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Classwide Peer Tutoring: Practice, Theory, Research, and Personal Narrative

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Abstract

Contemporary teachers need instructional practices that are (a) powerful enough to meet the needs of a rapidly diversifying student population, (b) feasible to implement on a classwide basis, and (c) socially acceptable to them and their pupils. Classwide peer tutoring (CWPT) is one such instructional practice. In addition to describing CWPT, its research base, and supporting theoretical perspectives, this article describes a project in which a classroom teacher in a remedial education program worked collaboratively with an educational researcher to examine the impact of CWPT on her pupils' math computational fluency as monitored on district-adopted, curriculum-based assessments. Results indicated that all pupils, including those with disabilities, made substantial learning gains and improved their academic-related behavior in class. The teacher reported that CWPT was relatively easy to implement and that her students loved playing the tutoring game in math.

Keywords

classwide peer tutoring, math fluency, students with special needs, curriculum-based assessment

A national crisis of poor learning outcomes is evident in reading, math, and other core subject areas. These failures are particularly noticeable among students with special needs; pupils from culturally and linguistically diverse backgrounds; and those from environments of poverty, abuse, or neglect (Education Trust, 2005). It is also clear that poor learning outcomes are often the product of diverse learner characteristics present when children enter school and relatively weak instructional interventions that struggling students encounter in school (Greenwood, Maheady, & Delquadri, 2002). These early learning challenges often transform into more substantive problems such as grade retention, dropping out of school, increased discipline issues, and placement in special and remedial education programs—outcomes that further limit student access to higher education, contribute to increased unemployment, and diminish individuals' abilities to contribute to society (Heal, Khoju, & Rusch, 1997). At the heart of this immense instructional challenge are

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hardworking classroom teachers who try to accommodate a rapidly diversifying student population, using an ever-expanding and often inconsiderate curriculum, and doing so often under conditions of dwindling instructional support (McLeskey, Rosenberg, & Westling, 2010). These classroom teachers do not need the will or desire to help all of their students to succeed; they already possess that. What they need are the tools for doing so. They need more powerful academic and behavioral interventions that can improve the performance of all students (i.e., high-, average-, and low-achieving), that can be applied on a proactive and classwide basis, and that can be sustained under existing levels of instructional support and assistance. Classwide peer tutoring (CWPT) is one of those potentially powerful instructional tools.

Practice Description

Classwide peer tutoring refers to a class of instructional strategies in which students are taught by peers who are trained and supervised by the classroom teacher (Greenwood et al., 2002). The oldest and most widely researched classwide tutoring model was developed at Juniper Gardens Children's Project in Kansas City, Kansas, almost 30 years ago. The program is currently available in manual form under the commercial title of *Together We Can* (Greenwood, Delquadri, & Carta, 1997). The Juniper Gardens' CWPT program emerged from collaborations among educational researchers and a classroom teacher who was trying to successfully integrate children with learning disabilities (LD) into her general education setting (Delquadri, Greenwood, Stretton, & Hall, 1983). Importantly, the following criteria were established during initial CWPT development: The program would (a) not create extra work for the teacher, (b) benefit all children in the class, (c) use materials and resources found in existing instructional programs, (d) supplement rather than supplant current instruction, and (e) be conducted within existing instructional time periods (Delquadri et al., 1983). It is these particular attributes that may make CWPT an appealing instructional option for classroom teachers.

The resulting CWPT program allowed teachers to simultaneously engage all of their students in reading, math, and spelling activities for about 30 minutes per day in each subject area. The program was applicable across first- through sixth-grade classrooms and was used from 3 to 5 days per week. Over the past 25 years, other similar classwide tutoring models have emerged:

1. peer-assisted learning strategies (PALS; Fuchs, Fuchs, Mathes, & Simmons, 1996),
2. The Ohio State START Tutoring Program (Heron, Heward, Cooke, & Hill, 1983),
3. classwide student tutoring teams (CSTT; Harper & Maheady, 1999), and
4. reciprocal peer tutoring (RPT; Fantuzzo & Ginsburg-Block, 1998).

