

# Promises and Limitations of Peer-Assisted Learning Strategies in Reading

Kristen L. McMaster<sup>1</sup>

*University of Minnesota*

Douglas Fuchs and Lynn S. Fuchs

*Peabody College of Vanderbilt University*

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*This article provides an overview of Peer-Assisted Learning Strategies (PALS) for reading. First, specific activities and research supporting PALS for Grades 2 through 6, High School, Kindergarten, and First Grade are described. Then, research addressing the characteristics of students who have not responded to PALS, as well as approaches to identification and further intervention for PALS nonresponders, is summarized. Finally, current PALS research directions are briefly presented, followed by recommendations for PALS implementation in general education classrooms and ways to obtain PALS materials and training.*

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**Keywords:** Reading, Intervention, Peer-Mediated Learning, Classwide Peer Tutoring

Since passage of the No Child Left Behind Act of 2001 (NCLB; 2002), policymakers have increasingly emphasized that *all* students must meet rigorous standards of knowledge and skill, and that teachers must be held accountable for academic outcomes of students with and without disabilities. To ensure that students achieve high standards, teachers are expected to implement “scientifically based” instructional practices in their classrooms. The Individuals with Disabilities Education Act (IDEA, 1997, 2004) is closely aligned with NCLB reforms. Specifically, IDEA stipulates that all students with disabilities must have access to the general education curriculum and standards and emphasizes the importance of prevention and early intervention. Like NCLB, IDEA strongly recommends the use of scientifically based instruction that has been demonstrated in research to meet the needs of diverse groups of students in general education classrooms.

Few would dispute the importance of implementing well-researched instructional practices that promise to benefit many students. However, surprisingly few academic interventions designed to promote the academic achievement of students with and without disabilities have undergone rigorous experimental or quasi-experimental research (Seethaler & Fuchs, 2005; Slavin, 2003). For example, Seethaler and Fuchs reported that, of 806 reading and math intervention studies published in special education and school psychology journals, only 5.46% used a group design, and only 4.22% used random assignment.

Rigorous experimental or quasi-experimental research is not easy to implement, as it must be conducted on a large scale, requiring substantial resources and

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1. Kristen L. McMaster, Department of Educational Psychology, University of Minnesota, 233 Burton Hall, Minneapolis, MN 55455. Email: mcmas004@umn.edu

school support. Moreover, the logistics of randomized field trials can be unwieldy and are often seen as undesirable or even unethical by schools and districts that strive to ensure equal student access to promising interventions (Slavin, 2002). Thus, only a handful of instructional approaches have been demonstrated—through rigorous experimental research—to have positive academic outcomes for students with a broad range of instructional needs and to show promise for use in general classrooms. One such approach, Peer-Assisted Learning Strategies for Reading (PALS; Fuchs & Fuchs, 2005), is the focus of this article.

Nearly 15 years of pilot studies, component analyses, and large-scale experiments conducted in classrooms have demonstrated that PALS improves the reading achievement of low-, average-, and high-achieving students, including students with disabilities (e.g., Fuchs, Fuchs, Mathes, & Simmons, 1997; Fuchs, Fuchs, Thompson, Al Otaiba et al., 2001; Simmons, Fuchs, Fuchs, Hodge, & Mathes, 1994). Of particular importance to PALS research has been the close involvement of classroom teachers in its development and implementation (e.g., Fuchs & Fuchs, 1998; Fuchs, Fuchs, & Burish, 2000; Fuchs, Fuchs, Thompson, Al Otaiba, et al., 2001). Thus, teachers' collaboration with PALS researchers has led to a set of instructional approaches that are not only effective for many students, but are also efficient and feasible for classroom use. For these reasons, PALS has been approved by the U.S. Department of Education's Program Effectiveness Panel for inclusion in the National Diffusion Network on effective educational practices.

PALS is not without limitations, however. For example, a small proportion of students have made insufficient reading progress during the course of a school year despite participation in PALS (Al Otaiba & Fuchs, 2006; Fuchs et al., 2002; McMaster, Fuchs, Fuchs, & Compton, 2005). Researchers are continuing to work on the best ways to identify students for whom PALS is not beneficial and to increase its effectiveness accordingly. In addition, researchers are continuing to examine how to maximize the accessibility of PALS to teachers who struggle to find ways to implement evidence-based instruction amidst all of the other challenges they face (e.g., Fuchs et al., 2006).

