

## OSEP Research Institutes: Bridging Research and Practice



The article that follows is the fifth installment of a new column, *Bridging Research and Practice*, that will appear in each issue of TEC for the next year or two. In this column, three of the federally funded special education research institutes report to you, the practitioner, on their progress in areas that will be particularly helpful to you in working with your students. The U.S. Office of Special Education Programs (OSEP) has funded these three research institutes to study specific curricular and instructional interventions that will accelerate the learning of students with disabilities in curricular areas:

**CASL (Center on Accelerating Student Learning)** focuses on accelerating

reading, math, and writing development in grades K-3. The Directors of CASL are Lynn and Doug Fuchs of Vanderbilt University. CASL research sites are also located at Columbia University (Joanna Williams) and the University of Maryland (Steve Graham and Karen Harris).

**REACH (Research Institute to Accelerate Content Learning through High Support for Students with Disabilities in Grades 4-8)** is examining interventions that reflect high expectations, content, and support for students. The Director of REACH is Catherine Cobb Morocco at Education Development Center in Newton, MA. Research partners include the University of Michigan (Annemarie Palincsar and Shirley

Magnusson), the University of Delaware (Ralph Ferretti, Charles MacArthur, and Cynthia Okolo), and the University of Puget Sound (John Woodward).

**The Institute for Academic Access (IAA)** is conducting research to develop instructional methods and materials to provide students with authentic access to the high school general curriculum. The Institute Directors are Don Deshler and Jean Schumaker of the University of Kansas, Lawrence. Research partners include the University of Oregon and school districts in Kansas, California, Washington, and Oregon.

This issue features the Center on Accelerating Student Learning (CASL).

## Developing First-Grade Reading Fluency Through Peer Mediation

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The goal of the Center on Accelerating Student Learning (CASL) is to identify instructional practices that accelerate the learning of children with disabilities in kindergarten through grade 3. This includes the development of effective, multicomponent instructional interventions in reading, writing, and math, which focus on basic skills and higher-order learning and promote fluency, transfer, and maintenance. The intervention described in this column is designed to promote reading development, including fluency, among first-grade children with and without disabilities. The intervention is conducted in general education classrooms using peer-assisted learning strategies.

Theories by LaBerge and Samuels (1974), Logan (1985), and Stanovich (1980) and research conducted by Schreiber (1987), among others, indicate that reading comprehension depends on (a) accurate word recognition and (b) reading fluency—the fast, effortless, “automatic” reading of connected text. For many years, researchers

and practitioners believed that reading fluency develops naturally as children gain proficiency in reading at the word level, and that activity expressly devoted to fluency-building is unnecessary (see National Reading Panel, 2000). This is no longer the case, partly because of increasing evidence that some children do not achieve fluency despite a capacity to read at the word level (Fuchs, Fuchs, Mathes, Lipsey, & Roberts, 2001); partly because there are now proven fluency-building activities (see Yang, 2001).

### Repeated Reading

Probably the most frequently evaluated fluency-building strategy is repeated reading. In accordance with this approach, students are given short reading passages that contain recognizable words; and they read these passages for a predetermined number of times or for as many times as necessary to reach a specified level of reading rate. Repeated reading reflects a view shared by theorists and researchers that fluency is best developed through practice and repeti-

tion in consistent reading materials. A recent meta-analysis of the pertinent literature indicates that low achievers with and without a “learning disability” label can benefit from repeated reading, with effect sizes ranging from .30 to 1.20, depending on type of student and type of reading measure (Yang, 2001). This same meta-analysis also reveals a surprisingly small number of studies that involve first-grade children and that require teachers (rather than researchers) to implement the repeated-reading strategy.

Because reading failure often begins early and is difficult to remediate beyond the primary grades (e.g., Juel, 1988; Stanovich, 1986), and because evidence suggests repeated reading can strengthen reading fluency, we decided to develop such an intervention for first grade. In addition, we are designing it so that children can help each other become more fluent readers, thereby making it practical for teachers to use. What follows is a description of our peer-mediated reading program at first

grade. As you read it, remember it is a "work in progress," and it is meant to supplement, rather than supplant, teachers' reading/language arts curriculum. We call our program "First-Grade PALS." (The acronym stands for "Peer-Assisted Learning Strategies.")

### First-Grade PALS

As in Kindergarten PALS, Grades 2-6 PALS, and High-School PALS (for descriptions, see Fuchs, Fuchs, Thompson et al., 2001), First-Grade PALS participants work in pairs with same-age peers. Teachers introduce PALS to their students by modeling PALS activities in whole-class format. The teacher plays the role of Coach and the entire group of students responds as the Reader in choral fashion. Gradually, across a set of eight, 30-minute introductory lessons, the teacher provides individual children an opportunity to assume the role of Coach and Reader for the class sessions. Then students begin to tutor each other, as the teacher carefully monitors and provides corrective feedback to ensure students' mastery of the activities.

