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Best Practices on Teaching Letter-Sound and Nonsense Word Fluency

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Abstract
Reading fluently is a lifelong skill that many students struggle to accomplish. This research focused on using strategies to improve the identification of letter sounds and nonsense words to improve reading skills. The participants were first grade students not meeting district benchmark expectations in the areas of letter sound identification and nonsense words. The ten students were from two urban schools in the Twin Cities metro area. Students were given frequent informal and formative assessments with the final summative assessment mimicking district standard testing. Teachers worked in small groups (4-5 students) or 1:1 with students. These groups met for 15 minutes each day for 4 weeks. Teachers used a variety of strategies, including incremental letter sound rehearsal, sound boxes, multisensory approach, and peer tutoring to help increase letter sound and nonsense word fluency. Results showed an increase in both areas of student achievement. While a survey measuring students’ attitude toward reading was varied, observations during interventions did show students were satisfied with their improvement of scores and their confidence level. Interventions will continue until students reach the benchmark expectations in their district.
A lifelong skill that all students need to accomplish to be successful in school, and everyday life, is reading fluency (Lo, Cooke, & Starling, 2011). For the typical developing reader, fluency, or the ability to read with speed, accuracy, and expression, is often something that comes with practice (Lo, Cooke, & Starling, 2011). According to Speece and Ritchey (2005), students need to be able to read sight words and decode words at a fast rate to develop oral reading fluency. Having acquired the letter sounds, decoding skills, and a solid base of sight words, many learners begin to feel the flow of naturally smooth reading (Speece & Ritchey, 2005). Eventually, this process becomes second nature; reading is fluid, and comprehension is often high (Speece & Ritchey, 2005). For some readers, however, fluency becomes a stumbling block; the letter sounds, words, and phrases don’t seem to fit together, and when reading aloud, the speaker sounds choppy and robotic (Speece & Ritchey, 2005). Far from being fluid, the process is a series of hurdles and obstacles that leave the reader feeling frustrated and defeated (Speece & Ritchey, 2005). Without fluency, comprehension is often a casualty that leaves the learner at a tremendous disadvantage in comparison to their fluent peers (Speece & Ritchey, 2005). In this review, various methods and strategies will be explored to increase reading fluency in primary aged students ranging from six to eight years old.

Why is reading fluency important? Although reading fluency is one of the five factors in reading instruction, it is most often not a focus in classrooms, perhaps because of time constraints and knowledge of available strategies (Daly, & Kupzyk, 2012). Teachers and parents have forgotten the importance of teaching oral reading fluency, and practicing oral reading fluency to primary age students (ages 6-8)
(Kostewicz, 2012). First-grade classrooms need to have a balanced approach to teaching literacy (Learning First Alliance, 1998). In order to increase first grade reading fluency, teachers should model fluent reading, teach explicit instruction of phonics skills, and ensure students have alphabetical knowledge mastered (Learning First Alliance, 1998). Students should be given the opportunity to practice reading with good literature while being taught comprehension skills at the same time (Learning First Alliance, 1998). In addition, educators need to teach phonemic awareness, use word study within the classroom, and include writing during the literature block (Learning First Alliance, 1998). Teachers can use formative and summative assessments to determine student groups for reading (Learning First Alliance, 1998). These groups should be flexible as students learn and acquire their skills throughout the school year (Learning First Alliance, 1998).

Reading is a lifelong skill that all first grade students are expected to learn. Not all students are meeting grade level expectations by the end of the year and therefore are not reading fluently by the time they reach third grade. Students need to learn letter sounds and need to learn how to sound out words with letter sounds. If students can master letter sounds and how to read phonetically spelled words, students will learn to read words with automaticity thereby increasing fluency. Therefore, the purpose of this action research study is to determine what effect individualized phonics strategies have on improving letter sound fluency and nonsense word fluency for first graders who are below grade level expectations.

What effect does individualized phonics strategies have on improving letter sound fluency and nonsense word fluency for first graders who are not meeting grade
level benchmarks? Our review of literature and our research will help to answer this question.

**Review of Literature**

This review will highlight research on the best teaching strategies and interventions to increase reading fluency in the areas of letter sounds and nonsense or pseudowords for students in the primary classrooms (students ages 6-8). *Systematic phonics instruction* is critical for beginning readers to learn letter sounds (National Reading Panel, 2000). *Incremental Rehearsal of letter sounds* is an individualized or small group intervention that will help the students who are not consistently stating or recalling letter sounds (Rahn, Wilson, Egan, Brandes, Kunkel, Peterson, & McComas, 2015). *Multisensory approach* to reading letter sounds and decoding unknown words help students who need a more intensive intervention (Campbell, Helf, and Cooke, 2008). *Sound or Word Boxes* are used to help students learn letter to sound correspondence (Alber-Morgan, Joseph, Kanotz, Rouse, & Sawyer, 2016).

*Pseudoword or nonsense word* reading practices allow for students to learn how to sound out a word that is phonetically spelled (Cardenas, 2009). *Peer tutoring* or coaching can be a class-wide oral reading fluency intervention (Cleary & Wright, 2006; Marr, Algozzine, Nicholson, & Dugan, 2011; Fuchs & Fuchs, 2005; Kourea, Cartledge, & Musti-Rao, 2007). This allows for teachers to monitor students in the classroom during the intervention (Cleary & Wright, 2006; Marr, Algozzine, Nicholson, & Dugan, 2011; Fuchs & Fuchs, 2005; Kourea, Cartledge, & Musti-Rao, 2007).