The purpose of this article is to provide an overview of PALS and the research base that addresses its effectiveness in improving the reading performance of many students with and without disabilities in general education classrooms. First, we provide a brief overview of PALS's background and important features. Then, we describe specific PALS activities and research supporting PALS for Grades 2 through 6, High School, Kindergarten, and First Grade. Third, we discuss research examining students' responsiveness to PALS. Fourth, we briefly discuss current efforts to bring PALS "to scale;" that is, to explore ways to effectively implement and sustain PALS in today's classrooms. Last, we make recommendations for PALS implementation and provide information for how to access PALS materials and training.

## OVERVIEW OF PALS

### *PALS Background*

PALS was developed by Douglas Fuchs and Lynn Fuchs and their colleagues at Vanderbilt University (see Fuchs & Fuchs, 2005; Fuchs et al., 1997; Fuchs, Fuchs,

Thompson, Al Otaiba et al., 2001; Mathes, Howard, Allen, & Fuchs, 1998). PALS was modeled after Classwide Peer Tutoring (CWPT) developed by Delquadri and colleagues (e.g., Delquadri, Greenwood, Whorton, Carta, & Hall, 1986) at the Juniper Gardens Children's Project at the University of Kansas. CWPT was designed to "increase the proportion of instructional time that all students engage in academic behaviors and to provide pacing, feedback, immediate error correction, high mastery levels, and content coverage" (Greenwood, Delquadri, & Hall, 1989, p. 372). Researchers have demonstrated that CWPT can improve students' performance in reading, spelling, and math (e.g., Fantuzzo, King, & Heller, 1992; Greenwood et al.), and at both the elementary (e.g., Greenwood et al.; Maheady & Harper, 1987) and the secondary levels (Maheady, Harper, & Sacca, 1988).

The Vanderbilt group (i.e., Fuchs & Fuchs, 2005; Fuchs et al., 1997; Fuchs, Fuchs, Thompson, Svenson et al., 2001; Mathes et al., 1998) has extended this research by conducting large-scale studies (across multiple schools and classrooms) to evaluate PALS's effects on low-performing students with and without disabilities, as well as on average- and high-performing students. They have also explored whether PALS is more or less effective in high-poverty, Title I schools and middle-class, non-Title I schools, and schools in urban and suburban districts. In addition, as mentioned, PALS has been examined across a variety of grade levels, resulting in PALS for kindergarten, first grade, grades 2 through 6, and high school.

### ***Important Features of PALS***

Across each grade level, PALS incorporates the following key features.

***Reciprocal tutoring roles.*** Every student in a classroom is paired with another student, with each pair consisting of a higher- and a lower-performing student. Students in each pair are assigned the roles of "Coach" (tutor) and "Reader" (tutee). These roles are reciprocal, so that both students in a pair serve as Coach and Reader during each session. The teacher determines pairs by rank ordering all students in the classroom from the strongest to the weakest reader. The teacher then divides the rank-ordered list in half and pairs the strongest reader from the top half with the strongest reader from the bottom half, and so on, until all students are paired. Pairs change at least every three to four weeks.

***Opportunities to respond and experience success.*** Researchers have documented that conventional instructional approaches provide relatively infrequent amounts of academic responding time (e.g., Delquadri & Greenwood, 1981; Stanley & Greenwood, 1983) and that students with learning disabilities actually may lose about a month of instruction per year due to lack of engagement during instruction (Greenwood et al., 1989). Thus, to increase students' time on task and opportunities to respond, PALS incorporates frequent verbal interactions between partners (e.g., Delquadri et al., 1986; Greenwood et al.). The Coach's role is to provide immediate, corrective feedback to the Reader when needed. These features increase many students' chances of success during PALS reading activities.

***Supplemental practice of skills taught in the core reading curriculum.*** PALS activities emphasize important reading skills (e.g., decoding, fluency, and comprehension) that are presumably addressed in the core curriculum but require extensive practice to ensure student mastery and growth. These activities are implemented for 30- to 40-min sessions, three to four times per week.

**Structured activities.** PALS consists of a set of structured activities, which students are trained to implement with their partners. Teachers use a set of brief scripted lessons to train all students. The training lessons for each activity last 30 to 60 min per session and take 2 to 4 weeks to implement. Lessons include scripted teacher presentations, student practice, and teacher feedback. Once the students are proficient with the PALS procedures, they can devote their full attention to the actual content of the lessons. In the next section, we describe the specific activities for each grade level, as well as the research supporting their use. We begin with PALS for Grades 2 through 6 because that was the first PALS program to be developed.