Teachers use the Rapid Letter Naming test, a good predictor of future reading performance (Torgesen, Wagner, & Rashotte, 1997), to pair the highest-scoring student in each class with the lowest-scoring student; the second highest-scoring student with the next-to-last scoring student, and so on. The higher-performing student in each pair is the Coach first; the lower-performing student is the Reader first. The Coach's job is to monitor the Reader's performance and provide assistance when necessary; the Reader's responsibility is to read and to cooperate with the Coach. When a pair completes an activity, students switch roles and repeat the activity. Students are assigned new partners every 4 weeks.

This past year, we researched two versions of First-Grade PALS: PALS with a fluency-building component (PALS + Fluency) and PALS without such a component (PALS). The reading performance of the students in both groups was compared to a no-treatment control group. The PALS + Fluency and PALS activities build on our work in kinder-

garten (e.g., Fuchs, Fuchs, Thompson, Al Otaiba, Yen, Yang, Braun, & O'Connor, 2001) and on the efforts of Mathes, Howard, Allen, and Fuchs (1998). The 35-minute lessons in both versions of First-Grade PALS consist of three parts: Teacher-Directed instruction, Sounds and Words, and Partner Reading.

**Teacher-directed instruction.** In PALS and PALS + Fluency, every lesson is preceded by 3 minutes of teacher-directed instruction. First, the teacher introduces new letter sounds and sight words. Then, using a set of 8 to 10 (new and old) words from the day's lesson, the teacher slowly pronounces a word, and the students hold up a finger for each sound they hear. Then the teacher displays a printed version of the word. The students read it slowly; then quickly.

**Sounds and Words.** Sounds and Words include four peer-mediated activities, each of which is represented on a lesson














sheet shared by a pair (see Figures 1 and 2; Fuchs et al., 2000). The first activity, letter-sound correspondence, always directly follows the teacher-directed instruction. During the past year, PALS and PALS + Fluency groups performed this activity in the same manner. The Coach points to a letter on the lesson sheet and prompts the Reader to say its sound. If the Reader makes a mistake, or does not know a letter sound, the Coach uses a correction procedure. When the Reader has said all of the sounds, the Coach marks a happy face and five points on the lesson sheet (see Figure 1).

The second Sounds and Words activity is a blending (or decoding) task on the same set of 8-10 words used during the teacher-directed instruction. The Coach encourages the Reader to sound out a word on the lesson sheet (see Figure 1). After the Reader has responded correctly, the Coach tells the Reader

Figure 1. Peer-Mediated Lesson Sheet #1

Lesson 62		coach says:
ch	k z er oo ea o ★	"What sound?"
oo	ck j ou ee ing ow	
i	qu ar u th ★ y er	
b	sh h aw ur ir e ★	
	☺ ☺ 5 points 5 points	
jackets	mittens	1. "Sound it out."
cool	pool	2. "Read it fast."
noon	feeds	
peanuts	seals	
petting	swimming	
	☺ ☺ 5 points 5 points	

Figure 2. Peer-Mediated Lesson Sheet #2

<p>many came over take over soon old soon to give          many are going give from your look old be going          take your says from white many put when going          give soon from their going over could be could give          were from could give came over soon could take</p> <p style="text-align: center;">            5 points 5 points       </p>	<p>"Read the words."</p>
<p style="text-align: center;"> <b>At the Zoo</b> </p> <p>The kids are sitting on the bus. The teacher says,          "We will be at the zoo soon. Zip your jackets. Put on          your mittens and hats. It's cool out today."          At the zoo, the kids look at <sup>J1</sup>many <b>animals</b>.  <sup>J2</sup>James feeds peanuts to the hungry <sup>J3</sup>elephants. Pam          waves to the seals swimming in the pool. In the          petting zoo room, <sup>M2</sup>a <sup>M1</sup>cow <sup>M3</sup>licks Meg on the hand. A          duck says, "Quack!" At noon, the kids eat their          lunch. The field trip is lots of fun!</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;"> animals</p> <p style="text-align: center;"> elephants</p>
<p style="text-align: center;"> Go back to "Read the story."</p>	

cial chart in their PALS folder. When they have earned enough stars to complete their charts, they get a bookmark or some other inexpensive reward and new charts to complete.

In the fourth Sounds and Words activity, students practice reading decodable words and sight words in stories printed on the lesson sheets (see Figure 2). This activity is performed similarly by both PALS groups. Before the students read the story, the teacher introduces new "rocket" words (i.e., infrequently used words added to the stories to make them more interesting) and reviews old "rocket" words. Next, the teacher reads the story to the students, who follow along on their lesson sheets. In PALS + Fluency classrooms, teachers emphasize the importance of reading quickly and correctly. Coaches then prompt Readers to read the story. If a mistake is made or if a Reader does not know a word, the Coach uses a correction procedure. When the story has been read, the Coach marks a happy face and registers five points.

During the second half of the treatment, students in PALS + Fluency classrooms perform the speed-reading game on the story section (See Figure 2). Teachers lead a brief training session. The game is played in the same manner as with sight words; however, students now read for 1-minute intervals. All students continue to read three times. Their goal is to read more words in the story on the second or third trial than in the first trial. The same correction procedure and the same types of rewards and charts are used as before.