**Systematic Phonics Instruction**

Reading expectations increase when students enter first grade and students start to see themselves as readers or nonreaders (Learning First Alliance, 1998). The
Common Core State Standards expect first graders to read with accuracy and fluency and to comprehend what they read. The process of how students learn to read can be smooth for some but can be bumpy and difficult for others. According to Ehri (2005), as cited by Cummings, Dewey, Latimer & Good (2011), there are four phases of reading development. The phases are pre-alphabetic, partial alphabetic, full alphabetic and consolidated alphabetic (Ehri, 2005). Pre-alphabetic and partial alphabetic student readers are either not able to blend, incorrectly blend or partially blend words (Ehri, 2005). Teachers can determine strategies to use for each of these phases. Including systematic phonics instruction into the daily lessons is one of the best practices for reading instruction today (Ehri, 2005). The implementation of systematic phonics instruction is especially important in the kindergarten and first grade levels; this is to help support students’ growth in foundational reading skills (National Reading Panel, 2000). According to the National Reading Panel (2000), systematic phonics instruction is critical for helping beginning readers learn to read. Further, the National Reading Panel (2000) indicated that the earlier the systematic phonics instruction is taught, the better for beginning readers. Systematic phonics instruction can be delivered 1:1, in small groups and to whole classes (National Reading Panel, 2000).

**Incremental Rehearsal of Letter Sounds**

Letter sound fluency is a very important stepping stone in learning to read (Ehri, 2005). If students do not know letter sounds, they are not able to blend phonetically spelled words (Ehri, 2005). If they are not able to blend words, students will not be able to understand what they are reading (Speece & Ritchey, 2005). Incremental Rehearsal has been widely researched in multiple subject areas, including, but not limited to
teaching letter sounds, teaching letter sounds via a computer program, teaching multiplication (Nist & Joseph, 2008; Volpe, Burns, DuBois & Follen Zaslofsky, 2011; Burns, 2005). In a study using incremental rehearsal to teach letter sounds to English Language Learners, Rahn, Wilson, Egan, Brandes, Kunkel, Peterson, & McComas (2015) found that with a 1:1 intervention, an increase in letter sound retrieval resulted in a higher rate of fluency in letter sounds. One participant increased 34 sounds in a minute after the intervention (Rahn et al., 2015). For the intervention, the instructor created individualized flashcards with known and unknown letters/sounds for each student (Rahn et al., 2015). During each session, the teacher administered two sound sequences with one unknown sound and six known sounds in each sound sequence (Rahn et al., 2015). The teacher modeled the letter sound of the unknown sound first and had the student repeat it (Rahn et al., 2015). The teacher moved the unknown card after each known card, allowing for the student to practice that sound seven times in that sequence (Rahn et al., 2015). The sound was added to the next sound sequence, and another known sound was removed to get even more practice (Rahn et al., 2015). When sound sequences were mastered (all sounds read correctly), new sequences were made (Rahn et al., 2015). Some noted limitations were that little background was available on students, multiple graduate school students delivered the interventions, commercially made flashcards were used with one student and not another, and the intensity of the intervention was increased for one student more than another (Rahn et al., 2015). Overall, the strategy was effective for the ELL students in this study, and this may work with other students who are at risk in the area of reading; teachers would have to work 1:1 with the students (Rahn et al., 2015).
Multisensory Reading Strategies

Students learn to read in many different ways. One of the strategies that has been researched for helping students with disabilities has been the multisensory approach to learning to read (Campbell et al., 2008). The Orton-Gillingham approach is a common strategy that has been used to help students with dyslexia learn how to read, spell and write (Campbell et al., 2008). Campbell, Helf, and Cooke (2008) researched the effects of adding multisensory elements to a supplemental reading program to help students who were what they called "treatment resisters" (p. 270). The researchers added the multisensory elements to the sound recognition and decoding of nonsense words and to oral reading fluency (Campbell et al., 2008). During letter-sound correspondence activities, students looked at letters presented by the teacher, said the sound and wrote the letter on a small carpet square (Campbell et al., 2008). During the segmenting, the teacher stated the word slowly while the students tapped out the word on their nondominant hand. They then formed the word with magnetic letters (Campbell et al., 2008). Students were asked to tap out words when reading word lists (Campbell et al., 2008). When reading passages or stories, students were also asked to tap out words on their nondominant hand when they came to a word they didn't know. (Campbell et al., 2008). The results of the study indicated that students increased their fluency in decoding nonsense words (Campbell et al., 2008). Students started to approach the task by reading whole words instead of just stating the sounds (Campbell et al., 2008). The students also increased in their oral reading fluency in the passages (Campbell et al., 2008). There were several limitations to this study; there were only six students in this study, the expertise of teaching reading of teachers varied, the amount
of time given to the intervention (4 months—the students were already in 2nd grade and had a large gap to make up to get to grade level) (Campbell et al., 2008). Overall, the results of this study indicate that applying multi-sensory elements to reading can help students improve in recalling letter sounds and decoding words that are phonetically spelled (Campbell et al., 2008).

**Nonsense Word Fluency**

Nonsense word fluency or pseudoword fluency material is often used in early reading screening (Cummings et al., 2011). It is beneficial for teachers to screen and progress monitor in nonsense word fluency or pseudowords since this subtest is based on reading words using letter to sound correspondence (Cummings et al., 2011). This subtest has been researched multiple times. Many have found a correlation between nonsense word fluency or how a student "attacks a word", and how well a student can read a grade-level passage (Fien, Park, Baker, Smith, Stoolmiller, & Kame’enui, 2010; Harn, Stoolmiller, & Chard, 2008; Fuchs, Fuchs & Compton, 2004; Good, Baker, & Peyton, 2009). "When beginning readers decode pseudowords they can only use letter/letter clusters as cues of their recognition. They cannot guess at the identity of pseudowords" (Groff, 2003).

