PALS

Peer-Assisted Learning Strategies for Accelerating Achievement in Reading and Math

"Without exception, PALS has made an incredible difference not only in student achievement and learning in class, but in the approach teachers take to learning."

—Susan Burns, elementary school principal

The Need for Scientifically Based Practices for Reading and Mathematics Instruction

A surprisingly large number of America's children do not learn to read. As many as 40% of children in many classrooms fail to make adequate reading progress. According to some estimates, 25% of the adult population is illiterate. In the area of mathematics, the problem is of similar magnitude. Many children leave school without the basic skills necessary to obtain gainful employment or to manage everyday finances. In response to these poor achievement outcomes, the federal government has promoted the use of scientifically based practices that have been shown to boost students' academic growth. The government's goal is to insure that all students achieve the reading and math skills necessary to lead successful, productive, and satisfying lives.

Peer-Assisted Learning Strategies: A Scientifically Based and Feasible Practice Promoting Higher Achievement

What is PALS?

Peer-Assisted Learning Strategies, or PALS, is a scientifically based practice studied over the past 15 years. To develop and evaluate PALS, Vanderbilt University researchers have worked in close collaboration with hundreds of

teachers to insure that the PALS methods are feasible and effective. This collaborative effort has often required the building, tearing down, and rebuilding of PALS procedures before settling on the methods that work best.

With PALS, every student in the class is paired. In each pair, one student is academically stronger than the other. During each PALS session, the students in a pair take turns as tutor and tutee while working on structured activities that address the difficulties each may be experiencing. This pairing creates 10 to 15 instructional experiences in a given classroom, each geared to individual needs. It also permits the teacher to circulate in the class, to observe students, and to provide individual help as needed.

PALS is designed to supplement a teacher's existing reading and math programs. PALS can be used with any instructional approach and takes only several 35-minute sessions per week.

In *reading*, PALS has been developed for preschool through sixth grade and high school. In *mathematics*, PALS programs are geared to students in kindergarten through sixth grade.

Across grades in reading and math, PALS incorporates the following features:

- Teachers train their students to insure that the students make correct use of the structured activities and helping strategies.
- Scripted materials guide teachers' training of their students.
- Activities focus on key skills in reading and math and reflect state-of-the-art instructional practices.
- Reciprocal turn-taking insures that every child is tutor and tutee in every session.
- Participation is associated with high levels of student engagement and practice.

What is the evidence for PALS' effectiveness?

PALS research meets the highest standard of research-based evidence. It involves multiple studies that incorporate randomized field trials. In these experimental studies, classrooms were randomly assigned to PALS or No-PALS classrooms that used the same curriculum. PALS teachers implemented PALS 2 to 4 times per week during normally allocated instructional time so that PALS and No-PALS children received similar amounts of instruction. The fidelity, or accuracy, with which PALS was implemented was assessed and shown to be high. Students were pre- and posttested on well-known measures of reading or math to determine the amount of learning for low-performing, average-performing, and high-performing students as well as for students with learning disabilities.

Results from these experimental studies show that across these four types of learners—students with learning disabilities, low-performing students without disabilities, average-achievers, and high-achievers—reading and math achievement is dramatically greater in PALS classrooms than in No-PALS classrooms. Students with disabilities are better known and better liked in PALS classes, and PALS students tend to express greater enjoyment with their reading and math instruction. Moreover, teachers are enthusiastic about the effectiveness and feasibility of PALS.

On the basis of this scientific evidence, PALS was approved by the U. S. Department of Education's Effectiveness Panel for inclusion in the National Dissemination Network of effective educational practices for use at the school, district, and state levels. PALS-Reading and PALS-Math extend the capacity of teachers to accommodate the increasingly broad range of students in their classrooms, helping them insure the academic success of their students.

"Many times, the kids get the right answer, but they don't understand why. This helps them identify the different steps it takes to get the right answer. They do so much better when they can explain what they are doing and why."

—Kristen Pekovich, 3rd grade teacher

PALS Activities

PALS incorporates different activities at different grade levels, reflecting an appropriate set of developmental skills critical for academic success.

