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Peer-assisted learning strategies for first-grade readers: Responding to the needs of diverse learners

It is widely accepted that effective early literacy instruction incorporates strategies to improve word recognition while providing for the reading of meaningful, connected text (Adams, 1990; Adams & Bruck, 1995; Baker, Simmons, & Kameenui, 1995; Mason, Herman, & Au, 1991). Extensive research has shown repeatedly that systematic instruction in word recognition skills and fluency development is critical to early reading success for many readers (Adams, 1990; Chard, Simmons, & Kameenui, 1995; Smith, Simmons, & Kameenui, 1995; Stanovich, 1988, 1991). Likewise, early reading experiences utilizing and expanding children's comprehension have been linked again and again to overall literacy development (e.g., Snow & Ninio, 1986; Taylor, 1983; Teale, 1984; Wells, 1986).

Thus, there is growing consensus that early readers benefit from a balance or synergy between emphasis on code-based systematic word recognition and fluency strategies and meaning-based literacy experiences (Gunn, Simmons, & Kameenui, 1995; Kameenui, 1993). However, how to best achieve this balance has been at the center of ongoing controversy (Adams & Bruck, 1995; Chall, 1989; Kameenui, 1993; Mason et al., 1991; Smith, 1992).

Responding to mixed messages about early reading instruction, many teachers are uncertain about how to

best meet the literacy needs of their diverse students (Adams & Bruck, 1995; Kameenui, 1993; Kameenui et al., 1995). Thus, it is not surprising that about one in three children experience significant difficulty in learning to read (e.g., Adams, 1990) and that illiteracy rates are on the rise (e.g., Chard et al., 1995). Unfortunately, it appears that once children fall behind, they rarely catch up (Juel, 1988, 1991) and that problems in early reading acquisition, especially word recognition, often affect children's abilities to participate in purposeful, enjoyable reading and writing throughout their lives (Daneman, 1991; Juel, 1991; Stanovich, 1991, 1993/94).

Fortunately, the last 20 years have been very productive in the study of literacy acquisition, and much is known about how to help children experience early reading success (Galda & Cullinan, 1991; Gunn et al., 1995; Kameenui et al., 1995; Mason et al., 1991; Smith et al., 1995). Thus, we assert that the present challenge is not about how to teach early literacy, but rather how to balance the various aspects of what is known in ways that are both practical for teachers and responsive to the unique learning needs of individual children. In response to this challenge, the present research empirically examines the efficacy of Peer-Assisted Learning Strategies for First-Grade Readers (First-Grade PALS), a set of early reading strategies that incorporates research-

Peer-assisted learning strategies for first-grade readers: Responding to the needs of diverse learners

THIS RESEARCH examines the effectiveness of Peer-Assisted Learning Strategies for First-Grade Readers (First-Grade PALS) as a tool for enhancing the reading achievement of different learner types, particularly low-achieving students, representing the range of academic diversity typically present in primary grade classrooms. First-Grade PALS helps teachers to accommodate this diversity (a) by decentering instruction through peer mediation so that students become more actively involved in the learning process, (b) by including provisions for integrating phonological and alphabetic skills into the decoding of words in connected text, and (c) by providing extensive and repeated exposure to a variety of children's literature. In this research, the efficacy and feasibility of First-Grade PALS were examined in naturally constituted, academically heterogeneous first-grade classes, during time normally allocated for reading instruc-

tion. Twenty first-grade teachers and 96 first-grade students (46 low, 20 average-, and 20 high-achieving) participated. Ten teachers incorporated First-Grade PALS into their reading program; 10 continued to teach reading as usual. Data collected included (a) time-series phonological awareness and reading fluency data and (b) pre- and post-measures of concepts of print, decoding, fluency, and comprehension. Students and teachers also were asked to rate their satisfaction with various aspects of First-Grade PALS. Results indicate that all learner types were positively affected by participation in First-Grade PALS, with the greatest gains indicated for low-achieving students. Likewise, both students and teachers implemented First-Grade PALS with relative ease, demonstrated high fidelity, and reported high levels of satisfaction.

Estrategias de Aprendizaje Asistido por Pares para Lectores de Primer Grado: Una respuesta a las necesidades de una diversidad de estudiantes.

ESTA INVESTIGACIÓN examina la efectividad de las Estrategias de Aprendizaje Asistido por Pares para Lectores de Primer Grado (PALS 1er. Grado) como una herramienta para mejorar el desempeño en lectura de diferentes tipos de estudiantes, particularmente estudiantes de bajo rendimiento, que representen el rango de diversidad académica típico de las aulas de primer grado. PALS 1er. Grado ayuda a los docentes a adaptar esta diversidad: (a) descentralizando la enseñanza a través de la mediación de pares, de modo que los estudiantes se involucren más activamente en el proceso de aprendizaje, (b) incluyendo elementos para integrar habilidades fonológicas y alfabéticas en la decodificación de palabras durante la lectura de textos y (c) proporcionando una exposición extensa y repetida a una variedad de literatura infantil. En este trabajo, se examinó la eficacia y viabilidad de PALS 1er. Grado en aulas de primer grado constituídas naturalmente y, heterogéneas desde el punto de vista

académico, durante el tiempo normalmente dedicado a la lectura. Participaron veinte docentes y 96 estudiantes de primer grado (46 de bajo rendimiento, 20 de rendimiento promedio y 20 de alto rendimiento). Diez docentes incorporaron PALS 1er. Grado a sus programas de lectura; diez continuaron enseñando como lo hacían habitualmente. Los datos recogidos incluyeron: (a) datos de conciencia fonológica y fluidez en lectura tomados en distintos períodos y (b) pre y post tests de conceptos sobre la escritura, decodificación, fluidez y comprensión. También se pidió a estudiantes y docentes que evaluaran varios aspectos de PALS 1er. Grado. Los resultados indican que la participación en PALS 1er. Grado influyó positivamente en todos los tipos de estudiantes, siendo los estudiantes de bajo rendimiento los más beneficiados. Asimismo, tanto los estudiantes como los docentes implementaron PALS 1er. Grado con relativa facilidad, demostraron un alto cumplimiento y manifestaron estar muy satisfechos.

Tutorensystem für Schulanfänger beim Lesen: Eingehen auf die Bedürfnisse unterschiedlich lernfähiger Schüler

DIESE FORSCHUNGSSTUDIE untersucht die Erfolgsaussichten von Lernstrategien mittels schülerbezogener Aufgabenverteilungen für Erstklässler beim Lesen—Peer-Assisted Learning Strategies (1. Klasse PALS)—als Anleitungshilfe zur Steigerung der Leseleistung unterschiedlich lernfähiger Schüler, insbesondere von Schülern mit Leistungsschwächen, und berücksichtigt die akademischen Unterscheidungsspannweiten wie sie typischerweise in Klassenräumen der Anfangsstufe vertreten sind. 1. Klasse PALS hilft den Lehrern auf diese Unterschiede einzugehen, (a) durch eine vermittelnde Aufgabenverteilung auf die Mitschüler, so daß die Schüler aktiver in den Lernprozeß einbezogen werden, (b) durch Hinzufügen von Maßnahmen zur Integrierung phonologischer und alphabetischer Fertigkeiten im Entschlüsseln von Worten innerhalb eines zusammenhängenden Textes, und (c) durch die umfangreiche Bereitstellung und der wiederholten Darbietung unterschiedlicher, ausgewählter Kinderliteratur. In dieser Forschungsstudie wurden Wirkungskraft und Durchführbarkeit von 1. Klasse PALS Maßnahmen im Rahmen der normalen Unterrichtszeit für Lesestunden in natürlich zusammengestellten, akademisch heterogenen 1. Schulklassen untersucht.

Es nahmen 20 Lehrkräfte der 1. Klasse und 96 Schüler der 1. Klasse (davon 46 unterdurchschnittlich, 20 durchschnittlich, und 20 überdurchschnittlich begabt) an der Studie teil. Zehn Lehrer bezogen die 1. Klasse PALS Strategien in ihren Leseunterricht mit ein; die übrigen 10 führen fort, das Lesen wie bisher üblich zu unterrichten.

Die Datenermittlung schloß ein (a) eine zeitbemessene Serienfassung der phonologischen Aufmerksamkeit und Daten für fließendes Lesen, ferner (b) Maßnahmen zur vorherigen und anschließenden Bewertung von Konzepten des Druckmaterials, des Entschlüsselns, der Flüssigkeit und des Verständnisses. Schüler und Lehrer wurden ebenfalls gebeten, ihre Zufriedenheit mit den 1. Klasse PALS Strategien unter verschiedenen Aspekten zu beurteilen. Die Ergebnisse weisen daraufhin, daß alle Lerngruppierungen positiv durch die Teilnahme am 1. Klasse PALS beeinflusst wurden, mit den besten Steigerungssindikatoren bei leistungsschwachen Schülern. Gleichermaßen wandten Schüler und Lehrer die 1. Klasse PALS Strategien mit ausgesprochener Leichtigkeit an, zeigten hohe Zustimmung und berichteten von hochgradiger Zufriedenheit.

小学1年生同志が読みを助け合う学習ストラテジー：多様な学習者のニーズに応じて

で典型的に見られる多様な学力を代表する低学力の生徒のリーディング能力を高める手段として、小学1年生が友達読みの手助けをする学習ストラテジーの効果を調査したものである。この学習ストラテジーは、(a) 友達を介することで生徒たちがより活発に学習のプロセスに関わり合い、指導から注意をそらさないこと、(b) 発音とアルファベットの能力を統合してテキストに出てくる単語を読む練習をすること、(c) 児童向けの様々な読み物を幅広くかつ何度も読む機会を与えることによって教師が学力差を緩和させるのに一役買う。この研究では、日常的に読みの指導が行われている時間割及び多様な生徒を抱える通常の小学1年生クラスにおけるこの学習ストラテジーの効果及び実行可能性が調査された。被験者は小学1年生を担当している20名の教師と96名の小学

20名、高学力児童20名)である。10名の教師はこの学習ストラテジーを読みの指導に取り入れ、残りの10名は、通常の読みの授業を続けた。集められたデータは、(a) 発音に対する意識と読みの速さを時間を追って調べたものと、(b) 活字、読み、速さ、理解についての概念を実験の前後で調べたものであった。生徒と教師は、その学習ストラテジーの様々な側面における満足度を評価することが求められた。その結果、学力の差にかかわらず全ての学習者がこの学習ストラテジーに前向きに取り組み、特に低学力の生徒にとっては大きな学習効果があることが分かった。同様に生徒も教師も比較的容易にこの学習ストラテジーに参加でき、真面目に取り組み、満足度も高いことが分かった。

Stratégies d'apprentissage assisté par des pairs pour des lecteurs de première année: répondre aux besoins d'apprenants hétérogènes

CETTE RECHERCHE examine l'efficacité de Stratégies d'Apprentissage Assisté par des Pairs (SAAP) pour des lecteurs de première année, comme outil d'amélioration de la réussite en lecture de types d'apprenants assez différents pour présenter l'ensemble des caractéristiques que l'on peut trouver dans des classes du premier degré, et en particulier les élèves peu performants. Les SAAP en première année aident les enseignants à faire face à cette hétérogénéité (a) en décentrant l'enseignement grâce à la médiation des pairs de sorte que les élèves s'impliquent plus activement dans le processus d'apprentissage, (b) en se donnant les moyens d'intégrer des habiletés phonologiques et alphabétiques pour le décodage des mots d'un texte continu, et (c) en fournissant une exposition importante et fréquente à de nombreux livres de jeunesse. Dans cette recherche, on a examiné l'efficacité et la faisabilité de SAAP en première année dans des classes constituées de manière normale, hétérogènes sur le plan académique, et pendant le temps normalement prévu pour l'en-

seignement de la lecture. Vingt enseignants de première année et 96 élèves de première année (46 faibles, 20 moyens, et 20 bons) y ont participé. Dix enseignants ont inclus des SAAP dans leur programme de lecture, dix ont continué à enseigner la lecture comme d'habitude. Les données recueillies comportent (a) des données relatives à la conscience phonologique et à la maîtrise de la lecture (séries temporelles) et (b) des mesures relatives aux conceptions de l'écrit, au décodage, à la maîtrise de la lecture, et à la compréhension (avant/après). On a également demandé aux élèves et aux maîtres d'évaluer leur degré de satisfaction relatif à différents aspects des SAAP en première année. Les résultats indiquent que la participation aux SAAP en première année a eu un impact positif sur tous les types d'apprenants, les élèves les moins performants obtenant les bénéfices les plus élevés. Par ailleurs, tant les élèves que les enseignants ont mis en oeuvre assez facilement les SAAP en première année, ont fait preuve d'une grande fidélité, et ont manifesté une grande satisfaction.

based best practices in early literacy instruction and uses first graders to mediate the instruction of other first graders.

