THE EFFECTS OF CLASS WIDE PEER TUTORING ON FIFTH GRADE STUDENTS'

WEEKLY SPELLING TEST PERFORMANCE

By

Lindsay Kryszak

A Master's Project

Submitted in Partial Fulfillment

Of the Requirements for the Degree of

Master of Science in Education

Department of Curriculum & Instruction

At the State University of New York at Fredonia

Fredonia, New York

May 2013

CERTIFICATION OF PROJECT WORK

We, the undersigned, certify that this project entitled *The Effects of Class Wide Peer Tutoring on Fifth Grade Students' Weekly Spelling Test Performance by Lindsay Kryszak*, Candidate for the Degree of Master of Science in Education, Department of Curriculum & Instruction, is acceptable in form and content and demonstrates a satisfactory knowledge of the field covered by this project.

May 15, 2013
Date

Dr. Lawrence Maheady
Master's Project Advisor
Department of Curriculum and Instruction

May 28, 2013
Date
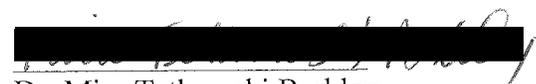
Dr. Mira Tetkowski Berkley
Associate Professor, Early Childhood Education
Department Chair, Curriculum and Instruction

7/3/13
Date

Dean Christine Givner
College of Education
At SUNY Fredonia

Abstract

Class Wide Peer Tutoring is a well-established strategy for improving pupil academic performance, particularly in basic academic skills (e.g., reading, math, and spelling fluency) and the acquisition and retention of content-related, factual knowledge. The present study provided partial replication of CWPT's powerful academic effects, albeit to a lesser degree than previous research. Using an alternating-treatments design, CWPT produced slight but noticeable improvements in17, 5th grade pupils' weekly spelling test scores. Results were limited somewhat by high baseline scores and lower fidelity ratings during initial tutoring sessions. More importantly, however, there were perceived improvements in pupils' interpersonal and communication skills, more attention to instruction, and increased team cooperation. The classroom teacher and students provided positive acceptability ratings for most CWPT goals, procedures, and outcomes. Implications for future research are discussed.

Table of Contents

Introduction

Some educational professionals believe that test accommodations should be readily available to all students with special needs in order to improve the likelihood that they are being assessed in a reliable and valid manner (Heward, 2009). Other professionals argue that students with special needs should also be exposed to evidence-based practices (EBPs) as often as possible to improve their chances for academic and behavioral success (Cook, Tankersley, *&* Landrum, 2009; Detrich, Keyworth, & States, 2008). Since the advent of the No Child Left Behind Act (NCLB, 2002), schools have been charged with providing students with special needs access to the same demanding curriculum as their normally developing peers and holding them (and their teachers) accountable using the same or similar high stakes, standardized tests. While this legislative mandate is an important step forward for serving individuals with disabilities more effectively in our schools, the actual implementation of such movements has been less than stellar (Heward, 2009). Like so many other things in life, the devil is in the detail! This project was designed to improve the academic performance of a small group of students, some of whom had special needs, using an evidence-based practice known as Class Wide Peer Tutoring (CWPT) (Greenwood, Maheady, & Delquadri, 2002). Before proceeding to research methodology and outcomes, however, an illustrative review of two relevant literatures is offered. The first describes studies that examined the impact of mandated, high stakes, test accommodations on pupils' standardized test performance, while the latter reviews relevant studies involving the use of Class Wide Peer Tutoring in a variety of academic domains but with a particular emphasis on spelling.

Standardized Test Accommodations for Students with Disabilities

Most studies on standardized test accommodations with students with special needs were conducted with pupils with learning disabilities (LD). However, Koegel, Koegel, and Smith (1997) did examine the effects of test modifications on students on the autism spectrum. In this study, the researchers manipulated variables related to motivation and attention to see what influence they had on these youth's standardized test performance. This qualitative study examined six pre-school and elementary- aged children under two different testing conditions: (a) a standardized condition, and (b) a motivation/attention condition. Children in the standardized condition used standardized language and intelligence tests, while experimental children were provided with contingent rewards for correct responses. Researchers found that test scores were always higher for those in the motivation condition. Koegel et al (1997) concluded that it is important to identify and eliminate variables that hinder students' logical abilities in high stakes assessment situations.

The Special Education Elementary Longitudinal Study (SEELS) also tracked students with special needs throughout their elementary and middle schools years to understand what happened to them. Bottsford-Miller, Thurlow, Stout, and Quenemoen (2006) used these data sets to examine accommodation use. They compared IEP and 504 Plan accommodations to better understand the consistency, or lack thereof, of accommodations that were provided. They specifically looked at five accommodations: (a) "extended time", (b) read aloud, (c) setting accommodations, (d) response accommodations, and (e) "other". The researchers concluded that, "students with disabilities tend to benefit more from extended time than students without disabilities," and that, "an accommodation does not threaten the validity of test scores if the use of it improves the performance of students with disabilities" (p. 7).

In a similar study examining the effects and validity of accommodations on high-stakes testing for students with reading disabilities, Fletcher and his colleagues (2006) evaluated 3rd grade students from six different suburban school districts (48 schools and 113 teachers) who were identified as dyslexic or average decoders. The effects of three accommodations were studied: (a) extended test time, (b) reading proper nouns to students, and (c) reading stems and possible responses to comprehension questions to students after they read the passage independently. Students were administered the Letter-Word Identification and Word Attack subtests of the Woodcock-Johnson III Tests of Achievement and randomly assigned to groups. For standardized administration manual-directed procedures were followed while in the accommodation group and assessments were administered orally. Fletcher et al. concluded that, "findings distinctly establish that the package of accommodations (increased time, reading of proper nouns, and reading of comprehension stems) resulted in significant improvement in the performance of poor decoders" (p.146). They suggested further that such accommodations "do not introduce construct-relevant variance to the test, but rather eliminate construct-irrelevant variance from the scores of students with disabilities" (p.146).

In a related study, Cook, Eignor, Sawaki, Steinberg, and Cline (2010) used factor analysis to examine test accommodations for students with disabilities. They wanted to determine if standardized tests measured the same construct(s) for (a) students without disabilities who took tests under standard conditions; (b) students with learning disabilities who took tests with IEP- or 504-specified accommodations; and (c) students with learning disabilities who took tests with read-aloud accommodations. Researchers administered the 4th grade ELA state assessment to random samples of 500 students and concluded that the tests have, "some degree of validity for students with disabilities who take the test with and without the particular set of accommodations

that were used in the study" (p.206). They noted as well that "read-aloud can be considered an appropriate and valid test accommodation."

A qualitative study conducted by Elliott, Kratochwill, McKevitt, and Malecki (2009) "examined the effect accommodations have on test results of students with and without disabilities and documented experts' judgments about the appropriateness of testing accommodations" (p.224). Two hundred and eighteen (218) 4th grade students from urban, suburban, and rural school districts in Wisconsin participated. Seventy-three students were diagnosed as learning disabled and 38 had at least one recommended IEP accommodation. One hundred and forty five (145) students without disabilities were included for comparison purposes. Two performance assessments (i.e., mathematics and science) were used to determine if student ability in measureable learner outcomes was comparable to state standards. Students with disabilities were assigned randomly to three test conditions (i.e., no accommodations, three common accommodations, and teacher-recommended accommodations) and completed two performance assessments with accommodations and two without. Four participants were videotaped and rated on the validity and fairness of observed accommodations. Findings were mixed; on the positive side, student test scores without accommodations were higher for 57 students with disabilities and 54 students without disabilities; on the negative side, nine students with disabilities and 13 students without disabilities performed more poorly with accommodations. Accommodations were viewed as valid and fair, but slightly *more* valid and fairer when accommodations were specified on student IEPs.