These programs expand the utility and flexibility of peer tutoring methods. The Juniper Gardens' model, however, is the focus of this article.

The Juniper Gardens' CWPT program has four primary components: (a) weekly competing teams; (b) highly structured, reciprocal tutoring procedures; (c) daily point earning, public posting, and contingent rewards; and (d) direct practice in functional instructional activities. CWPT was developed as an alternative practice activity that can be used in place of independent work time. It should not be done with new material but rather used with content that was taught previously through direct instruction. CWPT has been used effectively to improve both basic academic skills (e.g., reading, writing, math, spelling fluency) and students' acquisition and retention of important content knowledge. When using CWPT, teachers' roles change from primary deliverers of instruction to facilitators and monitors of peer-teaching activities.

A Sample CWPT Spelling Session

Each week, teachers form two competing teams by having pupils select colored pieces of paper (e.g., red or blue) from a covered box. The number of students in class determines how many pieces of paper are placed in the box (e.g., 24 students = 12 red and 12 blue pieces). The teacher then puts students with the same colored paper into tutoring pairs (i.e., 6 red and 6 blue pairs). CWPT does not provide explicit directions regarding tutor assignment other than initially placing students who are most likely to work well together into pairs and monitoring ongoing performance to ensure that everyone is making adequate progress each week. If all students are performing well, then team membership and partners stay the same for the rest of the week. Each subsequent week, students reach into the box and are assigned to different teams and partners. Throughout the year, pupils typically move from team to team and have an opportunity to work with every peer.

Within each pair, tutoring roles are reciprocal. Students serve as both tutors and tutees during each session and follow a highly structured tutoring procedure. After pupils retrieve their tutoring materials (i.e., weekly spelling list, blank paper, and a deck of numbered cards), the teacher sets a timer for approximately 10 minutes. For the first 10 minutes, one pupil in each pair serves as tutor. Tutors present each item on previously constructed curriculum materials (e.g., weekly spelling lists) and provide immediate positive and constructive feedback (i.e., verbal and points) contingent on tutee responses.

Table 1. Essential Components for Implementing Classwide Peer Tutoring (CWPT)

Required materials	Teacher procedures	Pupil procedures
a. Team point charts posted	a. Teacher introduces and instructs new content	a. Tutors award 2 points for correct tutee responses
b. Tutoring materials (e.g., folder, flash cards, study guides)	b. Teacher directs pupils to get tutoring materials (i.e., movers move now)	b. Tutors use correction procedure i. Tutor stops tutee ii. Tutor provides correct answer
c. Point sheets	c. Teacher sets timer (e.g., 10 minutes)	c. Tutor awards 1 point for tutee correction
	d. After timer goes off, teacher resets timer for same amount of time and instructs students to change roles	d. Pupils write point totals on worksheets
	e. Teacher circulates among students during tutoring	e. Pupils post totals on team point charts
	f. Teacher awards bonus points for good tutoring	
	g. Teacher provides assistance to pairs as needed	
	h. Teacher writes point totals on team point charts	

Tutees, in turn, are required to spell, orally and in writing, each dictated word. Tutors then award 2 points for each word spelled correctly. If tutees misspell target words, however, tutors say "incorrect" and then provide the correct response (i.e., tutors orally spell the word). Tutees then correct their errors by writing the word correctly three times. If errors were corrected appropriately, tutors award 1 point. If tutees fail to correct their errors by either refusing or making mistakes during the correction phase, then no points are given for that item. Students complete as many items as possible before the time period elapses. They are told that the more items they complete correctly, the more points they will earn for themselves and their respective teams. When the timer goes off, students reverse roles and follow the same tutoring procedures for an equivalent amount of time.