## PALS ACTIVITIES AND RESEARCH

### *PALS for Grades 2 Through 6*

**Activities.** PALS for Grades 2 through 6 consists of three activities that are conducted during each PALS session: Partner Reading with Retell, Paragraph Shrinking, and Prediction Relay. Partners share books or other texts selected by the teacher. These texts should be at an appropriate level for the lower-performing reader in each pair and, therefore, can (and should) be different for each pair. For each activity, the higher-performing reader is the first Reader, and the lower-performing reader is the first Coach (and second Reader). After 5 min, they switch roles.

The first activity is Partner Reading with Retell. The first Reader reads for 5 min, then the second Reader reads the same text for 5 min. Whenever the Reader makes an error, the Coach says, "Stop, you missed that word. Can you figure it out?" If the Reader does not figure out the word in 4 seconds, the Coach says, "That word is \_\_\_\_\_. What word?" The Reader says the word and continues reading. After both students have read, the lower-performing reader retells the sequence of events just read for 2 min. Students earn 1 point for each sentence read correctly and 10 points for the retell.

The second PALS activity is Paragraph Shrinking. This activity is designed to develop comprehension through summarization and main idea identification. Students use a questioning strategy to direct their attention to the important ideas or events they are reading about (e.g., Jenkins, Heliotis, Stein, & Haynes, 1987). During Paragraph Shrinking, the students continue reading orally, but they stop at the end of each paragraph to identify the main idea. Again, the higher performer is the first Reader, and the lower performer is the first Coach. The Coach asks the reader to identify (a) who or what the paragraph is mainly about and (b) the most important thing about the "who" or "what." Then the Reader must condense, or "shrink," this information into 10 words or less. If the Coach deems the Reader's answer incorrect, she says, "That's not quite right. Skim the paragraph and try again." After the Reader provides a new answer, the Coach decides whether the answer is correct. If it is correct, she gives 1 point each for correctly identifying the "who" or "what," for stating the most important thing, and for using 10 words or less to state the main idea. If the Coach determines that the answer is incorrect, she provides a correct answer, and the pair continues reading. After 5 min, the partners switch roles.

The last activity, Prediction Relay, requires students to make predictions and then confirm or disconfirm them. This activity is included in PALS because

making predictions is a strategy associated with improvements in reading comprehension (e.g., Palincsar & Brown, 1984). Prediction Relay consists of four steps. The first Reader (a) makes a prediction about what will happen on the next half page to be read, (b) reads the half page aloud, (c) confirms or disconfirms the prediction, and (d) summarizes the main idea. If the tutor disagrees with the prediction, she says, "I don't agree. Think of a better prediction." Students earn points for each reasonable prediction, for reading each half page, for accurately confirming or disconfirming the prediction, and for identifying the main idea in 10 words or less. Again, the students switch roles after 5 min.

Each pair is assigned to one of two teams for which they earn points during PALS. These points are awarded for correct responses during the activities. Each pair marks their points by slashing through numbers on a score card. Teachers circulate among the pairs to monitor performance and award bonus points for cooperative behavior and for following the PALS procedures. At the end of each week, the pairs report the number of points they earned for their teams, and the teacher adds them up to determine the winning team. The teacher creates new pairs and teams every four weeks.

**Research.** Researchers have reported positive academic and social outcomes of PALS. In a large-scale experimental field trial (Fuchs et al., 1997), 12 schools in urban and suburban districts were stratified by student achievement and socioeconomic status and assigned randomly either to implement PALS or to serve as no-treatment controls. PALS was implemented for 15 weeks in 20 classrooms as part of the reading curriculum, while 20 classrooms continued with their regular reading programs.

At the beginning of the study, the PALS and control classrooms did not differ significantly in terms of demographics, teacher experience, or student reading achievement. After 15 weeks, however, students in PALS classrooms statistically significantly outperformed their control counterparts in terms of growth on the Comprehensive Reading Assessment Battery (CRAB; Fuchs, Fuchs, & Hamlett, 1989), a measure of reading fluency and comprehension, with effect sizes ranging from .22 to .56. These effects held true for average and low-performing readers, including students with learning disabilities who had been mainstreamed in general education classrooms. In another study (Fuchs, Fuchs, Mathes, & Martinez, 2002), results indicated that students with learning disabilities in PALS classes enjoyed greater social acceptance than students with learning disabilities in non-PALS classes, suggesting that PALS has social as well as academic benefits.