A similar study (Gilbertson-Schulte, Elliott, & Kratochwill, 2001) examined the effects of test accommodations on standardized math scores for students with and without disabilities. The researchers asked, "What effects do accommodations have on test results for individual

students and groups of students (e.g., students with and without disabilities)?" (p.531).They examined the test performance of 86 fourth-grade students (i.e., 43 each with and without disabilities) from the mid-west. Results showed that student test scores improved more for pupils with than without disabilities. Gilbertson-Schulte et al also noted that, "on multiple-choice items, construct-irrelevant variance is removed for students with disabilities, but on constructed-response items, both construct-relevant and construct-irrelevant variance is affected by testing accommodations" (p.544).

Test accommodations were also used at the collegiate levels. Lovett, Lewandowski, Berger, and Gathje (2010), for example, conducted a study with 140 college students taking an introduction to psychology class at a private university in the northeastern United States. The study used three primary measurement tools: (a) motor speed in typing or handwriting, (b) essay writing skills, and (c) sentence-composition ability. The study examined the effects of time depending on response mode and vice-versa. Students were tested in a small, quiet classroom and directed to write picture-based essays using either word processors (without spell check) or handwriting. Results found no effects on writing quality, however, the word processor increase written quantities over than the handwriting in quantity (length). Lovett et al concluded that word processing provided an "opportunity to be more time efficient and/or more generative in a fixed time period, and that it may or may not improve writing quality, depending on the task, scoring procedures, sample under study, and other features" (p.74). When conditions were combined (word processor and extra time) students produced considerably longer essays. Therefore, if the length of compositions is the goal on writing tasks, then practitioners should allow students with disabilities to have extended time *and* word processors.

Collectively, the evidence base on test accommodations for students with disabilities suggests that in general some basic modifications like extended time limits, oral assessments, and the use of technology *can* improve pupil performance on standardized measures and provide a more valid assessment of their intellectual and academic competence. In contrast, most evidence suggests that test accommodations do *not* noticeably impact the performance of students without disabilities. While there are some notable limitations in this research line (e. g., individual accommodations were only part of intervention packages, multiple accommodations were used simultaneously, and restricted ages and disabilities were examined), there is also ample high quality evidence to support the continued use of test accommodations for students with disabilities in particular. Such accommodations can alleviate student pressure and anxiety and give them a fair chance to perform their best.

Class Wide Peer Tutoring

Class Wide Peer Tutoring (CWPT) has been used to improve the academic and interpersonal performance of students with and without disabilities for over 30 years now. The classroom-based intervention was developed by researchers at the Juniper Gardens Children's Project in Kansas City, Kansas in the early 1980s (Delquadri, Greenwood, Stretton, & Hall, 1983; Delquadri, Greenwood, Whorton, Carta, & Hall, 1986) and it is currently available under the commercial title of *Together We Can* (Greenwood, Delquadri, & Carta, 1997). CWPT was designed initially to improve basic academic skills (i.e., reading, math, and spelling) of low performing elementary students such as those with disabilities (Delquadri et al., 1983) but its use was extended subsequently to secondary social studies (Maheady, Sacca, & Harper, 1988), science (Bowman-Perrott, 2009), mathematics (Kamps, Greenwood, et al., 2008), and modern languages (Madrid, Canas, & Ortega-Medina, 2007; Wright, Cavanaugh, Sainato, & Heward,

1995) classes. Arreaga-Mayer (1998) reported that at least 25 high quality, peer-reviewed studies found CWPT to be superior to conventional forms of teacher-led instruction. Most importantly, these outcomes applied equally to students with and without disabilities. This next section illustrates how CWPT was used to improve the performance of students who struggled academically.

Maheady, Harper, and Mallette (2001) described the extensive difficulties that students with mild disabilities encounter in school and examined the myriad ways that peer-mediated interventions have been used to improve their performance. Significant among these difficulties were (a) a lack of basic academic skills; (b) academic-related challenges (e.g., school survival skills); and (c) behavioral and interpersonal deficits. The researchers showed that a number of peer teaching methods were effective in improving pupil performance across all three domains. Moreover, they concluded that peer-teaching strategies were a powerful set of instructional options that should be applied on a broader and more routine basis. Maheady et al suggested that peer-teaching methods worked because they created a more favorable peer-teacher ratio within the classroom (i.e., 1:1) and provided additional opportunities for students to receive positive and corrective feedback. They also reported that students with mild disabilities preferred peer teaching to more common teacher-led instructional practices.

Another study conducted by Madrid et al (2007) compared the effects of two types (i.e., cooperative versus competitive) of CWPT to teacher-led instruction on students' spelling achievement. Sixteen third grade bilingual students were randomly selected to participate based on a history of poor spelling performance. The researchers systematically alternated the use of both versions of CWPT over a 15-week time interval, creating an alternating treatment design. Results showed that the "cooperative" version of peer tutoring was the most effective treatment.

Under cooperative CWPT, pupils improved their spelling test scores from 12% to 93%; when competitive CWPT was in effect, pupil test performance improved from 13% to 80%; and only from 14% to 36% under teacher-led instruction. The researchers argued that the cooperative version was most effective because it was the most compatible with Hispanic culture. That is, Hispanic children's preference for cooperative over competitive types of activities.

Class Wide Peer Tutoring was also shown to be effective in a general education setting containing some "included" students with emotional and behavioral challenges. Bowman-Perrott et al (2007) used an A-B-A-B design with students in two alternative school classrooms and compared the effects of CWPT to teacher-led instruction on students' weekly biology test scores. Results show that student scores with CWPT were about the same in one classroom and slightly better in the second. A third classroom was then selected and used to examine the impact of CWPT and a Class Wide Self Management (CWSM) intervention. Results from the third classroom showed that students showed sizeable improvements in most, but not all intervention weeks. However, all three classrooms showed noticeable improvements in time spent on task when CWPT was in effect and students preferred the peer-mediated interventions over teacher-led instruction.

In a related investigation, Bond and Castagnera (2006) demonstrated the different roles that peers can play in supporting each other. They explored the concept of "cooperative classrooms" by addressing four types of helping that must become common to all classrooms (a) requesting help; (b) accepting help; (c) refusing help; and (d) providing help. The researchers suggested that not only was CWPT successful in increasing academic performance for all participating students, but that it also strengthened social skills among pupils with and without disabilities. Bond and Castagnera argued that with proper training and implementation, students

could become "prosumers" of education; that is, they could be re both producers and consumers of instruction. The cooperative classroom was created under the assumption that all people need help, not just students with disabilities. They suggested further that interventions like CWPT create the least restrictive environment for students with disabilities, while providing opportunities to increase their academic skills, promote diversity, and improve their communication and social skills. Such environments may also help students to see a "small-scale example" of what society can and should be like.