PALS-MATH ACTIVITIES

Kindergarten. The focus of PALS-Math is on number recognition, number concepts, and the development of a mental number line representation. Accordingly, children practice associating numerals with their numerical value, play games involving "more" and "less," and work with number lines to compare the placement and value of numbers. Early concepts of addition and subtraction are also introduced with an emphasis on "number stories."

Grade 1. PALS-Math becomes more challenging. In addition to a strong focus on number recognition and the development of a mental number line representation, emphasis is on place value within numeration, number concepts, and addition and subtraction concepts. The first-grade PALS curriculum also addresses missing addends and mathematical operations, and the number values extend to the hundreds.

Grades 2-6. The PALS program covers the comprehensive math curriculum including numeration, number concepts, computation of whole numbers, fractions, and decimals, measurement and geometry, figures/graphs, and word problems. The specific skills addressed at each grade correspond to the standards most frequently represented at each level of the curriculum.

PALS-READING ACTIVITIES

Preschool. PALS focuses on letter-naming, letter-sound correspondence, phonemic awareness, initial letter sounds, and vocabulary development.

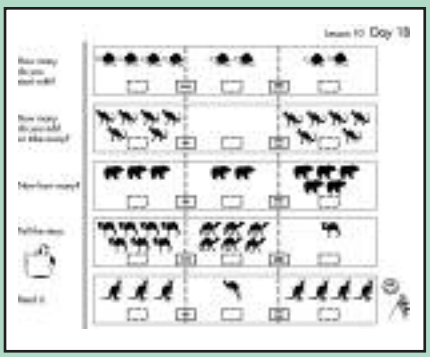


Figure 1. Sample First-Grade PALS Gameboard for Story Problems

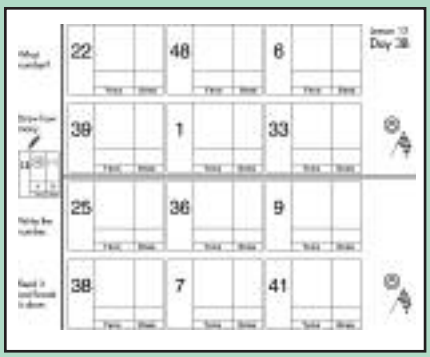


Figure 2. Sample First-Grade PALS Gameboard for Number Concepts

Kindergarten. PALS focuses on letter-sound correspondence, phonemic awareness, early decoding, and word identification. Children also read sentences and short stories. Many complete the Kindergarten PALS program as readers.

Grade 1. The program promotes letter-sound correspondence, phonemic awareness, early decoding, word identification, sentence and story reading, and fluency-building activities.

Second-Grade. PALS advances decoding and word identification, fluency, and comprehension of narrative texts. The comprehension activities at second grade introduce children to critical reading strategies that are often used by successful readers, including paragraph summaries and predicting future text.

Third through sixth grade. PALS emphasizes the development of fluency as well as comprehension strategies with three activities: Partner Reading with Retells, Paragraph Shrinking, and Prediction Relay.

PALS Materials

PALS materials are user-friendly. A comprehensive manual, written expressly for teachers, guides implementation at each grade. Teachers do not need to develop additional materials, use novel curricula, or devote more time than usual to instruction. PALS materials and activities complement any instructional approach. For example, teachers have used PALS-Reading as effectively with whole language instruction as with phonics-based approaches. PALS enhances teachers' ongoing practices.

Summary

PALS-Reading and PALS-Math are scientifically based practices that help teachers boost the reading and math performance of low-, average-, and high-achieving students, as well as those with special needs. In addition, the PALS programs are practical and are enjoyed by teachers and students.

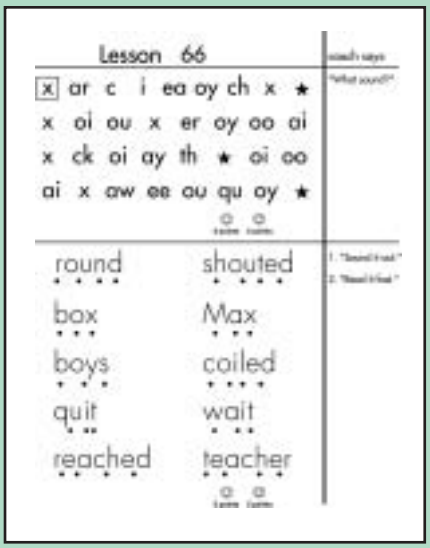
Related Readings

Fuchs, D., Fuchs, L. S., Mathes, P., & Simmons, D. (1997). Peer-Assisted Learning Strategies: Making classrooms more responsive to student diversity. *American Educational Research Journal, 34*(1), 174-206.