### **High School PALS**

**Activities.** In light of the effectiveness of PALS for Grades 2 through 6, and because reading problems persist well beyond the elementary-school years, PALS researchers extended PALS upward to high school (Fuchs, Fuchs, & Kazdan, 1999). High School PALS includes the three activities described above (Partner Reading, Paragraph Shrinking, and Prediction Relay). However, High School PALS differs from PALS for Grades 2 through 6 in three ways. First, students switch partners every day instead of every four weeks. This accommodates the more frequent absences of high school students, which makes partner consistency difficult. In addition, it accommodates many high school students' preference for interacting with different

classmates. Second, the motivational system is based on a “work” theme. Pairs earn PALS dollars, which they deposit into checking accounts. They maintain these accounts and write checks to order items from a PALS catalog, such as CDs, fast-food coupons, and sports apparel that have been donated by local businesses. Third, High School PALS students typically read from expository rather than narrative text selected to address issues pertinent to their lives, such as work and social relationships.

**Research.** High School PALS has been demonstrated to be a promising strategy to promote literacy among seriously reading-delayed adolescents (Fuchs et al., 1999). In a study in which students in 9 High School PALS classrooms were compared to students in 9 Control classrooms, PALS students grew more on reading comprehension (with an effect size of .34) and reported more positive beliefs about working hard to improve reading. However, PALS and control students did not differ on reading fluency growth or beliefs about being and wanting to become better readers.

### ***Kindergarten and First Grade PALS***

Much of the reading research over the past two decades has emphasized the serious consequences of reading failure, pointing to the difficulty of remediating deficits in reading beyond the early grades (e.g., Juel, 1988). Thus, the most recently developed PALS activities have focused on beginning reading skills critical for early literacy acquisition (Fuchs, Fuchs, Thompson, Svenson et al., 2001; Morgan, Young, & Fuchs, 2006). Specifically, Kindergarten PALS (K-PALS) and First Grade PALS activities address phonological awareness, beginning decoding, and word recognition, all skills that researchers have demonstrated to be important for successful beginning reading programs (see National Reading Panel, 2000).

**K-PALS activities.** Teachers prepare their children for PALS by modeling the activities in a whole-class format. The teacher acts as the Coach and the students are the Readers during eight introductory lessons. Gradually, individual students take turns assuming the role of Coach for the whole class. Then, the students tutor each other, alternating as Coach and Reader. The higher-performing student is always the Coach first. The teacher circulates among the student pairs, monitoring their progress and providing corrective feedback. K-PALS is conducted three times per week, for 20 min per session.

Two types of activities are incorporated into PALS: Teacher-Directed Sound Play and Sounds and Words. Teacher-Directed Sound Play includes five phonological awareness “games” that address rhyming, isolating first sounds, isolating ending sounds, blending sounds into words, and segmenting words into sounds. Each lesson sheet shows pictures of common animals and objects. For example, as illustrated in Figure 1, the “First Sound” game shows rows of four pictures (tub, teeth, cap, turkey). Three of the pictures begin with the same sound. In the lesson shown in Figure 1, the teacher would point to the first two pictures and say, “tub, /t/, teeth, /t/.” Then she would point to the other two pictures and say, “Which one starts with /t/, cap or turkey?” The Reader should reply, “Turkey, /t/.”

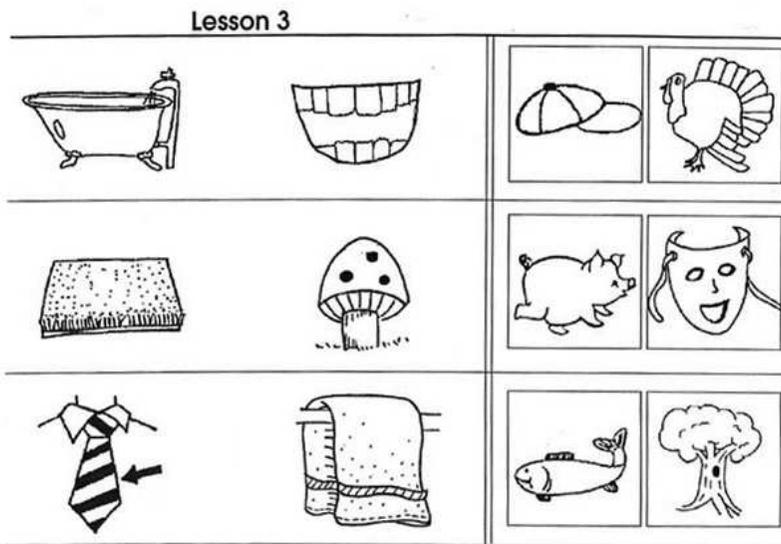
The Sounds and Words activity immediately follows the Teacher-Directed Sound Play game. Sounds and Words is made up of four activities, which are printed on one side of a lesson sheet (see Figure 2). After the Reader has completed an