According to Cardenas (2009), phonics instruction using pseudoword instruction will increase decoding skills of beginning readers. In her study, she had two groups of students in her class (Cardenas, 2009). One group received basal phonics instruction, and the other group received pseudoword phonics instruction (Cardenas, 2009). The purpose of this study was for students to rely on the letter-sound relationship instead of memorizing familiar words or using other decoding strategies to decode the words
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(Cardenas, 2009). The students in the control group were able to generalize the skills to real word reading (Cardenas, 2009). The research indicated that teachers would be able to determine if students were able to decode a word rather than memorize the words (Cardenas, 2009). Some limitations discussed in this research was the small sample size, a disproportionate number of boys and girls in each group, effects of teacher instruction, and researcher created assessment tool (Cardenas, 2009). Overall, the results of this study indicate that teachers need to include nonsense word phonics practice to increase fluency success (Cardenas, 2009).

Lane and Pullen (2015) suggest that teachers use blending wheels, hands-on tools for decoding practice, using nonsense words, as tools to practice decoding. The three different sized wheels have letters organized in a way to line up CVC words for students to practice sounding out or blending (Lane & Pullen, 2015). Wheels are connected by a brass fastener so that letters can move, and students are challenged to read new, unfamiliar words (Lane & Pullen, 2015). The blending wheels can be extended to include digraphs, blends, and syllables (Lane & Pullen, 2015). Overall, blending wheels can be used with the whole class. They are an engaging tool that can be used to keep students practicing their decoding skills (Lane & Pullen, 2015).

Sound Boxes

According to Alber-Morgan, Joseph, Konotz, Rouse, & Sawyer (2016), sound boxes or word boxes are instructional strategies that teachers can use to work with students on letter-sound correspondence. They were originally developed by Elkonin in 1973 as sound boxes (Alber-Morgan et al., 2016). In a study of this method, it was found that it was effective for students to increase reading of CVC words for low-
achieving African-American first graders (Alber-Morgan et al., 2016). In addition, it increased spelling of CVC words for these first graders (Alber-Morgan et al., 2016). The research was conducted in a small group setting, and students worked with researchers in a 1:1 situation (Alber-Morgan et al., 2016). The teacher had predetermined consonant-vowel-consonant (CVC) words (5 groups in all, changing the vowel sound for each group) (Alber-Morgan et al., 2016). The first list had short a sound, etc. The teacher showed the word, read the word, modeled how to sound out the word, and then pushed the chips on the sound boxes (Alber-Morgan et al., 2016). Students and teacher then did the same procedure together (Alber-Morgan et al., 2016). After, letters replaced the chips and the teacher modeled how to sound out the same first three words by sliding the letters into the sound boxes (Alber-Morgan et al., 2016). Students then repeated the process. Finally, teachers modeled how to write the letters for each sound on the sound boxes and had students duplicate (Alber-Morgan et al., 2016). Limitations of this study were that criteria might have been set too high, spelling scores were higher than reading scores (reading was completed before spelling), and the number of generalization measures was limited (Alber-Morgan et al., 2016).

Peer Tutoring or Coaching

Peer tutoring or coaching can be beneficial for assisting several students at the same time (Marr et al., 2011). The goal of peer coaching is to provide an intervention to struggling students with the help of either same age peers or students in older grades (Marr et al., 2011). This can be done as a whole class, or it can be a pull-out intervention done at a particular time of day (Marr et al., 2011). The advantage to this type of strategy is the support requires no additional need for personnel or resources
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(Marr et al., 2011). Highly effective programs such as the Peer-Assisted Learning Strategies (Fuchs, Fuchs, Mathes, & Simmons, 1997) and Class-wide Peer Tutoring (Delquadri, Greenwood, 1995) are examples of interventions that exist within a single classroom. These programs are designed to be self-contained and require little teacher assistance.

Wright and Cleary (2006) created a cross-age program that would enlist older students from other classrooms to be reading tutors as part of a study on the effectiveness of cross-age tutoring. The ‘listening-while-reading’ approach was chosen as the strategy (Wright & Cleary, 2006). This method allows the less-skilled reader to practice a passage by first listening to the tutor read aloud while silently following along (Wright & Cleary, 2006). Next, the tutee reads the same passage receiving help and corrective feedback as needed (Wright & Cleary, 2006). A peer-tutoring manual was assembled with explicit instructions for both the tutors and those facilitating (Wright & Cleary, 2006). Tutors were trained in expected behaviors and in how to implement the program with tutees (Wright & Cleary, 2006). Overall, the average number of weeks that the students participated in the instruction was nineteen weeks (Wright & Cleary, 2006).

The study looked at both the increase in words per minute of the tutees and also the tutors (Wright & Cleary, 2006). The results of the study showed tutees reading at a mean rate of 70 words per minute up from 52 and tutors beginning at a mean of 73 to a rate of 86 by the end of the treatment (Wright & Cleary, 2006). A limitation of the study was that there was not a control group to compare the success of the program (Wright & Cleary, 2006). This decision was influenced by the prediction that teachers would view the study negatively if students that were struggling were specifically excluded.
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(Wright & Cleary, 2006). Instead, the study was considered an investigation into the effectiveness of cross-peer coaching. Through the research of conducting this strategy, Wright & Cleary (2006) suggested a set of procedures for schools participating in the program: First, explain to teachers the advantages of peer tutoring. Second, capitalize on the expertise of staff such as interventionists and specialists. Third, be ready to provide the instruction and management of student misbehaviors. Fourth, invite the interventionists to provide student referrals. Fifth, be prepared to provide frequent feedback to classroom teachers on how students are performing. This study proved the effectiveness of cross-peer tutoring (Wright & Cleary, 2006). Overall, class-wide peer tutoring or coaching seems to be a good fit for whole class intervention--it’s more time efficient than 1:1 reading practice (Kourea, Cartledge, & Musti-Rao, 2007). Not only does class-wide peer tutoring maximize teacher’s time, but it also increases students’ social skills like cooperation, accepting feedback, taking turns, making positive statements, etc. (Kourea et al., 2007).