While pupils are engaged in appropriate tutoring behaviors, teachers move about the classroom and award bonus points to maintain high levels of implementation accuracy. Teachers award bonus points to tutors, for example, for (a) maintaining a brisk pace; (b) providing clear, immediate, and concise feedback; (c) using the error correction procedures appropriately; and (d) providing unsolicited supportive comments. Similarly, tutees earn bonus points by working quickly and accurately, correcting their errors immediately and without comment, and producing high-quality responses. Teachers typically award up to 10 bonus points per student by writing on the top of pupils' practice sheets in a different colored pen each day (to prevent cheating) and commenting on what was done appropriately. Teachers also try to balance the number of bonus points assigned to each team.

After pupils have served in both roles, they add the number of points earned, including bonus points, and write their respective totals on their papers. Individual student points, as well as daily and cumulative team totals, are then displayed publicly on a laminated scoreboard in the front of the classroom. CWPT procedures typically remain in effect from 3 to 4 days per week. On Fridays, pupils are evaluated individually using existing assessment procedures (e.g., weekly spelling tests). Pupils are told that they can earn 5 points for themselves and their respective teams for each word they spell correctly on the test.

Point earnings from weekly spelling tests are then added to cumulative point totals for each team to determine a weekly winning team. Team-of-the-week certificates are presented and signed by each member of the winning team. Certificates are then posted on the outside wall of each classroom or within the room itself. Each week, new competing teams are formed, thereby increasing the probability that each student will participate on a winning team, while simultaneously minimizing the possibility that cliques will develop. See Table 1 for a summary of the essential components for implementing CWPT.

Practitioner Narrative, by Jaime Gard

I was initially unfamiliar with the Juniper Gardens' CWPT program. I heard about it in a graduate education class I took while also teaching a remedial education class in mathematics in a local school district. All students in this class were identified as being at risk for failure based upon poor performance on high-stakes, state-level testing and districtwide math fluency assessments. They were not particularly motivated by math and often engaged in off-task and disruptive classroom behaviors. At the start of the year, students often said that they "hated math" or were "too stupid to do math." CWPT

sounded like a promising alternative to motivate students and improve their math computational skills.

I implemented CWPT with 8 fifth-grade remedial students in a small, culturally and linguistically diverse, urban elementary school during the 2008–2009 school year. The group consisted of five girls and three boys who were 10 years old at the time. Five students were Hispanic, two were Caucasian, and one was African American. Of the five Hispanic students, two were classified as English language learners (ELLs). Two of the students had IEPs [Individualized Education Programs] for documented learning disabilities. One student received accommodations under a [Section] 504 plan due to a diagnosis of attention-deficit/hyperactivity disorder (ADHD). Five of the eight students also qualified for free or reduced meals. In 2007–2008, six students received scores of 2 on the fourth-grade New York State math exam, and two others earned scores of 1 (minimum passing grade was 3).

The remedial math classes were designed to supplement regular math instruction and improve student performance on high stakes and districtwide assessments. The eight students received math instruction from me in small groups during 60-minute instructional blocks each day. These services were provided by me "pushing into" the general education classroom and working with my small group of students. In addition to the 60-minute instructional block, students received 30 minutes of services in a "pull out" setting 4 days a week. CWPT was done during the 30-minute pull-out sessions. The district-adopted core math curriculum, *Investigations in Number, Data, and Space* (TERC, 2008), was used for all instruction.

Although the district-adopted curriculum appeared to help in some math areas, it was not particularly useful in improving multiplication and division fluency. The goal, therefore, was to use CWPT to improve my students' computational fluency in these areas. This goal was important for a few reasons. First, basic multiplication and division fluency is critical to improved performance in upper level math courses where students are expected to apply their computational skills to solve problems. Second, the school district uses mathematics fluency measures to monitor pupil progress and determine who needs supplemental instruction. Students with the lowest benchmark fluency scores (measured in digits correct per minute) are categorized as needing intensive intervention, and students whose scores are not as low but who do not meet grade-level benchmarks are identified as being in need of strategic intervention. All of my eight remedial students demonstrated a need for intensive intervention at the start of the school year. Additionally, development of math fluency was included among two students' IEP goals for the year.