(continued on back)

"Higher level thinking has become easier for the students. I saw the skills they learned in the reading class carry over into other subjects."

—Linda Ausbrooks, 3rd grade teacher



Figures 3 and 4. Example of a two-page first-grade PALS-Reading lesson.

Fuchs, D., Fuchs, L. S., Thompson, A., Al Otaiba, S., Yen, L., Yang, N., Braun, M., & O'Connor, R. (2001). Is reading important in reading-readiness programs? A randomized field trial with teachers as program implementers. *Journal of Educational Psychology, 93,* 251-267.

Fuchs, D., Fuchs. L., Yen, L., McMaster, K., Svenson, E., Yang, N., Young, C., Morgan, P., Gilbert, T., Jaspers, J., Jernigan, M., Yoon, E., & King, S. (2001). Developing first-grade reading fluency through peer mediation. *Teaching Exceptional Children, 34*(2), 90-93.

Fuchs, L. S., Fuchs, D., & Karns, K. (2001). Enhancing kindergarten children's mathematical development: Effects of peer-assisted learning strategies. *Elementary School Journal, 101,* 495-510.

Fuchs, L. S., Fuchs, D., & Kazdan, S. (1999). Effects of peer-assisted learning strategies on high-school students with serious reading problems. *Remedial and Special Education, 20,* 309-318.

Fuchs, L. S., Fuchs, D., Hamlett, C. L., Phillips, N. B., Karns, K., & Dutka, S. (1997). Enhancing students' helping behavior during peer-mediated instruction with conceptual mathematical explanations. *Elementary School Journal, 97,* 223-250.

Fuchs, L. S., Fuchs, D., Yazdian, L., & Powell, S. R. (2002). Enhancing first-grade children's mathematical development with peer-assisted learning strategies. *School Psychology Review, 31,* 569-584.

PALS was developed and evaluated in cooperation with Metropolitan Nashville (TN) Public Schools, Williamson County (TN) Public Schools, and the Franklin (TN) Special School District. Research on PALS Reading and Math has been supported in part by the following grants from the Office of Special Education Programs, U.S. Department of Education: H324D000030, H0324V8001, H133G70050, H023C70230, H023C40001, H023N3003, and H023E90020.

For additional information, write or call

LYNN FUCHS, PH.D.
DOUG FUCHS, PH.D.
Professors of Special Education
John F. Kennedy Center
Investigators
Vanderbilt University
Peabody Box 328
230 Appleton Place
Nashville, Tennessee 37203-5701
Phone 615-343-4782
Fax 615-343-1570
doug.fuchs@vanderbilt.edu
lynn.fuchs@vanderbilt.edu
kc.vanderbilt.edu/kennedy/pals

The John F. Kennedy Center for Research on Human Development is a National Institute of Child Health and Human Development designated mental retardation and developmental disabilities research center. The Center is a university-wide research, training, diagnosis, and treatment institute. Center researchers are committed to improving the quality of life of persons with disorders of thinking, learning, perception, communication, mood and emotion caused by disruption of typical development. Founded in 1965, the Center serves as a laboratory for developing, evaluating, and disseminating innovative educational practices. See kc.vanderbilt.edu/kennedy.

Peabody College, Vanderbilt University's college of education and human development, seeks to advance human well-being by fostering greater learning. Peabody's efforts are international in scope and include learners of all ages and abilities. A research institution, Peabody disseminates the knowledge it creates through an energetic network of partnerships with K-12 school systems, higher education institutions, corporations, nonprofit organizations, and governments, as well as through its 30,000 graduates. See peabody.vanderbilt.edu/peabody/.

Vanderbilt University is committed to principles of equal opportunity and affirmative action. Published by John F. Kennedy Center Communication Services, 2003 Photographs by Larry Wilson