Peer Assisted Learning Strategies, PALS, is a research-based program for kindergarten through sixth grade and high school (Fuchs et al., 2001). When using first grade PALS, the teacher introduces new sounds and words to the whole group first (Fuchs et al., 2001). The first-grade students then break up into partner groups and read through the sounds, words, sight words, and a fluency passage (Fuchs et al., 2001). Children take turns being the coach and student during each section (Fuchs et al., 2001). There is a correction procedure taught to the students, and the students also can earn smiley faces and points as teams throughout this process (Fuchs et al., 2001). Limitations are that students with learning disabilities did not show progress in oral
reading fluency skill, and it didn't work to include comprehension competencies in the kindergarten and first-grade PALS (Fuchs & Fuchs, 2005). Teachers will need to choose the best program for their students, taking the student needs into account. Further, research indicates that teachers were most successful when there was support from PALS researchers throughout the process (Fuchs & Fuchs, 2005). PALS professional development is available for schools (Fuchs & Fuchs, 2005).

**Implications for teaching practice**

Overall, educators need to determine what strategies will best fit their students' needs. By using formative assessments and progress monitoring, teachers can determine if individualized instruction, small group instruction or whole class instruction is needed to meet their students' needs. According to Mahdavi and Haager (2007), progress-monitoring assessments serve two main objectives: to evaluate students' academic progress and assess the effectiveness of the intervention. Both require collecting data frequently so that teachers are allowed to continually monitor learning goals (Mahdavi & Haager, 2007). In reading, the progress-monitoring tool would be established based on the student's areas of need and the grade-level standard that is the purpose of the intervention (Mahdavi & Haager, 2007). Progress monitoring assessments are typically condensed, fluency-based assessments that can be given once a week or every two weeks to monitor the student's progress (Mahdavi & Haager, 2007).

Providing a balanced literacy approach to teaching reading in the primary classroom, while including explicit phonics instruction, will benefit all of the students (Learning First Alliance, 1998). Incremental Rehearsal of letter sounds has shown
success with ELL students and at-risk students—students will learn letter sounds that they individually need to learn (Rahn et al., 2015). A multisensory approach can help those students who need more intensive interventions with reading (Campbell et al., 2008). According to Rasinski, Fawcett, Lems & Ackland (2010), using magnetic letters to make words and break words can help all students who are learning to read because you can use them with basic short vowel words and move onto blends and digraphs. Rasinski, Fawcett, Lems & Ackland (2010), also suggest that “making and breaking” words allows for more scaffolding for students. Sound boxes and blending wheels can be used in 1:1, small group or as a whole class to help teach letter to sound correspondence (Alber-Morgan et al., 2016; Lane & Pullen, 2015). Implementing nonsense word or pseudoword phonics strategies in the classroom has proven to help improve students’ ability to decode words that are phonetically spelled (Cardenas, 2009). Class-Wide Peer Tutoring/Coaching has shown significant success and has been beneficial for students who are learning to read and struggling with oral reading fluency skills (Cleary & Wright, 2006; Marr, Algozzine, Nicholson, & Dugan, 2011; Fuchs & Fuchs, 2005; Kourea, Cartledge, & Musti-Rao, 2007). Teachers need to either find additional adult support through volunteer resources to implement 1:1 individualized instruction of letter sounds or they need to perform class-wide peer tutoring to work on basic oral reading fluency skills (Cleary & Wright, 2006; Marr, Algozzine, Nicholson, & Dugan, 2011; Fuchs & Fuchs, 2005; Kourea, Cartledge, & Musti-Rao, 2007). These two strategies can be combined to reach the needs of all learners. Teachers should use gradual release of responsibility during core instruction of reading materials. Further, teachers can work on teaching using explicit phonics instruction including word boxes or
wheels to work on applying the learned letter-sound correspondence in small groups or individually (Alber-Morgan et al., 2016; Lane & Pullen, 2015). According to Carol Ann Tomlinson (2014), small groups are an essential strategy when providing instruction to students who are struggling. The students receive focused supervision on skills previously taught, and are retaught these lagging skills with more clarification to ensure understanding.

“Reading is a critical skill that, if not mastered, could have detrimental effects on a person’s life” (Keyes, Cartledge, Gibson, & Ervin, 2016, p. 141). Interventions have been successful in helping students’ oral reading fluency increase in the primary grades (ages 6-8) (Rasinski, 2006). Practicing oral reading fluency and teaching oral reading fluency strategies are critical to improving student reading skills (Rasinski, 2006). The higher the reading fluency accuracy, the greater the comprehension (Rasinski, 2006). Teachers need to continue to be model readers for the students and continue doing best practices with the core curriculum (Joseph, 2008). After reviewing student needs and available resources/programs, teachers must choose the best fit for the students who are struggling in basic oral reading fluency. The recorded data behind the reviewed strategies to increase letter sound fluency and nonsense word fluency shows the positive results that can occur. While implementing these methods may be time-consuming, the encouraging statistics show that reading gaps may close with successful, consistent application. Including peers in interventions is cost-free and highly effective; however, a combination of all of these interventions explored in this review would predictably produce even greater results.

**Methodology**
This study used a variety of strategies to improve letter sound and nonsense word fluency among first grade students not meeting district benchmark goals. Baseline data on district-wide assessments (FAST and AIMSWeb) was collected in the beginning of the school year. Students were given frequent informal and formative assessments to determine the effect of the curriculum with the final summative assessment mimicking district standard testing. Students were also given surveys at the beginning and end of this study to determine the confidence level of the student participants (see Appendix A).

The population for this study was 2 first grade classrooms in the northern Twin Cities metro area. The sample was 10 first graders who were not meeting grade level benchmarks in district-wide reading assessments for letter sound fluency and nonsense words on the FAST and AIMSweb (see Appendix B).

Students were given a beginning of the year assessment for letter sounds and nonsense words. Students were tested in a 1:1 situation and were timed for 1 minute for each assessment. Teachers used a variety of reading strategies and gave formative assessments throughout the study. Students were tested at the end of the study with a final summative assessment similar to the beginning of the school year assessment.

