tutoring was implemented in the first week of the treatment phase, followed by two weeks of business as usual spelling instruction, followed by two weeks of peer tutoring, and so forth for eight weeks’ total. During the baseline phase, the teacher implemented

spelling instruction and practice as usual, and students completed weekly pre- and posttests on unpracticed spelling words. During the treatment phase, the students were trained by the researcher on the peer tutoring for spelling procedures. Then, peer tutoring for spelling and business as usual spelling instruction were implemented in alternating weeks as previously described. Some previous studies exploring spelling curriculum and performance using single case designs have used weekly data points within an alternating treatment design, although these studies collected data on multiple treatments simultaneously (Nies, & Belfiore, 2006; Viel-Ruma, Houchins, & Fredrick, 2007). Research in other areas also provides examples of weekly alternation of treatments. For example, a study by Brake and Sauer-Zavala (2016) used an alternating treatment design to compare mindfulness-based exposure strategies. Treatments were implemented for one week and then alternated.

Procedures

Spelling instruction consisted of a 20-min time block twice a week, with spelling posttests implemented on Friday, which required 5 to 10 min. The researcher and teacher used a timer to ensure the time allotted for peer tutoring and business as usual spelling instruction were equivalent, thus controlling for time spent practicing spelling. This study followed the classroom curriculum, thus, the words assessed and practiced in each phase and treatment were taken from the curriculum sequence. Each Monday of both phases, the teacher introduced the unit by pronouncing each of the words, first on its own and then in a sentence, to the entire class. The teacher used the word in a sentence to help students understand the appropriate usage of the word. The word introduction provided on Mondays was not counted as spelling practice but rather a method to familiarize students with the week's words.

Pretest

An AIMSweb spelling assessment was used to assess participants' spelling skills at the outset of the study and to assign students to dyads. The assessment was scored according to WSC and CLS. Students were assigned to dyads by first ordering students from high to low by performance, then dividing that list in half, then matching the highest of the two halves together and so forth, creating 10 groups of two and one group of 3. This triad was created based on the class's middle performing student joining the dyad with the peer performing the next highest and the lowest performing peer. The classroom teacher reviewed the assigned dyads to ensure that pairings were appropriate. This process ensured that the higher-achieving student could adequately serve as a model for the lower-achieving student in the dyad. These were the pairs for the students to work in throughout the study.

Baseline

During the baseline phase, students were assessed on spelling words that were not taught or practiced that week. For the first two weeks of the baseline phase, the words used were those designated for the upcoming week, long "i" vowel patterns (e.g., nine, high) and r-controlled words with "a" (e.g., car, star). The third baseline spelling list was created by the classroom teacher and researcher. This list targeted a word pattern that was not in the spelling curriculum to be taught but was deemed to be of approximately equal difficulty to neighboring lists. This list included words with the /aw/ sound (e.g., pause, lawn). During baseline, students completed a pretest on Monday and a posttest on the last day of the week (usually Friday).

Business as Usual

During business as usual weeks the teacher taught the class using their typical methods, this included designated spelling time. During this designated spelling practice time, each student was introduced to the words and word patterns on Monday and given a spelling test on those

same words on Friday. The class would practice the week's spelling word list twice a week by completing worksheets, which targeted usage and meaning of the words, in addition to spelling. These worksheets included a set of sentences with blanks, and students selected the correct spelling words to go in the blank by selecting it from a word bank. Once they selected the best word to fit in the blank, they copied the word from the top of the paper into the blank. Students were permitted to bring their spelling word lists home to practice; it is unclear which students practiced at home and for the length of time. The amount of time allocated to spelling instruction during the business as usual phase was 50-60 minutes, which included one 5- to 10-min session to introduce the words and implement a pretest, two 20-min practice sessions, and one 5- to 10-min posttest. Business as usual spelling lists included the following patterns: "ou" (e.g., round, shout), "ew" (e.g., new, grew), -ar (e.g., shark, square, star) and "oo" (e.g., cook, book).

Peer Tutoring for Spelling

Peer tutoring for spelling was designed to be implemented in a 20-min session. The program was also intended to a) not create additional work for the teacher, b) not take additional time away from the curriculum, c) assist all children in the class, d) utilize words already within the curriculum, and e) supplement spelling instruction. Prior to implementing peer tutoring, the AIMSweb spelling assessment was implemented, dyads were formed based on the procedures described above, and a 30-min training session was implemented to teach students how to follow the peer tutoring for spelling procedures. The AIMSweb spelling assessment was given by the researcher and scored on both WSC and CLS as described above. Then, students were ranked on WSC and CLS. Therefore, it was composed of two peers from the top half and one peer from the lower half, adhering to the PALS pairing guidelines in which triad pairing ensuring two lower performing students are not paired (Fuchs, & Fuchs, 2005). Spelling lists in the peer tutoring

condition included the following patterns: included r-controlled “i” (e.g., girl, third), long “e” vowel patterns (e.g., here, clear), long “u” vowel patterns (e.g., blue, too), and “ee” and academic vocabulary (e.g., cheer, deer).

The teacher reviewed the dyads to ensure students were able to work together effectively. The partner on the first half of the list was designated as partner 1 and the participant on the lower half was designated as partner 2 throughout the study. Since there were 23 students in class, there was one group of three students.

Peer Tutoring Training (week 1, prior to implementing intervention). The researcher implemented a 30-min session to train students on the peer tutoring procedures. The researcher followed a script that was read aloud to all of the students at one time. First, students were informed on the pairing of peers, the length of the study, and the jobs they would be responsible for throughout the peer tutoring practice sessions. The researcher explained the reciprocal nature of peer tutoring – each partner would have a chance to be both the tutor (or coach) and tutee (or speller) for both activities. Then, the researcher began explaining the two activities, beginning with “Spell It, Check It”. “Spell It, Check It” follows cover-copy-compare procedures which are described in greater detail below. Then, students were trained to check their partner’s spelling. If it was correct they could move to the next word; if it was incorrect they were trained to use the Error Correction Card and to show them the word again and allow additional time to study the word. They were instructed to continue this process until the activity was complete. The researcher had each dyad practice one word following the “Spell It, Check It” procedures. The students were then trained on how to ask for help when they were stuck on a word. They were trained to say, “I am stuck,” and their partner would show them the word again and allow additional studying time.

The students were then trained on the second activity called “Best Spell”, as described below. Then, the researcher had each dyad practice one word following the “Best Spell” procedures. The researcher trained the students on how they can earn points and how to count points. They were told that each partner can earn their “team” 1 point per word spelled correctly during both activities. The researcher then trained all students how to record their points on their point sheet. The researcher also reviewed appropriate and inappropriate behaviors for working with partners in the context of peer tutoring for spelling.

Peer Tutoring for Spelling Phase (1 week after training is completed). Participants completed two tasks within their peer tutoring time. In each activity, each student was given 2 min to complete the task as the tutee. The first task was “Spell It, Check It”, which used cover-copy-compare procedures. Partner 1 (the higher achieving speller according to the AIMSweb spelling assessment) was the tutee first, and partner 2 was the tutor. In this way, partner 1 served as a model for partner 2. The tutor showed the tutee the first word by putting the window card over the spelling list to show the first word. The tutee studied the word, and the tutor removed the list from view when the tutee indicated they were ready to try spelling the word. The tutee spelled the word. Then, the tutor checked the word. If an error occurred, the tutor was trained to use the verbiage on the Error Correction Card: “You’ve made a mistake, the word is ____.” Then, the tutor showed the tutee the word. The tutee studied the word again and indicated when they were ready to attempt spelling the word again. The coach then waited for the speller to finish spelling the word to determine if additional error correction was needed or they could show them the next word. This process repeated as necessary until the word was spelled correctly. Once the first word was spelled correctly, the tutor showed the tutee the next word and repeated the process described above. This process continued for all 12 words, or until 2 min

elapsed, if a dyad completed the word list prior to the 2-min time limit, they were instructed to start again at the top of the list to gain additional practice. When the 2 min elapsed and the timer beeped, the tutee counted up all the words spelled correctly and documented this on their point sheet (students received 1 point for each word spelled correctly during this time). Then, the students switched roles; partner 2 was the tutee and partner 1 was the tutor. The steps outlined above were then completed for 2 min. Including time spent transitioning into peer tutoring for spelling, this first activity generally required 10 min to complete; 3-min per partner.