activity one time, the Coach marks one of four happy faces printed at the end of the activity. The students then switch jobs and do the activity again. The first activity, called "What Sound?," displays rows of letters that the students read from left to right. A new letter sound is introduced in every other lesson. This new letter is presented in a box along with a picture of an animal or object that starts with that sound. The new letter sound is introduced by the teacher. Then the Coach points to each letter and asks, "What sound?" The Reader says each sound. Stars are interspersed among the letters to prompt the Coach to praise the Reader (e.g., "Great job!"). When the Reader makes an error, the Coach says, "Stop, that sound is \_\_\_\_." "What sound?" The Reader says the sound, and the Coach says, "Start the line again."

The second activity, "What Word?," displays common sight words in rows on the lesson sheet. A new sight word is introduced in every other lesson, and the words build cumulatively across lessons. The teacher introduces the new sight word to the class at the beginning of the lesson. The Coach points to each sight word and asks, "What word?" The reader reads the words, and the Coach corrects errors, just as in the "What Sound?" activity.

The third activity is called "Sound Boxes." Here students read decodable words comprised of letter sounds practiced in earlier lessons. The words in each lesson are presented in word families, such as "at," "mat," and "sat." Again, words build cumulatively across the lessons. Each letter of a word is in a "sound box." The Coach says, "Read it slowly," and the Reader sounds out the word, pointing to each box. Then the Coach says, "Sing it and read it." This prompts the Reader to blend the sounds together and then read the word. The Coach corrects errors and praises the Reader for appropriate responses.

Figure 1. Sample Sound Play lesson sheet for Kindergarten PALS.



First Sound A  
m, l

Figure 2. Sample Sounds and Words lesson sheet for Kindergarten PALS.

Lesson 29

<p>g p o r a h ★ r i t p c ★ n i p f h ★ a p h o p i r s ★ ☺ ☺ ☺ ☺</p>	<p>What sound?</p>
<p>is and was the and on the and ☺ ☺ ☺ ☺</p>	<p>What word?</p>
<p>rat hat sat pan can man The rat sat. ☺ ☺ ☺ ☺</p>	<p>Read it slowly. ♪ Sing it and read it.</p>

Finally, the students read sentences comprised of sight words and decodable words practiced in earlier lessons. The Coach says, "Read the sentences," and provides corrective feedback for any errors as the Reader reads. At the end of the lesson, the students count the happy faces they have marked, and record this number on point sheets.

**K-PALS research.** Results of large-scale experimental research show that K-PALS can have a substantial positive impact on the beginning reading skills of many children and that the K-PALS decoding activities provide an added value over phonological awareness training alone. Fuchs, Fuchs, Thompson, Al Otaiba et al. (2001) reported a study in which 33 classrooms were assigned randomly to three groups: control, phonological awareness training, and phonological awareness training with the K-PALS decoding activities. After approximately 20 weeks, the phonological awareness group and the phonological awareness with K-PALS group statistically significantly outperformed controls on measures of phonological awareness. Moreover, the K-PALS group reliably outperformed the other two groups on measures of beginning reading skill. Fuchs, Fuchs, Thompson, Al Otaiba et al. also showed K-PALS to be effective in schools with large percentages of minority children and children living in poverty, as well as in schools with predominantly white, middle-class student populations. Furthermore, Fuchs et al. (2002) demonstrated that, as a group, kindergartners with disabilities who participated in K-PALS outperformed kindergartners with disabilities in control classrooms. Despite these successful outcomes, a number of kindergartners with disabilities who have participated in K-PALS have not improved their reading skills, a point to which we will return.