Teachers worked in small groups (4-5 students) or 1:1 with students who were well-below first grade level benchmarks in reading letter sounds and nonsense words. These groups met for 15 minutes each day for 4 weeks. First, teachers used a variety of strategies, including incremental letter sound rehearsal, sound boxes, and peer tutoring with letter sounds to help increase letter sound fluency. Teachers timed students for one minute each week to see how quickly students could recall letter
sounds (formative assessment). These letter sound intervention groups continued for 10 school days. Then, teachers worked with students who needed to increase nonsense word fluency. Teachers used a variety of phonics strategies for teaching blending and reading nonsense words, including word boxes, word/blending wheels, systematic phonics instruction, and peer tutoring. These nonsense word intervention groups continued to meet for 10 school days. Throughout both intervention time periods, formative assessments were given to determine if interventions in place were helping students make growth in their early reading skills. Students charted their scores after each formative assessment. At the end of the study, student participants were given another survey to show their confidence level in reading.

Not all of the first grade students are meeting benchmarks for oral reading fluency at the end of the school year, and therefore many are not reading fluently by the time they reach 3rd grade. After talking with reading specialists and looking at district data, formative and summative assessments indicate that a number of students are not meeting grade level benchmarks set for the end of the first grade and second grade school year.

All students can be affected. However, the at-risk students or those who are well below meeting grade level benchmarks and the students who are right at benchmark or just below benchmark are the students who are most affected. Our goal was to increase letter sound fluency and nonsense word fluency through a variety of strategic interventions aimed at ultimately increasing reading fluency for those first grade students who did not meet benchmark district goals.
Students in this study are in first grade (ages 6-7) from two Northwest Metro-Area suburban schools in Minnesota. The demographic information in Table 1 represents the 10 students receiving the interventions with 5 being male and 5 being female. According to fall district testing, these students did not meet benchmark standards for reading fluency, letter sound fluency or nonsense word fluency.

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Male</th>
<th>Female</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Grade</td>
<td>5</td>
<td>5</td>
<td>NW Metro Suburb</td>
</tr>
</tbody>
</table>

*Table 1. Student Demographic Information.*

The research question that this study addressed dealt with strategies used to improve reading fluency in first grade students not meeting benchmark requirements. Teachers worked in small groups (4-5 students) or 1:1 with students who are well-below first grade level benchmarks in reading letter sounds (25 per minute) and nonsense words (27 per minute). These groups met for 15 minutes each day for 4 weeks. First, teachers used a variety of strategies, including incremental letter sound rehearsal, sound boxes, and peer tutoring with letter sounds to help increase letter sound fluency. Teachers timed students for one minute each week to see how quickly students could recall letter sounds (formative assessment). These letter sound intervention groups continued for 10 school days. Then, teachers worked with students who needed to increase nonsense word fluency. Teachers used a variety of phonics strategies for teaching blending and reading nonsense words, including word boxes, word/blending wheels, etc. These nonsense word intervention groups continued to meet for 10 school days. Throughout both intervention time periods, formative assessments were given to
determine if interventions in place were helping students make growth in their early reading skills. At the end of the study, student participants were given another survey to show their confidence level in reading.

At the end of our study, we analyzed three different sources of data. We have included district-wide assessments (the FAST and AIMSweb assessments) and action research data as quantitative data. We have also included a student survey at the beginning of the study and the end of the study as qualitative data. First, we analyzed the FAST and AIMSweb beginning of the year data, progress monitoring data and the final assessment data in both the letter sounds and nonsense words. Then, we evaluated the student survey data from the beginning of the study and the end of the study.

Analysis of Data

The fall benchmarks for the AIMSweb and FAST assessments were used to determine which students needed interventions in letter sound fluency and nonsense word fluency. The AIMSweb assessment expects first graders to be able to read 25 letter sounds per minute and 27 sounds for nonsense words per minute. The district with the FAST letter sound assessment expects first grade students to be able to read 53 letter sounds per minute. The FAST nonsense word fluency assessment expects students to read 11 or more words or sounds (3 sounds) in words in one minute. These scores were compared to the national norms and same aged peers. The students who fell in the at-risk range in letter sound fluency and the students who fell in at risk area in the nonsense word fluency were chosen to participate in the intervention groups within
the classroom. The first grade students who received interventions within the classroom fell between 15 and 30 percentile rank in FAST and 1 to 20 percentile rank in AIMSweb. The graphs below show the student data from the beginning of the year to the end of the action research.

The following scores in Figure 1 and Figure 2 represent each student’s baseline scores for letter sound fluency in the AIMSweb and the FAST assessments. These scores were determined by the number of letter sounds correctly read in a one minute timed assessment. The students have each been labeled with a letter to maintain confidentiality. The group of students from the school using AIMSweb had very similar scores in letter sound fluency. The group of students from the school using FAST had a wider range of scores in the letter sound fluency. The students in the AIMSweb group fell into a lower percentile rank than the FAST group. However, the scores from the AIMSweb group were closer to the benchmark. These students were 3-7 letter sounds away from meeting grade level benchmarks in letter sound fluency. The AIMSweb group was closer to meeting benchmarks than the other group. This group had to increase letter sound fluency by single digits. On the other hand, the students in the FAST group were given a higher percentile rank, but were 34-20 letter sounds away from meeting grade level benchmarks in letter sound fluency. The FAST group of students had a larger range range of scores and had more sounds to increase to meet their goals.
Figure 1. AIMSweb baseline scores for letter sound fluency.

Figure 2. FAST baseline scores for letter sound fluency.