Finally, Mastropieri, Scruggs, Norland, Berkeley, McDiffie, Tornquist, and Connors (2006) compared quantitative outcomes associated with CWPT versus teacher-led instruction for students with mild disabilities. Thirteen inclusive classes of 213 students, 44 of whom were classified with disabilities, participated in 12-week sessions of randomized field trials. The control condition classrooms used traditional instruction that consisted of teacher lecture, class notes, laboratory-like class activities, and supplemental textbook materials such as worksheets. The experimental condition began with the same teacher presentations as control conditions but instead of working independently to complete worksheets they working in peer teaching groups with a variety of differentiated instructional activities. Once more, results supported the effectiveness of peer teaching over teacher led instructional activities, However, this time pupils also performed significantly better on high-stakes testing at the end of the year. Peer-mediated learning combined with differentiated science activities produced more meaningful student learning of science content than when taught with more traditional teacher-led instructional methods. Results also suggested that students in inclusive science settings can work effectively with each other to improve their understanding of critical science content.

Collectively, this illustrative literature review suggests that both common test accommodations and CWPT can serve important purposes in the improvement of pupils' academic and behavioral performance. There is also some evidence to suggest that CWPT might promote more positive interpersonal interactions among those who participate in the tutoring game. The present investigation was undertaken to see if CWPT could also be used to improve the spelling test performance of a group of middle-income students in inclusive educational settings. More specifically, this study addressed the following questions (a) what effects, if any, will CWPT have on students' weekly spelling test scores compared to traditional, teacher-led instruction?; and (b) How will students rate CWPT in terms of the importance of its goals, acceptability of its procedures, and satisfaction with its outcomes?

Method

Participants and Settings

This study was conducted in a 5th grade classroom in a small elementary school in suburban Western New York. The school district has four elementary schools, one middle school, and one high school. According to the 2009-2010 New York State Report Card, there were a total of 1,688 K-5 students from Kindergarten to 5th grade, the district was in good academic standing in core subject areas and had an 89% graduation rate. Approximately 16% of the student population received free and reduced meals. Student population was predominately Caucasian (97%) with the remaining students being Hispanic, African- American, and American Indian/Alaskan Native respectively. The participating elementary school had a total of 238 students, 41 of whom were 5th graders. The school has a 96% attendance rate, is in good academic standing, and has a free and reduced meal rate of 19% slightly higher than the district average.

Student participants included 17 (9F, 8M), 5th grade students. Fifteen pupils were Caucasian and two were Guatemalan and African-American respectively. One other student had an IEP and another was on a 504 plan. According to the classroom teacher, the entire class was performing below expectations on regularly scheduled spelling assessments and two students, in particular were struggling the most. These two target students (1M, 1F) were identified initially based upon their low baseline scores in spelling and they also had histories of academic difficulties. There were typically two to three adults in the classroom during classroom instruction; the classroom teacher, a consultant special educator who "pushes in" to co-teach, and a part-time teaching assistant. The study was conducted under the auspices of the classroom teacher. The primary investigator's role included (a) developing all tutoring-related materials; (b) training students to use CWPT; and (c) collecting and analyzing student data. The classroom and/or consultant teacher assisted in implementation by responding to individual pupil concerns and conducting inter-rater reliability and fidelity assessments.

Dependent Variables

Two primary forms of data were collected during the study. The first dependent variable was the percentage correct on weekly spelling vocabulary quizzes. At the end of each week, pupils took their weekly spelling assessments under typical conditions (i.e., words read aloud and used in a sentence by the teacher) and pupils independently wrote each word. Spelling assessments were graded and scores and then entered on data collection sheet (see Appendix A). Spelling scores for the entire class were aggregated and displayed on simple line graphs by experimental phases. In addition, individual line graphs were for the two lowest performing pupils.

To ensure that spelling data were being collected accurately and reliability, the classroom teacher and primary investigator independently scored pupil quizzes during 25% of randomly selected spelling assessments. The two raters' scores were then compared on an *item-by-item* basis. If both raters scored an item the same way (i.e., both correct or both incorrect), then the item was scored as an *agreement* (A). If the two raters scored an item differently (i.e., one correct and one incorrect), then the item was scored as a *disagreement* (D). Inter-rater reliability was then calculated as the number of agreements divided by the number of agreements and disagreements times 100%. Overall inter-scorer agreement averaged .98 with a range of .92 to 1.00. This suggests that data were collected accurately and reliably.

The second dependent variable was pupil responses to a 20-item, 7-point Likert-type social acceptability survey (Appendix B). The social acceptability survey was divided into three sections and participants were asked to rate CWPT in terms of (a) importance of its *goals*; (b) acceptability of its *procedures*; and (c) satisfaction with its *outcomes*. Immediately after the last CWPT session, students completed surveys *individually* and *anonymously*. Pupil ratings were then aggregated and reported as mean ratings for each item in a tabular display.

Independent Variable

The primary independent variable was the Juniper Gardens' Class Wide Peer Tutoring (CWPT) program. CWPT is an intra-class, reciprocal tutoring program that has generated a considerable amount of empirical support over the past 25 years (Buzhardt, Greenwood, Abbott, & Tapia, 2007). There are four major components to CWPT (a) weekly competing teams; (b) highly structured tutoring procedures;(c) daily point earning, public posting, and contingent rewards; and (d) direct practice of functional academic skills (i.e., basic spelling skills). Weekly competing teams were formed in a number of ways including (a) counting off by numbers (1 or

2); (b) the number of letters in their first names (i.e. 6 letters or more on one team, under 6 letters on the other); (c) color of card chosen from a deck (i.e. black and red); (d) height; and (e) color of a paper slip chosen from a bag (i.e. red and blue). Tutoring pairs were then formed within each team. Tutoring teams and partners remained the same for one week and the following week new teams and partners were selected.

The second intervention component is a highly structured, reciprocal peer tutoring procedure. Tutoring pairs took turns being the "tutor" and "tutee" for eight minutes each. Tutors dictated each spelling word to tutees using a list of weekly vocabulary words. Tutees were required to spell each word aloud while writing it on a sheet of paper. If answers were correct, then tutors awarded two (2) points and dictated the next word. If tutees' answers were incorrect, then tutors (a) provided the correct answers; (b) asked tutees to write the correct response three times; and (c) awarded one (1) point if errors were corrected. Zero points were given if tutees failed or refused to correct spelling words. After 10 minutes, tutoring partners changed roles and followed the same procedures until time expired. While students worked in pairs, the teacher moved about the classroom and awarded bonus points, up to 25 per team, for students who were displaying good tutoring behaviors or were providing encouragement and support for other team members. Students totaled their individual points, including bonus points, and totals were posted on a CWPT scoreboard displayed prominently in class. Team point totals were cumulative through the week and students earned five (5) points for each word spelled correctly on the weekly assessment. Test points were then added to cumulative team totals and a winning team of the week was announced. The winning team applauded the efforts of the other team and then signed their names to a tutoring recognition sheet that was displayed publicly in class. New

teams and tutoring partners were formed each week to ensure that everyone got to be on a

winning team and had an opportunity to work with all other classmates during CWPT sessions.

To ensure the CWPT was being implemented as intended, a 16-item fidelity

implementation checklist was developed (see Appendix C). The checklist consisted of each step

necessary to use CWPT as outlined by its developers and spaces to record the "presence" or

"absence" of each step. During 25% of randomly selected intervention sessions, the teaching

assistant observed the investigator and recorded which procedural components were present or

absent. Fidelity of implementation was calculated as the number of steps present divided by the

number present and absent times 100%. Fidelity assessments indicated that CWPT was

implemented with an average of 92% accuracy (range = .75 to 1.00). It should be noted that the

lowest fidelity ratings occurred during the first observation; after that, CWPT was implemented

with 100% accuracy.