Obstacles to responsive early reading instruction

In the vast majority of classrooms today, teachers are coping with greater academic diversity than ever before (see Allington, 1991; Baker et al., 1995; Headden, 1995; Hodgkinson, 1991; Jenkins, Jewell, Leceister, & Troutner, 1990; Natriello, McDill, & Pallas, 1990). In the typical U.S. public school primary-grade classroom, it is not unusual for one teacher to instruct 25 or more children who (a) possess a wide range of maturity and reading ability (Kameenui, 1993); (b) do not speak English as their first language and may know little to no English (Carnegie Foundation, 1995); (c) are being raised in poverty (Children's Defense Fund, 1992); (d) are labeled or are at risk for being labeled learning disabled, mildly mentally disabled, or emotionally disturbed; (e) take medication for hyperactivity and attention disorders; (f) may be hearing- or visually impaired; and (g) may be high functioning or gifted (Council for Exceptional Children, 1994). Needless to say, this diversity makes it challenging for teachers to meet the unique needs of individual students (Allington, 1991; Baker et al., 1995; Fuchs, Fuchs, & Bishop, 1992; Vaughn & Schumm, 1995).

Most teachers report that they would like to better meet the diverse academic needs of their students, but they feel overwhelmed and ill-equipped (Schumm & Vaughn, 1995; Vaughn & Schumm, 1995). What they require, they report, are feasible strategies to help them to better accommodate students with diverse instructional needs (Schumm & Vaughn, 1995; Vaughn & Schumm, 1995).

One result of increasing academic diversity is that it is difficult for teachers to provide adequate reading opportunities for all learners. Descriptive studies have repeatedly indicated that typical reading instruction provides insufficient engaged reading opportunities to facilitate reading growth for many students (Gelzheiser & Meyers, 1991; Haynes & Jenkins, 1986; O'Sullivan, Ysseldyke, Christenson, & Thurlow, 1990; Simmons, Fuchs, Fuchs, Mathes, & Hodge, 1995). For example, students spend approximately two thirds of their reading periods independent of the teacher and engaged in non-reading or indirect reading activities (Allington & McGill-Franzen, 1989; Haynes & Jenkins, 1986). When students are being instructed directly by the teacher, they spend about 70% of their time passively watching and listening to the teacher or other students, with little or no opportunity to actually read (O'Sullivan et al., 1990; Simmons et al., 1995). Furthermore, it appears that students most at risk for school failure actually receive less engaged

reading opportunities than their higher performing peers (Allington, 1984; Hall, Delquadri, Greenwood, & Thurston, 1982; O'Sullivan et al., 1990).

Content of the reading curriculum

Compounding problems of inadequate engaged reading opportunity, it appears that the content of early reading instruction often lacks many components critical to the success of students experiencing literacy acquisition difficulty (Adams, 1990; Chard et al., 1995; Galda & Cullinan, 1991; Gunn et al., 1995; Moats, 1994, 1995; Morrow, 1993; Roser, Hoffman, & Farest, 1990; Smith et al., 1995; Tunnell & Jacobs, 1989). This critical content includes provisions for acquiring accurate and quick word recognition, increasing the speed and ease of reading connected text, providing extensive exposure to authentic literature, and enhancing the deep processing of text.

Word recognition

Most crucial among the critical components of a curriculum for beginning readers is the inclusion of systematic instruction in word recognition. Extensive research over the last two decades has produced a strong consensus that the fundamental reading problem for most children who experience serious difficulty learning to read involves the insufficient acquisition of accurate and fluent word identification, which subsequently interferes with comprehension development (see Chard et al., 1995; Stanovich, 1988, 1991). Furthermore, phonological abilities and alphabetic reading skills, especially phonological recoding, appear to account for individual differences in word recognition in both children and adults (Share, 1995). Fortunately, a plethora of research shows that accurate and fluent word identification is enhanced by specific, careful instruction in phonological abilities and alphabetic reading skills (Adams, 1990; Chard et al., 1995; Share, 1995; Torgesen, Wagner, & Rashotte, 1994; Wagner & Torgesen, 1987).

There is also growing awareness that how the content of this instruction is designed may determine how effective it will be, especially for low-performing readers. Thus, in designing instruction to teach phonological abilities and alphabetic reading skills, factors such as demand on memory, complexity of word structures, and the immediate utility of new information must all be considered to ensure new knowledge is meaningful and applied to the reading of connected text (Carnine, Silbert, Kameenui, 1997; Garon & Wagner, 1997; Howard, Fuchs, & Mathes, 1997).

Fluency development

Beyond phonological and alphabetic knowledge, children must be able to read connected text with rela-

tive ease if the meaning of that text is to be accessed and the development of mature comprehension strategies is to prosper (Adams, 1990; Chard et al., 1995; Mason et al., 1991; Rashotte & Torgesen, 1985; Stanovich, 1991). Comprehension of subtle language concepts in print simply cannot occur without recognition of the individual words composing those concepts (e.g., Chard et al., 1995). Research confirms that fluency and comprehension develop simultaneously and it is likely that this relationship is reciprocal (Gunn et al., 1995; Trachtenburg, 1990; Vellutino, 1991).

Early literacy instruction that integrates alphabetic knowledge into the actual act of reading meaningful, rich text has been shown to enhance both fluency and comprehension (Adams, 1990; Chall, 1983, 1989; Gunn et al., 1995; Vellutino, 1991). Furthermore, providing opportunities for repeated immersion in meaningful text has been shown to enhance both fluency and comprehension (Mason et al., 1991; Rashotte & Torgesen, 1985; Sindelar, Monda, & O'Shea, 1990; Weinstein & Cook, 1992).

Comprehension development

Clearly readers must recognize words fluently in order to comprehend text (Mason et al., 1991), but fluency alone is not sufficient for achieving deeper levels of understanding (Daneman, 1991). Competent comprehenders are strategic; they typically follow a generalizable plan when approaching texts (Flood & Lapp, 1991). Specifically, competent comprehenders employ the following strategies, each of which can be incorporated into instructional activities: (a) previewing a text, activating prior knowledge, and setting a purpose for reading prior to reading; (b) monitoring comprehension of a text and synthesizing new concepts with previous knowledge while reading; and (c) summarizing, evaluating, and applying the ideas in a text after reading (Flood & Lapp, 1991).

The use of children's trade books also has received recent attention for facilitating children's internalization of a strategic approach to processing text (Flood & Lapp, 1991). It appears that children develop a deeper understanding of concepts of print and text structures, as well as increased word recognition and fluency, through repeated exposure to this literature (Bridge, Winograd, & Haley, 1983; Flood & Lapp, 1991; Koskinen & Blum, 1986; Tunnell & Jacobs, 1989). More specifically, repeated reading of the same authentic text enables young readers to attend to different aspects of a story and, thus, to deepen understanding (Beaver, 1982; Martinez & Roser, 1985) and gain confidence in reading (Morrow, 1993).

Use of these books has been shown to facilitate children's vocabulary and syntax development (Cullinan, 1989; Galda & Cullinan, 1991; Morrow, 1993), increase

interest in reading (Galda & Cullinan, 1991; Huck, 1977; Tunnell & Jacobs, 1989), and supply models of written language for young readers and writers (Cullinan, 1989; Galda & Cullinan, 1991). Furthermore, many of these early comprehension skills appear to be enhanced rather incidentally through increased and repeated exposure to a variety of children's literature (Galda & Cullinan, 1991; Rhodes, 1981; Tunnell & Jacobs, 1989).

Overcoming the obstacles

A balanced curriculum

Clearly it is important to provide extensive and repeated exposure to a variety of quality trade books and to teach children to attend to text in ways that will enhance deeper comprehension. Simultaneously, because children's problems acquiring word identification skills have been so firmly established as a primary cause of their reading problems, and because alphabetic reading skills play such a crucial role in the development of word-reading ability, any reading curriculum designed to prevent or correct early reading failure must include provisions for teaching and integrating phonological and alphabetic skills into the fluent decoding of words in connected text (Chard et al., 1995; Kameenui et al., 1995; Smith et al., 1995). It also appears that combining carefully designed systematic phonics instruction with more holistic practices that emphasize contextualized experiences with authentic texts may facilitate this desired integration of alphabetic knowledge, enhance word recognition fluency, and increase multiple dimensions of comprehension.

Decentering

Beyond incorporating critical content, if early reading instruction is to have the desired impact, the way in which instruction is typically delivered must be restructured to actively engage children in learning; children must no longer passively watch and listen to the teacher teach. Indeed, few literacy researchers would argue with the assertion that children learn by reconstituting prior knowledge as they encounter new information, primarily through collaborative talk with others (Barnes, 1990; Vygotsky, 1978; Wells, 1986). Thus, what is needed, we argue, is a decentering of the teaching and learning process, or "a loosening of the straight jacket nature of traditional classrooms" (Fuchs, Fuchs, Mathes, & Simmons, 1997, p. 178). In a decentered classroom, children take greater responsibility for their own learning while teachers serve as facilitators by arranging the learning environment and curriculum to enhance learning.

Peer-mediated instruction

Peer-mediated instruction is one decentering option that encourages children to become more active learners. Peer-mediated instruction has a long, rich, and research-supported tradition as an effective technique for promoting academic gains in multiple contexts, across subject areas, and with most learner types including children with mild disabilities and other children at risk for school failure (see the following reviews for more details: Cohen, Kulik, & Kulik, 1982; Devin-Sheehan, Feldman, & Allen, 1976; Gerber & Kauffman, 1981; Kalfus, 1984; Mathes & Fuchs, 1994). Additionally, there is agreement that both tutors and tutees benefit academically (Cohen et al., 1982; Devin-Sheehan et al., 1976; Gerber & Kauffman, 1981; Kalfus, 1984).

Peer-Assisted Learning Strategies for first-grade readers

One very successful class of peer-mediated techniques is Peer-Assisted Learning Strategies. It was originally called Classwide Peer Tutoring (CWPT) and developed at the Juniper Gardens Children's Project in Kansas in the late 1970s as a technique for improving children's learning of basic skills in urban schools. This type of peer-mediated instruction was developed specifically to reallocate instructional time to increase students' opportunities to engage in academics (see Delquadri, Greenwood, Whorton, Carta, & Hall, 1986; Greenwood, Delquadri, & Hall, 1989). Building on this foundation, researchers at Peabody College of Vanderbilt University developed and empirically validated Peabody Peer-Assisted Learning Strategies (Peabody PALS) in reading for the upper elementary grades. They borrowed the basic classroom structure of the original CWPT and expanded these procedures to engage students in strategic reading activities. These activities were designed to increase students' abilities to (a) cumulatively review information read, (b) sequence information, (c) summarize paragraphs and pages, (d) state main ideas in as few words as possible, and (e) predict and check outcomes (for more detail, see Fuchs et al., 1997; Mathes, Fuchs, & Fuchs, 1995; Mathes, Fuchs, Fuchs, Henley, & Sanders, 1994).

First-Grade PALS was developed as a downward extension of Peabody PALS as a result of observed need and repeated teacher requests. Specifically, first-grade teachers, observing the enthusiasm of both teachers and students for Peabody PALS, repeatedly requested that First-Grade procedures be developed. Additionally, in Peabody PALS classrooms, it was observed that at each grade, especially second and third, there was a small set of students who could not fully participate and, therefore, benefit from the activities because they were not yet reading. Teachers of these students requested that

appropriate procedures be implemented with students sooner to prevent, or at least reduce, the occurrence of nonreaders after first grade.