Weekly progress monitoring of the four-week intervention of letter sound fluency were completed and charted. The students were able to fill out charts for their fluency scores (see Appendix C). These progress monitoring assessments were completed
individually. Students were timed for one minute to see how many letter sounds they could read correctly. The following scores in Figures 3 and 4 represent each student’s progress monitoring scores for letter sound fluency. The scores in Figure 3 represent the student’s scores for the AIMSweb progress monitoring. The scores in Figure 4 show that all of the students' letter sound fluency scores increased throughout the four-week intervention. The students' letter sound fluency scores in the FAST group varied and were not as consistent. This school had a longer fall break and had a field trip during the last week. This may be the reason for slightly lower scores for the 4th week of progress monitoring.

![AIMSweb Letter Sound Fluency-Progress Monitoring](image)

*Figure 3. AIMSweb progress monitoring scores for letter sound fluency.*
Figure 4. FAST progress monitoring scores for letter sound fluency.

Figures 5 and 6 represent the final scores for the letter sound fluency intervention for the AIMSweb group and the FAST group. Figures 7 and 8 compare the baseline and the final letter sound fluency scores for both groups. All of the students show growth from the baseline to the final assessments. Student B in the AIMSweb student group made the most growth between the baseline and final assessment in letter sound fluency. This seems to be consistent with the scores from the progress monitoring for Student B, as well. Student J in the FAST student group made the most growth between the baseline and final assessment in letter sound fluency. Student J's progress monitoring indicated growth, as well. Student J more than doubled the amount of letter sounds he/she read correctly in one minute from the baseline assessment to the final assessment.
Figure 5. AIMSweb final scores for letter sound fluency.

Figure 6. FAST final scores for letter sound fluency.
LETTER SOUND FLUENCY and NONSENSE WORD FLUENCY

Figure 7. AIMSweb baseline and final scores for letter sound fluency.

Figure 8. FAST baseline and final scores for letter sound fluency.

Figures 9 and 10 display evidence that improvements were made in both groups for letter sound fluency from the beginning of the intervention to the
conclusion of the intervention, especially when comparing the averages of the participants for both groups. All of the students in the AIMSweb group met benchmarks after receiving the interventions. The intervention was successful for this group. When looking at the final assessment for the FAST group, only one student met the benchmark after the 4 week interventions. However, this group had a larger gain to make in what was expected for the benchmark goal. Further, this group had a longer break away from instruction due to fall break and a field trip. Overall, the students in the FAST group all showed growth in letter sound fluency. The interventions seem to be working with this group, as well. The FAST group will need to continue with the interventions and reassess in a couple of weeks.

Figure 9. AIMSweb baseline and final average scores for letter sound fluency.
The following scores in Figure 11 and Figure 12 represent each student’s baseline scores for nonsense word fluency sounds and words in the AIMSweb and the FAST assessments. The AIMSweb scores were determined by the number of sounds read in the nonsense words in one minute. The FAST scores were determined by the number of words correctly read in a one minute timed assessment. The students have each been labeled with a letter to maintain confidentiality. The group of students from the school using AIMSweb had a wider range of scores in the nonsense word fluency sounds than the group of students from the school using FAST. The range of the scores for the AIMSweb group was 8 sounds and the range of scores for the FAST group was 4 words.
LETTER SOUND FLUENCY and NONSENSE WORD FLUENCY

Figure 11. AIMSweb baseline scores for nonsense word fluency.

Figure 12. FAST baseline scores for nonsense word fluency

Weekly progress monitoring of the four-week intervention of nonsense word fluency was completed and charted. The students were able to fill out charts for their fluency scores (see Appendix C). These progress monitoring assessments were
completed individually. Students were timed for one minute to see how many nonsense word sounds (AIMSweb) or nonsense words (FAST) they could read correctly. The following scores in Figures 13 and 14 represent each student’s progress monitoring scores for nonsense word fluency for sounds and words. The scores in Figure 13 represent the students’ scores for the AIMSweb progress monitoring. The scores in Figure 13 show that all of the students’ nonsense word sound fluency scores increased throughout the four-week intervention. Student F’s progress monitoring scores varied more than the other students’ scores. The scores in Figure 14 represent the students’ scores for the FAST progress monitoring. The students’ nonsense word fluency scores in the FAST group varied and were not consistent. Scores for students G, H, and I varied throughout the progress monitoring. These students didn’t show consistent growth in reading nonsense words. Student J’s scores were more consistent and continued to grow over the 4 weeks of interventions.

![AIMSweb Nonsense Word Fluency-Progress Monitoring](image)

**Figure 13.** AIMSweb progress monitoring for nonsense word fluency (sounds).
Figure 14. FAST progress monitoring for nonsense word fluency.

Figures 15 and 16 represent the final scores for the nonsense word fluency intervention for the AIMSweb group and the FAST group. Figures 17 and 18 compare the baseline and the final nonsense word fluency (sounds for AIMSweb and whole words for FAST) scores for both groups. All of the students show growth from the baseline to the final assessments. Students B and D in the AIMSweb student group made the most growth between the baseline and final assessment in nonsense word fluency (reading sounds). This seems to be consistent with Student B and Student D’s progress monitoring scores, as well. Student J in the FAST student group made the most growth between the baseline and final assessment in nonsense word fluency. This Student J’s progress monitoring indicated growth, as well. Student J increased his/her nonsense word fluency by 10 words from initial assessment to the final assessment.
**Figure 15.** AIMSweb final scores for nonsense word fluency (sounds).

**Figure 16.** FAST final scores for nonsense word fluency.
Figure 17. AIMSweb baseline and final scores for nonsense word fluency (sounds).

Figure 18. FAST baseline and final scores for nonsense word fluency.