Experimental Design and Procedures

An alternating-treatments single case research design was used to examine the effects of

CWPT on pupils' weekly spelling test performance. This particular design is capable of

establishing a cause and effect relationship by showing that pupils' performance changes *in*

predictable ways when baseline and intervention conditions are alternated rapidly (Kennedy,

2005). The present study began with an initial baseline phase and then proceeded to a second

phase where baseline and intervention conditions were alternated on a weekly basis. Typical

baseline instructional conditions consisted of (a) teacher-led review of new spelling words and

meanings; (b) independent seatwork assignments involving new words; (c) corresponding

homework assignments; and (d) weekly spelling assessments. Baseline data were used to

determine pupils' present skills levels, assist in the selection of target students, and provide

comparison data sets for analysis of intervention effects. After initial baseline data stabilized, students were taught to use CWPT during a 30-minute training session. CWPT procedures were explained and students engaged in a brief role-play and received positive and corrective feedback. To facilitate pupil acquisition of tutoring components, high success materials were used during initial training activities. Once students demonstrated acceptable fidelity levels (i.e., >90% fidelity) formal data collection began. CWPT sessions occurred three times per week for 20 minutes per day and were used *instead of* independent seatwork. All other instructional variables (e.g., number of vocabulary words, instructional leaders, and allocated time) were held constant.

A typical CWPT session proceeded as follows. On the first day of each week, students took a spelling pretest assessing their prior knowledge on the week's spelling list. They were then randomly assigned to two competing teams by using one of the methods described earlier (e.g., picking a card red versus black from a deck of cards). For the next 20 minutes, tutor pairs participated in reciprocal tutoring sessions for equal amounts of time (10 minutes). Student A tutored student B and then they changed roles. Tutors had spelling lists and dictated words to their partners. Tutees wrote and spelled each word aloud. If words were spelled correctly, then tutors awarded two points (i.e., tutees wrote 2 next to correctly spelled word). If tutees spelled words incorrectly, then tutors provided correct spellings and asked tutees to write (and orally spell) them correctly three times to earn one point. If tutees failed to correct their errors, then 0 points were awarded and they moved on to the next word. The goal was for students to earn as many points as they can in 10 minutes. When time expired, pupils changed roles and followed the same procedures. While students were tutoring one another, the investigator or teacher walked around the room and gave *bonus points* for (a) following tutoring procedures; (b)

providing positive and constructive feedback; and (c) other displays of pro-social behavior. At the end of the 20 minutes, students totaled their individual points, including bonus points, and wrote the totals on top of their papers. Individual point totals were then aggregated into daily team totals that were recorded on the class-tutoring chart. Daily tutoring data were cumulative and displayed publicly. At the end of the week, students took their regularly scheduled spelling assessments, but were told that they can earn five points for their team for each word spelled correctly. Points from weekly assessments were added to team totals and a "Winning Team of the Week" was identified. Winning team members received "Star Speller" certificates and received a coupon for a free ice cream in the cafeteria. Winning team members also applauded their opponents for their hard work throughout the week. The following week new teams and partners were formed. Baseline and intervention conditions were then alternated on a weekly basis during the second experimental phase. After the last tutoring session, students completed consumer satisfaction surveys anonymously and independently.

Results

The effects of CWPT on the entire class' weekly spelling test scores can be seen in Figure 1. As depicted, class performance was relatively high during initial baseline sessions. The class average, for example, ranged from 83% and 93% correct with a mean of 88%. Most students were earning A and B grades under typical teaching conditions but the classroom teacher felt that they could do even better. Only two students had low baseline scores in comparison to overall class performance (i.e., Students #7 & #15). There was also a slight decelerating trend in the entire class' performance over the initial baseline phase. When CWPT and baseline conditions were alternated, pupil spelling test scores were graphed by condition. As shown, the class' overall spelling test performance remained strong across both instructional

conditions. However, mean class' spelling test scores were higher during three of four experimental comparisons. Overall, the class average was 96% (range = 91% to 100%) when CWPT was in effect and 93% under typical teacher-led instructional conditions (range = 88% to 98%).

Data relevant to the first target student (#7) can be seen in Figure 2. As shown, this student's spelling test performance was quite variable under teacher-led instructional conditions. Weekly spelling grades ranged from 25% (F) to 90% (A-) with an initial average of 66%, or the equivalent of a D grade. When CWPT was alternated with teacher-led instruction, student #7's spelling test scores remained quite variable, although they were higher under CWPT during two-thirds of the comparative assessments. When CWPT was in effect, the student's spelling test scores averaged 71% (range = 35% to 100%). Under teacher-led conditions, her mean spelling grade was 68% with a range of 25% to 100%. Student #7's test performance remained quite variable during both treatment conditions.

The effects of CWPT on Student #15's spelling test scores are depicted in Figure 3. As shown, this pupil's spelling grades were also much lower than the class average, although they were less variable than Student #7's performance. During initial baseline assessments, the pupil was absent during two of five spelling tests. His spelling average was 72% (C-) with a range of 55% to 85%. There was also a clear decelerating trend in his spelling grades. During the alternating treatments phase, his performance increased under both conditions and his attendance was better as well. During CWPT, his spelling average increased to 85% (range = 55% to 100%) while his mean under teacher-led instruction was 78% (range = 65% to 90%). Again, his spelling grades were higher during two of three comparative assessments.

Student consumer satisfaction ratings provided some interesting reactions to the CWPT intervention (see Table 1). As seen, students rated all three intervention goals quite highly. They almost unanimous rated "getting along with others" as a very important goal and they felt that it was important for them and their peers to be good spellers. Most students also reported that they liked most, if not all, CWPT components. They provided the highest acceptability ratings for "earning points" and "bonus points" (M= 6.4 and 6.8 respectively), followed by "being on a CWPT team", "getting a team of the week certificate", and "using spelling test lists". The only CWPT component with low acceptability ratings was for "making error corrections" when words were misspelled (M=2.9). Students also appeared to be quite satisfied with CWPT outcomes. They reported, for example, that CWPT helped to improve their overall spelling performance (M=6.4) and that they preferred to use CWPT than work independently when practicing spelling words (M=6.1). Students provided higher satisfaction ratings for "being the tutor" (M=5.5) over "being the tutee" (M=4.7). Mixed ratings were given when students were asked if other students thought they were smarter after using CWPT (M=3.5) and if they believed that CWPT could be harmful to other students (M=3.1). Students overall mean rating of CWPT was 5.8.