The second activity of the peer tutoring phase was “Best Spell”, which focused on fluency in spelling assigned words. This activity targets spelling fluency by using structured practice, repeated practice, and error correction, practices that have been found to be effective practices for spelling (Eckert, Coddling, Truckenmiller, & Rheinheimer, 2009). In this activity, each partner had 2 min to spell the spelling words correctly as many times as possible. Partner 1 began as the tutee and partner 2 was the tutor; again, this allowed the more skilled speller to serve as a model for the less skilled speller. To begin the activity, the tutor held the spelling list out of view of the tutee and read the first spelling word aloud to the tutee. Then, the tutee spelled the word. The tutor checked the tutee’s spelling; if the tutee made an error, the tutor used the verbiage, “You’ve made a mistake, the word is ____.” Then, the tutor showed the tutee the word and said the word out loud again. The tutee studied the word and indicated when they were ready to attempt spelling the word again. The coach then waited for the speller to finish spelling the word to determine if additional error correction was needed or they could show them the next word. This process continued until the word was spelled correctly. Once the word was spelled correctly, the tutor read the next word aloud, and the process continued until 2 min elapsed and the timer beeped. The tutee usually got through the entire list before time elapsed; when this

occurred, the tutor began introducing words from the beginning of the list again. After their 2 min of practice, the tutee counted the number of words they spelled correctly and recorded points on their point sheet, giving 1 point for each correctly spelled word. The roles were then switched and partner 2 was the tutee and partner 1 was the tutor. The same procedures were followed for the next 2-min practice session. Including time spent transitioning into the next activity, this activity took approximately 8 min to complete.

Points and Error Correction

Students earned points during both peer tutoring activities. During both activities, each student got one point per word spelled correctly, regardless of whether they spelled the word correctly on their first attempt or a subsequent attempt. For example, a student would receive 1 point if they spelled the word correct on the first attempt or the third attempt. These points were added to the point sheet at the end of each student's turn during both "Spell It, Check It" and "Best Spell", as noted above.

If an error occurred during either activity, the tutor was trained to use verbiage from the Error Correction Card: "You've made a mistake, the word is ____." Then, the tutor showed the tutee the word. The tutee studied the word and indicated when they were ready to attempt spelling the word again. The coach then waited for the speller to finish spelling the word to determine if additional error correction was needed or they could show them the next word. This process repeated as necessary until the word was spelled correctly (see Appendix B for correction card).

Bonus points ("Super Speller") were given at the end of the session by each member of the dyad to their partner for effort during peer tutoring. Each student would assess their partner's effort on their spelling practice and award up to 5 points accordingly (with 5 points being

awarded if their partner put forth a great deal of effort). Wrapping up the lesson and awarding bonus points generally required 2 min. Throughout peer tutoring the classroom teacher circulated around the classroom observing the pairs and providing assistance when needed. Students did not receive any tangible reinforcement for points they earned.

The amount of time allocated to spelling instruction during the peer tutoring for spelling phase was 50-60 min, which included one 5- to 10-min session to introduce the words and implement a pretest, two 20-min peer tutoring sessions, and one 5- to 10-min posttest.

Implementation of the KIP

One week after the study had concluded, the researcher returned to the classroom to administer the KIP. Each student received their own copy of the KIP with a total of eight questions. Each question was read aloud. Students were provided enough time to answer the question before the next question was read. Each student indicated their answers on their own copy of the KIP. The researcher and the classroom teacher were present to answer questions students had.

Implementation Fidelity and Interscorer Agreement

A checklist was used to monitor implementation fidelity. The fidelity checklist included 16 items that represented the major steps of the procedures: initiates peer tutoring, initiates each activity, monitors length of time for each activity, provides prompts to the students along with group and individual praise throughout the intervention (See Appendix D). An observer assessed peer tutoring procedures on 37.5% (3 of 8) of the peer tutoring practice sessions to ensure all peer tutoring procedures were implemented with fidelity. During these sessions, the researcher implemented 100% of the steps correctly. The observer for all observations was the classroom teacher.

Interscorer agreement was calculated on 25% of weekly spelling pretests and 25% of weekly spelling posttests for both WSC and CLS, by dividing the number of agreements by the number of agreements plus the number of disagreements and multiplying by 100. Across two raters, interscorer agreement was 92.4% using CLS scoring; scores differed on seven instances. For WSC, interscorer agreement was 98.9%, with one instance in which the raters disagreed.

Data Analysis

Each week's spelling pretest and posttest assessments were scored using both WSC and CLS. Then, the weekly change score from pretest to posttest was calculated by subtracting pretest performance from posttest performance. Finally, a class average was computed. If a student was absent for the pretest or posttest in a given week, no change score was calculated and their data were not included in the class average. Weekly change in WSC and CLS served as the dependent variable for the first research question. Visual examination of weekly change in WSC and CLS, including change in trend, level, and variability, was used to examine the effectiveness of peer tutoring for spelling relative to business as usual instruction and baseline. Kendall's Tau was also calculated to provide standardized effect sizes to better understand these results (Tarlow, 2016). Kendall's Tau is a non-parametric effect size which controls for trends in baseline or comparison phase data. Specifically, baseline corrected Tau was used (Tarlow, 2016). Baseline corrected Tau calculates an effect size while controlling for any trends in the baseline data. When using baseline corrected Tau .00 to .2 is considered to be a small effect size, .2-.6 is a moderate effect size, .6-.8 is a large effect size, and .8-1.00 to be a very large effect size (McKevett, Kromminga, Ruedy, Roesslein, Running, & Coddling, 2020). Descriptive statistics of KIP responses were calculated and compared between the business as usual and peer tutoring phases to answer the second research question.

Results

AIMSweb spelling performance was quantified as CLS and WSC, the average WSC was 5.13 (43% correct), with a range of 1 WSC (8% correct) to 10 WSC (83% correct). Using CLS, student performance ranged from 10 CLS (15% correct) to 60 CLS (88% correct), with a class average being 32.74 (48% correct). Using WSC, the 25th percentile corresponds to 3 WSC (AIMSweb, 2002). Four students scored below this criterion. Using CLS, the 25th percentile corresponds to 17 CLS. One student performed below this criterion. Thus, three students overall were determined to be performing below the 25th percentile on at least one criterion and were identified for additional analyses. One of these student's data were omitted from analysis based on having less than 50% of data points.

Based on AIMSweb national norms, 54 CLS is considered to be at the Tier 1 level in the Winter of 2nd grade. Two (8.7%) students met this criterion, and nine (39.1%) students meet AIMSweb Winter 2nd grade of 39 CLS. When comparing students AIMSweb performance to Fall of 2nd grade norms, five (21.7%) students met the Tier 1 benchmark of 47 CLS, and 13 (56.5%) met the Tier 2 criteria of 31 CLS. Thus, the class on average was performing below average according to AIMSweb national norms.

During the baseline phase, the average pretest score was 4.71 WSC (39% correct) and 40.85 CLS (60% correct). Thus, students overall did not have considerable pre-existing knowledge of the words. During the baseline phase, the average posttest score was 5.14 WSC (43% correct) and 42.25 CLS (62% correct). Thus, students showed a modest increase in spelling performance simply by taking the spelling assessment twice. The average weekly change score for the class from the pretest to posttest in baseline was 1.87 CLS and 0.52 WSC. Tables 1 and 2

include pretest performance, posttest performance, and weekly change scores for the class as a whole, John and David for all weeks of the study.

Research Question 1: When Peer Tutoring Methods are Applied to the Area of Spelling at the Classwide Level, Does Student Spelling Performance Increase in Comparison to Traditional Spelling Instruction?

Analysis of All Participants' Data

During the three-week baseline phase, students' spelling performance on average improved 0.52 WSC and 1.87 CLS from pretest to posttest. Throughout the three-week baseline phase, the WSC change score showed a downward trend, from 0.76 WSC in week 1 to 0.33 WSC in week 3 (see Figure 1 and Table 1). The ordinary least squares slope estimated from these data was -0.21 WSC per week. Throughout the three-week baseline phase, CLS weekly change score showed a downward trend, beginning with 2.76 CLS and ending at 0.44 CLS (see Figure 2). The ordinary least squares slope estimated from these data was -1.15 CLS per week. Therefore, baseline data showed a negative slope and minimal variability according to both WSC and CLS.

Following the baseline phase, business as usual spelling instruction was implemented in weeks 2, 3, 6, and 7 of the treatment phase. Throughout the business as usual weeks, students' spelling performance on average increased 2.27 WSC and 6.78 CLS (see Table 1,2 and Figures 1 and 2). Overall, these data showed a negative trend, with WSC weekly change in week 2 averaging 2.94 WSC, and WSC weekly change in week 7 averaging 2.57. The ordinary least squares slope estimated from these data was -0.11 WSC per week. Likewise, CLS weekly change in week 2 averaged 8.24 CLS, and CLS weekly change in week 7 averaged 7.83. The ordinary least squares slope estimated from these data was -.47 CLS per week.

In addition to quantifying performance increases in WSC and CLS weekly change, it is also useful to quantify performance increases in terms of the number of students who meet a mastery criterion at posttest. For this purpose, 90% mastery was used given its frequent use for this purpose and relationship to enhanced maintenance of learning (Fuller, & Fienup, 2018). When using WSC scoring methods, an average of 12 (57.1%) students reached the mastery criterion during business as usual instruction (range = 9 to 14). Using CLS scoring procedures, an average of 14 (66.7%) students reached the mastery criterion during business as usual instruction (range = 9 to 16).