Figures 19 and 20 display evidence that improvements were made in both groups for nonsense word fluency from the beginning of the intervention to the conclusion of the intervention, especially when comparing the averages of the participants for both groups. The students in the AIMSweb group did not meet the benchmark for the nonsense word sound fluency after the 4 week interventions. However, this group of students had a wider range of scores and
had a further goal to reach between their baseline and the expected benchmark scores than the FAST group. The interventions still seem to be working. All of the students in the AIMSweb group have grown between 5-10 letter sounds in the nonsense word fluency assessment. The teacher will continue to use the interventions, as they seem to be helping students make growth. When looking at the final assessment for the FAST group, all of the students have met their grade level benchmark for the nonsense word fluency. This group had less of a range of baseline scores. This group also had a smaller gain to make in their scores in order to meet benchmark. Student J. can be exited from this group at this time since the scores have been consistently meeting grade level expectations. The other three students in the FAST group need to continue to work on nonsense word fluency interventions to help students start to be more consistent with blending and reading the words correctly.

Figure 19. AIMSweb baseline and final average scores for nonsense word fluency (sounds).
Figure 20. FAST baseline and final average scores for nonsense word fluency.

The student survey was our qualitative data. Table 2 shows the survey results from the beginning and the end of the four-week intervention. This survey was given to see how students felt about reading in the beginning and to see if the intervention positively affected the students’ feelings of reading at the end of the action research.

The initial responses for “I Love to Read” were 40% of the students indicated “no,” 40% of the students indicated “yes,” and 20% of the students indicated “sometimes.” In the final responses for “I Love to Read,” there was a slight increase in a positive way. Sixty percent of the students indicated “yes,” 30% of the students indicated “sometimes” and 20% of the students indicated “no.” The initial responses for “I enjoy reading at home” were 40% “yes,” 30% “sometimes” and 30% “no.” The Final responses showed increase in the positive way. The responses were 70% “yes” and 30% “sometimes.” The initial responses for “I enjoy checking out books at the school library and reading at school” were 90% “yes” and 10% “sometimes.” When compared to the final response we saw 100% “yes.” Initially 60% students indicated that they cannot “understand what they
read” and at the conclusion 30% of the students indicated they could “understand what they read” and 60% of the students indicated they could sometimes “understand what they read.” Twenty percent of the students stated “Reading is hard for me” and 80% of the students indicated “reading is hard for me” sometimes initially, but we saw a slight positive change in the final survey for 30% of the students following the interventions. Fifty percent of the students indicated they wish they could “read better,” initially. Following the interventions, this didn’t change. At the beginning only 20% of the students indicated “I like to read out loud.” At the end of the action research 50% of the students indicated “I like to read out loud.” One hundred percent of the students indicated “I like it when someone reads to me” initially. The final results indicated no change in this. Overall, according to their written responses, the students showed a slight positive change in their feelings toward reading. However, observing them on a daily basis showed an excitement not seen before. As with many things in life, continued practice brings confidence. At the end of the year, a third survey will be given with the hope of students having a more positive attitude towards reading. As teachers, our job is to continue to give our students every opportunity to build on their accomplishments no matter how small.
Table 2. Student Survey Chart for before the intervention and the conclusion of the intervention.

The Student Survey seemed to be more of an indication of how the students were feeling on that particular day. For a 6-7 year old child, it is difficult for them to articulate how they see their progress developing over an extended period of time.
Sometimes, when they recognize words, they feel like they are “a reader” on that day. The next day may have words they don’t recognize so they label themselves as not being “a reader”. What we saw as a positive was that they all enjoyed going to the library, and they all enjoyed being read to. We interpreted this to mean that a seed has been planted in that they have a love of books. Our goal is to continue to water, or encourage, our students to grow into becoming confident readers.

**Action Plan**

The purpose of our research was to determine what effect do phonics strategies have on improving reading fluency for students not meeting benchmarks in first grade. “Reading is a critical skill that, if not mastered, could have detrimental effects on a person’s life” (Keyes, Cartledge, Gibson, & Ervin, 2016, p. 141). Students in the primary grades (ages 6-8) need systematic phonics instruction and other interventions to help students’ oral reading fluency. Interventions including incremental letter sound rehearsal, sound boxes, multisensory approaches, and peer tutoring were all used intensely and purposefully to increase letter sound and nonsense word fluency. Students were encouraged to celebrate their successes which added to their confidence.

The data that was collected during this study indicates that teaching phonics strategies to students in the primary grades helps to increase letter sound fluency and nonsense word fluency. According to the final data, students participating in the various interventions have shown substantial growth in both areas. Students G, H, I, and J had a longer Fall break and had a field trip the last week of interventions. This may be why scores were not as high on some of the final tests. The students were also interrupted
by another student within the classroom during the final assessment time. The teacher will keep an eye on these students as the year goes on to see if these students show regression after breaks and/or if these students need to continue to have practice with the letter sounds and blending and reading words.

Teachers were able to work with students in small groups or in 1:1 situations and give immediate and specific feedback during formative assessments and during small group instruction. Students were made aware of student goals or benchmarks for the intervention and were able to track their achievement in the letters sounds and nonsense words. For students to be able to see growth on their charts was very motivating.

Recommendations for teachers include the use of daily systematic phonics instruction as a whole group as well as incremental rehearsal of letter sounds, multisensory strategies, nonsense word drilling, and sound boxes in a small group or 1-to-1 setting. In addition, peer tutoring has been found to be valuable when practicing fluency passages to increase words read per minute. Times per week and length of time are dependant upon availability in daily schedule. To see desired improvements, however, interventions should be done on a daily basis. Peer tutoring can/should be done in addition to teacher interventions. Peer tutoring may be done by grade level peers or by students in older grades. This provides a positive experience for both students.

Now that we have completed this study, we plan to:

- Continue using interventions with students who are not meeting benchmark goals. Daily 15 - 20 minute small groups and 1 to1 sessions
will be built into daily reading lesson plans. Weekly formative assessments will show growth or regression thereby forming the direction for future interventions for each student. Continue to discuss data with intervention teachers/staff and grade level staff to ensure all students are receiving the services and/or interventions that are needed. District testing in January will give further data on needs for student interventions.