Discussion

Current findings indicated that Class Wide Peer Tutoring was an effective intervention for improving the spelling test scores of a 5th grade class in a suburban school district in Western New York (e.g., Buzhardt et al.,, 2007; Greenwood, Delquadri, & Hall, 1989; Greenwood, Dinwiddie, Bailey, Carta, Dorsey, Kohler, Nelson, Rotholtz, & Schulte, 1987; Harper, Mallette, Maheady, Parkes, & Moore, 1993; Maheady & Harper, 1987; Maheady, Harper, Mallette, and Karnes, 2004; Maheady, Harper, Mallette, & Winstanley, 1991). When CWPT was in effect, the class average on weekly spelling tests increased by about eight percentage points over initial

baseline levels (i.e., 96% versus 88%) and three percent above the second baseline. These results extend the efficacy of CWPT to another student population and geographic location. Although CWPT was effective, pupil spelling gains were smaller than those reported elsewhere in the literature. There are at least two possible explanations for this outcome. First, student baseline levels were quite high compared to previous research. Here, students typically earned B+ and A- grades on weekly spelling tests during baseline assessments. This was much higher than other empirical investigations (e.g., Dequadri et al., 1983; Maheady & Harper, 1987; Maheady et al., 2004). As such, there was a ceiling effect with little room for pupil growth. Second, intervention effects appeared to be more delayed than in prior research. This may have been a function of the fact that the teacher's initial fidelity rating was only 75% which indicated that certain critical intervention components (i.e., public posting of pupil scores and teacher use of contingent praise and bonus points) were omitted in early study phases. As such, future research should ensure lower baseline performance (e.g., via pre-testing) prior to intervention and increase procedural fidelity earlier in the study. CWPT effects on the two target students were a bit less clear. Student #7, for example, continued to display variable performance even when CWPT was in effect while student #14's performance continued to be plagued by absenteeism. In both cases, pupil gains were not as large as peer improvements and suggest that some procedural adaptations may be needed for these youngsters.

Perhaps more impressive than academic gains, however, were the improvements that students made in their interpersonal interactions during spelling lessons. There was clearly more team and peer cooperation, improved communication skills, and more attention paid to instruction. Students worked well with one another including those with whom they normally would not work. There was also more encouragement shared among peers while CWPT was in

effect. Providing students with opportunities to learn from each other seemed to enhance their motivation and responsibility for learning. Some might even consider these outcomes to be more important than gains on weekly spelling tests. Consumer satisfaction surveys also revealed that pupils enjoyed playing the tutoring game, as well as most of its procedural components. Most teachers would welcome interventions that pupils liked and that increase their academic performance (e.g., Bell, Young, Blair, & Nelson, 1990; Maheady & Harper, 1987; Sideridis, Utley, Greenwood, Delquadri, Dawson, Palmer, & Reddy, 1997; Wright et al., 1995). As noted, pupils reported that it was very important for them and their peers to do well in spelling and to get along well with one another. They were also very positive in their evaluation of CWPT components with the possible exception of the error correction procedure. Similar findings were reported elsewhere (e.g., Maheady et al., 2004; Maheady et al., 1991). Pupils also noted that they were satisfied with CWPT outcomes. They felt that CWPT improved their spelling test performance and helped them to get along better with others. Any intervention that improves pupil performance and their interpersonal interactions should be attractive to classroom teachers.

The present findings also suggested that CWPT improved classroom climate and student motivation. Students appeared to be more excited to participate in academics whenever they were playing the tutoring game. They made quicker and more orderly transitions when CWPT was being used. Students, who were initially reluctant to come to class, were more motivated to get started immediately. There also seemed to be less disruption and student bickering while the game was in effect. The use of bonus points for positive interpersonal behavior during CWPT seemed to increase positive peer interactions. Overall, students appeared to be nicer to one another and were eager to perform well in class.

Although CWPT was effective, there were a few important limitations to the current study. First, the study was conducted with only one group of students in one subject area and for a relatively short period of time. Due to requirements to complete the master's project, the investigator was unable to conduct more extensive experimental phases. It would have been more convincing for example, to show that the positive effects of CWPT lasted for longer than a couple of weeks. Second, no attempt was made to measure the generalization or maintenance effects of CWPT. Because of this, the investigator is unable to say if the improvements noted during spelling spilled over to other subject areas or were maintained after the study ended. Another limitation was the high baseline scores. It is difficult to demonstrate substantive academic gains when pupils are already performing well under teacher-led conditions. Future researchers may want to include weekly pre-tests to ensure that new academic content is unknown to students prior to intervention. Finally, the present study examined only one facet of pupils' literacy performance (i.e., spelling test scores). As such, a generalization to other areas of literacy development (e.g., reading, writing, and speaking) is not appropriate at this time.

In conclusion, the present study provides additional evidence that Class Wide Peer Tutoring can be a useful tool for improving students' academic and interpersonal performance. In this case, 5th grade students from a suburban school district improved their weekly spelling test scores when CWPT was in effect. In addition, academic and interpersonal gains were found for the entire class, as well as two targeted low performing pupils. This study along with many others conducted by separate researchers in different locations and with pupils of varying grade and age levels suggests that Class Wide Peer Tutoring is a reliable and consistent intervention for improving pupils' basic skills performance. Given increases in inclusive educational placements and greater emphasis on the use of scientifically based teaching practice (e.g., Cook, Tankersley,

& Landrum, 2009; Detrich et al., 2008), CWPT may provide a powerful instructional alternative for classroom teachers. Although further research must be completed on the long-term impact of using CWPT on pupils' high stakes test performance, as well as on the generalization and maintenance of intervention effects, current findings suggest that CWPT may be a viable instructional alternative for classroom teachers.

References

Arreaga-Mayer, C. (1998). Increasing active student responding and improving academic performance through class-wide peer tutoring. Intervention in School and Clinic, 34(2), 89-94.

Bell, K., Young, K. R., Blair, M., & Nelson, R. (1990). Facilitating mainstreaming of students with behavior disorders using class-wide peer tutoring. School Psychology Review, 19, 564-573.

Bond, R. & Castagnera, E. (2006). Peer supports and inclusive education: An underutilized resource. Theory into Practice, 45(3), 224-229.

Bottsford-Miller, N., Thurlow, M. L., Stout, K. E., & Quenemoen, R. F. (2006). *A comparison of IEP/504 accommodations under classroom and standardized testing conditions: A preliminary report on SEELS data*. Synthesis report 63. Minneapolis, MN: National Center on Educational Outcomes, University of Minnesota.

Bowman-Perrott, L. J., Greenwood, C. R., & Tapia, Y. (2007). The efficacy of CWPT used in secondary alternative school classrooms with small teacher/pupil ratios and students with emotional and behavioral disorders. *Education and Treatment of Children 30*(3), 65-87.

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.

Cook, L., Eignor, D., Sawaki, Y., Steinberg, J., & Cline, F. (2010). Using factor analysis to investigate accommodations used by students with disabilities on an English language arts assessment. *Applied Measurement in Education, 23*(2), 187-208.

Cook, B. G., Tankersley, M., & Landrum, T. (2009). Determining evidence-based practices in special education. *Exceptional Children, 75,* 365-383.

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.

Delquadri, J. C., Greenwood, C. R., Whorton, D., Carta, J. J., & Hall, R. V. (1986). Class-wide peer tutoring. *Exceptional Children, 52,* 535-542.

Detrich, R., Keyworth, R., & States, J. (2008). A roadmap to evidence-based education: Building an evidence-based culture. In R. Detrich, R. Keyworth, & J. States (Eds.), *Advances in evidence-based education (Vol. 1): A roadmap to evidence-based education* (pp. 3-19). Oakland, CA: The Wing Institute.

Elliot, S. N., Kratochwill, T. R., McKevitt, B. C., & Malecki, C. K. (2009). The effects and perceived consequences of testing accommodations on math and science performance assessments! *School Psychology Quarterly 24*(4), 224-239.

Fletcher, J. M., Francis, D. J., Boudousquie, A. Copeland, K., Young, V., Kalinowski, S., & Vaughn, S. (2006). Effects of accommodations on high-stakes testing for students with reading disabilities! *Exceptional Children, 72 (2)*, 143-156.

Gilbertson-Schulte, A. A., Elliott, S. N., & Kratochwill, T. R. (2001). Effects of testing

accommodations on standardized mathematics test scores: An experimental analysis of

the performances of students with and without disabilities. *School Psychology Review,*

30(4), 527-548.