In the PALS group, students continue to read the stories in the second half of the treatment as they did in the first half. They mark a star on a chart if they have read the story a certain number of times. The teacher decides on this criterion, but may never set it higher than three times. The charts the students use are identical to the ones used by the PALS + Fluency students for the speed-reading game. The PALS students also get a reward and a new chart each time they complete a chart.

**Partner Reading.** After students in both PALS groups have been conducting Sounds and Words activities independ-

to read the word fast. If the Reader makes a mistake or is unable to sound out or read a word, the Coach uses a correction procedure. The Coach marks a happy face and five points at the end of the activity. PALS and PALS + Fluency groups performed this task in the same way. About 50 decodable words are presented in this fashion across the lessons.

The third activity is a sight word task. A total of 113 words on the first-grade Dolch Word List are introduced across the lessons in both PALS and PALS + Fluency. During the first half of the treatment (weeks #1 through #11), both PALS groups use the same materials but they perform the activity differently. In the PALS group, the Coach points to a sight word and prompts the Reader to read it. If the Reader says the wrong word or does not know a word, the Coach uses a correction procedure. The Coach marks a happy face and reg-

isters five points at the end of the activity (see Figure 2).

In contrast, during the first half of the treatment, PALS + Fluency students play a speed-reading game with the sight words. Readers read as many sight words as they can in three 30-second trial periods, starting each time at the beginning of the section. The teacher times the students and reminds them to return to the same starting point. Coaches listen to Readers and apply a correction procedure if the Reader makes a mistake or does not know a word. At the end of each timed segment, the Reader marks his or her initials next to the last word read. The goal is to increase the number of words read in the second or third trial over the number of words read in the first trial. After three timed readings, the students switch roles. If the students read more words in the second or third trial than in the first trial, they mark a star on a spe-

ently for 9 weeks, Partner Reading is added. Partner Reading requires students to apply their decoding skills and sight word knowledge to connected text in books appropriate for their reading level. Teachers prepare their students for Partner Reading in two 20-minute sessions. Both PALS groups perform this activity in the same manner; however, PALS + Fluency teachers remind their students to read quickly and correctly. The Coach reads the title of the book, pointing to each word. Afterwards, the Reader does the same. The Coach next reads a page, pointing to each word; the reader follows suit. If the Reader makes a mistake or does not know a word, the Coach uses a correction procedure. Partners proceed through the book in this manner and mark five points; then they switch roles and repeat the process. Each book is read at least four times before it is traded for a new one. Partner Reading is conducted for 10 minutes immediately following the Sounds and Words activities.

### Research Results

In September 2000, 33 first-grade teachers and their students were assigned randomly (within their respective schools) to PALS + Fluency, PALS, and control groups. After a 22-week treatment, students' progress on reading-related measures was compared across the three study groups. Reading measures addressed phonological awareness (letter-sound correspondence, segmenting, and blending), "alphabets" (word attack, word identification, and spelling), fluency (number of words read correctly in connected text), and comprehension. The two PALS groups reliably outpaced controls by about .5 standard deviations on the phonological awareness and alphabetic measures; only the PALS + Fluency group's improvement was statistically significantly better (by .20 to .30 SDs) than controls on fluency and comprehension measures. Further, these results were not mediated by type of student (low achievers versus average achievers versus high achievers versus students with disabilities) or by type of school (Title I versus no Title I).

These and related findings suggest that peer-mediated, repeated reading

promoted both reading fluency and reading comprehension. Although the differences separating the three study groups on the fluency and comprehension measures was small to moderate in magnitude, the time devoted to repeated reading was very modest. PALS + Fluency students' speed reading consumed a mere 50 minutes during the entire first 11 weeks of the intervention; 100 minutes during the last 11 weeks. That is, the PALS + Fluency students' greater gains on fluency and comprehension measures was due to only 2.5 hours of repeated reading activity spread across 22 weeks. It seems reasonable to expect that if teachers were to engage their students for more time in peer-mediated repeated readings, teachers and students would obtain more impressive results. We are pursuing this possibility and related strategies for helping teachers to promote greater reading fluency and stronger comprehension among their students.

If you are interested in obtaining more detailed information about PALS reading (or PALS math) programs at kindergarten, first grade, grades 2-6, and high school, visit our web site (<http://www.peerassistedlearningstrategies.net>) or email us ([pals@vanderbilt.edu](mailto:pals@vanderbilt.edu)).

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**If you are interested in obtaining more detailed information about PALS reading programs at kindergarten, first grade, grades 2-6, and high school, or about PALS math programs, visit our Web site (<http://www.peerassistedlearningstrategies.net>) or e-mail us at [pals@vanderbilt.edu](mailto:pals@vanderbilt.edu). If you are interested in having a PALS Workshop held at your school or in your district, contact [conteduc@cec.sped.org](mailto:conteduc@cec.sped.org).**