In First-Grade PALS classrooms, as in Peabody PALS and CWPT classrooms, children are paired with other children from within their own classroom. Each pair then simultaneously completes a tutoring routine that has been carefully taught by the teacher. Pairs are also assigned to one of two teams, for which they earn points for academic activities and cooperative behavior during tutoring. At the end of an instructional week, each pair's points are reported to the teacher, total points for each team are determined, and the winning team is announced.

What sets First-Grade PALS apart from its predecessors is the incorporation of critical content identified through research for effective early literacy instruction. Within each First-Grade PALS session students (a) practice phonological awareness and phonological recoding and read connected text built on previously mastered phonological elements, and (b) make predictions about a trade book prior to reading it, share the experience of reading a book with a peer, have repeated exposure to the text, and summarize the text through verbal retelling. All of this is accomplished during a 35-minute session composed of two tutoring routines. The first routine, Sounds and Words, is a code-based set of activities incorporating critical phonological and alphabetic reading skills. The second routine, Partner Read-Aloud, is a holistic activity incorporating a basic strategy for how to interact with text.

Purpose of the study

In the present research we set out to empirically determine the effects of adding First-Grade PALS procedures to the existing reading program in intact, naturally constituted first-grade general education classrooms. Specifically, we wanted to know (a) if children who participate in First-Grade PALS experience greater reading achievement than children who receive more typical instruction, (b) if First-Grade PALS effects interact with learner types representing a wide range of academic diversity (i.e., low-, average-, and high-achieving students), and (c) if teachers and students are able to implement First-Grade PALS with high levels of fidelity while maintaining high levels of satisfaction with the procedures.

Method

Pilot activities

The year prior to the present study, First-Grade PALS routines were developed with the assistance of 5

first-grade teachers at 3 schools, with each school serving students varying in socioeconomic status. The present First-Grade PALS procedures evolved through a process of repeated trials, repeated errors, and repeated teacher feedback. They were piloted for 5 weeks during the spring of that year.

Subjects

Teacher selection

Twenty teachers in 6 schools in a southeastern U.S. urban school district were recruited to participate in this study, 10 to conduct First-Grade PALS and 10 to serve as a contrast group. Of the 10 First-Grade PALS teachers, 4 piloted the procedures the preceding year and requested continued participation. The 5th pilot teacher moved from the district. Contrast group matches for these 4 teachers were recruited from among teachers who had similar teaching profiles including years of experience, degrees held, and self-reported approach to teaching reading. One teacher was matched with a teacher from within the same school building, the other 3 were matched with teachers from demographically similar schools.

The remaining 12 teachers were recruited to participate in the project, then randomly assigned to either the First-Grade PALS or Contrast group. Before recruiting these participants, we collected the following information on all elementary schools in the district: (a) school size, (b) percentage of students receiving free or reduced-price lunch, and (c) mean reading scores for first graders on the statewide, group-administered, norm-referenced achievement test administered the previous year. We then categorized schools by demographic similarity as high, middle, or low. After considering the demographics of the schools in which the matched teachers taught, we then determined the number of teacher participants we would recruit from each of these types of schools to create a representative stratified sample.

In the final analysis, both comparison groups had 4 teachers classified as high. Of these, 3 were matched and 1 was assigned randomly. The remaining 6 teachers in both comparison groups were evenly split so that 3 taught in middle- and 3 in low-category schools. One set of middle-category teachers was matched and taught in the same school; the other teachers were assigned randomly to groups.

One-way analyses of variance (ANOVAs) revealed no statistically significant differences between groups on years of teaching experience, teachers' age, grade taught, or class size. Chi-square analyses indicated no relationship between group and race, certification, highest degree earned, or hours of special education coursework.

Table 1 presents teacher demographic information and statistics.

Comparability of reading instruction

While the First-Grade PALS treatment was initially being implemented, we asked all 20 teachers to (a) classify and describe their approach to teaching reading and (b) record how they allocated their reading instructional time in a typical week. We then briefly interviewed teachers every 5 to 6 weeks to ascertain if they had made any significant changes to their reading approach or routine. Additionally, we informally observed instructional procedures to confirm the accuracy of reported information. This was done to ascertain the comparability of instructional practices in the two comparison groups, ensuring that any outcome differences between groups could not be attributed to total time allocated for reading instruction or to a specific reading approach other than First-Grade PALS. Chi-square analyses indicated no reliable differences between the groups on reading approach ($\chi^2 = 2.69, p = ns$), grouping practices ($\chi^2 = 5.80, p = ns$), or the incorporation of systematic phonics instruction ($\chi^2 = .83, p = ns$). Likewise, ANOVAs indicated no reliable differences in the average number of minutes teachers allocated for reading during an instructional week, $F(1,18) = .82, p = ns$, or the number of minutes they dedicated to particular activities, including teacher-directed instruction, $F(1,18) = 2.96, p = ns$; independent seatwork, $F(1,18) = .19, p = ns$; and sustained silent reading, $F(1,18) = .01, p = ns$. A between-group difference was indicated for time allocated to paired reading, $F(1,18) = 6.42, p < .05$; however, because First-Grade PALS uses paired reading, this difference was anticipated.

Student selection

Teachers implemented treatments with all students in their naturally constituted, academically heterogeneous first-grade classes during time normally allocated for reading instruction. Within each of the 20 participating first-grade classrooms, our research team identified 5 student participants based on performance on a Curriculum-Based Measurement (CBM) probe of phonological segmentation (Kaminski & Good, 1996) and an oral reading fluency probe on first-grade text (Fuchs, Hamlett, & Fuchs, 1990) administered to all students in the class (discussion following). First, we identified the 3 lowest achieving (LA) students in the class as determined by an oral reading fluency score of 0 words in a minute and scores on the phonological segmentation task representing the three lowest in the class. Likewise, we identified one average-achieving (AA) student who performed at or near the middle of the class and one high-achieving (HA) student who ranked at the top of the class on the

Table 1 Demographic information for PALS ($n = 10$) and Contrast ($n = 10$) teachers

	Treatment		No treatment		χ^2 ^a	F ^a
	n (%)	M (SD)	n (%)	M (SD)		
Age					1.03	
21–29 years	2 (20)		3 (30)			
30–39 years	5 (50)		3 (30)			
40–49 years	2 (20)		2 (20)			
50–59 years	1 (10)		2 (20)			
Race					.39	
Caucasian	8 (80)		9 (90)			
African American	2 (20)		1 (10)			
Highest degree					2.32	
B.S./B.A.	7 (70)		4 (40)			
M.Ed./M.S.	3 (30)		5 (50)			
Ed.S.	1 (10)		1 (10)			
Certification					1.00	
Elementary (K–6)	9 (90)		9 (90)			
Special education	1 (10)		1 (10)			
Total years teaching experience		10.90 (7.16)		11.90 (11.15)		.06
Total years teaching first grade		7.40 (6.15)		5.00 (5.75)		.81
Total years teaching special education		.10 (.32)		.30 (.68)		.72
Number of hours of special education coursework		4.70 (2.87)		3.30 (1.34)		1.96

^aNo contrasts were statistically significantly different.

screening tests. Four LA students moved during the course of the year (two in each comparison group). No other attrition was experienced. Demographic information for participating students is presented in Table 2.

Our purpose in sampling 3 LA students reflected our primary focus on increasing early reading success with students at risk for school failure. By selecting the 3 lowest achieving students in each class we sampled approximately the lowest performing 20% of all students in the 20 classrooms, thus providing an adequate sample to statistically detect between-group differences, while simultaneously allowing for the examination of within-group variability. We sampled only one AA and HA student from each classroom because we expected the possible intragroup variability among these learner types to be less, thus allowing for detection of between-group differences even though the power of each analysis was low. Furthermore, to sample more students would have been beyond the resources available to conduct this research.

One between-subjects (treatment: First-Grade PALS vs. contrast) and one within-subjects (type of student: LA vs. AA vs. HA) ANOVA indicated no statistically significant differences on students' age, grade level function-

ing, or time spent in reading instruction. Chi-square tests indicated no relation between treatment and students' prior retention in first grade, prior attendance in kindergarten, or gender. A difference for race was detected, however, between HA students in the comparison groups, with statistically significantly more HA students in the First-Grade PALS group being Caucasian ($\chi^2 = 8.57$, $p < .01$). A difference for special education label was also detected for LA students in the comparison groups, with statistically significantly more LA students in the First-Grade PALS group being special education students ($\chi^2 = 5.25$, $p < .01$). Table 2 presents demographic information and statistics for students.

First-Grade PALS condition

For this research, teachers conducted First-Grade PALS with their entire class three times per week for 35-minute sessions for 16 weeks during time allocated for language arts. On average, teachers in both conditions allocated about 11 hours per week for language arts. Of this time, First-Grade PALS required 1.75 hours, of which 1.5 hours were spent actively engaged in meaningful reading activities with a peer. These teachers were not

Table 2 Student demographic data by learner type and group

Variable	Student type	PALS			Contrast			F	(df)	χ^2
		M	(SD)	n (%)	M	(SD)	n (%)			
Age in years	LA	6.78	(.42)		6.75	(.28)		.07	(1,54)	
	AA	6.82	(.32)		6.87	(.31)		.13	(1,18)	
	HA	6.80	(.27)		6.70	(.31)		.53	(1,18)	
	ALL	6.79	(.37)		6.77	(.29)		.13	(1,94)	
Gender Male/Female	LA			15/13 (53.6/46.4)			11/17 (39.3/60.7)			1.15
	AA			7/3 (70.0/30.0)			5/5 (50.0/50.0)			.83
	HA			4/6 (40.0/60.0)			6/4 (60.0/40.0)			.80
	ALL			26/22 (54.2/45.8)			22/26 (45.8/54.2)			.67
Kindergarten attendance	ALL			48 (100.0)			48 (100.0)			.00
Learning or language disability label	LA			7 (25.0)			1 (3.6)			5.25**
	AA			0 (0.0)			0 (0.0)			.00
	HA			0 (0.0)			0 (0.0)			.00
Prior retention	LA			3 (10.7)			1 (3.6)			1.07
	AA			0 (0.0)			0 (0.0)			.00
	HA			0 (0.0)			0 (0.0)			.00
Race Caucasian/African American	LA			9/19 (32.1/67.9)			12/16 (42.9/57.1)			.68
	AA			8/2 (80.0/20.0)			10/0 (100.0/ 0.0)			2.22
	HA			10/0 (100.0/ 0.0)			4/6 (40.0/60.0)			8.57**
	ALL			27/21 (56.3/43.7)			26/22 (54.2/45.8)			.04

NOTE: LA = Low-achieving (PALS $n = 28$, Contrast $n = 28$); AA = Average Achieving (PALS $n = 10$, Contrast $n = 10$); HA = High-achieving (PALS $n = 10$, Contrast $n = 10$)
* $p < .05$ ** $p < .01$

required to make any other changes to their typical reading program. How typical was defined varied; 8 classified themselves as whole language teachers, although observation indicated that in 7 of these classrooms whole language translated into adherence to a literature-based basal series and the additional incorporation of children's literature and centers. Additionally, 3 teachers used some type of phonics program made up of daily worksheets focused on letter sounds, combinations, and blends. Seven did not include systematic phonics, although they all reported using embedded phonics analysis when necessary. Additionally, 3 teachers reported using primarily whole-group instruction, 4 used both whole-group and ability-group instruction, 2 used ability groups, and 1 used only centers for delivering instruction.

Three graduate students and the first author, Patricia Mathes, were the staff on this project. Project staff responsibilities included collecting pretest and posttest data, collecting weekly reading growth data (i.e., CBM probes of phonological awareness and reading fluency in all 20 classrooms), and providing technical assistance to teachers as they trained and implemented First-Grade PALS.