Greenwood, C. R., Delquadri, J. C., & Carta, J. J. (1997). *Together we can: Classwide peer*

tutoring to improve basic academic skills. Longmont, CO: Sopris West Publishers.

(www.sopriswest.com)

Greenwood, C. R., Delquadri, J. C., & Hall, R. V. (1989). Longitudinal effects of class-wide peer

tutoring. *Journal of Educational Psychology, 81,* 371-383.

Greenwood, C. R., Dinwiddie, G., Bailey, V., Carta, J. J., Dorsey, D., Kohler, F. W., Nelson, C.,

Rotholtz, D., & Schulte, D. (1987). Field replication of class-wide peer tutoring! *Journal*

of Applied Behavior Analysis, 20, 151-160.

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., Mallette, B., Maheady, L., Parkes, V., & Moore, J. (1993). Retention and

generalization of spelling words acquired using a peer-mediated instructional procedure

by children with mild handicapping conditions. *Journal of Behavioral Education, 3*, 25-

38.

Heward, W. L. (2009). *Exceptional children: An introduction to special education (9th Ed.).*

Upper Saddle River, NJ: Merrill/Pearson.

Kamps, D. M., Greenwood, C. R., Arreaga-Mayer, C., Veerkamp, M. B., Utley, C., & Tapia, Y., (2008). The efficacy of Class Wide Peer Tutoring in middle schools! *Education and Treatment of Children, 31,* 119-152.

Kennedy, C. R. (2005). *Single-case designs for educational research.* Upper Saddle River, NJ: Merrill/Pearson.

Koegel, L. K., Koegel, R. L., & Smith, A. (1997). Variables related to differences in standardized test outcomes for children with autism. *Journal of Autism and Developmental Disorders 27*(3), 233-243.

Lovett, B. J., Lewandowski, L. J., Berger, C., & Gathje, R. A. (2010). Effects of response mode and time allotment on college students' writing! *Journal of College Reading and Learning, 40*(2), 64-79.

Madrid, L. D., Canas, M., & Ortega-Medina, M. (2007). Effects of team competition versus team cooperation in Class Wide Peer Tutoring. *Journal of Educational Research, 100,* 155-160.

Maheady, L., & Harper, G. F. (1987). A class-wide peer tutoring program to improve the spelling test performance of low income, third and fourth grade students. *Education and Treatment of Children, 10*, 120-133.

Maheady, L., Harper, G. F., & Mallette, B. (2001). Peer-mediated instruction and interventions and students with mild disabilities! *Remedial and Special Education, 22*(1), 4-14.

Maheady, L., Harper, G. F., Mallette, B., & Karnes, M. (2004). Preparing pre-service teachers to implement Class Wide Peer Tutoring. *Teacher Education and Special Education*, *27*, 408-418.

Maheady, L., Harper, G. F., Mallette, B., & Winstanley, N. (1991). Implementation requirements

associated with the use of a class-wide peer tutoring system**.** *Education and Treatment of Children, 14* (3), 177-198.

Maheady, L., Sacca, M. K., & Harper, G. F. (1988). Class-wide peer tutoring with mildly handicapped high school students! *Exceptional Children, 55*, 52-59.

Mastropieri, M. A., Scruggs, T. E., Norland, J. J., Berkeley, S., McDuffie, K., Tornquist, E. H., & Connors, N. (2006). Differentiated curriculum enhancement in inclusive middle school science: Effects on classroom and high-stakes tests. *The Journal of Special Education, 40*(3), 130-137.

No Child Left Behind Act of 2001, 20 U. S. C. 6319 (2008).

Sideridis, G. D., Utley, C., Greenwood, C. R., Delquadri, J. C., Dawson, H., Palmer, P., & Reddy, S. (1997). Class-wide 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.

Wright, J. E., Cavanaugh, R. A., Sainato, D. M., & Heward, W. L. (1995). Somos todos ayudantes y estudiantes: A demonstration of a classwide peer tutoring program in a modified Spanish class for secondary students identified as learning disabled or academically at risk. *Education and Treatment of Children, 18*, 33-52.

