Reading Comprehension Achievement and Peer vs. Teacher-Directed Tutoring

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Reading Comprehension Achievement and Peer vs. Teacher-Directed Tutoring

by

Patrick James Pastore

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A thesis submitted to the
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Reading Comprehension Achievement and Peer vs. Teacher-Directed Tutoring

by

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Chapter 1

Introduction

If there is one skill in modern society that is more important than any other, most could probably argue that it would be the ability to read. Without the ability to read, it would be nearly impossible for a person to succeed or even get by. This ability transcends subject areas and permeates the world around us. Perhaps this is why literacy has become a major focal point of today's educational system. With increasingly high levels of accountability for both schools and individual teachers, educators must begin to wonder the best means by which literacy can be taught and supported. Can such support be extended beyond whole-class instruction?

McIntyre, Jones, Powers, Newsome, Petrosko, Powell, and Bright (2005) believe that such support can be extended beyond whole-class instruction. These researchers conducted a study to determine whether supplemental instruction, in the form of teacher-led tutoring outside the classroom within the school day, was actually an effective means of increasing the reading comprehension achievement of school-age students. Through a multifaceted experiment involving second-grade students, they determined that those who were exposed to such tutoring scored better on the Flynt-Cooter Informal Reading Inventory, which was administered to all subjects both before and after the study as part of a pretest-posttest design. These results indicate that tutoring and reading supplementation do positively affect student achievement in literacy.
Such research suggests that tutoring is an effective means of increasing students' skills in the area of literacy, particularly reading comprehension, but what does tutoring actually consist of? There are a variety of approaches to tutoring within the realm of literacy. Teacher-directed tutoring, in which a teacher instructs a small group of children as a means of remediation and support, was utilized in the study mentioned above by McIntyre, et al. (2005). Much of the recent research in the area of tutoring has focused on peer tutoring, in which students actually deliver the remediation and support to one another. Calhoon (2003) addressed the effectiveness of peer tutoring in her study involving students with reading disabilities. From this study, in which students in different experimental groups were exposed to different forms of peer tutoring in reading, she identified this style of instruction as particularly effective in increasing student achievement. If such methods are effective with students with special needs, one might hope to generalize the results by performing further research in the area. In both conditions, student achievement in reading comprehension did increase, indicating that tutoring is effective. The more difficult question, however, is which format, direct tutoring or peer tutoring, is more effective.

Studies in the past have identified that tutoring students in the area of literacy produces higher levels of student achievement in reading comprehension, but most have failed to conclusively determine which of the aforementioned formats is better. Van Keer (2004) conducted research in which reading strategies were taught directly to fifth graders, either by a teacher or by another peer. She found that, while students in both conditions made gains, those taught directly by the teacher reached greater
levels of achievement in reading. This directly contradicts the results of a later study by Van Keer and her colleague Verhaeghe (2005), which suggested that peer tutoring is the most effective means of tutoring students. Mathes, Torgesen, Clancy-Menchetti, Santi, Nicholas, Robinson and Grek (2003) found that peer tutoring was far more effective when compared with direct methods. In order to best educate students in reading, and maximize the support they receive in their quest for literacy, teachers need to be aware of which format is most effective.

Problem Statement

Literacy is an important life skill which all must master in order to actively participate in today’s society. As a result, teachers must begin an urgent push toward literacy in the early elementary years. Across a wide range of schools and settings, tutoring is implemented in an attempt to increase student achievement and further drive literacy. The overwhelming amount of tutoring, which takes many forms across these different settings, may cause teachers to pose an important question. Which is the most effective means of tutoring? My action research explored whether direct tutoring or peer tutoring was a more effective means of increasing student achievement within the realm of reading comprehension of middle school-aged students.

Significance of the Problem

Students attending the school in which I teach are from a metropolitan area where less than half are testing at the proficiency level on the 6th grade New York
State English Language Arts (ELA) Exam. If less than half the students are reaching this benchmark, especially with the added pressure of No Child Left Behind (NCLB), then something must be done.

In my school, I am fortunate enough to have an hour block for tutoring each day in reading, and this time must be best utilized to ensure that students can succeed, not only on the state tests, but also in life. In order to do so, it is my responsibility to maximize my effort with respect to this tutoring block and increase student reading comprehension with a renewed sense of urgency.