Following baseline, peer tutoring for spelling was implemented during weeks 1, 4, 5, and 8 of the treatment phase. Across peer tutoring for spelling weeks, student spelling weekly change was 2.67 WSC and 10.81 CLS (see Tables 1, 2 and Figures 1, 2). Overall, these data show a negative trend, with WSC weekly change in week 1 averaging 3.42 WSC and WSC weekly change in week 8 averaging 2.00. The ordinary least squares slope estimated from these data was -0.10 WSC per week. Likewise, CLS weekly change score in week 1 averaged 12.58 CLS and CLS weekly change score in week 8 averaged 6.11. The ordinary least squares slope estimated from these data was -0.48 CLS per week.

Performance increases in the peer tutoring for spelling phase were also measured by the number of students meeting the 90% mastery criterion. When using WSC scoring methods, an average of 13.5 (64.3%) students reached the mastery criterion during the peer tutoring for spelling phase (range = 13 to 14). Using CLS scoring procedures, an average of 16.5 (78.6%) students reached the mastery criterion during the peer tutoring for spelling phase (range = 15 to 17).

Effect sizes were computed using the Tarlow's (2016) baseline corrected Tau for all participants' data. Tau was used to estimate effect sizes for comparing the baseline phase to each treatment phase, and for comparing the two treatment phases. Although a negative trend was observed in each baseline phase and in business as usual spelling instruction, baseline trend was still corrected in all effect size calculations given that the confidence interval of the slope in the baseline phase included 0.

When comparing the baseline data to the business as usual data using WSC scoring methods, a large effect size was estimated (Tau = 0.76, $p = 0.05$, SE = 0.35). When comparing the baseline data to the business as usual data using CLS scoring methods, a large effect size (Tau = 0.76, $p = 0.05$ SE = 0.35) was estimated. When comparing baseline to peer tutoring for spelling using WSC scoring methods, a large effect size (Tau = 0.78, $p = 0.05$ SE = 0.34) was estimated. When comparing baseline to peer tutoring for spelling using CLS scoring methods, a large effect size (Tau = 0.78, $p = 0.05$ SE = 0.34) was estimated. A small effect size (Tau = 0.28, $p = 0.47$, SE = 0.47) was yielded when comparing business as usual instruction to peer tutoring for spelling (when business as usual is considered the baseline phase) using WSC scoring methods. A moderate effect size (Tau = 0.47, $p = 0.19$, SE = 0.44) was estimated between business as usual and peer tutoring for spelling when using CLS scoring methods.

Analysis of Struggling Spellers' Data

John and David's spelling performance was investigated on an individual level to better understand the effectiveness of peer tutoring for struggling spellers. John's spelling weekly change during baseline was 2.00 WSC and 6.00 CLS (see Tables 1, 2, and Figures 3, 4). No baseline trend could be estimated based on only one baseline data point collected due to student absences. The average weekly change during business as usual weeks was 3.00 WSC and 5.50

CLS. Their performance during business as usual instruction in WSC showed an increase trend, ranging from 2 to 4 WSC. During peer tutoring for spelling weeks, the student's average weekly change was 5.00 WSC and 18.75 CLS. John's performance during this condition showed a downward trend according to both WSC and CLS. Ultimately, there was a high degree of overlap between the business as usual and peer tutoring for spelling phases. Peer tutoring for spelling showed overlap with the baseline phase, while business as usual instruction did not show overlap with the baseline phase. John's data should be interpreted with caution as there was only one baseline data point collected due to student absence at the time of baseline collection.

John's spelling performance was also evaluated using baseline corrected Tau. Tau could not be calculated when comparing to baseline, as only 1 baseline data point was collected. A large effect size (Tau= 0.66, $p= 0.07$, SE= 0.37) was yielded when comparing business as usual instruction to peer tutoring for spelling (when business as usual is considered the baseline phase) using WSC scoring methods. A large effect size (Tau= 0.77, $p= 0.03$, SE= 0.32) was estimated when CLS scoring methods were used when comparing business as usual instruction to peer tutoring for spelling (when business as usual is considered the baseline phase). John's data should be interpreted with caution as only one baseline data point was gathered due to absences.

David's baseline data showed a downward trend in performance when using WSC and CLS scoring procedures (see Tables 1 and 2, Figures 5 and 6). David had an average weekly spelling change during baseline of 0.33 WSC and 2.33 CLS. The average weekly change during business as usual weeks was 2.00 WSC and 11.50 CLS. During peer tutoring for spelling weeks, David's spelling performance increased by an average of 2.50 WSC and 12.00 CLS. WSC and CLS data during business as usual weeks were highly variable and showed a decreasing trend. WSC and CLS data during peer tutoring for spelling weeks were highly variable with a

downward trend. However, there was a high degree of overlap between treatment phases. Both treatment phases showed overlap with the baseline phase according to WSC and CLS data.

David's spelling performance was also evaluated using baseline corrected Tau. When comparing the baseline data to business as usual using WSC scoring methods, a moderate effect size was estimated (Tau= 0.38, $p= 0.37$, SE= 0.49). When comparing the baseline data to the business as usual using CLS scoring methods, a moderate effect size was estimated (Tau= 0.50, $p= 0.22$, SE= 0.46). When comparing baseline to peer tutoring for spelling data when using WSC scoring methods, a moderate effect size (Tau= 0.49, $p= 0.27$, SE= 0.47) was found. When comparing baseline to peer tutoring data using CLS scoring methods, a moderate effect size (Tau= 0.25, $p= 0.60$, SE= 0.52) was found. A small effect size (Tau= 0.05, $p= 1.00$, SE= 0.50) was yielded when comparing business as usual instruction to peer tutoring for spelling (when business as usual is considered the baseline phase) using WSC scoring methods. A small effect size (Tau= -0.09, $p= 0.89$, SE= 0.50) was estimated when CLS scoring methods were used when comparing business as usual instruction to peer tutoring for spelling (when business as usual is considered the baseline phase).

Research Question 2: To What Extent Do Students Believe That Peer Tutoring Is an Acceptable, Feasible, and Effective Method to Practice Spelling?

Each student completed the Kids Intervention Profile (KIP) to gather information on acceptability and perceived effectiveness for business as usual spelling instruction and peer tutoring for spelling. The researcher read each question aloud to the class, and students selected their responses on the visual Likert scale from "Not at all" (1) to "Very, very much" (5). On average, students found both methods of spelling practice highly acceptable and effective. Specially, the average rating across questions related to business as usual spelling instruction was

2.87, and the average rating across questions related to peer tutoring for spelling was 4.12 (see Table 3).

Student responses on the KIP indicated that students liked practicing their spelling words in both conditions (business as usual $Mdn = 3$ and peer tutoring for spelling $Mdn = 5$). They also indicated that there were few times when they did not want to practice their spelling words in both conditions (business as usual $Mdn = 2$ and peer tutoring for spelling $Mdn = 2$). They also did not believe their spelling got worse from participating in both conditions (business as usual $Mdn = 1$ and peer tutoring for spelling $Mdn = 1$). Students seemed to enjoy practicing spelling more using peer tutoring, although they reported that neither intervention was unenjoyable or ineffective. Some more distinct differences emerged between students' perceptions of peer tutoring for spelling and business as usual spelling instruction. For example, students often wished they could work more on spelling using peer tutoring for spelling ($Mdn = 4$) and generally did not want to work more on spelling using business as usual methods ($Mdn = 1$). They also indicated a greater liking of peer tutoring methods ($Mdn = 5$) than business as usual methods ($Mdn = 3$). Finally, students on average indicated a perception that peer tutoring for spelling was more helpful ($Mdn = 4$) than business as usual spelling instruction ($Mdn = 3$).

Discussion

The implementation of peer tutoring methods has been applied to a variety of academic subjects within the classroom setting including math, reading, and it has also been applied to positive behavior modeling (Delquadri et al., 1986; Hawkins et al., 2009; Oddo et al., 2010). However, there is minimal research applying peer tutoring to spelling (Delquadri et al., 1983; McDonnell, et al., 2000). For that matter, there is minimal research on spelling interventions as compared to reading, writing, and mathematics. Research has documented the importance of

spelling skills to overall literacy skills, including the improvements in reading and writing outcomes when spelling intervention is provided (Delquadri et al., 1986; Hawkins et al., 2009; Oddo et al., 2010). This study contributed to the spelling intervention literature and more specifically the research applying peer tutoring to spelling.

The results indicated that relative to baseline performance, explicit spelling instruction was associated with an increase in spelling performance. Specifically, students' spelling performance was higher on average during weeks spelling instruction was provided when compared to the baseline phase. Baseline corrected Tau effect sizes were large when comparing both business as usual and peer tutoring for spelling to the baseline phase. In addition, two struggling spellers in the class showed higher spelling performance in both peer tutoring for spelling and business as usual as compared to the baseline phase. These results indicate that explicit spelling instruction is likely more effective than no spelling instruction.