Figure 1 shows all target students' spelling scores across baseline and response cards conditions.
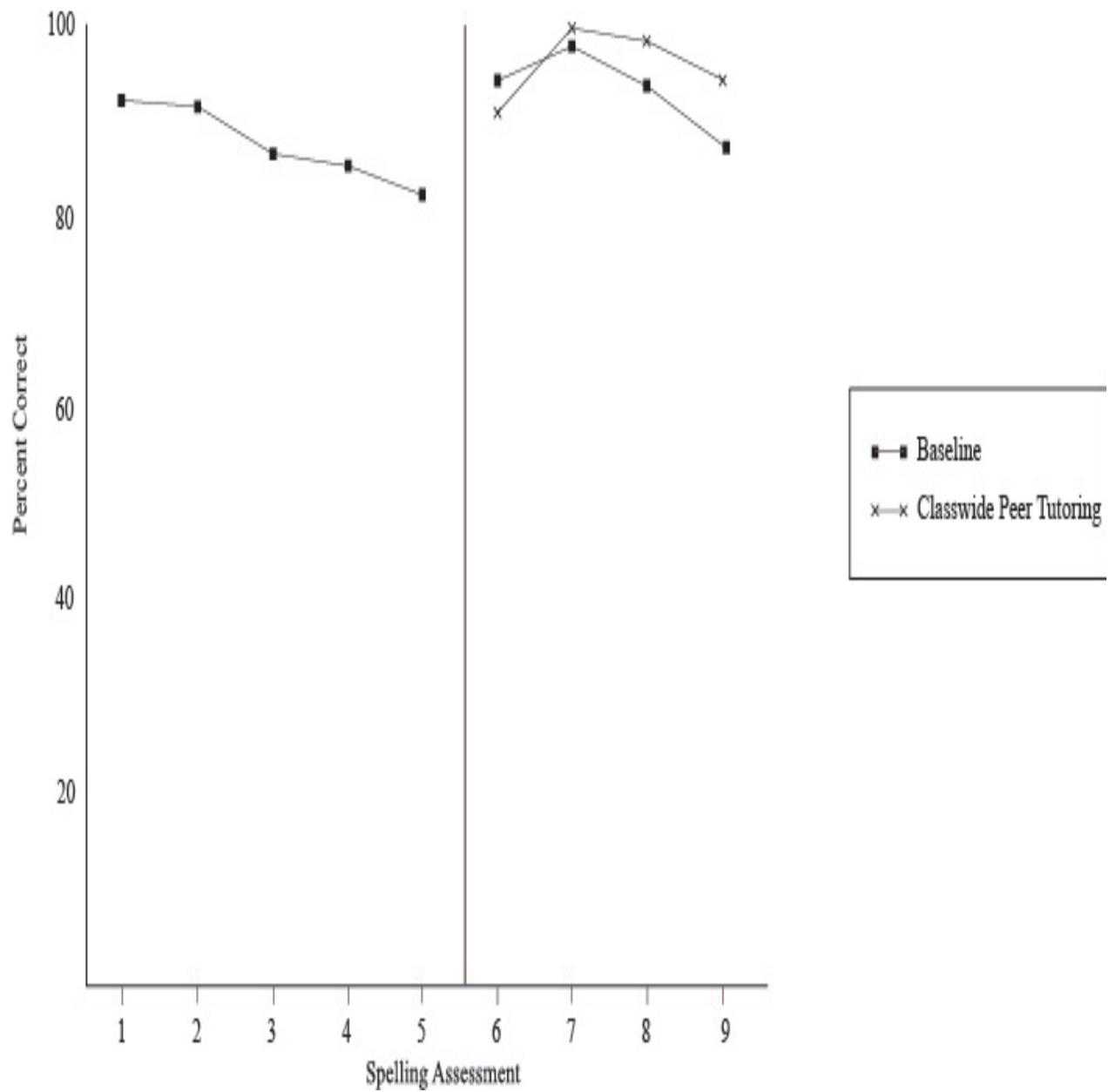
Figure 2 shows student #7's spelling scores across baseline and response cards conditions.
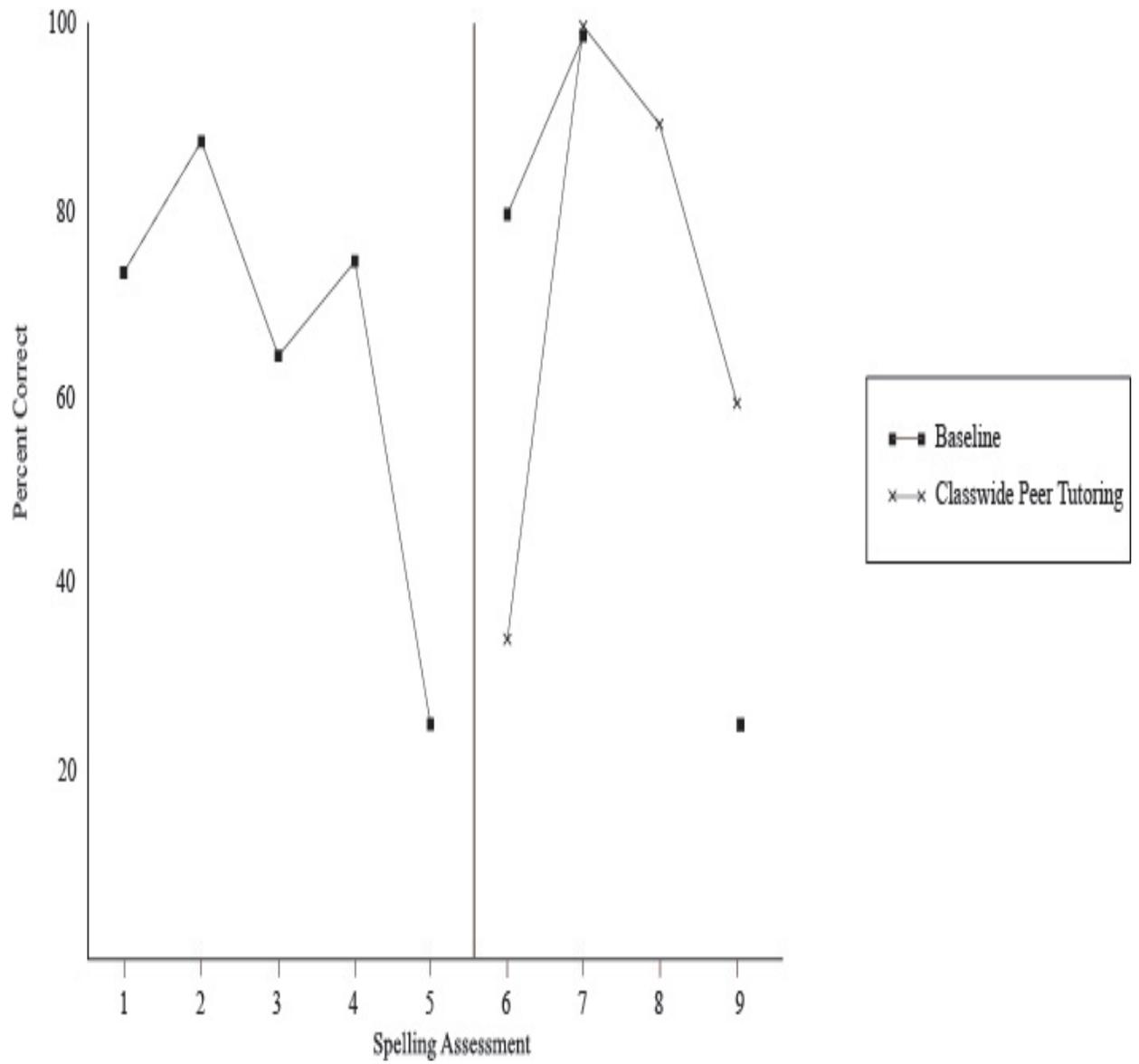
Figure 3 shows student #15's spelling scores across baseline and response cards conditions.
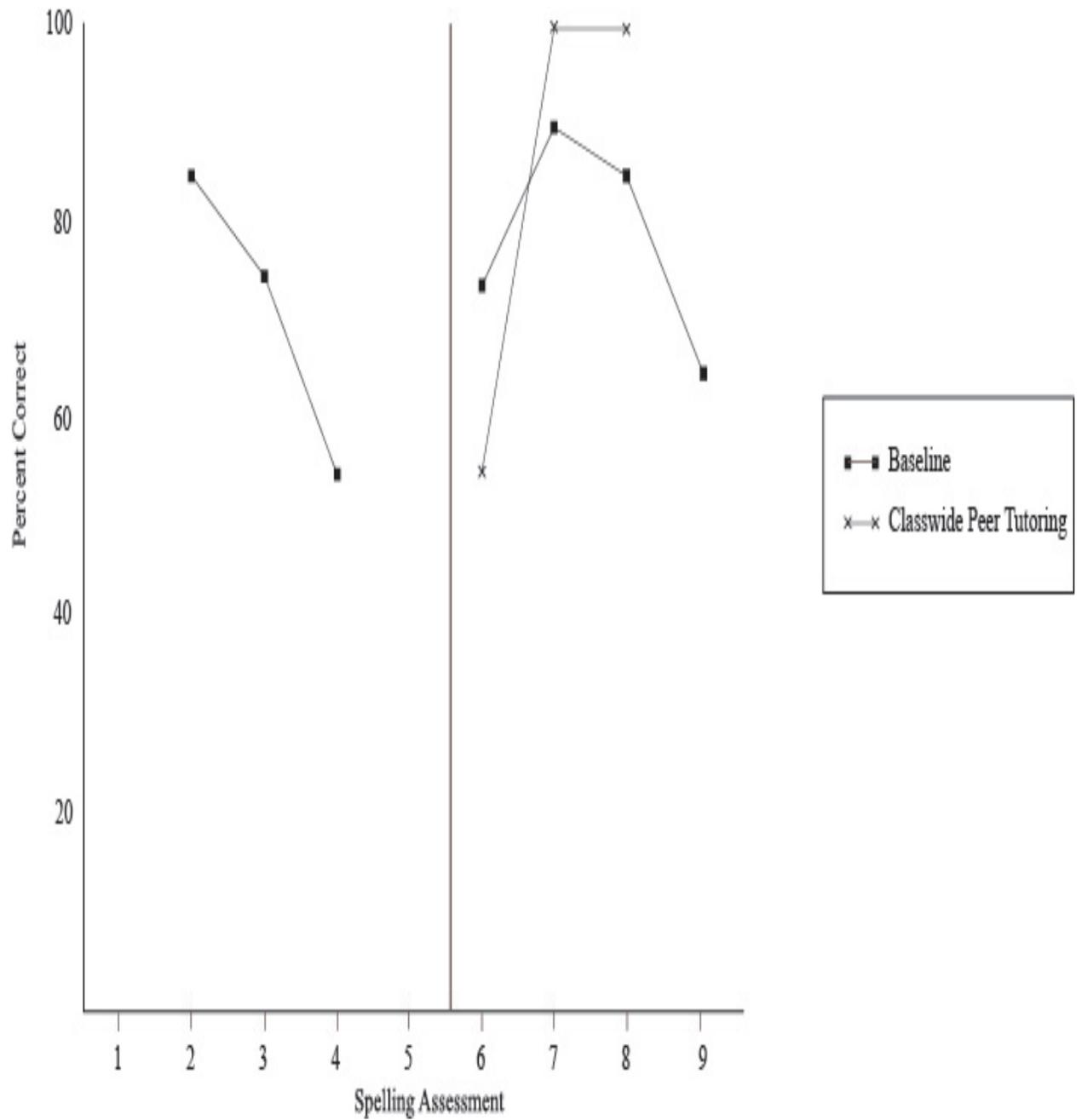
Table 1 <u>Mean consumer satisfaction ratings for CWPT by 5th grade pupils</u>.