I set up two groups in order to determine which method of tutoring, peer-directed or teacher-directed, was more effective. In doing so, I not only maximized the limited instructional time that I had each day, but I also attempted to improve my students’ reading comprehension to the best of my ability. Based on the success of my intervention, I believe that not only have I helped my school maintain its own success on the mandatory New York State ELA Exam, but, more importantly, I kept my students on the path toward literacy and success in society.

**Rationale**

I work in a school that emphasizes direct instruction in the classroom. The rationale comes from both the principal and superintendent, who believe that the only way that students can achieve mastery of skills is through individual completion of classwork. My educational background has come to include a heavy emphasis on social constructivism, a theory which posits that people learn through social
interactions with one another. With this potentially important facet of education removed from my school completely, students might not reach their true potential.

Conducting such research in my own school, with students who are academically at risk or need additional support in my reading class, afforded me the opportunity to quantify real data on the effectiveness of both teacher-directed and peer-directed tutoring. Though my study is unlikely to change the policies and procedures of my school, I was at least able to identify which methods appeared to be most effective in increasing the reading comprehension ability of my own students.

Beyond my own personal gains and breadth of knowledge, my research has the potential to add to the body of work associated with the comparison of teacher-directed and peer-directed tutoring. Currently available research has identified inconsistent findings across different subject areas and settings. Though my data may not be generalizable beyond urban middle school students, my research has provided me with a more accurate view of both methods of tutoring and the effects on student comprehension.

When conducting the research, I considered my role to be "Participant-Observer," as I participated fully in the implementation of the study, while taking opportunities to formally observe student behaviors throughout. As I participated, I was sure to offer student-specific, helpful feedback and aid students with decoding and understanding as often as possible. These feedback practices were based on the research of Crowe (2005), who found that this level of oral feedback was more effective in increasing student reading comprehension achievement than resisting
help and urging students to decode. I also included tenets of Van Keer’s research (2004) in my design, in which students were broken into two separate groups: one receiving direct tutoring, and one receiving peer tutoring. Through my research, I hoped to find and adapt tutoring methods that would ultimately help me become a more efficient reading teacher. Now that I have been able to determine whether peer tutoring or direct tutoring works best for my students, other students of mine will have the opportunity to become more proficient readers.

**Definition of Key Terms**

**Literacy:** The ability to read.

**Reading Comprehension:** The ability to demonstrate understanding of what one has read, through answers to both multiple choice and open response questions.

**Tutoring:** Supplemental instruction taking place after a lesson, occurring within small group settings.

**Direct Tutoring:** Any form of tutoring, taking place in small groups beyond the basic curriculum, that is taught and directed explicitly by the teacher or trained adult staff member.

**Peer Tutoring:** Any form of tutoring, taking place beyond the basic curriculum, that is driven by the pairing of two or more students who share information with one another.
Chapter 2

Literature Review

In classrooms throughout America, tutoring is implemented as a form of supplemental instruction. This is done under the assumption that tutoring truly is an effective means of increasing student achievement in the core curricular areas. But is tutoring actually effective? A great deal of research has been conducted which suggests that tutoring is effective, and more recent research has focused on which methods of tutoring are most effective. Research was reviewed in an attempt to determine which practices other experts found to be most effective within the realm of reading.

Tutoring: Its impact on student learning

Reading comprehension has been a major point of focus for a variety of educational researchers throughout history. Perhaps the level of concern with reading comprehension is due to the fact that this skill is interdisciplinary, encompassing a wide range of both educational and non-educational experiences. Teachers may spend a great deal of time attempting to find strategies which aid students in developing better reading comprehension skills and increasing their levels of achievement therein.

The first problem which must be addressed in finding effective tutoring strategies is establishing a starting point, a point of reference upon which other research might be built. McIntyre, Jones, Powers, Newsome, Petrosko, Powell, and Bright (2005) conducted research to determine whether supplemental instruction was
actually an effective means of increasing the reading comprehension achievement of school-age students. Supplemental instruction can be defined as any instructional support taking place after a lesson, outside the classroom. They studied 196 first and second graders from seventeen different schools who received reading remediation in the form of intervention services, and compared their reading comprehension against students of the same age level who did not receive such support. Achievement was evaluated based on the Flynt-Cooter Informal Reading Inventory, which was administered as a pretest in October of the studied school year and as a posttest in May of the same year. Throughout the school year, McIntyre, et al. (2005) observed and interviewed students and teachers involved in the study, as a means of better understanding the processes involved in each individual remediation program.