**First Grade PALS activities.** The First Grade PALS program was developed based on the work of Mathes et al. (1998). As in K-PALS, the first-grade activities emphasize beginning decoding skills and word recognition. In addition, First Grade PALS includes a fluency component designed to measure the speed and accuracy with which students read. For two weeks, teachers train students to follow PALS rules and work cooperatively to complete the PALS activities. Following training, PALS is conducted three times per week, for 35-40 min per session.

Each PALS lesson begins with a brief teacher-led introduction. The teacher introduces new letter sounds and sight words and then leads the students in segmenting and blending words that they will later decode in the lesson. After the teacher says a word, the students say the sounds in the word, holding up a finger for each sound. The teacher then shows them the word, and they blend the sounds together and read the word.

First Grade PALS activities are comprised of two main parts: Sounds and Words and Partner Reading. Sounds and Words is made up of four activities (see Figure 3). The first, "Saying Sounds," is similar to the "What Sound?" activity in K-PALS. That is, the Coach points to each letter on the lesson sheet and says, "What sound?," and the Reader says each sound. The Coach praises the Reader and provides corrective feedback. When the Reader has said all the sounds, the Coach marks a happy face and 5 points on a point sheet. The students then switch roles.

The second activity is a blending task using the words the teacher presented at the beginning of the lesson. An arrow is printed under each word, and small dots are printed under each phoneme. The Coach points to the first word and says,

Figure 3. Sample Sounds and Words lesson sheet for First Grade PALS.

<h3>Lesson 23</h3> <p>n c h o ★ g n c</p> <p>o n d ★ i t p f c</p> <p>c n s n r h n ★</p> <p style="text-align: center;">  5 points     5 points         </p>	<p>coach says:</p> <p>"What sound?"</p>
<p>Pam                  Sid</p> <p>hat                  fast</p> <p>grass                cat</p> <p>pan                  in</p> <p style="text-align: center;">  5 points     5 points         </p>	<p>1. "Sound it out." 2. "Read it fast."</p>

<p>23</p> <p>are has to come find see no are for</p> <p>he said are away with he has no was</p> <p>come find have blue have a and he</p> <p>are blue he has are for was away are</p> <p style="text-align: center;">  5 points     5 points         </p>	<p>coach says:</p> <p>"Read the words"</p>
<p> Pam and <b>James</b> </p> <p>Pam has a <b>brother James</b>.</p> <p>Pam has a baseball.</p> <p>Pam throws the baseball to <b>James</b>.</p> <p>Pam and <b>James</b> are in the grass at the park.</p> <p style="text-align: center;">  5 points     5 points     5 points     5 points     5 points     5 points         </p>	<p>"Read the story."</p> <p style="text-align: center;"></p> <p style="text-align: center;">James</p> <p style="text-align: center;"></p> <p style="text-align: center;">brother</p>
<p> Go back to "Read the words."</p>	

“Sound it out.” The Reader points to each dot and says the sounds. Then the Coach says, “Read it fast.” The Reader slides her finger along the arrow and reads the word fast. If the Reader makes an error, the Coach models sounding out the word and reading it fast; the Reader repeats the word and starts the line over. Again, the Coach marks a happy face and points, and the students switch roles.

The third activity is called Read the Words. Common sight words are presented in rows on the lesson sheet. The Coach says, “Read the words,” and the Reader points to each word and reads them. Many of the sight words are grouped into phrases, prompting the Reader to read words in chunks, rather than in isolation. In addition, at the end of each PALS lesson, students read the sight words in a “speed game” format. During the Speed Game, the teacher times the Readers for 1 min as they read the sight words. The Readers have two chances to try to read more words in 1 min than they did the first time. Then the Coaches play the game. When students beat their times, they mark a star on a Star Chart which, when completed, may be exchanged for small prizes, such as bookmarks or pencils.

Next, students read short stories composed of the sight words and decodable words they have already practiced. Before the students read the story, the teacher introduces “rocket words” that have been added to make the stories more interesting. First the teacher reads the story, providing a fluent model. The Readers then read the story. If the Reader makes a mistake, or hesitates on a word for 3 seconds, the Coach says the correct word, and the Reader repeats it and continues reading. Happy faces and points are marked, and the students switch roles. The speed game format is used with the story when the stories become long enough for timed readings.