Results are somewhat murkier when comparing peer tutoring for spelling to business as usual instruction. Tau effect sizes were small to large when comparing the business as usual spelling instruction to peer tutoring for instruction, in favor of peer tutoring for spelling. When looking at classwide average performance, students appeared to show greater increase in weekly change during peer tutoring for spelling weeks with an overall average weekly change of 2.67 WSC and 10.82 CLS; during business as usual instruction weekly change was average of 2.27 WSC and 6.78 CLS. However, there was a considerable amount of overlap between peer tutoring for spelling and business as usual instruction. Peer tutoring for spelling was also associated with a somewhat higher number of students meeting an 90% mastery criterion.

Based on analyzing two struggling students spelling performance data, results indicated that these struggling students' spelling performance initially increased over baseline levels, but

trends in performance for both business as usual and peer tutoring for spelling were negative. The negative trend in spelling performance throughout peer tutoring for spelling and business as usual phases could be the result of students' improving spelling skills, which may have impacted the weekly change score. Indeed, an increase in pretest scores throughout the study was noted. However, class performance did not approach the ceiling during the study, so the role of this influence is unclear. In addition, variation in the potential CLS each week (ranging from 62 to 78 CLS) may have impacted the results. There were mixed results when looking at business as usual compared to peer tutoring for spelling results, peer tutoring for spelling was no specific benefit for one student but for the other struggling student peer tutoring for spelling yielded an increase in performance when compare to business as usual, specifically looking at CLS and WSC. Ultimately, explicit spelling instruction is likely more effective than no spelling instruction for struggling students.

Overall, these findings support previous research showing that peer-delivered and immediate corrective feedback methods can be used to increase academic performance (Skinner et al., 1989; Greenwood, 1997). Peer tutoring for spelling, which included peer-delivered and immediate corrective feedback components, was associated with an increase in spelling performance as compared to the baseline phase. The benefits of peer tutoring for spelling as compared to business as usual instruction are uncertain, given that effect size estimates were moderate to large but visual analyses were less conclusive. Additionally, both business as usual spelling instruction and peer tutoring for spelling led to increases in performance and a substantial number of students spelling with 90% or greater accuracy.

Results from the students KIP indicated that students enjoyed practicing their spelling words overall regardless of the method, but students reported that they enjoyed practicing their

spelling words more when peer tutoring for spelling was implemented. Students on average indicated that they preferred to practice their spelling words using peer tutoring for spelling procedures as compared to the business as usual procedures. Students also indicated that peer tutoring for spelling helped them learn their spelling words better than business as usual instruction. Students also indicated that there were more instances in which they wanted to practice their spelling words when peer tutoring for spelling was implemented. These results are consistent with previous findings that students enjoy working with their peers on a new skill or to simply review and continue to develop skills (Fuchs et al., 1994; Kamps et al., 1998; Kourea et al., 2007).

Limitations

The findings within this study should be interpreted in the context of the study's limitations. Most students were absent at some point during the study, which impacted their participation in pretest and posttest assessments (student weekly change score could not be calculated if either of these data points were missing) as well as their participation in peer tutoring for spelling and business as usual spelling instruction. An average of 3.75 (16.3%) students missed the pretest, the posttest, or both in a given week of the treatment phase. This means that the data from week to week represents slightly different groups of students and may affect the results. The baseline spelling lists could be a potential limitation as two were taken from the spelling curriculum and the other was created based on 2nd grade curriculum words targeting a word pattern that was not taught within the spelling curriculum. Thus, the final baseline spelling list in particular may have differed in important ways from the other spelling lists used in the study.

The interventionist during peer tutoring for spelling weeks was the researcher, with the aid and support of the classroom teacher. Thus, the effects of peer tutoring for spelling cannot be separated from the effectiveness of the interventionist/researcher. To address this limitation, a significant portion of peer tutoring sessions were observed for procedural fidelity, and the researcher was present during business as usual instruction and ensured that the overall time spent on spelling instruction was equivalent in both conditions. An additional limitation is that sessions were missed in one week of the study. For instance, during week three of business as usual spelling instruction, a scheduled day off of school resulted in only one practice session that week. Additionally, the dependent variables changed in some respects from week to week. While the potential WSC was the same each week, the potential CLS varied week to week, which could have impacted the results and potentially weekly change scores observed. The words taught also changed from week to week. Although all words were from the same curriculum and generally focused on vowel spelling patterns, some spelling patterns may have been more difficult for students to learn than others.

Finally, this study was completed in one classroom in one school in the Upper Midwest. To enhance the generalizability of these findings, additional studies should be conducted which implement peer tutoring for spelling in diverse classroom settings with larger participant samples. Additionally, implementation variables should approximate the school setting as much as possible, so future studies should involve classroom teachers as interventionists and implement the intervention over a longer period of time.

Implications

Within the constraints of these limitations, however, results do suggest that providing spelling instruction leads to greater weekly growth in spelling performance as compared to no

formal spelling instruction. In addition, I have documented some evidence that peer tutoring methods can be effectively applied to spelling.

Research Implications

This study expanded the research on spelling instruction. This study also expanded the research on the areas in which peer tutoring can be implemented for school aged students. This study provided evidence that peer tutoring can be applied to spelling instruction at a classwide level. Research has shown that effective spelling interventions target spelling skills specifically and explicitly and provide corrective feedback and increased opportunities to respond. These features can be found within peer tutoring as it uses immediate corrective feedback on a student's performance, along with one-one-one practice sessions with the skills and presents additional opportunities to practice the skill. Therefore, peer tutoring may be an effective intervention when applied to the area of spelling as it integrates components of previous effective spelling interventions.

Additional research needs to be completed on the potential effectiveness of peer tutoring applied to spelling. Very little research exists on this application of peer tutoring, so additional research is needed with larger and diverse samples and in different settings. In addition, research is needed on the most effective elements to use in peer tutoring for spelling. The use of peer tutoring as a supplement to teacher-led instruction or to replace some teacher-led instruction is also an important area for investigation. This study found that peer tutoring for spelling may be variably effective for struggling spellers. I observed that some struggling spellers were hesitant to practice spelling with peers. Struggling spellers may have also been at frustrational level within the current grade level spelling lists. These students may have benefitted from individualized spelling lists. Ultimately, explicit spelling instruction yields better performance

than no spelling instruction, peer tutoring may not be better for all student and may in fact show no benefit or even a disadvantage as compared to business as usual methods. The reasons for this and possible ways to address this are potential avenues for future research.

Practice Implications

This study supports the importance of implementing explicit spelling instruction to support students' spelling skills. Classwide, students' spelling performance was greater, regardless of whether business as usual procedures or peer tutoring for spelling procedures were implemented, as compared to baseline, when no instruction was provided on the words assessed. Importantly, peer tutoring for spelling may not be as effective for some struggling spellers but may be beneficial for others. Thus, these methods should perhaps not be implanted for struggling spellers until additional research has investigated this further. Additionally, it seemed that students enjoyed participating in peer tutoring for spelling. Thus, integrating peer tutoring as part of spelling instruction with students experiencing a reasonable level of success in the grade level spelling curriculum may be enjoyable and effective, particularly when best practices in peer tutoring are used and evidence-based practice methods (i.e., cover-copy-compare) are employed. Given the paucity of research supporting peer tutoring for spelling, teachers who decide to implement peer tutoring for spelling should carefully monitor students' progress to ensure its effectiveness.

Conclusion

The results of this study not only extended the current research for spelling instruction but also extended the application of peer tutoring. This study supported the importance of providing explicit spelling instruction and practice to enhance spelling performance. The results indicated that students increased their spelling performance when any spelling instruction was

implemented as compared to when spelling instruction was absent. Students on average had a greater increase in spelling performance during peer tutoring for spelling implementation as compared to business as usual spelling instruction. These effects were found to be moderate to large, although visual analyses were unclear. Ultimately, both business as usual spelling instruction and peer tutoring for spelling led to increases in performance and a substantial number of students spelling with 90% or greater accuracy. Additionally, some concerns were noted when investigating the effectiveness of peer tutoring for spelling among struggling spellers. Thus, peer tutoring for spelling may or may not be superior to typical spelling instruction, especially for struggling spellers, although this is an area where further research is needed. Students on average enjoyed practicing their spelling words regardless of the methods used, but they indicated higher levels of enjoyment and perceived effectiveness when peer tutoring procedures were implemented. In the area of spelling, teachers' instructional practices vary widely, and the evidence base is less developed than in other academic domains. Thus, the identification and implementation of effective and efficient instructional methods must continue.