From October through December, students used CWPT in multiplication, while September served as an initial baseline period. During February into June, students used CWPT in division, with January serving as a second baseline period. Students were trained initially to use CWPT during three 30-minute sessions. I described the procedures, selected two students to demonstrate them, and then had all students role-play the procedures while I moved around the classroom and provided positive and corrective feedback. Students quickly learned to move to their partners, take out the necessary materials, and practice their roles as both tutors and tutees. I used a 20-item checklist of all CWPT procedures to make sure that they were using it correctly. When pupils were using CWPT with at least 90% accuracy, we began using it formally with multiplication facts.

Classwide peer tutoring was used in a similar way as the spelling example. Each week, new teams were formed by having pupils select colored pieces of paper from a covered box. During each session, students served as both tutors and tutees for 10 minutes each. Given that students were randomly assigned to teams each week and were generally working below grade expectations in their math fluency, individual performance levels were not a major consideration when forming teams. Instead of using weekly spelling lists, however, pupils used flashcards displaying multiplication and division problems up to 12×12 and $144/12$, with correct solutions on the back. Tutees were required to read each problem and provide the solution orally as well as write the problem and solve it on paper. Tutors provided positive and corrective feedback and points as described earlier (i.e., 2 points for correct solutions and 1 point if errors were corrected appropriately). I also awarded bonus points for prosocial behavior and correct use of tutoring procedures. At the end of each CWPT session, teams totaled their points and recorded them on a class graph. On Thursday afternoon, the team with the most points earned a team-of-the-week certificate. Students then completed their weekly math fluency assessments each Friday. These data were graphed for the entire group and individual pupils to monitor student progress.

Amazingly, CWPT implementation proceeded in a very orderly manner. That is, half of the students, designated "stayers," remained at their desks while their partners ("movers") moved next to them. Pupils complied well with our posted tutoring rules (i.e., move quickly and quietly, talk only during tutoring sessions, talk only to your tutoring partners) and appeared very excited to play the tutoring game. Rule following [compliance], therefore, was very high. It was important, however, to move through the classroom while tutoring was going on. This allowed me to award bonus points for good tutoring behavior while also minimizing the likelihood of cheating or point inflation. To further minimize the possibility of cheating, I randomly selected one pupil's paper from each team and rescored it to see if all errors were corrected, an appropriate number of points were assigned, and the point total on top of the paper matched the number awarded. If these conditions were met, then I gave 50 bonus points to that team. If scoring differences emerged, then I simply corrected the paper, inserted the appropriate total

on top, and did not award bonus points for that particular team. It is important to note that there were no instances of overt cheating or flagrant point inflation during the study.

The use of CWPT produced immediate and noticeable improvements in all students' multiplication fluency. On average, the class increased their digits correct per minute by 11 digits from October to December on the district-adopted CBM assessment. This resulted in all students being reclassified as in need of strategic rather than intensive intervention. Closer inspection revealed that both the highest- and lowest-performing students showed comparable improvements (i.e., 11 digits for highest achiever and 10 digits for lowest performer). Students also improved their classroom behavior and understanding of math tasks. They participated much more often in class discussions and showed more confidence when solving challenging multiplication problems. Moreover, the complaining about math and off-task behaviors dropped considerably. Similar outcomes were noted when CWPT was used with division facts. Following a 20-minute retraining session, students used CWPT with division problems. Once again, all eight students displayed noticeable improvements by moving from intensive to strategic intervention classification. In-class performance also continued to be much better than when CWPT was not in effect.