McIntyre, et al. (2005) found that students receiving supplemental instruction in both first and second grades outperformed students receiving no supplementation of reading instruction on the Flynt-Cooter Informal Reading Inventory posttest. This was true no matter what the specific style of supplementation, suggesting that such practices are generally beneficial to all students. They conclude by noting that children receiving reading intervention outperformed those who did not, and suggest that such practices would be beneficial to all students with or without identified disabilities. With such a realization and the quantitative support for their hypotheses, McIntyre and her colleagues (2005) suggested that instruction, outside that which was conducted in the classroom with a full class of students, was also highly beneficial to
all students. This appeared to be especially true with struggling readers, quantifying the effectiveness of tutoring within the realm of reading.

Another group of researchers, Davenport, Arnold, and Lassmann (2004) attempted to determine the impact of tutoring on both reading comprehension and student attitudes toward reading. To accomplish this, they paired ten fifth grade students with learning disabilities with ten kindergarteners in what was called a "cross-age peer tutoring group" (p.3). Cross-age is simply meant to suggest that the tutors and students being tutored are from different grade levels. All participants were given both an attitudinal scale and a reading comprehension pretest as a means of determining a baseline of attitude and achievement. Fifth grade tutors were then given book selections and trained to identify skill-based questions, such as those recalling facts and details from the text, from these books to ask their kindergarten counterparts. The tutoring sessions consisted of the fifth grade tutors reading aloud and asking skill-based questions of their kindergarten tutees, and occurred two times a week for thirty to forty minutes per session. Following the intervention, an attitudinal and reading comprehension posttest was administered for comparative data. There was, unfortunately, no control group with which to compare said data.

After the intervention, Davenport, et al. (2004) concluded that the intervention was successful, particularly where attitude was concerned. Both fifth grade tutors and their kindergarten counterparts indicated a more positive view of reading on the posttest when compared with the pretest. Reading comprehension gains were also significant, as the fifth grade tutors with learning disabilities made gains as large as
one grade level in their reading comprehension ability. More significant were the achievement gains made by the kindergarten-aged participants, nearly all of whose word recognition skills improved. Though limited due to the lack of a control group, this research aligns with the study of McIntyre, et al. (2005) in its evidential support of tutoring as having a positive impact on achievement in the area of reading comprehension.

Direct tutoring and its effects on reading

Once supplemental instruction was established as a widely accepted avenue through which student skills could be improved, research was reviewed with further specificity. In recent years, the focus of research in education has generally been centered on the tenets of social constructivism. Social constructivism refers to the process of learning as being gained from and led by other people. Supporters of this style of education believe that people learn best through working with others. As a result, there is limited current research focusing on direct instructional techniques. One study that was recently conducted, however, attempted to quantify the effects of direct instruction in reading in an urban middle school setting with students who were identified as being two to four years behind grade level (Shippen, Houchins, Steventon, & Sartor, 2005). Students participated in a six week study in which they received direct tutoring from their classroom teachers in both reading decoding and comprehension. They were given two separate pre- and post-tests as a means of measuring baseline performance as well as student performance following the implementation of the study.
Based on the posttest data, the researchers concluded the direct tutoring method was highly effective in increasing student achievement in reading, markedly in the area of reading fluency. The researchers even noted that, "This study continues to confirm the effectiveness of highly structured, explicit, teacher-directed instruction for struggling readers," within an urban middle school setting (Shippen, et. al, 2005, p. 180). Though the research itself was not compared against peer tutoring, the data clearly indicated that direct supplemental instruction was an effective means of increasing reaching comprehension achievement. This data would later be challenged by those who believed that peer tutoring was far more effective. In the meantime, however, direct supplemental instruction was established as an appropriate and beneficial way of improving students' skills in reading.