After First Grade PALS has been conducted for 4-6 weeks, Partner Reading is introduced. This activity is conducted for 10 min in each PALS session, immediately following the Sounds and Words activities. During Partner Reading, students use the decoding and word recognition skills that they have practiced during PALS to read books. Teachers select books that are appropriate to the reading level of the lower-performing student in each pair. The Coach reads the title of the book, pointing to the words; then the Reader reads the title. The Coach then reads a page, pointing to the words, and the Reader repeats the same page. When the partners finish the book, they mark 5 points, switch roles, and read the book again. Each book is read four times before the pair receives a new book to read.

*First Grade PALS research.* A major focus of PALS research at the first-grade level has been exploration of the importance of including fluency-building skills in a beginning reading program. This is based on increasing concern that reading fluency does not develop naturally in all students (see National Reading Panel, 2000) and is critical for reading comprehension (e.g., LaBerge & Samuels, 1974; Stanovich, 1980).

Fuchs et al. (2002) reported preliminary results of a study in which 33 first-grade classrooms were assigned randomly to one of three groups: First Grade PALS without fluency activities, First Grade PALS with fluency activities, and control. After approximately 20 weeks of intervention, students in both PALS groups statistically significantly outperformed controls on phonological awareness and alphabetic measures. Only the students who participated in the PALS fluency activities also outperformed controls on measures of fluency and comprehension. As in previous

PALS research, the benefits of First Grade PALS appear not to be mediated by student learner type (low-, average-, or high-performing), disability, or type of school (Title I vs. non-Title I).

### STUDENT RESPONSIVENESS TO PALS

Although PALS appears to benefit many students, including students with disabilities, some children do not make adequate achievement gains despite participating in PALS activities. An estimated 20% of low-achieving nondisabled students (Mathes et al., 1998) and more than 50% of students with disabilities (Fuchs et al., 2002) have not responded to PALS, as measured by growth on tests of phonological awareness, decoding, and word recognition. Researchers have attempted to describe characteristics of PALS “nonresponders” (Al Otaiba & Fuchs, 2006) as well as to determine the best ways to identify and provide further intervention for these students (e.g., McMaster et al., 2005).

Al Otaiba and Fuchs (2006) conducted a study with 104 children, including 7 with disabilities. These children participated in PALS in kindergarten only, in first grade only, in both kindergarten and first grade, or in neither grade. Kindergarten students were identified as responsive to intervention if their performance was above the 30<sup>th</sup> percentile of intervention students on pre- to posttreatment letter-sound and segmentation fluency growth. First graders were identified as responsive if their post-treatment performance was 40 words or more read correctly on an oral reading fluency measure. Students were further classified as “always responsive” (they met the above criteria in both years), “sometimes responsive” (they met the criteria in one year), or “nonresponsive” (they did not meet the criteria in either year).

These three groups of students were reliably different from each other on measures of problem behavior, verbal memory, syntactic awareness, vocabulary, naming speed, and segmentation skills. A combination of rapid naming speed, vocabulary, working memory, behavior, and amount of intervention (PALS) received over the two years predicted 82% of nonresponsive, 30% of sometimes responsive, and 84% of always responsive students. A subset of these students ( $n = 50$ ) were tested again at the end of their third-grade year. Of those who had participated in PALS, only one student was receiving special education services with IEP goals addressing reading.

McMaster et al. (2005) explored ways to identify and provide further intervention to students found to be unresponsive to PALS. The primary purpose of this study was to determine the level of service delivery that was most beneficial to students whose reading challenges were difficult to remediate. McMaster et al. compared the effects of (a) PALS, (b) a modified version of PALS, and (c) one-to-one pull-out tutoring provided by an adult on the reading achievement of students who were not responding to PALS.

First students were identified as “at risk” for unresponsiveness to First Grade PALS based on poor letter-naming performance in the fall of first grade and teacher judgment. Then, these students’ progress was monitored during seven weeks of PALS implementation using weekly word-level curriculum-based measures. Next, students were identified as unresponsive based on performance levels and growth

rates significantly below those of average-performing peers. These nonresponders represented about 16% of PALS participants. Finally, the nonresponders were assigned randomly to (a) continue in PALS, (b) receive a modified version of PALS, or (c) receive one-to-one tutoring from an adult outside of the regular classroom.