A few other outcomes were noteworthy. First, when students initially used CWPT, they responded rather slowly and only accumulated about 20 to 40 points per session. As the year progressed, however, they worked more quickly and typically earned in excess of 80 points per session. This meant that they were doing more work in the same amount of time, which is very important if they are to reduce the gap between themselves and normally achieving peers. Second, four of eight students received passing scores on the New York State high-stakes math assessment, whereas another improved her score from a 1 to 2. While all students did not meet the desired benchmark score of 3, more than half improved their performance on the state test. In the past, very few if any students showed similar improvements. Third, when CWPT was discontinued for approximately 3 weeks in January, pupil fluency rates declined and complaining increased again. Once CWPT was resumed, all students' fluency rates rose once again. Perhaps most importantly, students showed remarkable changes in their attitudes toward math when using CWPT. They made remarks such as, "I can do math now," and "I used to be bad at math but now I'm good." They tried more challenging math applications and even increased their use of prosocial comments toward each other. They became more supportive of one another and worked extra hard to help classmates who were struggling. Students were very proud of their improvements and even made their own line graphs to show their progress.

Overall, I found CWPT to be rather easy and inexpensive to use. I was able to use existing curriculum materials in the form of flashcards, and pupils were assessed using district-adopted evaluation procedures (digits correct per minute). Sessions were scheduled to replace independent seatwork, my pupils enjoyed playing the "tutoring game," and it fostered more positive peer interactions. I made only a few minor changes in Juniper Gardens' procedures. First, students were allowed to create their own line graphs to monitor their fluency progress. This is not normally a part of the CWPT program, but it seemed to really motivate the students and provided an opportunity to "show off" for parents and peers. Second, there was no weekly individual test for students to earn additional points. Rather, daily CWPT points were added into cumulative totals, and winning teams were designated each Thursday based solely on practice session points. Initially, I had tried to award 5 additional points for each digit correct on the Friday assessments, but this became quite time-consuming. Finally, initial training in the proper use of CWPT was very important, as were teacher monitoring and bonus points, to ensure students used the procedures correctly. A brief retraining session was also needed after the holiday break. However, once students learned the procedures, they carried them out without teacher assistance even when substitutes were teaching.

Theory

Juniper Gardens' CWPT has its theoretical foundations in the effective instruction (Brophy & Good, 1986; Rosenshine, 1979), eco-behavior analysis (e.g., Greenwood, Delquadri, Stanley, Terry, & Hall, 1985), and, to a lesser extent, social learning (e.g., Slavin, 1995) literatures. Effective instruction theorists emphasize the importance of time and active student responding as important predictors of student learning and performance. They argue that classroom teachers really do make a significant difference in student learning (an unpopular belief at that time) and that some teachers and instructional practices are more effective than others in improving pupil achievement. These theorists argue further that (a) as one increased active learning time and maintained high levels of pupil success (e.g., >80%), pupil achievement would increase irrespective of cultural, linguistic, and/or socioeconomic variables; and (b) the systematic arrangement of instructional variables could remediate and potentially prevent learning failure (Brophy & Good, 1986; Rosenshine, 1979). CWPT essentially harnesses these instructional variables into a game format that actively engages all pupils simultaneously, provides immediate positive and corrective feedback, and offers contingent rewards for improved academic performance.

Eco-behavioral analysis emerged as a subarea in the field of applied behavior analysis that emphasizes the importance of contextual factors—such as classroom physical arrangements, instructional materials, and teacher behavior—and

their interactions with student behavior (Greenwood, Carta, & Atwater, 1990). Until this time, behavior analysts had focused most attention on the important relationships between student behavior and environmental consequences (e.g., reinforcement, punishment, extinction). Yet, emerging observational research suggested that many children failed due to insufficient "opportunities to respond" provided in the curriculum and by teacher lessons (Greenwood et al., 1985). These researchers demonstrated, for example, that some students who were presumably failing because of learning disabilities were actually spending very little time (e.g., less than 6 minutes per day) actively responding (i.e., reading, writing, and discussing) in class. Although some of their learning difficulties may have stemmed from processing difficulties, providing such few response opportunities made it highly unlikely that pupils would improve academically.