Student pairs, teams, and points

Teachers assigned students to pairs that consisted of a stronger and a weaker reader. We called the more capable student the Coach, and the less capable student the Reader, permitting, we speculated, the stronger reader to take on a teacher-like role and the weaker student to benefit from a model of good reading. Teachers assigned students to new pairs every 4 weeks.

After pairing students, teachers then assigned each pair to one of two class teams for which they earned points. As with pair assignments, team assignments lasted 4 weeks. Pairs worked together to earn points for completing each First-Grade PALS activity. The teacher also used bonus points to foster both academic and social development, motivating students to accomplish specific goals, such as cooperating with their partners, praising their partners, giving specific compliments, and remaining on task. First-Grade PALS provided teachers with a meaningful context in which they could foster a variety of social skills. Teachers frequently reminded students how to be good sports and that the purpose of PALS was to become better readers. At the end of every week (i.e., 3 First-Grade PALS sessions), the teacher

added up the points for each pair and announced the team totals. The winning team then stood up and took a bow while the second place team clapped. Next, the winning team clapped for the second place team in recognition of their good effort. Thus, First-Grade PALS provided teachers with a means of fostering academic and social development that was motivating to students.

First-Grade PALS strategies

As previously mentioned, First-Grade PALS is composed of two sets of routines: Sounds and Words, a code-based activity following principles of the model of Direct Instruction (Carnine, Silbert, & Kameenui, 1997), and Partner Read-Aloud, a literature activity consistent with a holistic framework for reading instruction.

Sounds and Words. The first 10 minutes of each First-Grade PALS session were dedicated to Sounds and Words. Four fast-paced activities constituted Sounds and Words: (a) Letter Sounds, (b) Hearing Sounds, (c) Sounding Out, and (d) Stories. Each activity followed a simple routine that students were carefully taught to con-

duct. Daily lesson sheets were used to conduct Sounds and Words (see Figure 1). In each First-Grade PALS session, pairs worked through a new lesson sheet. These sheets became cumulatively more difficult; however, across a week (3 tutoring sessions), students were presented with no more than two new sounds and one new sight word. Although the lesson sheets were visually simple, their systematic design ensured high rates of success and motivation. Issues addressed in their design included memory demand, complexity of word structures, and the immediate application of skills to the reading of connected text.

The purpose of the first activity, Letter Sounds, was to teach basic letter-sound correspondences. Listed on the day's lesson sheet were a series of previously mastered sounds and one new sound located in the new sound box. At the beginning of the tutoring session, the teacher told the class how to say the new sound. Next, the Reader practiced each letter sound by saying the sound for each letter when the Coach pointed to the letter and asked, "What sound?"

Figure 1 Example of a Sounds and Words student lesson sheet

Lesson 28				Coach says:					Coach says:
u	ch	ing	w p u b n	"What sound?"	Chip	tub			1. "Sound it out."
ing	u h g i l u d f r ch				slug	class			2. "Say it fast."
t u c e i ch r c u m a					drag	cast			
			5 points		legs	loss			
cup	bring	slot	plug	"What is the last sound in _____?"	less	bugs			
trust	bunch	slab	chum		champ	sing			
spill	nets	sent	off						
glass	bug	drab	bump						
			5 points		Chip the bug fell in the tub.				Read the sentence.
					Plop! Rub-a-dub dub.				
					He swims and bobs, dips and flips.				
					Pug the slug hops into the tub with Chip.				
					They <u>have</u> fun in the tub. Glub, glub, glub!				
			5 points						

Next, students completed a phonemic awareness activity called Hearing Sounds. On the lesson sheet was a series of short words in which one letter or letter combination was underlined. The Coach's task was to (a) read the word, (b) verbally segment the word into its phonemes, and (c) ask the Reader to identify either the beginning or ending sound in isolation.

In the third activity, Sounding Out, students practiced phonological recoding. On each lesson sheet, a series of phonetically regular words appeared in list form. Each word was printed above an arrow pointing left to right with dots below each letter. The Reader sounded out each word by saying each sound in the word as she or he touched each dot below its corresponding letter or letter combination. Last, the Reader read each word as a whole unit.

The Sounds and Words lesson sheet culminated with the Reader integrating the skills practiced in isolation in the Stories activity. These stories were composed of previously presented sounds and sight words. New sight words were underlined and presented by the Coach before the Reader attempted to read the story.

During Sounds and Words, the Coach guided the process by prompting the Reader on each item presented on the day's lesson sheet. Prompts for each of the four activities were written on the lesson sheet in the Coach Says column (see Figure 1). If the Reader responded incorrectly to any item, the Coach modeled the correct response, asked the Reader to repeat the correct response, and directed the Reader to repeat the line or sentence in which the error occurred. To ensure that mastery had occurred, Readers were required to complete each line or sentence correctly before moving to the next line or sentence. As the Reader completed each activity accurately, the pair was awarded 5 points, which was recorded on a consecutively numbered shared score card. Thus, the pair received frequent reinforcement for effort expended.

The Sounds and Words activities were implemented in 2 phases, a teacher-directed preparation phase and a peer-mediated phase. During the first 4 weeks of First-Grade PALS, the teacher first presented a 10- to 15-minute lesson to the whole class, using scripted lessons prepared by our research staff. The purpose was to familiarize students with the routines used during Sounds and Words, increasing the likelihood of successful implementation of Sounds and Words in a peer-mediated context.

Partner Read-Aloud. Immediately following the Sounds and Words activity, whether teacher or peer directed, pairs conducted Partner Read-Aloud for the remaining 20 minutes. There were three activities associated with Partner Read-Aloud: (a) Pretend-Read,

(b) Read-Aloud, and (c) Retell. All three activities surrounded the reading of a connected text, typically a children's trade book; pairs read a new selection during each First-Grade PALS session. The choice of reading material was determined by the teacher, allowing for individualization by enabling teachers to choose texts according to the needs of individual pairs. We did, however, provide each teacher with a Book Bag of assorted children's picture books, most with predictable features, to use during Partner Read-Aloud. Each Book Bag had enough books for each pair in the class; staff members rotated bags among teachers during the course of the study. Teachers used these books extensively during the treatment. See Appendix A for a sample list of Book Bag books.

The first Partner Read-Aloud activity was Pretend-Read, which lasted for 3 minutes and was designed to (a) activate children's prior knowledge before reading and (b) teach students to make predictions about a selection before reading. The routine for Pretend-Read was very simple. First, the Coach read the title of the story, then the Reader read the title. Next, the Coach prompted the Reader to go through the story, page by page, and predict what was happening on each page based on the pictures. If the Reader experienced difficulty predicting what was happening, the Coach was taught to ask the Reader questions about the pictures to stimulate discussion. On the same score card used for Sounds and Words, the pair was awarded 5 points at the end of the 3-minute period for working hard.

The next 15 minutes of Partner Read-Aloud were devoted to Read-Aloud, an activity in which the Coach and Reader took turns reading each sentence of the story aloud. To enable the lower reader to read the text, we employed a modeling procedure. First, the Coach read a sentence of the story, pointing to each word as he or she read it, then the Reader read the same sentence. Pairs continued this procedure through the whole story. Once a pair finished the story, they turned back to the first page of the story and reread the story using the same procedure. If a pair was able to complete the story a second time, with time still remaining, the students switched roles, and the Reader read each sentence first. Each pair earned 10 points for each time the entire story was read.

In the final 2 minutes of Partner Read-Aloud, pairs sequenced the events of the story in the Retell activity. For this activity, the Coach prompted the Reader to retell the story, asking "What did you learn first?" and then "What did you learn next?" until the Reader retold the entire story. If necessary, the Coach filled in information or asked additional questions to assist the Reader. Pairs earned 10 points for completing Retell.

Implementing First-Grade PALS

Teachers taught their own students to conduct First-Grade PALS. Before beginning student training, teachers attended an all-day inservice during which they role-played each of the routines and were guided through a detailed manual explaining all aspects of First-Grade PALS (see Mathes & Allen, 1994).

After attending the inservice, teachers taught their own students in the First-Grade PALS procedures, following scripted lessons provided in the manual (see Appendix B for an example scripted lesson). During each session, a member of the project staff was present to help with demonstrations, classroom arrangements, and student monitoring and to ensure that the First-Grade PALS procedures were presented with high fidelity. Teaching students to conduct First-Grade PALS occurred in two phases. During the first phase children were taught the basic PALS structure (i.e., Coach and Reader roles, points, teams, and working with a partner) and how to conduct Partner Read-Aloud. This initial training typically required five 45-minute sessions. Four weeks later, students were taught how to conduct Sounds and Words, which required an additional three to four training sessions.

Contrast condition

Teachers in the Contrast condition conducted reading instruction in their normal fashion. Of these 10 teachers, 5 reported following a whole language perspective with no phonics systematically included. This translated to 3 classrooms looking very similar to the basal-based, whole language approach implemented among First-Grade PALS teachers. The other 2 whole language classrooms reflected practices more consistent with a holistic perspective. Among the remaining 5 teachers, 3 adhered to the basal with the incorporation of both phonics, focusing on letter sounds with daily worksheets and some children's literature, and 2 used a more fully developed phonics program that incorporated phonological recoding and the provision for reading connected text using newly learned alphabetic knowledge.

The Contrast teachers participated in the weekly measurement aspect of this research, and they knew that other teachers were participating in additional activities of some type. Each week they were visited by project staff who administered Curriculum-Based Measurement (CBM) probes (description follows) to the 5 participating students. They were also provided graphs of CBM data on these students every 4 to 5 weeks. Thus, teachers in this condition received more researcher attention than is typical of most intervention research.

Measures

Pretest-posttest achievement measures

Reading achievement was assessed at pre- and posttesting using the Woodcock Reading Mastery Tests-Revised (1987), the Test of Early Reading Ability-2 (1989), and the Comprehensive Reading Assessment Battery (Fuchs, Fuchs, & Maxwell, 1988), revised for first graders by Patricia Mathes. Each of these tests has alternate forms that were counterbalanced across students and testing sessions.

Woodcock Reading Mastery Tests-Revised (WRMT-R). The word identification, word attack, and passage comprehension subtests of the WRMT-R were administered to all participating students at pretest and posttest. The Word Identification subtest requires the student to identify words presented in isolation. The Word Attack subtest requires the student to pronounce either nonsense words or words with a very low frequency of occurrence. The Passage Comprehension subtest measures the student's ability to read a short passage (usually 2–3 sentences) and identify a key word that is missing from the passage. Reliability coefficients reported range from .68 to .99 with Total Reading being .99. Concurrent validity data indicate that the subtest and total test correlate from .85 to .91 with the Woodcock-Johnson Psychoeducational Battery reading subtests.

Test of Early Reading Ability-2 (TERA-2). Each of the two forms of the TERA-2 consists of 46 items that yield one score designed to measure a child's concepts of print, defined as (a) ability to construct meaning from print, (b) alphabet knowledge, and (c) knowledge about the conventions of print. Reliability coefficients for the TERA-2 range from .70 to .98, and the test correlates highly with other measures of language, readiness, and intelligence.

Comprehensive Reading Assessment Battery-Revised (CRAB-R). Oral reading fluency and comprehension of story content were assessed with the CRAB-R, which was revised by Patricia Mathes to be appropriate for assessing first graders. The CRAB-R provides two scores: words read correctly and questions answered correctly. The CRAB-R employs four 400-word traditional folk tales, used in previous studies of reading achievement (e.g., Brown & Smiley, 1977; Jenkins, Heliotis, Haynes, & Beck, 1987). The stories were rewritten to approximate a late first-grade readability level (Fry, 1968). Technical adequacy for the revised version has not been specifically investigated, but correlations between this test and other measures used in this investigation are inadequate ($r < .70$), thus, its validity is questionable.

Reading growth across time

Project staff visited both First-Grade PALS and Contrast classrooms weekly to administer Curriculum-Based Measurement (CBM) probes of (a) oral reading rate and (b) phonological awareness. Administration of these probes began 4 weeks prior to the implementation of PALS so that baseline performance could be determined. Weekly probe administration continued through the last week of First-Grade PALS implementation.