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Tables and Appendices

Table 2 *Classwide and Struggling Spellers Average Pretest, Posttest, and Weekly Change Score Using WSC Scoring*

	Baseline Weeks			Business as Usual Weeks				Peer Tutoring for Spelling			
	1	2	3	5	6	9	10	4	7	8	11
Class Average											
Pretest	6.18	4.8	3.15	7.33	7.29	9.11	7.61	7.14	8.20	7.23	8.65
Posttest	6.84	5.27	3.29	11.06	9.41	10.00	10.17	10.70	10.30	10.26	10.33
Growth	0.76	0.45	0.33	2.94	2.06	1.41	2.57	3.42	2.20	3.05	2.00
John											
Pretest	3	-	0	6	8	6	7	3	6	4	5
Posttest	-	-	2	8	10	10	9	11	9	9	9
Growth	-	-	2	2	2	4	2	8	3	5	4
David											
Pretest	2	1	1	2	2	4	2	1	2	2	4
Posttest	2	2	1	6	4	3	5	8	2	4	5
Growth	0	1	0	4	2	-1	3	7	0	2	1

Note. Classwide averages for each phase using words spelled correctly scoring methods displayed here along with each struggling speller in which additional analysis were conducted.

Table 3 *Classwide and Struggling Spellers Average Pretest, Posttest, and Weekly Change Score Using CLS Scoring*

	Baseline Weeks			Business as Usual Weeks				Peer Tutoring for Spelling			
	1	2	3	5	6	9	10	4	7	8	11
Class Average											
Pretest	39.45	49.95	33.15	49.67	46.82	53.95	55.13	46.09	56.80	50.5	52.05
Posttest	41.82	52.14	38.81	59.72	54.82	57.00	62.96	59.35	71.78	59.91	10.33
Growth	2.76	2.40	0.44	8.24	7.88	3.24	7.83	12.58	15.3	9.27	6.11
John											
Pretest	32	-	28	47	53	51	54	32	50	40	47
Posttest	-	-	34	53	59	59	58	61	70	57	56
Growth	-	-	6	6	6	8	4	29	20	17	9
David											
Pretest	27	21	14	22	11	24	22	11	21	19	25
Posttest	21	29	19	44	30	19	32	42	25	25	32
Growth	-6	8	5	22	19	-5	10	31	4	6	7

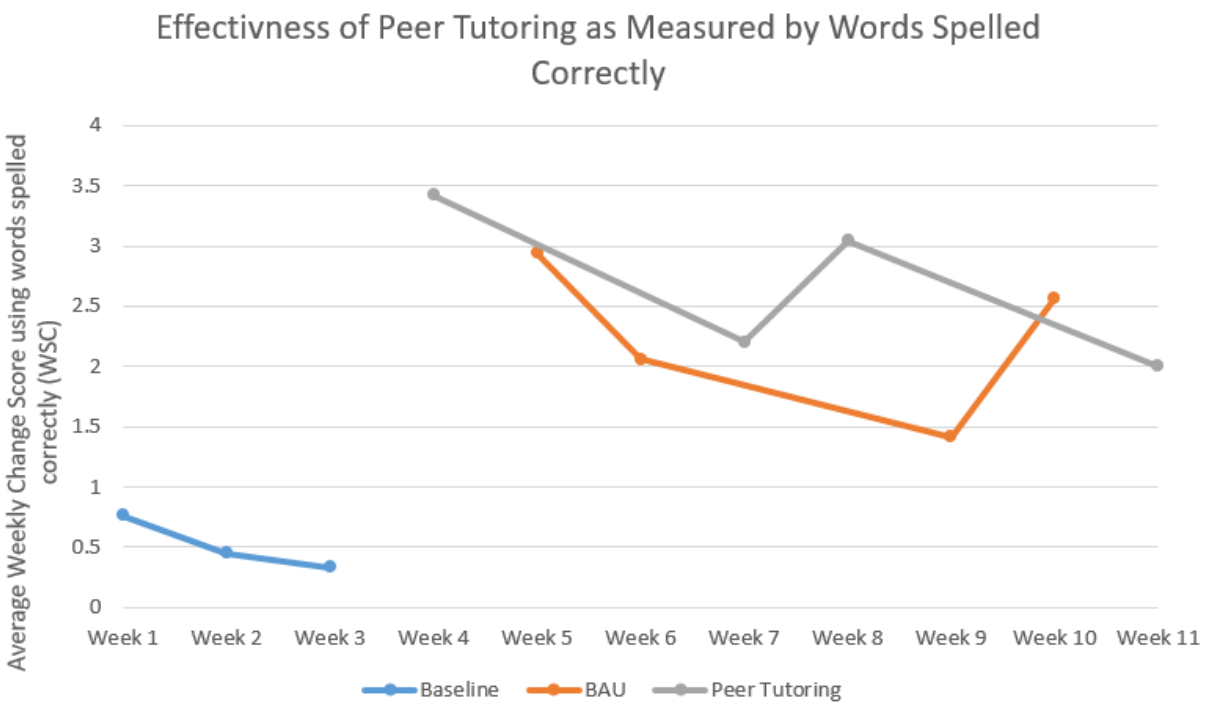
Note. Classwide averages for each phase using correct letter sequence scoring methods displayed here along with each struggling speller in which additional analysis were conducted.

Table 3 *KIP Classroom Results*

Questions	Business As Usual	Peer Tutoring
How much do you like practicing spelling words?	4	4.5
How much do you like practicing spelling words when you don't/do use Peer tutoring?	3	5
Were there times when you did not want to practice spelling words when peer tutoring was/not used?	2	2
Were there times when you wished you could work more on practicing spelling words without/with Peer Tutoring?	1	4
How much do you like practicing spelling words without/with peer tutoring?	2	4
How much do you think it helps you when your practice spelling words without/with peer tutoring?	3	4
Do you think your spelling has improved without/with peer tutoring?	3	4
Do you think your spelling has gotten worse from practicing without/with peer tutoring?	1	1

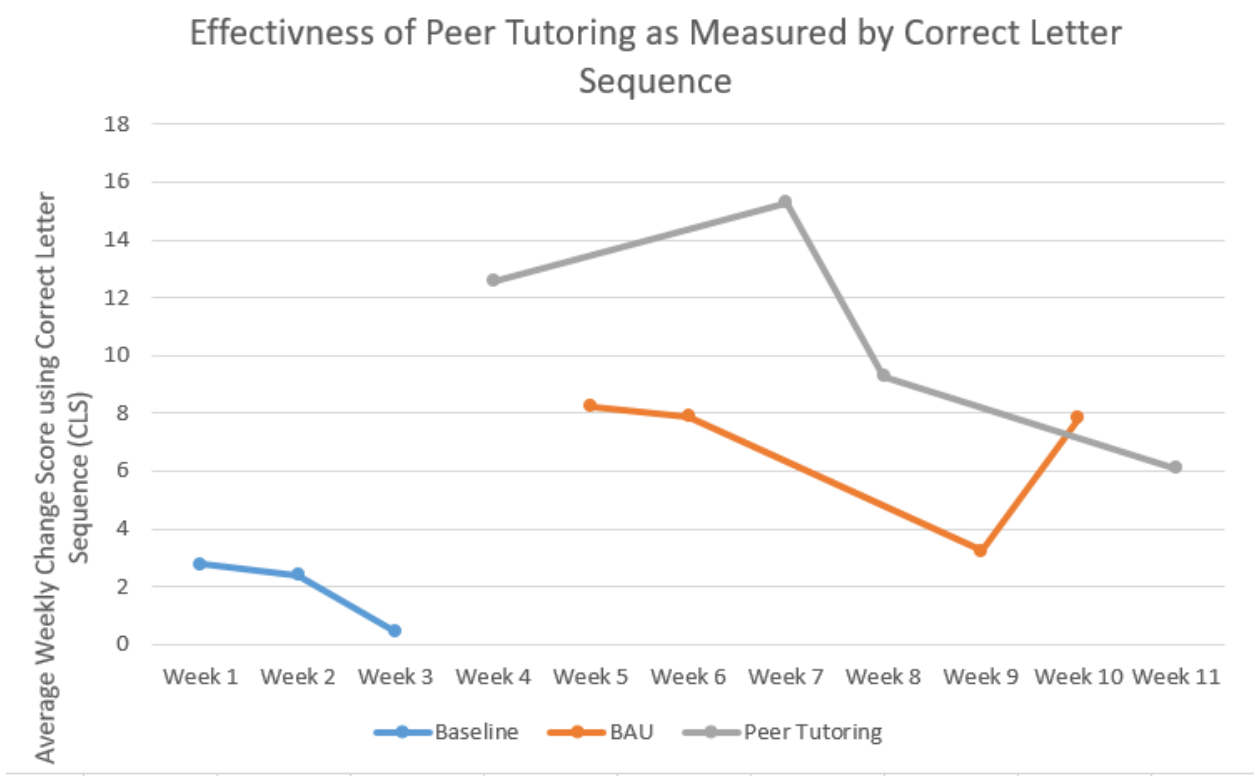
Note. Class medians are presented above.