The key to CWPT's effectiveness is that it increases all students' opportunities to respond actively in class and provides motivation in the form of between-team competition, point earning, and contingent rewards. Moreover, the use of a reciprocal tutoring format permits all students to practice academic tasks (e.g., reading orally, spelling, doing math computations) under conditions of constant monitoring, immediate error correction, and positive consequences for correct responding (Veerkamp, Kamps, & Cooper, 2007).

With roots also in the social learning literature (Slavin, 1995), CWPT models are not value-free; rather, they emphasize equality of opportunity, mutual assistance, shared goals, interdependency, and group cohesion (Harper & Maheady, 2007). Slavin (1995) noted further that at least four major theoretical perspectives (i.e., motivational, social cohesion, cognitive, and developmental) speak to the beneficial effects of peer-teaching strategies on student learning. Motivational theorists argue, for example, that group goals and reward structures provide incentives for pupils to help one another and thereby maximize their own success. Social cohesion theorists, conversely, suggest that students help each other more readily in peer teaching situations because they care more about one another (i.e., more group cohesion) and want other team members to succeed. In contrast, cognitive researchers suggest that the verbal and nonverbal interactions among pupils themselves enhance students' mental processing skills and increase their academic achievement. By teaching others, students gain a deeper understanding of the content itself. Finally, developmental theorists argue that collaborative activities among children promote growth because individuals work within one another's proximal zones of development and model collaborative group behaviors slightly above their own.

Research Evidence

Buzhardt, Greenwood, Abbott, and Tapia (2007) noted that more than 35 empirical studies have been conducted to support CWPT's effectiveness. These studies have included both single-case and between-group experimental designs; have been conducted by independent researchers in multiple sites around the country; and have produced positive academic and behavioral effects across a variety of content areas (e.g., reading, math, spelling, social studies, science, health, physical education, modern languages), developmental levels (e.g., elementary, middle, high school), and educational settings (e.g., general, remedial, special education classrooms). Research findings indicated that CWPT (a) significantly improved student academic performance on both curriculum-specific and standardized measures of achievement, (b) reduced disruptive behavior (Mitchem, Young, West, & Benyo, 2001), and (c) enhanced interpersonal interactions among students from different cultural and linguistic backgrounds (e.g., Madrid, Canas, & Ortega-Medina, 2007) as well as between children with disabilities and their normally developing peers (e.g., Sideridis et al., 1997). The most compelling empirical support for CWPT, however, came from a 12-year experimental longitudinal study (Greenwood, Delquadri, & Hall, 1989). Here, researchers compared groups of at-risk and nonrisk students who did and did not receive CWPT. They found that CWPT (a) increased students' active engagement during instruction in Grades 1 to 3; (b) improved student achievement at Grades 2, 3, 4, and 6; (c) reduced the number of CWPT students in need of special education services by Grade 7; and (d) decreased the number of students who dropped out of school by the end of Grade 11 (Greenwood et al., 2002).

More recently, CWPT research has been extended to include more secondary-age learners (Bowman-Perrott, 2009; Veerkamp et al., 2007) and to examine different forms of CWPT (i.e., cooperative versus competitive teams; Madrid et al., 2007). To date, there have been relatively few CWPT applications in secondary classes. Veerkamp et al. (2007) demonstrated that utilizing CWPT with an adapted lottery reinforcement system improved the academic performance of three urban general education classes in which novels were used as the curriculum. Positive effects for CWPT at the secondary level were also seen in a study by Bowman-Perrott (2009). Here, the classroom teacher used CWPT in two alternative high school biology classes to teach vocabulary and factual science content to students with emotional and behavior disorders. In addition to improved academic performance and noticeable decreases in students' off-task and disruptive behaviors, Bowman-Perrott noted that CWPT produced (a) more praise among pupils who typically had difficulty with positive social interactions, (b) increased levels of cooperation and better acceptance of adult feedback, and (c) generalized use of positive social behavior beyond the tutoring sessions.