Mathes, Torgesen, Clancy-Menchetti, Santi, Nicholas, Robinson and Grek (2003) identified further support for direct tutoring when they conducted a research study designed to compare the effects of peer tutored reading instruction to that of direct instruction from a teacher. To accommodate this purpose, the researchers conducted a parallel study in which 89 participants were exposed to either of these conditions and compared across pretest-posttest measures. In the small group tutoring condition, the classroom teacher worked directly with four to five students in the areas of reading comprehension, oral reading fluency, word identification and phonetics. Students assigned to the peer-assisted condition practiced the aforementioned reading skills with a peer. This peer-assisted condition included a component of the peer assisted learning strategy (PALS), which other research has
utilized in related studies. PALS refers to a specific format of tutoring, which involves a combination of teacher training and peer implantation. After being taught to offer reading feedback to their peers by a classroom teacher, students work in pairs, taking turns reading aloud and offering one another feedback. A teacher is present during these sessions in order to monitor, guide, and provide help as necessary. A third condition, consisting of students who received no supplemental support, was included for comparative purposes.

Through constant evaluations of procedures and learning outcomes as a result of the intervention, Mathes, et al. (2003) found that both the teacher-directed and peer-assisted conditions led to gains on measures of reading comprehension and fluency. These gains were consistent on the Woodcock Reading Mastery Test-Revised, selected subtests of the Comprehensive Test of Phonological Processes, and the Test of Word Reading Efficiency. Though both experimental groups made gains over the control group, subjects exposed to teacher-directed strategy instruction posted the greatest gains in reading achievement.

Another study which compared direct tutoring with a different strategy in lieu of peer tutoring was conducted by Hitchcock, Prater, and Dowrick (2004). These researchers compared the implementation of tutoring strategies in reading comprehension with “video self modeling” strategies (VSF) (p. 89). VSF involved recording participants reading orally, and then showing them the resulting footage. This method was used for half of the participants, while the other half received supplemental direct tutoring. The tutoring took place every day of the school week for
thirty minutes. The session themselves consisted of word study, read-aloud, and the pairing of graphic organizers and other visual cues with passages as a means of activating increased comprehension. These practices were implemented in order to determine their impact on both reading fluency and comprehension.

Following a nineteen week study and compilation of pre and posttest data, Hitchcock, et. al (2004) found that most of the students exposed to direct tutoring made statistically significant gains in both reading fluency and comprehension. Though this was also true of students exposed to VSF, the greatest gains in comprehension were the result of direct tutoring. A follow-up survey of parents and teachers indicated that the gains in reading had generalized to both home and school. The implications of this study are favorable toward the inclusion of direct tutoring as an effective means of providing struggling readers with supplemental instruction. Researchers have, however, continued to study varied methods of tutoring in an attempt to decide which is most effective.

Peer tutoring approaches and their impact on reading achievement

One method which has become increasingly utilized in newer research is peer tutoring, in which students tutor one another as a means of increasing skills. Peer tutoring, in which students work with one another as part of supplemental instruction, can take a different form from study to study, depending on the aim of researchers. Methods can include same-age peer tutoring, in which subjects are the same age, or cross-age peer tutoring, in which students from different levels of education work
with one another. Though the methods are varied, the results are generally favorable with respect to student achievement.

Calhoon (2003) conducted a study rooted in peer tutoring in which middle school students with reading disabilities were exposed to peer-mediated reading programs as a means of determining the impact on their reading comprehension achievement. Peer-mediated reading programs are based on a system known as classwide peer tutoring (CWPT), where students work in pairs as co-tutors, working together in this research study through activities within the realm of reading comprehension (Calhoon, 2003). This study included thirty-eight students identified as learning disabled in reading who were assigned to one of two experimental conditions; one in which students were taught using Linguistic Skills Training (LST), in which students tutor one another with a sole focus on phonetic and spelling errors, and another in which students were taught using Peer Assisted Learning Strategies (PALS). Both are peer-mediated reading programs. These two groups were compared against a control group in which students received teacher-directed reading remediation.