Items	Mean
1. How important is it for YOU to do well on your weekly spelling quizzes?	5.9
2. How important is it for other students in your class to do well in spelling?	5.6
3. How important is it for students to GET ALONG WELL with one another in class?	6.9
4. How much did you like being on a CWPT team during spelling time?	6.0
5. How much did you like BEING A TUTOR (teacher) within your team?	5.5
6. How much did you like BEING A TUTEE (student) within your team?	4.7
7. How much did you like USING THE SPELLING LISTS with other team members?	5.7
8. How much did you like EARNING POINTS during CWPT in spelling?	6.4
9. How much did you like MAKING CORRECTIONS when practicing spelling words?	2.9
10. How much did you enjoy EARNING BONUS POINTS during CWPT sessions?	6.8
11. How much did you like EARNING TEAM OF THE WEEK CERTIFICATES?	5.8
12. How satisfied are you with YOUR overall performance in spelling?	6.4
13. How satisfied are you with your performance on the CWPT teams?	6.1
14. How much did CWPT help you to learn spelling words better?	5.4
15. How much did CWPT help you to get along better with others in class?	4.7
16. Does CWPT seen like something that should be done in school?	5.8
17. Could CWPT be *harmful* to other students?	3.1
18. Did other students think that you were smarter after using CWPT?	3.5
19. Overall, what did you think of CWPT?	5.8
20. Which would you rather do, work independently on your spelling words or use CWPT?	6.1

Appendix A

Student Data Collection Form

STUDENT	B 1	B 2	B 3	B 4	B 5	I 6	B 7	I 8	B 9	I 10	B 11	I 12	B 13	I 14	AVERAGE SCORE
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
CLASS AVERAGE															

Appendix B

CWPT Consumer Satisfaction Survey

Please read each item aloud to your students and ask them to *circle the number* that best represents their feelings about that particular item. Emphasize the importance of completing the rating *individually and privately*. Thanks!

I.   Importance of Instructional Goals

1.   How important is it for **YOU** to do well on your weekly spelling quizzes?

1_____2_____3_____4_____5_____6_____7_____
not at all   somewhat important   very important

2.   How important is it for **OTHER STUDENTS** in your class to do well in spelling?

1_____2_____3_____4_____5_____6_____7_____
not at all   somewhat important   very important

3.   How important is it for students to **GET ALONG WELL** with one another in class?

1_____2_____3_____4_____5_____6_____7_____
not at all   somewhat important   very important

II.   Acceptability of Instructional Procedures

4.   How much did you like **being on a CWPT team** during spelling time?

1_____2_____3_____4_____5_____6_____7_____
not at all   some   a lot

5.   How much did you like **BEING A TUTOR** (t**eacher**) within your team?

1_____2_____3_____4_____5_____6_____7_____
not at all   some   a lot

6.   How much did you like **BEING A TUTEE (student)** within your team?

1_____2_____3_____4_____5_____6_____7_____
not at all   some   a lot

7.   How much did you like **USING THE SPELLING LISTS** with other team members?

1_____2_____3_____4_____5_____6_____7_____
not at all   some   a lot

8. How much did you like **EARNING POINTS** during CWPT in spelling?

    1_____2_____3_____4_____5_____6_____7_____
    not at all   some   a lot

9. How much did you like **MAKING CORRECTIONS** when practicing spelling words?

    1_____2_____3_____4_____5_____6_____7_____
    not at all   some   a lot

10. How much did you enjoy **EARNING BONUS POINTS** during CWPT sessions?

    1_____2_____3_____4_____5_____6_____7_____
    not at all   some   a lot

11. How much did you like **EARNING TEAM OF THE WEEK CERTIFICATES**?

    1_____2_____3_____4_____5_____6_____7_____
    not at all   some   a lot

III. Satisfaction with Strategy Outcomes

12. How satisfied are you with **YOUR** overall performance in spelling?

    1_____2_____3_____4_____5_____6_____7_____
    not at all   somewhat satisfied   very satisfied

13. How satisfied are you with your performance on the CWPT teams?

    1_____2_____3_____4_____5_____6_____7_____
    not at all   somewhat satisfied   very satisfied

14. How much did CWPT help you to learn spelling words better?

    1_____2_____3_____4_____5_____6_____7_____
    not at all   some   a lot

15. How much did CWPT help you to get along better with others in class?

    1_____2_____3_____4_____5_____6_____7_____
    not at all   some   a lot

16. Does CWPT seen like something that should be done in school?

    1_____2_____3_____4_____5_____6_____7_____
    not at all   maybe   definitely should

17.   Could CWPT be *harmful* to other students?

1_____2_____3_____4_____5_____6_____7_____
not at all   maybe   definitely could

18.   Did other students think that you were smarter after using CWPT?

1_____2_____3_____4_____5_____6_____7_____
not at all   some did   everyone did

19.   Overall, what did you think of CWPT?

1_____2_____3_____4_____5_____6_____7_____
didn't like at all   liked somewhat   liked it a lot

20.   Which would you rather do, work independently on your spelling words or use CWPT?

1_____2_____3_____4_____5_____6_____7_____
Work alone   doesn't matter   Use CWPT

Additional Comments:

_____

_____

_____

Appendix C

Juniper Gardens' Class Wide Peer Tutoring

Fidelity Implementation Checklist

Teacher_____   Date_____

Observer_____

	Yes	No	D.O.
1. Students are assigned to teams.	___	___	___
2. Students are assigned to partners	___	___	___
3. Students sit in close proximity to each other	___	___	___
4. Team Point Charts posted	___	___	___
5. All **Tutees** have worksheets and pencils	___	___	___
6. All **Tutors** have point recording sheets	___	___	___
7. Teacher previews content before session	___	___	___
8. Teacher sets timer for 10 minute session	___	___	___
9. Teacher circulates to reward bonus points	___	___	___
10. Teacher helps pairs when needed	___	___	___
11. Teacher directs students to change roles	___	___	___
12. Teacher resets timer for 10 minutes	___	___	___
13. Teacher computes and records points	___	___	___
14. Teacher commends winning team	___	___	___
15. Teacher encourages losing team	___	___	___
16. Teacher directs collection of materials	___	___	___

Totals: **/16 =   %**