Madrid et al. (2007) examined the impact of an adapted version of CWPT on the spelling performance of 16 bilingual fourth-grade students. Drawing upon cultural theory that suggested that Hispanic children are more cooperative than

their Caucasian peers, Madrid created a "cooperative" form of CWPT and compared pupil performance to standard (i.e., between-team competition) CWPT and teacher-led instruction. In the cooperative CWPT condition, teams with more tutoring points each day were asked to share their points with other team members. Whereas both versions of CWPT produced better academic outcomes than teacher-led instruction, improvements were consistently higher under the cooperative CWPT format.

This brief review of the CWPT research literature is intended to be illustrative rather than comprehensive; yet, it is possible to derive some general strengths and limitations. Regarding strengths, one must be impressed with both the number and consistency of CWPT findings. As noted, more than 35 empirical studies have been conducted on CWPT. The majority of these studies used single-case research designs that were implemented rigorously. Most studies, for example, targeted important academic and behavioral outcomes; measured the reliability with which outcome data were collected; documented that CWPT was used with a high degree of accuracy; and assessed the social acceptability of the intervention for teachers, pupils, and administrators. It is also noteworthy that similar outcomes were obtained across multiple research sites, in diverse content areas, and across a broad range of students and settings. The fact that so many different researchers working in so many different areas with so many different students got similar results speaks to the instructional power of CWPT.

Obviously, there are also some noteworthy limitations in the existing database. First, more randomized control trials (i.e., between-group experiments) are needed to strengthen CWPT's external validity, or the extent to which findings can be generalized to other students, teachers, and settings. It would be interesting to conduct such investigations within the context of "scaling up" studies similar to that conducted by Buzhardt et al. (2007). Whereas there have been numerous smaller scale demonstrations of CWPT's effectiveness, it is important to examine the extent to which the intervention can be implemented on a buildingwide and districtwide basis. A third limitation is that CWPT has been used almost exclusively to develop basic academic skills and increase the acquisition and retention of factual knowledge. Applications with higher order academic outcomes would extend CWPT's utility. Finally, more long-term investigations that examine broader instructional outcomes (e.g., performance on high-stakes assessments, progress through school) would be welcomed.

In conclusion, CWPT is supported by a number of theoretical perspectives (e.g., effective instruction, eco-behavior analysis, social learning) and a rich research base indicating its effectiveness for a variety of students in different educational environments. In addition to describing how CWPT is used generally, also included are authentic teacher experiences based on real-world implementation of CWPT. It proved to be a powerful instructional strategy for improving the math fluency of students who had struggled for years in this area. The program was easy to implement, required few additional materials or time, and was very enjoyable for students.

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References

Bowman-Perrott, L. (2009). Class wide peer tutoring: An effective strategy for students with emotional and behavioral disorders. *Intervention in School and Clinic*, *44*, 259–267.

Brophy, J. E., & Good, T. L. (1986). Teacher behavior and student achievement. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed., pp. 328–375). New York, NY: Macmillan.

Buzhardt, J., Greenwood, C. R., Abbott, M., & Tapia, Y. (2007). Scaling up class-wide peer tutoring: Investigating barriers to wide scale implementation from a distance. *Learning Disabilities: A Contemporary Journal*, *5*, 75–96.

Delquadri, J., Greenwood, C. R., Stretton, K., & Hall, R. V. (1983). The peer tutoring game: A classroom procedure for increasing opportunity to respond and spelling performance. *Education and Treatment of Children*, *6*, 225–239.

Education Trust, Inc. (2005). *Achievement in America*. PowerPoint presentation retrieved May 14, 2009, from www.edtrust.org

Fantuzzo, J., & Ginsburg-Block, M. (1998). Reciprocal peer tutoring: Developing and testing effective peer collaborations for elementary school students. In K. Topping & S. Ehly (Eds.), *Peer assisted learning* (pp. 121–144). Mahwah, NJ: Lawrence Erlbaum.