After 13 additional weeks of these interventions, the rate of student unresponsiveness was reduced to 9%. However, of the students identified as nonresponders, 81% of those who continued with PALS remained unresponsive, 75% of those who received modified PALS remained unresponsive, and 50% of those who received one-to-one tutoring remained unresponsive. These results suggest that (a) simply providing students with more time in PALS is not likely to improve their response to instruction; (b) modifying the curriculum is also not likely to improve many students' response to instruction; and (c) our one-to-one tutoring alternative was beneficial for some, but not all students. Clearly, more work is needed to best understand what must be in place for students for whom PALS is not beneficial.

### **CURRENT DIRECTIONS: BRINGING PALS TO SCALE**

Whereas PALS has shown promise in research studies conducted with students across a range of grades, skill levels, and settings (e.g., Title I and non-Title I schools in urban and suburban districts), questions remain as to how to most effectively implement and sustain teachers' use of PALS in today's classrooms. Currently, researchers at Vanderbilt University, The University of Texas Pan-American, and the University of Minnesota (e.g., Fuchs et al., 2006) are addressing the following questions: (a) What levels of teacher support are needed to successfully implement and sustain PALS? (b) What impact do levels of support have on student outcomes? (c) What impact does implementation fidelity have on student outcomes? (d) What teacher and student characteristics are related to successful implementation and sustainability of PALS? and (e) What contextual variables (at the classroom and school levels) are related to successful implementation and sustainability of PALS?

To address these questions, Fuchs et al. are examining whether the following add value to teacher implementation and student achievement: (a) varying levels of training and ongoing support outside the classroom (such as booster trainings and mentoring); (b) different types of classroom support (such as a general helper in the classroom vs. a helper dedicated to struggling readers); and (c) teachers' adaptations and modifications of PALS to fit their individual teaching styles and classroom needs. Findings from this research are expected to inform school administrators and teachers of the most effective ways to adopt PALS as a supplement to their core reading curricula.

### **IMPLICATIONS FOR PRACTICE AND RECOMMENDATIONS FOR PALS IMPLEMENTATION**

Teachers and researchers have worked hard to develop PALS into an effective and practical classroom-based approach (e.g., Fuchs & Fuchs, 1998; Fuchs et al., 2000; Fuchs, Fuchs, Thompson, Al Otaiba et al., 2001). A particular strength of this research is that classroom teachers, rather than researchers, implemented PALS with their students. The results of the large-scale studies reviewed in this article demonstrate that PALS may be used with success by teachers. A key to this success is that

teachers have implemented the program with fidelity; that is, they have conducted the activities accurately according to the procedures established during PALS development.

Several features that were in place likely contributed to teachers' fidelity of PALS implementation. First, teachers collaborating in PALS research participated in daylong training workshops. This training provided teachers with the opportunity to see demonstrations of PALS, practice the activities with guidance and support, and ask questions before implementing the program in their classrooms. Although PALS can be conducted using information from the PALS manuals, it is recommended that teachers who wish to use the program participate in a training workshop.

Second, teachers were provided with on-site technical support from research staff who made weekly classroom visits to observe, answer questions, and trouble-shoot problems that arose. Such support is not typically available to classroom teachers. Teachers using PALS may wish to periodically videotape the activities or have a peer trained in PALS observe their implementation to determine whether they are following the procedures.

Third, PALS must be implemented at least three times per week for 15 to 20 weeks (and four times per week in K-PALS classrooms in Title I schools). Whereas this may represent a significant time commitment, teachers have reported that PALS is practical, efficient, and fits well with their existing instructional programs (Fuchs et al., 2000).

Finally, and perhaps most important, teachers should know that PALS will not benefit all students. As with any instructional approach, it is critical to frequently monitor students' progress to determine whether they are making sufficient progress in reading. When progress monitoring results indicate that a student is not making progress, the teacher should consider modifying the activities or attempting alternative instructional strategies that address the student's individual needs.

#### SUMMARY AND WAYS TO ACCESS PALS MATERIALS

PALS has shown great promise as an effective supplement to conventional teaching methods to (a) promote critical reading skills and (b) accommodate the increasingly diverse student population and academic diversity in today's classrooms. PALS makes use of one of the greatest resources in our schools, the students themselves. When empirically validated instructional approaches such as PALS are implemented carefully and accurately, teachers can help many of their students make great strides toward literacy and success in school. For more information about PALS research, training workshops, and access to materials, visit the PALS website at <http://www.kc.vanderbilt.edu/pals/>.

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