Calhoon (2003) evaluated student achievement via administration of three reading subtests of the Woodcock-Johnson Test of Achievement-III following the implementation of the intervention, and found that students in both peer-mediated reading program groups made significant gains in reading comprehension over the control group. Students in the peer-mediated program groups also received ten fewer hours of direct instruction than the control group, further demonstrating the strength
of the programs. Based on the success of the study, Calhoon (2003) recommended that peer-mediated programs become a part of instruction, due to the high levels of achievement demonstrated by subjects.

Based heavily on emerging ideas of social constructivism and evidences of their success, peer-mediated programs such as those utilized in Calhoon’s study (2003) became commonplace within educational settings. Green, Alderman and Liechty (2004), who based their study on such prior research and strategy implementation, believed that peer tutoring was an effective strategy for improving student skills in a variety of curricular areas, including reading, writing, and mathematics. Based on these notions, they conducted their own research by pairing fourth and fifth grade peer tutors with thirteen at-risk second graders for a cross-age peer tutoring study. In addition to this peer tutoring, the second grade subjects received tutoring from undergraduate college students once weekly for the duration of the ten week intervention. These college tutors added individualization to the process by recording which rimes, or vowel-consonant combinations, the tutee missed in each session. They would spend time in the following session working on these specific rimes, which were different for each student. Another group of students was assigned to a control group, who received no additional tutoring support.

Utilizing a pretest-posttest model on the number of words read correctly, Green, Aldermann and Liechty (2004) compared the gains of the second grade subjects with their classmates who received no tutoring. They also noted their use of “ongoing weekly assessments” to better capture the growth students had made and
altered the content of the tutoring sessions as needed. They found, through these evaluative measures, that students who were exposed to peer tutoring made statistically significant gains over control group students in the number of words they could read than those who received no additional tutoring. The researchers determined that through their use of individualized peer tutoring and consistent evaluation, at-risk second-grade students reached greater levels of achievement in the area of reading than would have been possible without the implementation of such a strategy.

Within the same area of research, Vadasy, Sanders and Peyton (2005) conducted a study intended to compare different supplemental tutoring variations against classroom instruction without tutoring. They hoped to determine which tutoring method was more successful in increasing the reading achievement of fifty-seven first grade students. Students in the tutoring conditions received these services four times per week between October and May of the same school year. One experimental group was focused in decoding strategies and other “word study” skills, while the other experimental group devoted their intervention time to additional reading practice. Measures were taken so the data collected was a reliable and valid indication of the outcomes resulting from the study.

Vadasy and her colleagues (2005) found that students in the supplemental tutoring conditions far outperformed their classmates who were exposed only to classroom instruction on the Wide Range Achievement Test-Revised and the Woodcock Reading Mastery Test-Revised/Normative Update. These assessments
were selected to evaluate multilevel reading achievement of the subjects, and definitively showed the impact that tutoring had on reading achievement. Perhaps the most interesting aspect of the study’s results was that there was no significant difference between the increases in scores of either tutoring condition. Students in both tutoring conditions made comparable gains in their achievement, suggesting that the small-group or one-on-one format of the tutoring sessions was the cause of the gain, and not specifically which intervention style was implemented. The evidence in favor of the effectiveness of peer tutoring as a form of increasing reading comprehension achievement continued to build in light of this study.

While the positive support for peer tutoring is essential when considering implementation, one must also consider the studies which resulted in less convincing results. The outcomes of a research study by Van Keer (2004) supported some strategies through which the reading comprehension of students could be increased, but the data was not as consistent as other studies within the same realm. While still related explicitly to reading comprehension, he deviated this research from other studies by focusing on the direct instruction of reading strategies via teachers and peers.

Van Keer (2004) noted that while some educators felt that reading strategies were created by students as they moved through their own education, such strategies could not be confirmed and should therefore be taught directly. With this as a focus point, she designed a study in which 454 fifth graders were exposed to varying levels of direct strategy instruction. Students were not randomly assigned, as they had
already been placed into classrooms for the duration of the school year, but the research took steps to ensure reliability and validity of the study in what she described as a “quasi-experimental study.” Students were assigned to one of four groups. The first group of students received strategy instruction directly from a teacher in a whole-class setting. Another group involved same-age peer tutoring of reading strategies, while another involved the same practices with cross-age tutors, or students who were of different age levels. The final group was a control group, receiving no strategy instruction, which was compared to the experimental groups following the intervention. The interventions within these groups were carried out for an entire school year.