Fuchs, D., Fuchs, L. S., Mathes, P. G., & Simmons, D. C. (1996). *Peer-assisted learning strategies in reading: A manual*. Available from Box 328 Peabody, Vanderbilt University, Nashville, TN 37203.

Greenwood, C. R., Carta, J. J., & Atwater, J. (1990). Eco-behavioral analysis in the classroom: Review and implications. *Journal of Behavioral Education*, *1*, 59–77.

Greenwood, C. R., Delquadri, J. C., & Carta, J. J. (1997). *Together we can: Class wide peer tutoring for basic academic skills*. Longmont, CO: Sopris West.

Greenwood, C. R., Delquadri, J. C., & Hall, R. V. (1989). Longitudinal effects of classwide peer tutoring. *Journal of Educational Psychology*, *81*, 371–383.

Greenwood, C. R., Delquadri, J. C., Stanley, S., Terry, B., & Hall, R. V. (1985). Assessment of eco-behavioral interaction in school settings. *Behavior Assessment*, *7*, 331–347.

Greenwood, C. R., Maheady, L., & Delquadri, J. C. (2002). Class-wide peer tutoring. In G. Stoner, M. R. Shinn, & H. Walker (Eds.), *Interventions for achievement and behavior problems* (2nd ed., pp. 611–649). Washington, DC: National Association of School Psychologists.

Harper, G. F., & Maheady, L. (1999). Classwide student tutoring teams: Aligning course objectives, student practice, and testing. *Proven Practice: Prevention and Remediation of School Problems*, *1*, 55–59.

Harper, G. H., & Maheady, L. (2007). Peer mediated teaching and students with learning disabilities. *Intervention in School and Clinic*, *43*, 101–107.

Heal, L. W., Khoju, M., & Rusch, F. R. (1997). Predicting quality of life of youth after they leave special education high school programs. *Journal of Special Education*, *31*, 279–299.

Heron, T. E., Heward, W. L., Cooke, N. L., & Hill, D. S. (1983). Evaluation of classwide peer tutoring systems: First graders teach each other sight words. *Education and Treatment of Children*, *6*, 137–152.

Madrid, L. D., Canas, M., & Ortega-Medina, M. (2007). Effects of team completion versus team cooperation in class wide peer tutoring. *Journal of Educational Research*, *100*, 155–160.

McLeskey, J., Rosenberg, M. S., & Westling, D. L. (2010). *Inclusion: Effective practices for all students*. Boston, MA: Pearson.

Mitchem, K. J., Young, R. K., West, R. P., & Benyo, J. (2001). CWPASM: A classwide peer-assisted, self-management program for general education classrooms. *Education and Treatment of Children*, *24*, 111–140.

Rosenshine, B. (1979). Content, time, and direct instruction. In P. L. Peterson & H. J. Walberg (Eds.), *Research on teaching: Concepts, findings, and implications* (pp. 28–56). Berkeley, CA: McCutchan.

Sideridis, G. D., Utley, C., Greenwood, C. R., Delquadri, J. C., Dawson, H., Palmer, P., & Reddy, S. (1997). Classwide peer tutoring: Effects on the spelling performance and social interactions of students with mild disabilities and their typical peers in an integrated instructional setting. *Journal of Behavioral Education*, *7*, 435–462.

Slavin, R. E. (1995). *Research on cooperative learning and achievement: What we know, what we need to know*. Retrieved November 17, 2009, from www.successforall.net/cooplear.html

TERC. (2008). *Investigations in numbers, data and space* (2nd ed.). New York, NY: Scott Foresman.

Veerkamp, M. B., Kamps, D. M., & Cooper, L. (2007). The effects of classwide peer tutoring on the reading achievement of urban middle school students. *Education and Treatment of Children*, *30*, 21–51.

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