Curriculum-Based Measurement: Oral reading fluency. We used stories written at a first-grade level from *Monitoring Basic Skills Progress* (Fuchs et al., 1990), a computer-based CBM program, to measure oral reading fluency. Student participants read each story orally for 1 minute to project staff, who calculated the number of words read correctly in 1 minute (WPM). If a student did not pronounce a word correctly within 5 seconds, the tester pronounced the word for the student. This process was used to reduce student frustration and to increase the sensitivity of the measure. It should be noted that the computerized version of CBM was not used because the maze task associated with that program has proven to be very frustrating for many beginning readers.

Curriculum-Based Measurement: Phonological awareness. To monitor growth in phonological awareness across time, we used a CBM segmentation fluency task developed by Kaminski and Good (1996) at the University of Oregon. Based on their research, we chose phonemic segmentation because it has been shown to be sensitive to growth and resistant to ceiling effects, and because psychometric data on this task is high (see Kaminski & Good, 1996). Using Kaminski and Good's probes of randomly generated word lists, the project staff stated a word verbally and asked the student to "tell the sounds he or she hears in the word." Students were timed while segmenting words, generating a number of segments correctly pronounced per minute (SPM) score (see sample segmentation probe in Appendix C).

First-Grade PALS fidelity

Teachers and students were observed while conducting First-Grade PALS by project staff every 4 to 5 weeks for a total of three observations. An observation checklist was developed incorporating all behaviors that were supposed to occur during each First-Grade PALS session. All items were scored as either occurring, not occurring, or not applicable. Prior to the observations, teachers were told that project staff would be observing students to determine if they were following procedures accurately (see Appendix D for PALS fidelity observation checklist).

The basic First-Grade PALS checklist included 34 teacher behaviors and 101 student behaviors; student be-

haviors included Sounds and Words (47 behaviors) and Partner Read-Aloud (54 behaviors). During each activity, a staff member observed one pair of children in which a participating LA student was present. Observers rotated pairs so that a different LA child was observed during each new activity. Over the course of the project, each target LA child was observed doing each activity at least one time. Data indicated that, overall, teachers conducted First-Grade PALS with 87.67% accuracy ($SD = 7.75$), and students conducted Sounds and Words with 77.00% accuracy ($SD = 8.23$), and Partner Read-Aloud with 79.30% accuracy ($SD = 9.82$). Overall student implementation was at 81.17% accuracy ($SD = 8.06$).

Interobserver reliability was collected for 30% of all First-Grade PALS observations. These observations were spread out across the project to guard against observer drift. Interobserver agreement was calculated as agreements/(agreements + disagreements). Interobserver agreement on the entire instrument was 93.29%. Agreement was calculated as 93.01% for teacher scores, 93.50% for Sounds and Words, and 91.57% for Partner Read-Aloud.

Satisfaction with First-Grade PALS

After First-Grade PALS had been in place for 15 to 16 weeks, teachers and students participating in the First-Grade PALS condition were asked about its appropriateness and benefits. Teachers were given a questionnaire that explored the value and feasibility of First-Grade PALS. This questionnaire was composed of a series of Likert 5-point scale questions asking about various aspects of First-Grade PALS, with 5 points indicating highest satisfaction (see Appendix E for teacher feedback questionnaire).

Students were individually interviewed immediately after posttesting by project staff who read questions from a questionnaire following a protocol designed for this study. As with the teacher questionnaire, students were asked questions about First-Grade PALS using a 5-point Likert scale. To make clear what each of the 5 numbers meant, a happy face was placed below the 5 and a sad face placed below the 1. Wording for each number choice was consistent for each item (see Appendix F for student interviews).

Results

Pretreatment differences

Data were analyzed through SPSS/PC+ (Norusis, 1988) statistical procedures using Wilks's lambda criterion. ANOVAs indicated a statistically significant difference between low-achieving (LA) participants in the First-

Grade PALS group and the Contrast group on two fluency measures: (a) the CRAB-R words read correctly in 3 minutes, $F(1, 54) = 13.38, p < .00$, and (b) CBM average WPM during the baseline phase, $F(1, 54) = 4.49, p < .05$. In each case, results indicate that LA participants in the Contrast group had statistically significantly better scores than LA participants in First-Grade PALS. In each case, however, the true difference between groups was relatively small (4.51 words in 3 minutes and 1.21 words in 1 minute), leaving the educational relevance of these fluency differences unclear. Differences favor the Contrast group since weaker readers would be expected to make less gain (Juel, 1988), creating, we argue, a more stringent test of the First-Grade PALS treatment. Pretest comparability data are presented in Table 3.

Change from pre- to posttreatment achievement

Because multiple dependent measures were analyzed on the WRMT-R and the CRAB-R, multivariate analysis of variance (MANOVA) was performed initially. Examining change from pre- to posttreatment standard scores (i.e., mean = 100, standard deviation = 15), a 2 between-subjects (school category: high vs. middle vs. low; and condition: First-Grade PALS vs. Contrast) and 1 within-subjects (learner type: LA vs. AA vs. HA) on the WRMT-R indicated a statistically significant main effect for treatment, $F(90, 1) = 5.55, p < .05$; no interaction between learner type and treatment, or school category and treatment was detected. MANOVA on the CRAB-R change from pre- to posttreatment yielded no statistically significant results.

Follow-up univariate ANOVAs of WRMT-R change scores revealed a statistically significant difference for LA

students between the First-Grade PALS and Contrast groups on all subtests administered. For AA students, statistically significant differences were detected between groups on the passage comprehension subtest. Between groups of HA students, no statistically significant differences were detected.

The TERA-2 was analyzed using ANOVA since it yields only one score and since we administered it only to LA participants. A 1 between (condition: First-grade PALS vs. Contrast) 1 within (school category: high vs. middle vs. low) ANOVA on change from pre- to post-treatment standard scores indicated LA students who participated in First-Grade PALS experienced statistically significantly more change than Contrast students, with significant differences indicated for school category. Table 4 presents scores for the LA students on the TERA-2, as well as effect sizes for each growth metric. Effect sizes were calculated as $M^{\text{exp}} - M^{\text{con}} / SD^{\text{pooled}}$ (Hedges, 1981). Means and standard deviations for change from pre- to posttreatment (i.e., growth) scores on the WRMT-R and CRAB-R are also presented in Table 4 for LA, AA, and HA students.

Growth across time achievement

The weekly CBM probes of oral reading fluency and phonological segmentation were analyzed using repeated measures analyses to determine the impact of First-Grade PALS over time. In total, 20 CBM probes were collected across the duration of the study. For both phonological segments per minute and words read correctly per minute, probe scores were averaged across 4-week increments for a total of 5 phase average scores. Repeated measures analyses of phase average scores in-

Table 3 Pretest equivalency on reading scores by treatment ($n = 96$)

Variable/test	PALS ($n = 48$)						Contrast ($n = 48$)								
	LA ($n = 28$)		AA ($n = 10$)		HA ($n = 10$)		LA ($n = 28$)		AA ($n = 10$)		HA ($n = 10$)		LA	AA	HA
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>F</i> (1,54)	<i>F</i> (1,18)	<i>F</i> (1,18)
CRAB-R (raw score)															
Words correct	1.08	(1.82)	21.35	(17.21)	207.30	(104.95)	5.59	(6.26)	33.40	(33.73)	153.30	(119.22)	13.38***	1.01	1.16
Questions correct	.12	(.34)	.70	(.48)	3.90	(1.14)	.26	(.48)	.60	(.91)	2.90	(2.39)	1.87	.10	.13
TERA-2															
(standard score)	91.29	(7.52)					95.07	(9.23)					2.83		
WRMT-R (standard score)															
Word identification	82.11	(7.75)	103.40	(8.85)	130.67	(15.11)	86.12	(8.79)	105.50	(12.60)	127.00	(18.57)	3.27	.19	.24
Word attack	74.89	(3.25)	92.50	(9.68)	116.68	(10.45)	76.46	(5.42)	93.10	(16.98)	111.00	(15.03)	1.73	.01	1.00
Passage comprehension	83.21	(5.26)	98.70	(8.96)	117.78	(11.71)	85.27	(5.35)	100.90	(10.88)	117.80	(12.33)	2.11	.24	.00

*** $p < .001$

Table 4 Pre-posttreatment change in reading scores by treatment and label ($n = 96$)

Variable/test	PALS ($n = 48$)						Contrast ($n = 48$)											
	LA ($n = 28$)		AA ($n = 10$)		HA ($n = 10$)		LA ($n = 28$)		AA ($n = 10$)		HA ($n = 10$)		LA ($n = 10$)		AA ($n = 10$)		HA ($n = 10$)	
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)
CRAB-R (raw score)	62.71	(74.25)	123.75	(83.75)	122.40	(58.17)	45.12	(39.20)	105.70	(41.40)	137.95	(66.40)	1.21	.37	.31	.30	.27	-.25
Words correct	.79	(1.87)	2.55	(2.07)	2.05	(2.19)	.49	(1.11)	2.25	(1.11)	2.20	(1.45)	.51	.16	.03	.20	.18	-.08
TERA-2 (Standard score)	10.32	(9.17)					5.78	(7.63)					4.05*		.54			
WRMT-R (Standard score)	11.29	(12.45)	13.80	(16.38)	9.83	(8.81)	2.06	(13.89)	12.30	(16.73)	12.20	(8.34)	6.84*	.04	.38	.70	.09	-.25
Word attack	14.61	(13.25)	13.20	(9.70)	6.83	(12.47)	5.32	(10.48)	.10	(20.59)	5.30	(10.88)	8.47**	3.31	.09	.78	.81	.13
Passage comprehension	2.08	(12.83)	8.40	(4.30)	2.22	(4.34)	-1.70	(15.06)	1.90	(6.67)	-1.10	(8.31)	1.02	6.30*	1.25	.27	1.12	.50

Note: ES = effect size

* $p < .05$ ** $p < .01$

Table 5 CBM scores by treatment and label ($n = 96$)

Variable/time	PALS ($n = 48$)						Contrast ($n = 48$)						Treatment \times time $F(4,360)$
	LA ($n = 28$)		AA ($n = 10$)		HA ($n = 10$)		LA ($n = 28$)		AA ($n = 10$)		HA ($n = 10$)		
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	
Segments/minute													
Baseline	5.52	(5.50)	19.43	(4.51)	21.33	(6.42)	6.91	(5.98)	17.77	(4.83)	22.17	(6.36)	
PR (weeks 1–4)	14.32	(10.28)	29.45	(7.48)	32.65	(10.01)	13.79	(9.32)	26.55	(7.93)	30.55	(6.58)	
PR & SW (weeks 5–8)	20.73	(9.98)	33.40	(8.77)	35.28	(6.87)	18.76	(10.04)	31.23	(7.40)	34.68	(6.27)	
PR & SW (weeks 9–12)	28.72	(10.02)	39.88	(7.12)	40.93	(8.21)	23.22	(10.70)	34.63	(8.52)	41.05	(8.72)	
PR & SW (weeks 13–16)	30.75	(9.58)	40.30	(7.15)	42.48	(8.16)	25.39	(9.65)	35.20	(5.55)	38.18	(8.03)	3.12*
Words/minute													
Baseline	1.58	(1.67)	10.57	(7.46)	73.53	(42.13)	2.79	(2.53)	16.30	(11.57)	53.50	(38.99)	
PR (weeks 1–4)	4.06	(3.79)	17.10	(10.56)	85.00	(46.27)	5.19	(3.73)	24.70	(15.76)	66.35	(33.70)	
PR & SW (weeks 5–8)	7.96	(9.93)	27.58	(20.02)	99.08	(42.32)	8.30	(6.13)	31.80	(18.59)	82.73	(36.41)	
PR & SW (weeks 9–12)	15.66	(17.91)	40.03	(29.24)	109.00	(36.99)	11.48	(7.55)	40.00	(18.51)	95.45	(30.72)	
PR & SW (weeks 13–16)	24.72	(24.19)	52.60	(30.92)	122.18	(46.25)	14.97	(10.23)	47.45	(19.70)	96.48	(26.58)	4.52***

Note: PR = Partner Read-Aloud, SW = peer-mediated Sound and Words

* $p < .05$

** $p < .001$

icated a statistically significant treatment by time interaction for both segments per minute and words read correctly per minute. Means and standard deviations for phase averages delineated by activities in place and weeks of the treatment as well as treatment by time interactions are presented in Table 5.