Figure 1 *Effectiveness of Peer Tutoring for Spelling as Measured by Words Spelled Correctly*



Note. Overall class weekly change as measured by Words Spelled Correctly (WSC). Blue data points indicated baseline data, grey indicates peer tutoring for spelling, and orange data points indicate business as usual.

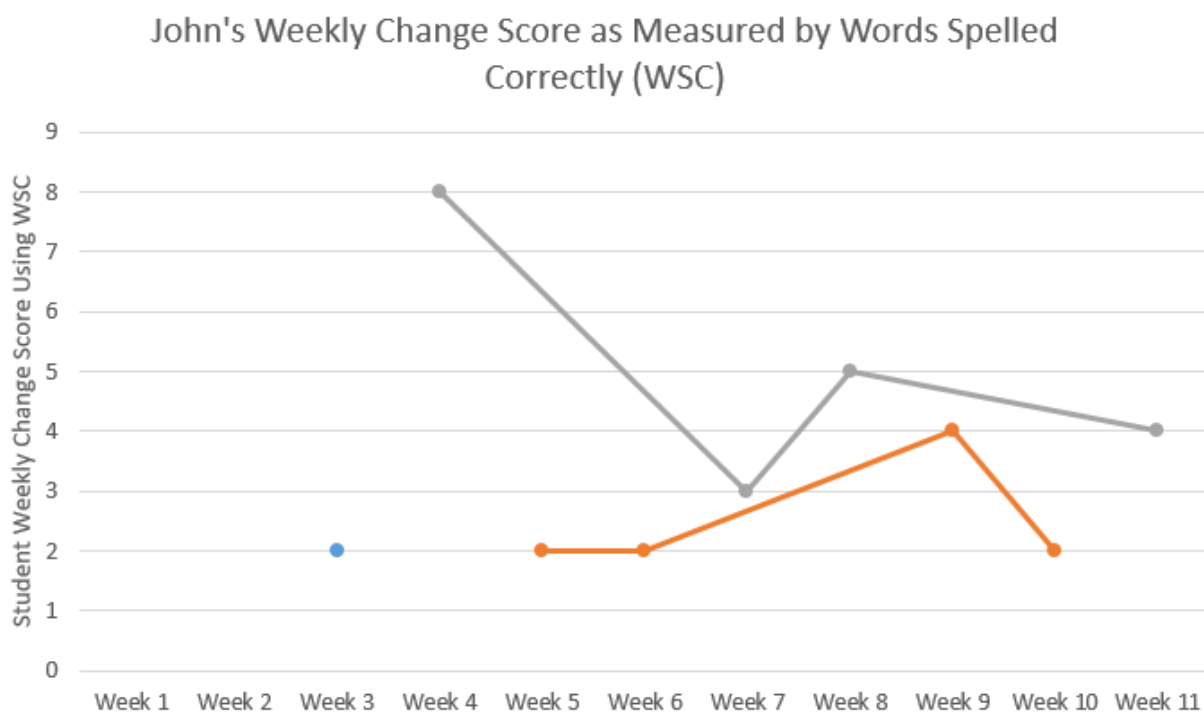
Figure 2 Effectiveness of Peer Tutoring for Spelling as Measured by Correct Letter Sequence



Note. Class Average weekly change using Correct Letter Sequence (CLS). Blue data points indicated baseline data, grey indicates peer tutoring for spelling, and orange data points indicate business as usual.

Figure 3 *John's Weekly Change in Spelling Performance as Measured by Words Spelled*

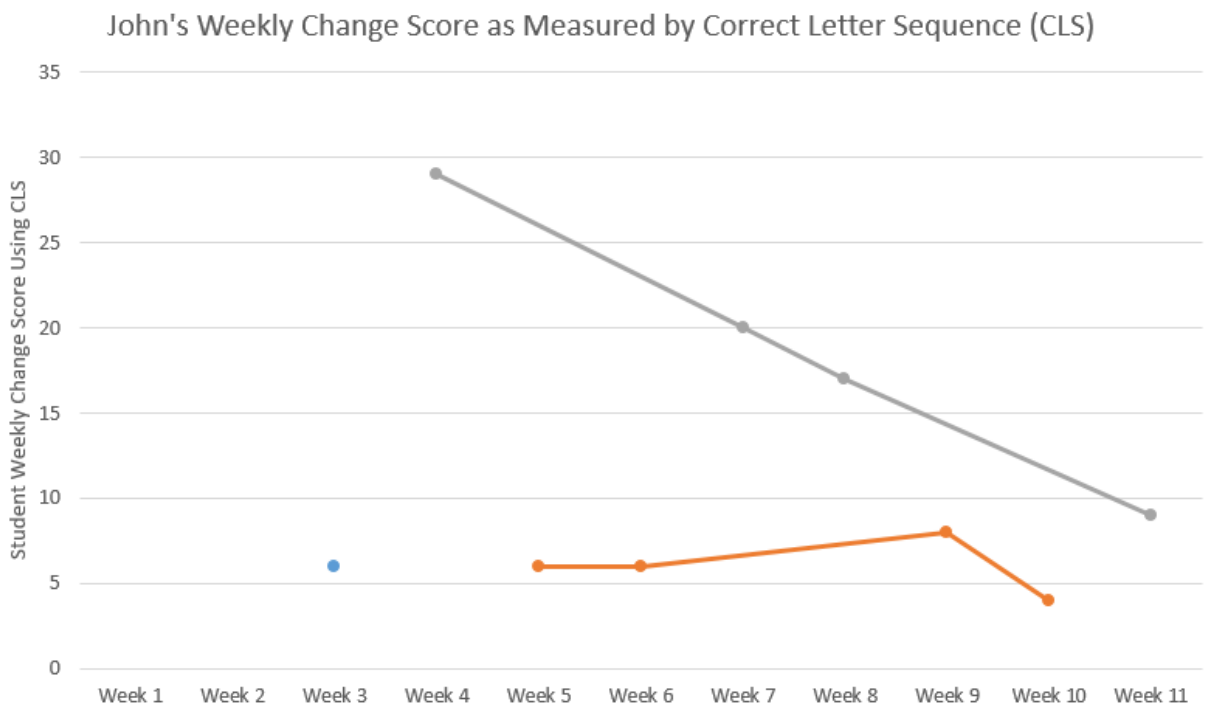
Correctly



Note. John's weekly change using WSC scoring. Blue data points indicated baseline data, grey indicates peer tutoring for spelling, and orange data points indicate business as usual.

Figure 4 John's Weekly Change in Spelling Performance as Measured by Correct Letter

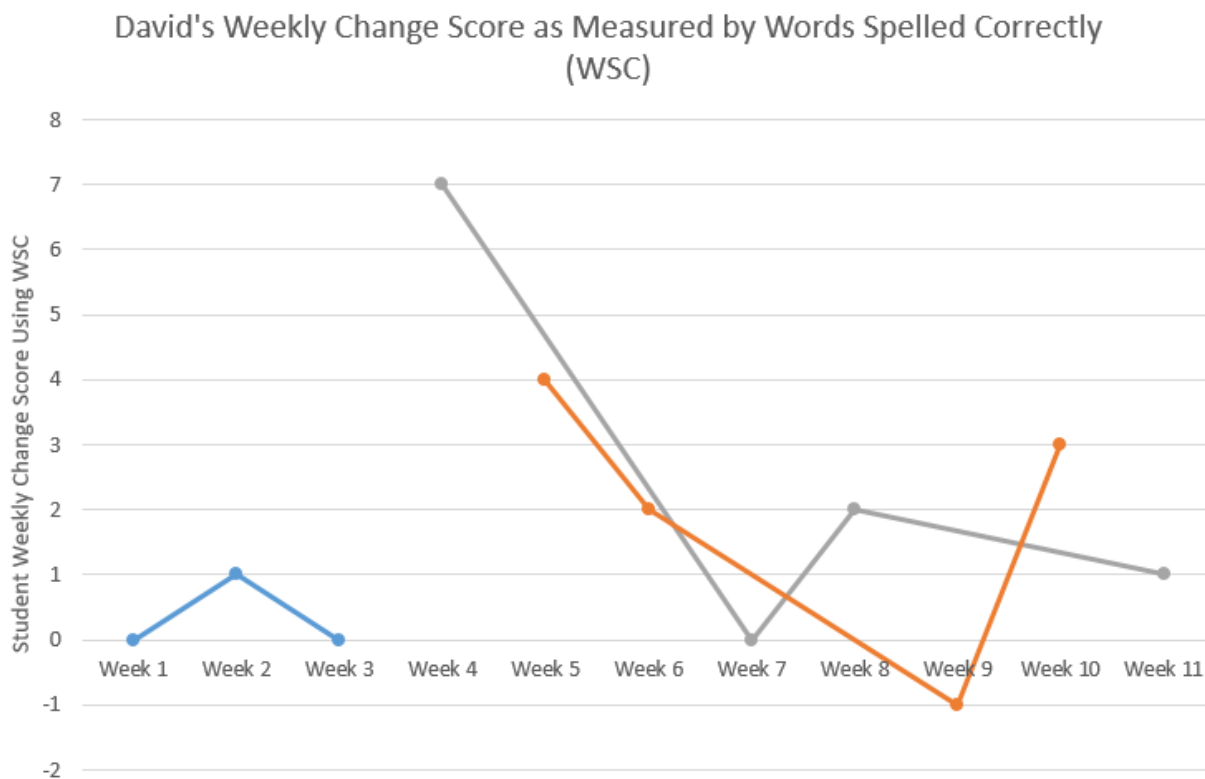
Sequence



Note. John's weekly change using CLS scoring. Blue data points indicated baseline data, grey indicates peer tutoring for spelling, and orange data points indicate business as usual.