- Continue teaching reading with a systematic phonics instruction as whole group instruction as part of the daily reading curriculum. Supplement using various activities that promote phonemic awareness paying special attention to students that struggle with this concept. Pair students with firm understanding with students who are not confident for whole group activities.

- Start working on sight word fluency and sentence/passage reading fluency both in small groups and as a whole group. Peer coaching will be utilized with first graders as tutors as well as upper grade coaches for approximately 30 minutes per day. For students that are not at grade level, using flash cards with sight words and short sentences will help with fluency. Encouraging parents to take an active role has shown to be beneficial for student growth as well.

- Incorporate more technology within the classroom. Teachers can introduce more apps for working with letter sounds, sound boxes and blending/reading words. When students get even more confident in their skills, teachers can start using the SeeSaw app or other apps that will
allow the students to record themselves reading passages. The students can replay the recording to listen for reading fluency. This can also be shared with parents.

In conclusion, though this was a short term study, the final results have shown marked improvement in student letter sound and nonsense word fluency. Teachers at the primary grades need to use systematic phonics instruction and other phonics strategies to ensure all students receive the support they need in order to learn to read. Interventions can be done by teachers, parent volunteers, and upper grade level students. Inclusion of others in the promotion of student reading growth accentuates the positivity of learning to read fluently. As confidence levels rise, students tend to show an even greater attitude towards reading which may positively affect them the rest of their lives.

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doi:10.1002/pits.20133

Appendix A

Student Survey
### Appendix B

**Fast Testing Samples**

<table>
<thead>
<tr>
<th>Student Key:</th>
<th>😊 = I agree!</th>
<th>🙁= sometimes</th>
<th>😞 = I do not agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I love to read!</td>
<td>😊</td>
<td>😞</td>
<td>🙁</td>
</tr>
<tr>
<td>I enjoy reading at home.</td>
<td>😊</td>
<td>😞</td>
<td>🙁</td>
</tr>
<tr>
<td>I enjoy checking books out of the school library and reading at school.</td>
<td>😊</td>
<td>😞</td>
<td>🙁</td>
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<tr>
<td>I understand everything I read.</td>
<td>😊</td>
<td>😞</td>
<td>🙁</td>
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<tr>
<td>Reading is hard for me.</td>
<td>😊</td>
<td>😞</td>
<td>🙁</td>
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<tr>
<td>I wish I could read better.</td>
<td>😊</td>
<td>😞</td>
<td>🙁</td>
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<tr>
<td>I like reading out loud.</td>
<td>😊</td>
<td>😞</td>
<td>🙁</td>
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<tr>
<td>I like it when someone reads to me.</td>
<td>😊</td>
<td>😞</td>
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</table>
LETTER SOUND FLUENCY and NONSENSE WORD FLUENCY

Appendix C
Letter Sounds Student Graph
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<tr>
<th>Name</th>
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<th>Date</th>
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### Letter Recognition

| Letter | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
| Name   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Sound  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

| Letter | a | b | c | d | e | f | g | h | i | j | k | l | m | n | o | p | q | r | s | t | u | v | w | x | y | z |
| Name   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Sound  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

### Blending

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#### 2 Letter initial consonant blends

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#### 2 Letter final consonant blends

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#### 3 Letter initial consonant blends

| scr | shr | spl | squ | str | thr |
AIMSweb® Letter Sound Fluency - Progress Monitor Assessment #4

Given To: ___________________________  Given By: ___________________________  Date: ________

a y m p n e v b f c / 10 (10)

z r u g c b e l k p / 10 (20)

g k j y n d p t h f / 10 (30)

j u b g m a t e z f / 10 (40)

z b i u n e g m f r / 10 (50)

k s z y d o g p u h / 10 (60)

w i p j o g n b a k / 10 (70)

m j c r g i h v a p / 10 (80)

k u v o a c t h n j / 10 (90)

u s t g j e n v l o / 10 (100)
AIMSweb® Nonsense Word Fluency - Progress Monitor Assessment #4

Given To: __________________________  Given By: __________________________  Date: ____________

noj    vez    ruz    biv    yep    / 15 (15)
nof    lal    jon    duv    luk    / 15 (30)
sij    yuc    mod    lef    hus    / 15 (45)
mij    vis    kuj    jep    miz    / 15 (60)
wip    pez    fik    vug    az    / 14 (74)
non    kat    jik    pas    joz    / 15 (89)
nik    ret    od    lic    dop    / 14 (103)
kos    muv    jid    sus    tos    / 15 (118)
zuc    laf    het    kuc    yub    / 15 (133)
woj    fos    og    rev    wij    / 14 (147)
wef    jof    yug    iz    fav    / 14 (161)
muz    nav    mac    vuz    bik    / 15 (176)
tud    veb    pep    wal    sid    / 15 (191)
suz    mav    hij    yob    nov    / 15 (206)
vom    yec    ic    hej    hon    / 14 (220)

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www.AIMSweb.com
### Letter Sound Checklist

**My Progress Graph**

**Letter Sound Production**

<table>
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<th>Student Name:</th>
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<table>
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<th>Correctly Produced Letter Sounds per Minute</th>
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<tbody>
<tr>
<td>Date</td>
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</table>

**Weeks of Instruction (Intervention)**

© Hello Literacy, 2012
## Word Boxes: Recording Form

Directions: Write up to 10 words below to be reviewed using word boxes. Then use this form to record the student’s performance in identifying the letter-sound components of the selected target words. The form has space for up to 3 trials for each word. Record “Y” in a trial if the student is able to:

1. place a counter in each box of the word-box form while correctly stating the matching letter-sound.
2. place the appropriate movable letter into each box of the word box form while correctly stating the matching letter-sound.
3. write the appropriate letter into each box of the word box form while correctly stating the matching letter-sound.
4. pronounce the entire word as written in the word box form.

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<th>Date: Trial 2</th>
<th>Date: Trial 3</th>
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