The change from the baseline phase to each of the First-Grade PALS phases (i.e., growth over time) was calculated for both segments per minute and words read correctly per minute. Table 6 presents the means and standard deviations for growth over time by learner type as well as the results of univariate ANOVAs and effect sizes for each comparison.

Satisfaction with First-Grade PALS

Teacher

Teacher responses to the First-Grade PALS teacher Feedback Questionnaire ranged from 3.50 to 5.00, with an average rating of 4.25 ($SD = .61$) as calculated by averaging responses to all items. With respect to the individual components of First-Grade PALS, teachers, on average, rated the importance of (a) Sounds and Words as 4.50 ($SD = .33$), (b) Pretend-Read as 4.25 ($SD = .55$), (c) Read-Aloud as 4.63 ($SD = 1.09$), and (d) Retell as 3.75 ($SD = .76$). Likewise, they reported the beliefs that, overall, First-Grade PALS (a) contributed positively to the reading achievement of their students ($M = 4.38$, $SD = .69$), and (b) enhanced the social skills of students ($M = 4.08$, $SD = 1.25$). Teachers also reported that they were likely to use First-Grade PALS in future years ($M = 4.70$,

$SD = .67$) and that PALS was an effective tool for accommodating diversity ($M = 4.50$, $SD = .97$).

Student

With respect to students, again the ratings were positive, with a range of 3.50 to 5.00 with no statistical difference detected via ANOVA by type of learner. On average, students reported that they felt Sounds and Words had helped them become better readers ($M = 4.56$, $SD = .92$), as had Pretend-Read ($M = 4.19$, $SD = 1.44$), and Read-Aloud ($M = 4.50$, $SD = 1.09$); they placed slightly less faith in the impact of Retell ($M = 3.79$, $SD = 1.56$). Students also reported that they felt that First-Grade PALS had helped them become better readers ($M = 4.72$, $SD = .76$) and that they liked doing First-Grade PALS ($M = 4.41$, $SD = 1.15$). In fact, students reported that if they were teachers they would be very likely to do First-Grade PALS with their own students ($M = 4.73$, $SD = .77$).

Discussion

This research examined the efficacy of First-Grade PALS as a tool for enhancing the reading achievement of different learner types, particularly low-achieving (LA) students, representing the range of academic diversity typically present in primary-grade classrooms. The results, other than the CRAB-R, indicate that such enhancement did indeed occur, although not equally for all learner types.

LA students seemed to profit the most from participating in First-Grade PALS. Statistically significant findings and large effect sizes were found on all measures,

Table 6 Growth from baseline over time on CBM measures

Variable/time	PALS (n = 48)				Contrast (n = 48)														
	LA (n = 28)		AA (n = 10)		LA (n = 28)		AA (n = 10)		LA (n = 10)		AA (n = 10)								
	M	(SD)	M	(SD)	M	(SD)	M	(SD)	M	(SD)	M	(SD)							
Segments per minute																			
PR (weeks 1-4)	8.80	(6.54)	10.02	(5.97)	11.32	(6.28)	6.88	(5.62)	8.78	(5.56)	8.38	(4.96)	1.34	1.38	.24	.83	1.34	.22	.52
PR & SW (weeks 5-8)	13.21	(7.13)	13.97	(6.74)	13.94	(5.95)	11.85	(6.72)	13.46	(5.57)	12.51	(4.66)	.35	3.28	.03	.86	.49	.08	.27
PR & SW (weeks 9-12)	23.20	(7.74)	20.44	(7.98)	19.59	(6.13)	16.32	(7.94)	16.86	(7.44)	18.88	(7.73)	.05	10.78**	1.08	10.78**	.88	.46	.10
PR & SW (weeks 12-16)	25.23	(7.78)	20.87	(8.92)	21.14	(8.81)	18.49	(7.91)	17.43	(3.88)	16.01	(8.76)	1.71	10.34**	1.25	10.34**	.86	.50	.58
Words per minute																			
PR (weeks 1-4)	2.48	(2.75)	6.53	(4.18)	11.47	(8.24)	2.39	(1.80)	8.40	(4.94)	12.85	(10.64)	.11	.02	.83	.02	.03	-.41	-.15
PR & SW (weeks 5-8)	6.37	(8.84)	17.01	(14.54)	25.54	(8.13)	5.50	(4.00)	15.50	(9.20)	29.23	(9.27)	.86	.23	.08	.86	.13	.12	-.42
PR & SW (weeks 9-12)	14.08	(16.82)	29.46	(23.55)	35.47	(16.11)	8.69	(5.63)	23.70	(10.18)	41.95	(21.54)	.58	2.59	.50	2.59	1.35	.32	-.34
PR & SW (weeks 13-16)	23.14	(23.08)	42.03	(24.44)	48.64	(19.04)	12.18	(8.29)	31.15	(12.67)	42.98	(20.96)	.40	5.60*	1.56	5.60*	.63	.56	.28

Note: ES = effect size, PR = Partner Read-Aloud, SW = peer-mediated Sounds and Words
 ** p < .05
 *** p < .01

except the CRAB-R. These included measures of word attack, word identification, oral reading rate, and early reading skills, such as concepts of print and phonological segmentation. The magnitude of these statistically significant between-group differences appear to be educationally relevant, with effect sizes on those same measures all above .50.

Likewise, AA and HA students appeared to benefit somewhat from First-Grade PALS participation. Although statistical significance for AA students between-group comparisons was indicated only on the WRMT-R passage comprehension subtest, the magnitude of effect sizes for AA students indicate educationally relevant findings, with effect sizes above .50 for word attack, phonological segmentation, and oral reading rate. First-Grade PALS did not appear to affect HA students as greatly. No indication of statistical significance was detected on any measure; however, educationally relevant effect sizes favoring HA students in the First-Grade PALS group were suggested for passage comprehension and phonological segmentation, although they also indicated that First-Grade PALS may have had a slightly deleterious effect on word recognition.

It must be kept in mind that the sample size for AA and HA students was small, resulting in low power to achieve statistical significance. Thus, we assert that effect sizes are very important to understanding the true effects of First-Grade PALS on these types of learners. HA students also were already reading well, and First-Grade PALS procedures were developed primarily to address the needs of students at risk for reading failure. Thus, we did not anticipate that the effects of First-Grade PALS would be as strong with HA students. Additionally, the AA and HA students may not have had as much direct practice in reading because all of the HA students and at least some of the AA students served as Coaches. Currently, we are monitoring the effects of increasing the reciprocity of these roles in an attempt to balance the amount of practice time somewhat more equally between Coaches and Readers. Even so, effect sizes suggest that these students did benefit more than AA and HA students who received typical instruction.

In making these assertions, we have placed less faith in the results of the CRAB-R. We make this choice because the CRAB-R was revised by Patricia Mathes for this research without technical adequacy data and the results of this unknown measure were inconsistent with measures from four other sources with good reliability and validity. At the very least, it seems likely that this CRAB revision was inadequate for the purposes of sensitively measuring beginning reading ability.

The differential gains on measures, other than the CRAB-R, for First-Grade PALS students compare favorably with other forms of CWPT, adding support to the

present findings. For example, Simmons, Fuchs, Fuchs, Hodge, and Mathes (1994) found average effect sizes of about .40 for the original CWPT for upper elementary-grade readers. This finding was replicated by Fuchs et al. (1997), reporting on Peabody PALS for upper elementary-grade readers.

Consistent with the academic findings, First-Grade PALS teachers reported the belief that First-Grade PALS had benefited both them and their students. They reported this belief for all learner types in both reading achievement and social skills development. First-Grade PALS students, like their teachers and irrespective of their position on the learner type continuum, expressed the belief that First-Grade PALS had affected their reading ability positively and stated that they enjoyed participating in the First-Grade PALS activities.

Contributing to this positive attitude toward First-Grade PALS was a reasonably high level of First-Grade PALS implementation, resulting in, we argue, an added sense of competence and satisfaction on the part of both teachers and students. While student implementation of First-Grade PALS was lower than what has been observed in other forms of CWPT in reading with older readers (see Simmons et al., 1994; Fuchs et al., 1997), it should be remembered that the treatment was conducted by first graders. Given the children's young age, our research team expected a somewhat lower fidelity. Our observations indicate that failure to correct mistakes using our correction procedure was the most significant fidelity problem. We observed that the Coach typically told the Reader the right information but failed to require the Reader to repeat the correct information or to redo the line or sentence in which the error occurred. We believe, however, that because incorrect information was typically identified, the most critical aspect, attending to errors, was addressed adequately.

Explaining PALS effects

First-Grade PALS effects perhaps are more noteworthy when considered within the context of time expenditure. It must be remembered that teachers in the project allocated about 11 hours to language arts and 7.5 hours specifically to reading instruction per week. Consequently, the 1.75 hours required to conduct First-Grade PALS represented only between 20% and 25% of the total reading block, and this was only during the 16 weeks First-Grade PALS was in place, or roughly half the academic year. Unlike other early literacy programs, such as Reading Recovery or Auditory Discrimination in Depth, First-Grade PALS does not require a substantial amount of instructional time. This efficient use of time increases its attractiveness to teachers and its overall feasibility.

Additionally, First-Grade PALS utilizes teacher time efficiently. It can be implemented with relatively little teacher training and requires less teacher planning than typical instruction. We attribute this to the simplicity of the First-Grade PALS routines and the materials, which are teacher friendly and complete.

Our conclusion of efficiency is further supported by the fact that teachers in both First-Grade PALS and Contrast classrooms reported typically using the instructional time allocated to them similarly. The only difference detected between instructional formats was in increased use of paired reading for First-Grade PALS classrooms. From this information, we infer that First-Grade PALS was the statistically significantly different instructional aspect between these two groups and thus accounts for the greater academic gain for the First-Grade PALS group.

We assert that the greater academic gain for the treatment group resulted from providing students with sufficient opportunity to actively engage in critical content. Of the 35 minutes needed to conduct each session of First-Grade PALS, 30 were used in the direct act of practicing reading skills or reading connected text. Likewise, the content practiced during those 30 minutes was designed to promote the greatest academic boost for the time expended. The Sounds and Words lesson sheets and the trade books used enabled teachers to provide students with learning opportunities within their zones of proximal development (Vygotsky, 1978). In other words, academic achievement was maximized because teachers were able to respond to individual student needs. This was accomplished by linking carefully designed Sounds and Words lesson sheets that included provisions for integrating phonological and alphabetic skills into the decoding of words in connected text with the repeated reading of a variety of texts using a basic strategy to deepen comprehension.

Beyond time usage, other variables were at play in the success of First-Grade PALS, not the least of which was the fact that teachers were able to implement and maintain First-Grade PALS fairly easily. We attribute this to the First-Grade PALS materials, which were designed to be teacher friendly and comprehensive, and to the routines, which were relatively simple. Teachers were provided a comprehensive manual that not only included a how-to section, but also incorporated scripted lessons for teaching students to carry out each routine (see Appendix B for sample script). The manual thus included all materials, other than the students' texts, necessary to conduct First-Grade PALS. Teachers were not required to develop any additional materials. Because First-Grade PALS did not entail a total restructuring of the reading program but enhanced the existing program,

we maintain that it was more feasible than other innovations that substitute radically different practices (see Gersten, Vaughn, Deschler, & Schiller, 1995, and Smylie, 1988, on why innovation should enhance rather than replace existing classroom practices).

It must be recognized that First-Grade PALS teachers were provided technical assistance beyond what the typical school district could provide to teachers implementing new practices. It is likely that this assistance increased teachers' initial confidence and ability to get the treatment in place. If they needed help, a member of our staff provided it immediately. This led, we argue, to increased proficiency in the procedures and to an increased sense of competence, leading to high fidelity and high satisfaction.