Figure 5 David's Weekly Change in Spelling Performance as Measured by Words Spelled

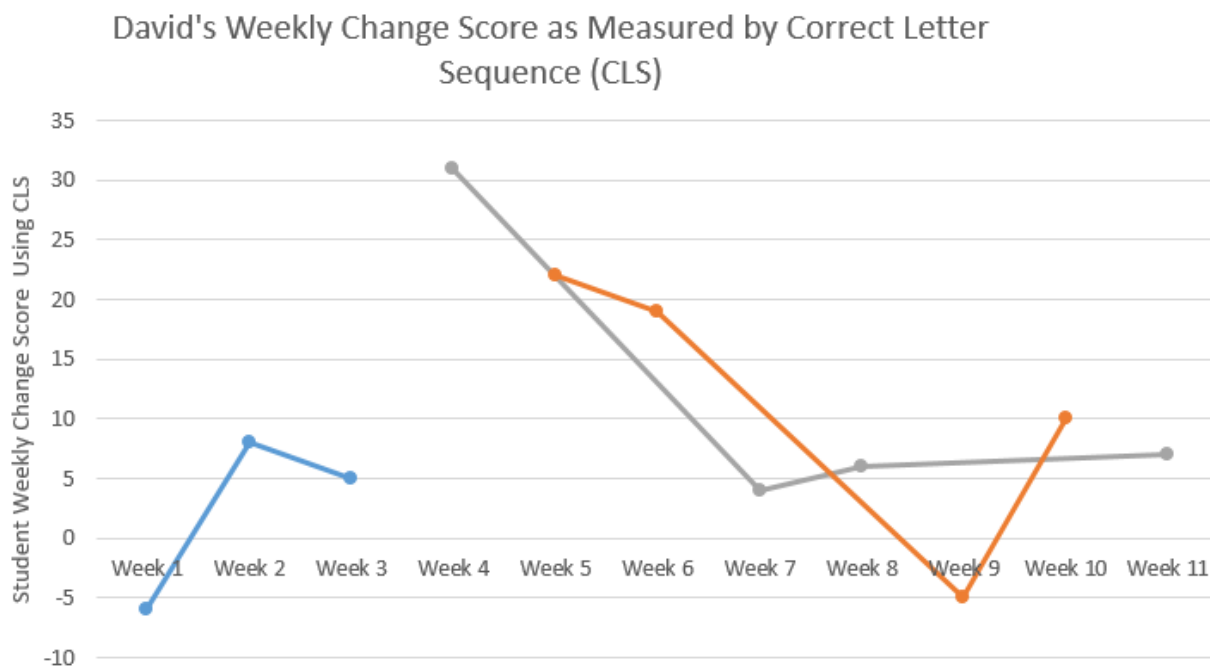
Correctly



Note. David's weekly change using WSC scoring. Blue data points indicated baseline data, grey indicates peer tutoring for spelling, and orange data points indicate business as usual.

Figure 6 David's Weekly Change in Spelling Performance as Measured by Correct Letter

Sequence



Note. David's weekly change using CLS scoring. Blue data points indicated baseline data, grey indicates peer tutoring for spelling, and orange data points indicate business as usual.

Appendix A

Cover-Copy-Compare Worksheet used for Spell It, Check it Activity One

Worksheet: Cover-Copy-Compare Student: <input style="width: 100px;" type="text"/>		Date: <input style="width: 100px;" type="text"/>
Spelling Words/Sight Words/Math Facts	Student Response	
1.	1a.	
	1b.	
2.	2a.	
	2b.	
3.	3a.	
	3b.	
4.	4a.	
	4b.	
5.	5a.	
	5b.	
6.	6a.	
	6b.	
7.	7a.	
	7b.	
8.	8a.	
	8b.	
9.	9a.	
	9b.	
10.	10a.	
	10b.	

Correction card given to each dyad to provide a visual schedule of activities along with the appropriate phrase when their partner made an error during one of the activities.

Appendix B

Spelling Activities

Activity 1: Spell It, Check It!


- Look at the word
 - Write the word
 - Check it
 - Keep going until all words are correct!
- Partner 1 is the speller, Partner 2 is the coach.
 - Point sheet
 - Partner 2 is the speller, Partner 1 is the coach.
 - Point sheet


Activity 2: Best Spell

- Coach reads each word, wait for the speller to spell
 - Speller writes
 - Coach helps if needed
- Partner 1 is the speller, Partner 2 is the coach.
 - Point sheet
 - Partner 2 is the speller, Partner 1 is the coach.
 - Point sheet

Helping the Speller

When the speller makes a **mistake** or is **stuck** on a word.

Coach: "The word is ____." 
Show it using the spelling window.
Speller: Study the word.

Speller: "I am stuck."
Coach: "The word is ____." 
Show it using the spelling window.
Speller: Study the word. Give it your best try.

Appendix C

Daily Point Sheet

Names: _____

Spell It, Check It: 1 point for each correct word

Speed Spell: 1 point for each correct word

Super Speller: up to 5 points for best effort

50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46
45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
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9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Appendix D

Fidelity Data Collection Form

Daily peer tutoring session fidelity:

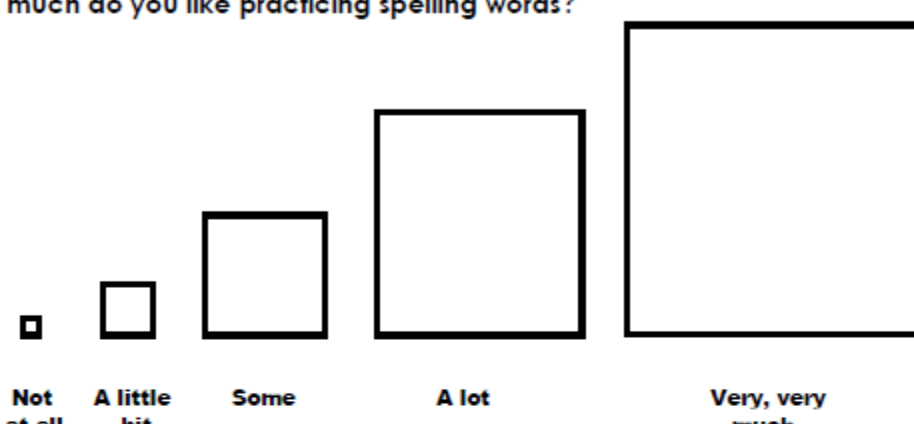
Yes	No	
		Interventionist initiates peer tutoring session and supports students in organizing their materials.
		Interventionist initiates Spell It Check It .
		Interventionist reviews the procedures for Spell It Check It , including that Partner 1 is the speller first.
		Interventionist allows 2 minutes for students to work.
		Interventionist initiates students filling out their point sheet.
		Interventionist initiates the next round of practice, including that Partner 2 is the speller this time.
		Interventionist initiates students filling out their point sheet.
		Interventionist initiates Best Spell .
		Interventionist reviews the procedures for Best Spell , including that Partner 1 is the speller first.
		Interventionist allows 2 minutes for students to work.
		Interventionist initiates students filling out their point sheet.
		Interventionist initiates the next round of practice, including that Partner 2 is the speller this time.
		Interventionist initiates students filling out their point sheet.
		Interventionist initiates the awarding of bonus points.
		Throughout the session, interventionist circulates while students practice providing behavioral and task-related support.
		Throughout the session, interventionist provides group-level and individual specific praise for effort and work quality.
		TOTAL (Out of 16)

Appendix E

Kids Intervention Profile

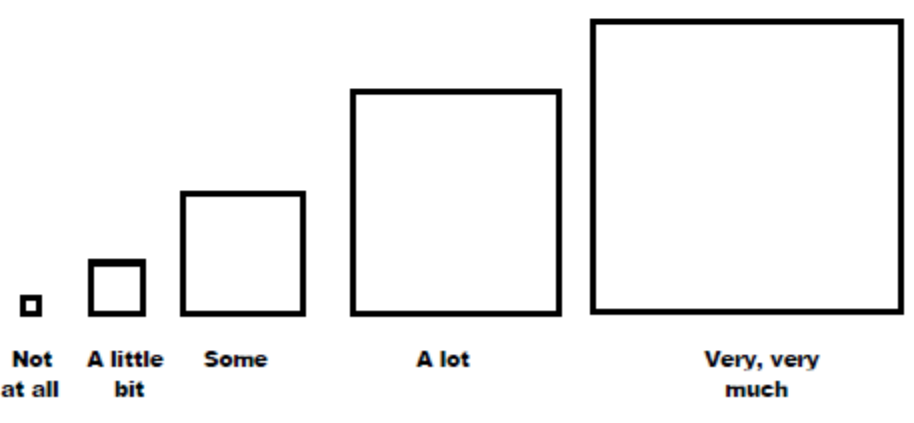
KIDS INTERVENTION PROFILE (KIP)

Question #1
How much do you like practicing spelling words?