Study limitations

Of course the technical assistance provided for First-Grade PALS teachers could be viewed as a limitation. In our sample, teachers required varying amounts of assistance for effective implementation. Not surprisingly, more assistance was needed by some teachers than others. However, only one teacher required extensive assistance, and that related more to general classroom management and instructional choices rather than the actual First-Grade PALS procedures. Given that it is unlikely that school districts implementing First-Grade PALS would have comparable levels of support available for teachers, the transportability of the present findings are unknown. However, this is a problem facing virtually all classroom innovations that are developed through careful research (Gersten et al., 1995).

A second and possibly more serious limitation is the fact that LA students were not equivalent on reading fluency measures at pretest. We are unsure why this situation occurred since we selected LA students from teachers' classrooms because of their initial similarity (i.e., wpm = 0). There was, however, a lag of 2 to 4 weeks between the time of pretesting and the time of First-Grade PALS implementation. It is possible that students in the Contrast group made greater initial reading growth during this lag. If this is the case, it would indicate that students in the Contrast group would have been predicted to make continued greater growth. We recognize that this is pure speculation on our part. Regardless of the reason, it is important to keep in mind that the actual differences between groups was only about 1.3 words read correctly per minute.

Additionally, while the data demonstrate that, as a group, LA students who participated in First-Grade PALS made greater academic gains than students who did not, this finding does not hold true for approximately 20% of the LA sample. Thus, it appears that First-Grade PALS

was not sufficient for adequately increasing the rate of literacy acquisition for all students, although we are confident that we positively affected the reading ability of most of the students who participated. However, given that First-Grade PALS is a relatively low-intensity, whole-class intervention, perhaps expecting all children to show statistically significantly greater reading achievement is unrealistic, especially if one considers that programs that are teacher directed and one-on-one tutoring programs, such as Reading Recovery (Clay, 1991), which provide for considerable intensity in terms of instructional time, cost, and teacher energy, have yet to achieve this goal (Iversen & Tunmer, 1993).

Conclusion

In conclusion, this research has demonstrated the efficacy of First-Grade PALS as one feasible tool for accommodating academic diversity in first-grade reading classrooms. We believe its success is attributable to (a) the efficient use of student and teacher time to increase students' engagement in the actual act of reading, (b) the incorporation of critical instructional content borrowed from the research literature on preventing and remediating early reading failure, (c) the relative simplicity of the tutoring routines, which enable children as young as first grade to mediate the instruction of their peers, and (d) the teacher friendly materials.

Of course before a true endorsement of First-Grade PALS can be made, further research needs to be conducted to ensure that the results are replicable. Likewise, the relative merits of the individual components of First-Grade PALS need to be explored. Presently, it is unclear if Sounds and Words or Partner Read-Aloud contribute more to achievement gains. Also, we are currently examining the effects of changing the roles of the students within each pair. We anticipate that by increasing the amount of reciprocity, we will increase the amount of practice time for stronger students without reducing the effectiveness of the treatment for weaker students. We are hoping that the weaker students will benefit from the modeling of the stronger students. Last, while the opinion of First-Grade PALS teachers and our own informal observation lead us to believe that social skills and classroom climate are enhanced by participating in First-Grade PALS, the actual social and ecological benefits need to be systematically explored.

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APPENDIX A**Sample listing of trade books supplied in experimental teachers' Book Bags**

- Alborough, J. (1992). *Where's my teddy?* Cambridge, MA: Candlewick.
- Bang, M. (1983). *Ten, nine, eight*. New York: Greenwillow.
- Carle, E. (1981). *The very hungry caterpillar*. New York: Putnam.
- Carle, E. (1984). *The very busy spider*. New York: Philomel.
- Deming, A.G. (1988). *Who is tapping at my window?* New York: Dutton.
- Fox, M. (1993). *Time for bed*. San Diego, CA: Harcourt Brace Jovanovich.
- Jones, C. (1989). *Old MacDonald had a farm*. Boston: Houghton Mifflin.
- Lillie, P. (1991). *When the rooster crowed*. New York: Greenwillow.
- Martin, B., Jr. (1983). *Brown bear, brown bear, what do you see?* New York: Holt.
- Pomerantz, C. (1984). *Where's the bear?* New York: Greenwillow.
- Raffi. (1988). *Wheels on the bus*. New York: Crown.
- Raschka, C. (1992). *Charlie Parker played be bop*. New York: Orchard.
- Shaw, N. (1986). *Sheep in a jeep*. Boston: Houghton Mifflin.
- Tafari, N. (1994). *This is the farmer*. New York: Greenwillow.
- Trapani, I. (1993). *The itsy bitsy spider*. Boston: Whispering Coyote.
- Ward, C. (1988). *Cookie's week*. New York: Putnam.
- Williams, S. (1990). *I went walking*. San Diego, CA: Harcourt Brace Jovanovich.
- Wood, A. (1992). *Silly Sally*. San Diego, CA: Harcourt Brace Jovanovich.
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APPENDIX B**Example teacher script for teaching students First-Grade PALS procedures**

Partner Read Aloud Step 1—Pretend-Read
(You will need a big book for this section.)

- Teacher: Now we are ready to talk about what you will do during Partner Read Aloud. After you read the title and find the first page of the story, you will do something called Pretend-Read. What will you do?
- Students: Pretend-Read.
- Teacher: When you pretend-read, you guess what the story will be about by looking at the pictures. What do you do when you pretend-read?
- Students: Guess what the story will be about by looking at the pictures.
- Teacher: You do *not* read the words in the story yet, you only talk about the pictures. It's called *pretend*-reading because you don't actually read the words. Do you read the words in the story when you are doing Pretend-Read?
- Students: No.
- Teacher: Good listening! Pretend-reading is important because it will make you think about what the story might be about. Really good readers always think about what they are going to read before they read the words. Let's pretend-read the story I have. I want you to look at all the pictures on each page and think about what might be happening on the page. First I'll show you how it works.

(Hold up the big book to the first page of the story.)

- Teacher: Look at this page. I'm looking at what the picture shows and I'm thinking, "what's going on?" Here's my guess. _____. Was that a reasonable guess?
- Students: Yes.
- Teacher: Yes, it was a good guess because it looks like _____ is happening on this page. With Pretend-Read, there is no one right answer. A good answer is anything that you think is happening on the page using the pictures. What is a good answer during Pretend-Read?
- Students: (idea—A good guess about what is happening on the page based on the pictures.)
- Teacher: I'll guess about what is happening on the next page. You tell me if it is a good guess.

(Make a reasonable prediction based on the next page. Discuss if it was a good prediction and why.)

- Teacher: Here's my guess for the next page.

(Point to an object on the page and name it.)

- Teacher: That was *not* a good guess. All I did was name something on the page. I did not tell what was happening. Your turn. Tell me a better guess for what is happening on this page.

(Call on a lower performing student.)

- Teacher: When you do Pretend-Read, Readers will always talk first. This means Readers need to look at all the pictures on the page and tell what they think is happening. Who will talk first?
- Students: The Readers.
- Teacher: Right. Coaches, your main job during Pretend-Read is to ask the Reader questions about the pictures. If your partner is having trouble talking about what is happening in the pictures, you will help by asking questions about the pictures. Coaches, what is your job during Pretend-Read?
- Students: To ask the Reader questions about the pictures.
- Teacher: Let's pretend-read the rest of this story. I'm going to pretend that I'm a Reader. All of you pretend that you are my Coach. I want each of you to look at the pictures. If I have trouble talking about a page, I want you to think of questions that could help me.
- Teacher: Look at this page. Since I'm the Reader, I'll talk first about the pictures on this page.

(continued)

APPENDIX B (cont'd.)**Example teacher script for teaching students First-Grade PALS procedures**

(Discuss what is happening on the page.)

Teacher: I did pretty well on that page, so I don't really need help. You can tell me to go on to the next page. Let's see if I need help on the next page.

(Briefly discuss the pictures. Leave obvious, important information out.)

Teacher: Did I do a good job of talking about the pictures on this page?

Students: No.

Teacher: You're right. I think I need help on this page. I didn't talk about important things that were happening. All of you are my Coaches right now, so think of questions that could help me. Don't tell me what's happening. Make me think about what's happening by asking me questions.

(Call on several students to share their questions. Discuss good questions. If students start to tell about the page, remind them that they are only supposed to ask questions about the page at first when they are the Coach.)

Teacher: Let's continue. I'm not going to tell you whether or not I'm doing a good job of talking about the most important information in the pictures. You decide if I need help or not.

(Discuss the next page well.)

Teacher: What do you think? Raise your hand if you think I talked about the pictures well enough.

(Monitor.)

Teacher: I think you're right. I did pretty well on that page. Let's try another.

(Repeat the process on the rest of the pages in the story.

Call on students to provide prompts on pages for which you require assistance.)

Teacher: Excellent pretend-reading. I want Coaches to mark 5 points on your score card for doing such a good job.

(Monitor.)

Teacher: Now it's your turn to practice pretend-reading with your partner. What should you do first with your book?

Students: Read the title.

Teacher: Right. Coaches, then Readers, read the title of your story books again.

(Monitor. Award bonus points to students who remember to finger-point.)

Teacher: Now you need to find the first page of your story. Who finds the first page?

Students: The Coach.

Teacher: Coaches, find the first page. Readers, help your partners.

(Monitor.)

Teacher: Now you are ready to Pretend-Read. Remember, *Readers* talk about what is happening in the pictures on each page of the story first. Coaches, your job is to help them by asking questions when they need help. Is everybody ready?

(Monitor.)

Teacher: I'll give you 3 minutes to pretend-read your story. That's not much time to pretend-read the whole story, so don't spend too much time on any one page. If you finish the story before I say to stop, switch jobs and the Coaches should pretend-read. But the Readers always go first. Begin.

(continued)

APPENDIX B (cont'd.)**Example teacher script for teaching students First-Grade PALS procedures**

(Monitor. Walk around to each pair and make sure the Reader is doing most of the talking. Praise cooperative behavior, reasonable predictions about the story based on the pictures, and good questioning by the Coaches.)

(Focus your time on your lowest performing students. Coaches of these students will probably need more guidance on prompting behaviors.)

Teacher: Excellent pretend-reading! Now let me tell you about points. Every time you pretend-read a whole story during PALS, you and your partner earn 5 points. How many points do you earn?

Students: 5.

Teacher: So, when we begin doing PALS, what will you do when you finish Pretend-Read?

Students: Mark 5 points on our score card.

Teacher: That's right, you mark 5 points on your score card when you finish pretend-reading a story. Readers, mark 5 points on your score card because you and your partner just finished pretend-reading a story.

(Monitor.)

Teacher: Let's review what we've learned so far about Story Sharing.

(Ask questions to check student understanding of the following information.)

Students: (Main points)

1. After pairs set up their PALS materials and read the title of their book/story, they are ready to pretend-read the text.
 2. During Pretend-Read, Readers predict what is happening on each page of the story by discussing the pictures.
 3. Coaches may make predictions also, but Readers talk first about each page.
 4. Coaches ask Readers questions about the pictures when necessary to stimulate discussion.
 5. Pairs mark 5 points on their score cards when they finish pretend-reading the whole story.
 6. If the Reader finishes pretend-reading the whole story, the partners switch jobs and the Coach pretend-reads the story.
-

APPENDIX C**Example phonological awareness segmentation probe**

Phonological awareness—segmentation
Probe 1

Word	Scoring	Score/possible
tree	/t/ /r/ /ee/	/3
do	/d/ /oo/	/2
game	/g/ /ai/ /m/	/3
time	/t/ /ī/ /m/	/3
hare	/h/ /ai/ /r/	/3
pad	/p/ /ă/ /d/	/3
Dan	/D/ /ă/ /n/	/3
feet	/f/ /ee/ /t/	/3
hail	/h/ /ai/ /l/	/3
hope	/h/ /oa/ /p/	/3
		Total
		/29

Time: _____ (secs)

Segments: _____/_____

Segments per minute = segments correct \times 60 = _____

of seconds

APPENDIX D**PALS fidelity observation checklist**

Teacher: _____

Observation date: _____

**Peer-Assisted Learning Strategies for First-Grade Readers
Implementation record**

Time started: _____ Time ended: _____ Total minutes: _____

Classroom*Starting up:*

- ___1. Folder distribution is calm and routine, requiring no more than 1 to 2 minutes.
- ___2. Students get their tutoring materials set up on their desks within 2 minutes.
- ___3. Storybooks have been assigned prior to the start of PALS.