<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not at all	A little bit	Some	A lot	Very, very much

Question #2
How much do you like practicing spelling words when you ____ use Peer Tutoring?

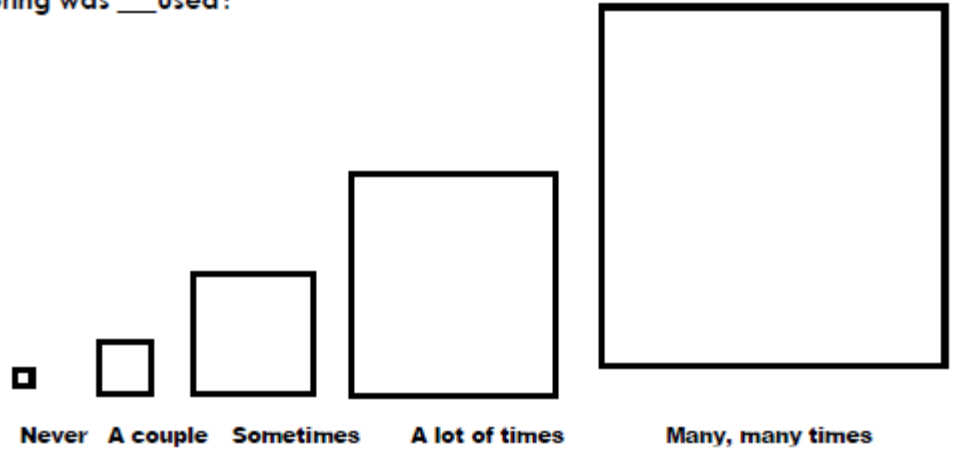


<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not at all	A little bit	Some	A lot	Very, very much

KIDS INTERVENTION PROFILE (KIP)

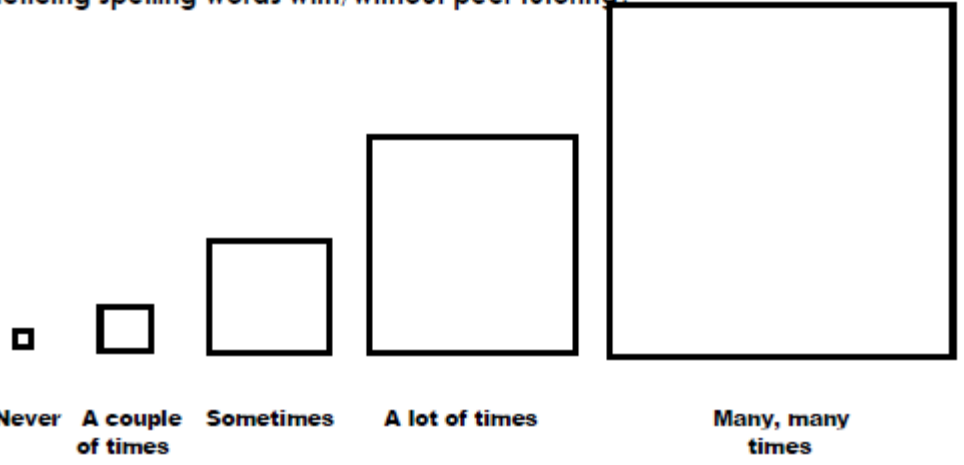
Question #3

Were there times when you didn't want to practice spelling words when Peer Tutoring was ___used?



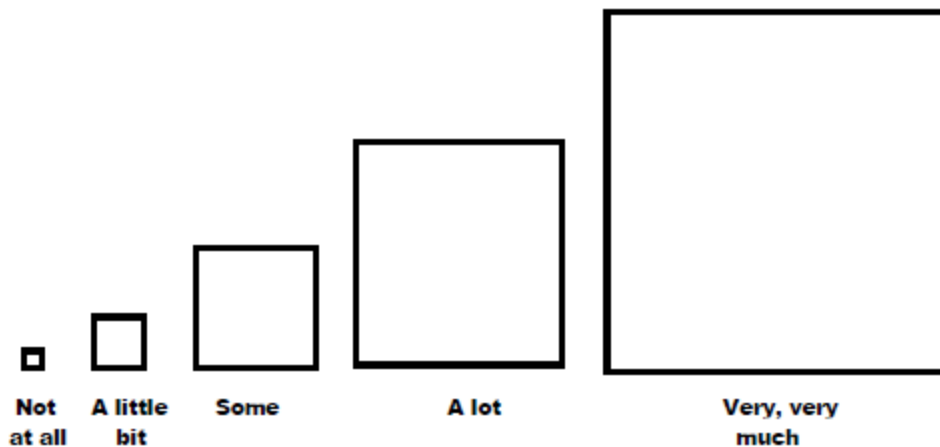
Question #4

Were there any times when you wished you could work more on practicing spelling words with/without peer tutoring?

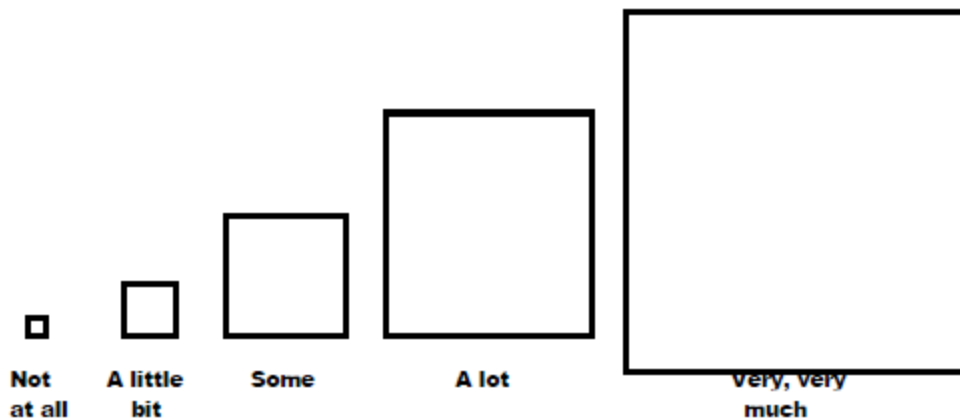


KIDS INTERVENTION PROFILE (KIP)**Question #5**

How much do you like practicing spelling words with/without peer tutoring?

**Question #6**

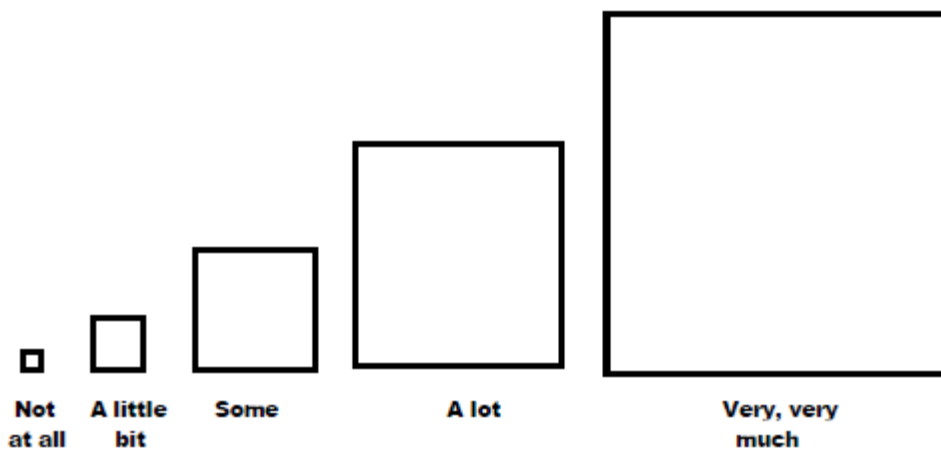
How much do you think it helps you when you practice spelling words with/without peer tutoring?



KIDS INTERVENTION PROFILE (KIP)

Question #7

Do you think your spelling has improved from practicing with/without peer tutoring?

**Question #8**

Do you think your spelling has gotten worse from practicing with/without peer tutoring?