Sounds and Words:

- ___4. Teacher checks student desks to make sure students are on the correct lesson.
- ___5. Teacher quickly presents the new sound and sight word for the day.
- ___6. Teacher gives command to begin Sounds and Words.
- ___7. Teacher actively monitors students during the majority of Sounds and Words.
- ___8. Teacher listens carefully to multiple pairs.
- ___9. Teacher provides corrective feedback as necessary.
- ___10. Teacher conducts Sounds and Words for 10 minutes.
- ___11. Transition between Sounds and Words and Partner Read-Aloud is smooth.

Pretend-Read:

- ___12. Teacher gives command to begin Pretend-Reading.
- ___13. Teacher actively monitors students during the majority of Pretend-Read.
- ___14. Teacher listens carefully to multiple pairs.
- ___15. Teacher provides corrective feedback as necessary.
- ___16. Teacher conducts Pretend-Reading for 3 minutes.

Read-Aloud:

- ___17. Transition between Pretend-Read and Read-Aloud is smooth.
- ___18. Teacher actively monitors students during the majority of Read-Aloud.
- ___19. Teacher listens carefully to multiple pairs.
- ___20. Teacher provides corrective feedback as necessary.
- ___21. Teacher conducts Read-Aloud for 15 minutes.
- ___22. Teacher provides help quickly when students raise their hands.

Retell:

- ___23. Teacher gives command for Retell.
- ___24. Teacher actively monitors students during Retell.
- ___25. Teacher provides corrective feedback, as necessary.
- ___26. Teacher listens to at least 1 pair closely.
- ___27. Teacher conducts Retell for 2 minutes.

Putting away:

- ___28. Putting materials away occurs within 2 minutes.
- ___29. There is a clear procedure for putting the tutoring materials and storybooks away.
- ___30. If points are reported, the procedures take no more than 5 minutes.

(continued)

APPENDIX D (cont'd.)**PALS fidelity observation checklist***General:*

- ___31. Teacher gives praise to specific pairs for specific behaviors.
- ___32. Teacher provides reminders to the class about how to conduct a specific procedure.
- ___33. Teacher is positive about PALS.
- ___34. Teacher awards bonus points.

Sounds and Words*Students*

Pair observed

Reader: _____

Coach: _____

Coaching behaviors:

(Letter Sounds)

- ___1. Coach points to each letter and asks the Reader to identify its sound.
- ___2. Coach holds continuous sounds and lifts on stop sounds.
- ___3. Coach follows correction procedure, if necessary.
- ___4. Coach only accepts correctly pronounced sounds.
- ___5. Coach repeats entire line if an error occurs.

(Hearing Sounds)

- ___6. Coach holds lesson sheet out of the view of the Readers.
- ___7. Coach says each word fast.
- ___8. Coach says each word slowly in phonemic segments.
- ___9. Coach holds up one finger for each segment.
- ___10. Coach asks Reader to identify the underlined sounds.
- ___11. Coach follows correction procedure.
- ___12. Coach repeats line if an error occurs.

(Sounding Out)

- ___13. Coach monitors Reader's sounding-out attempts.
- ___14. Coach does *not* point to the sounds but to each dot.
- ___15. Coach demonstrates correct sounding out if an error occurs.
- ___16. Coach directs the Reader to begin the line again if an error occurs.
- ___17. All words are sounded out correctly before the Coach allows the Reader to move to the next activity.

(Stories)

- ___18. Coach tells the Reader the sight word for the day.
- ___19. Coach monitors as the Reader reads each sentence.
- ___20. If an error occurs, the Coach tells the Reader to sound out the word.
- ___21. After sounding out a word, the Coach directs the Reader to read the sentence again.
- ___22. All sentences are repeated until they are read correctly by the Reader.
- ___23. If the Reader cannot sound out a word independently, the Coach demonstrates.

Reader behaviors:

(Letter Sounds)

- ___24. Reader says each sound.
- ___25. Reader holds continuous sounds, but not stop sounds.
- ___26. Reader accepts the Coach's corrective feedback.

(continued)

APPENDIX D (cont'd.)**PALS fidelity observation checklist***(Hearing Sounds)*

- ___27. Reader listens as the Coach segments words.
- ___28. Reader says underlined sound in isolation
- ___29. Reader accepts correction.

(Sounding Out)

- ___30. Reader points to the starting ball for each word.
- ___31. Reader sounds out each word by pointing to each dot and saying the sound for the letter above the dot.
- ___32. Reader does *not* stop between sounds or repeat sounds.
- ___33. After sounding out each word, the Reader reads the word as one unit.
- ___34. The Reader accepts corrections if an error occurs.

(Stories)

- ___35. Reader repeats the sight word for the day.
- ___36. Reader reads each sentence.
- ___37. If an error occurs, the Reader sounds the word out.

(General)

- ___38. The pair begins Sounds and Words as soon as the teacher gives the command.
- ___39. Five points are marked when Letter Sounds is completed.
- ___40. Five points are marked when Hearing Sounds is completed.
- ___41. Five points are marked when Sounding Out is completed.
- ___42. Five points are marked when Stories is completed.
- ___43. Coach and Reader cooperate with each other.
- ___44. Coach and Reader remain on task for the entire Sounds and Words activity.
- ___45. Coach and Reader start a new lesson only if previous lesson was mastered.
- ___46. The happy face is filled in only when mastery of a section is achieved.

Pretend-Read

Pair observed

Reader: _____

Coach: _____

Coaching behaviors:

- ___1. Coach reads title to reader.
- ___2. Coach points to each word of the title as she or he reads it aloud.
- ___3. Coach turns to the starting page of the story.
- ___4. Coach asks the Reader about the pictures on each page of the story.
- ___5. Coach does *not* read any words to the Reader.
- ___6. Coach listens to the Reader make predictions.
- ___7. Coach asks prompting questions if the Reader needs help.
- ___8. Coach does *not* provide the information to the Reader unless the Reader cannot respond with anything.
- ___9. Coach is supportive of the Reader.
- ___10. Coach is on task throughout the entire Pretend-Read period.

(continued)

APPENDIX D (cont'd.)**PALS fidelity observation checklist***Reader behaviors:*

- ___11. Reader repeats the title of the story to the Coach.
- ___12. Reader points to each word as she or he reads the title aloud.
- ___13. Reader talks about what she or he thinks is happening on each page of the story.
- ___14. Reader does not persevere on any one page.
- ___15. Reader cooperates with the Coach, accepting the Coach's help.
- ___16. Reader is on task during the entire Pretend-Read period.

General:

- ___17. The pair began Pretend Read as soon as the teacher gave the command.
- ___18. Ten points are marked only if the pair completed the entire story during the 2- to 3-minute period.
- ___19. Point marking is shared by the Reader and the Coach.
- ___20. Coach and Reader cooperate with each other.

Read-Aloud

Pair observed

Reader: _____

Coach: _____

Coaching behaviors:

- ___1. Coach turns to the beginning of the story after Pretend-Read is completed.
- ___2. Coach reads one sentence of text orally to the reader at a time.
- ___3. Coach points to each word as she or he reads it.
- ___4. Coach listens and follows while Reader reads the same sentence of text.
- ___5. Coach consistently follows correction procedure when Reader misses a word.
- ___6. Coach rereads sentence if the Reader misses more than one word in the sentence.
- ___7. If Coach doesn't know a word, he or she raises his or her hand and keeps on working until the teacher arrives.
- ___8. Coach reads each sentence first for the first two readings of the story.
- ___9. Coach switches jobs with the Reader on the third reading of the story.
- ___10. On the third reading, the Coach reads each sentence after the Reader has read the sentence.
- ___11. Coach continues to follow the correction procedure when the Reader doesn't know a word.
- ___12. Coach stays on task for the entire Read-Aloud period.
- ___13. Coach is supportive and positive with the Reader.

Reader:

- ___14. Reader listens and follows the Coach as the Coach reads each line of text.
- ___15. Reader reads the same line of text after the Coach.
- ___16. Reader points to each word as she or he reads it.
- ___17. Reader accepts Coach's help.
- ___18. After missing a word, the Reader rereads entire sentence of text.
- ___19. Reader reads first on the third reading of the text.
- ___20. Reader accepts Coach's help on the third reading of the text.

General:

- ___21. Reader and Coach cooperate with each other.
- ___22. Ten points are recorded after each reading of the story.
- ___23. Point marking is shared by the Reader and the Coach.
- ___24. Reader and Coach exchange positive comments about their performance.

(continued)

APPENDIX D (cont'd.)

PALS fidelity observation checklist

Retell

Coach:

- ___1. Coach asks the Reader to identify what happened first in the story.
- ___2. Coach asks the Reader to identify what happened next for the remainder of the session.
- ___3. Coach does *not* supply information for the Reader, unless the Reader needs prompting.
- ___4. If the Reader needs help, the Coach only prompts the reader.
- ___5. If the Reader presents information out of sequence, the Coach corrects the sequence.

Reader:

- ___6. Reader retells the story in its approximate sequence.
- ___7. Reader accepts correction from the Coach if necessary.

General:

- ___8. The pair is cooperative throughout Retell.
 - ___9. The pair is on task throughout Retell.
 - ___10. The pair marks 10 points for Retell.
-

APPENDIX E

First-Grade PALS teacher feedback questionnaire

Directions: Please complete this form concerning your participation in First-Grade PALS this year. We are very interested in your honest reactions to these reading procedures. We will use your comments and suggestions to try to improve the reading procedures in the future. After each question, please circle one number you feel best describes your opinion. Please do *not* place a mark between numbers.

Question	Not at all		Not sure		Very
1. How important was Sounds and Words to the reading achievement of your students?	1	2	3	4	5
2. How important was Pretend-Read to the reading achievement of your students?	1	2	3	4	5
3. How important was Read-Aloud to the reading achievement of your students?	1	2	3	4	5
4. How important was Retell to the reading achievement of your students?	1	2	3	4	5
5. Do you think First-Grade PALS has helped the overall reading achievement of your students?	1	2	3	4	5
6. Do you think First-Grade PALS has helped improve the social skills of your students?	1	2	3	4	5
7. How likely are you to continue to use First-Grade PALS in future years?	1	2	3	4	5
8. In your view, what was the overall effectiveness of First-Grade PALS as a tool to help you meet the range of needs of the students in your class?	1	2	3	4	5

APPENDIX F**Student PALS interview**

Student: _____



Teacher: _____

Read the following to the child:



"I'd like to know what you're thinking about PALS. The reason is that my friends and I want to make PALS as good as possible. We're trying to make it as helpful as it can be for students trying to become better readers. I've got some questions I'd like you to answer. Please answer them as honestly as you can. This isn't a test, and your answers are just for my friends and me, not for your teacher."

Explain how the scale works then administer each item orally. Allow the child to circle the number they choose, if s/he wants to. Explain the numbers and faces again as necessary.



1. Think about Sounds and Words. How much did it help you become a better reader?

				
1	2	3	4	5
Not at all		Kind of		A whole lot



2. Think about Pretend-Read. How much did it help you become a better reader?

				
1	2	3	4	5
Not at all		Kind of		A whole lot



3. Think about Read-Aloud. How much did it help you become a better reader?

				
1	2	3	4	5
Not at all		Kind of		A whole lot



4. Think about Retell. How much did it help you become a better reader?

				
1	2	3	4	5
Not at all		Kind of		A whole lot



5. Overall, how much do you think PALS helped you become a better reader?

				
1	2	3	4	5
Not at all		Kind of		A whole lot

6. Overall, how much did you like doing PALS?

				
1	2	3	4	5
Not at all		Kind of		A whole lot

7. If you were a teacher, would you want to do PALS with your students?

				
1	2	3	4	5
Not at all		Kind of		A whole lot