Van Keer (2004) found, after comparing pre- and posttest data, that students in the whole-class reading group and those in the cross-age peer tutored groups made significant gains over those in the control group. Additionally, they found that students engaging in same age peer tutoring made no statistical gain with respect to the control group. The researcher had hypothesized that all forms of direct strategy instruction would have led to increases in reading comprehension achievement, so this data was a discrepant but valid outcome of the study.

More recent research on the effectiveness of peer tutoring includes a study by Kourea, Cartledge, and Musti-Rao (2007), who completed an intervention on a group of six students from an urban school setting. Included in this intervention were students from a second and third grade inclusive classroom who were identified as being at risk for reading failure. The general and special education teachers in the
classroom collaborated to create a program through which these students were able to work with one another in a total class peer tutoring design. Total class peer tutoring can best be described as a classroom intervention in which students tutor one another in pairs, and then come together as a whole group to discuss. In this study, one student spent six minutes tutoring another student, and then proceeded to switch roles for another six minutes before sharing out their answers and discussion with the rest of the group (Kourea, et al., 2007). Students participating in this study worked in such groups for 30 minutes, three times a week over the course of the study, which lasted four months.

Following a pretest and the intervention, students were given four subtests from the Woodcock-Johnson-III Tests of Achievement, which were designed to measure student fluency and reading comprehension. Of the six students participating in the intervention, five showed significant gains in the areas of reading fluency and comprehension (Kourea, et al., 2007). Anecdotal records from both teachers as well as parents of the participants indicated that their level of achievement in reading had improved as a result of the study. While there was no control group against which this data was compared, this study suggests that classwide peer tutoring is an effective means of increasing student achievement in reading comprehension. The fact that the students involved in the study were from an urban school and identified as being academically at-risk indicates that peer tutoring can be effective even when the students are coming from inner-city populations and may be academically challenged.
Further evidence of the effectiveness of peer tutoring within urban classrooms comes from a study by Veerkamp, Kamps, and Cooper (2007). These researchers conducted a study in which seventy one students from three sixth grade classrooms in Kansas were exposed to classwide peer tutoring (CWPT). These students were divided across three conditions; a teacher-directed control group, CWPT, and CWPT with behavioral rewards. In the condition with behavioral rewards, students were given raffle tickets on a variable interval schedule when the teacher witnessed on-task behavior within the tutoring group. The researchers hypothesized that this added incentive would increase student motivation and therefore increase the effectiveness of the intervention.

CWPT was implemented weekly by the classroom teachers involved in the study, and student progress was measured by vocabulary and comprehension assessments which were given weekly (Veerkamp, et al., 2007). Through this method, the researchers found that students in the CWPT group made statistically significant gains in their assessment scores when compared to the teacher-led control group. This indicates that, in this study, peer tutoring was more effective than direct tutoring. The group making the greatest gains, however, was CWPT with behavioral rewards. Following tutoring and external rewards, these students made the largest statistical gains in reading comprehension, as hypothesized by the researchers. This is perhaps the most telling result of the study, which may cause a teacher to wonder if extrinsic rewards should become a major part of a tutoring program.
These findings very clearly suggest that extrinsic rewards have a motivating effect on students, which leads to more time on task during the tutoring sessions. In such situations, the increased time on task often leads to greater levels of student achievement.

While the researchers of this study clearly support the use of extrinsic rewards in some situations, Davis, Winsler and Middleton (2006) conducted research which study the connection between abundant extrinsic rewards at the elementary and intermediate levels and the resulting implications on student motivation in college. The researchers reported that 75% of participants indicated that they had received external rewards as a form of motivation in grade school, and they found that this did, in fact, tend to impact the motivation of these participants in college. Male participants who received extrinsic rewards for on-task behavior in class during their youth were less intrinsically motivated in college (Davis, et al., 2006). In other words, students who received rewards for their academic performance seemingly became dependent on the rewards and lacked an internal drive and work ethic. This study should serve to caution future researchers against the excessive use of extrinsic motivators, considering the possible long-term effects of the overuse of behavioral rewards.

Direct tutoring versus peer tutoring: Which is really more effective with respect to reading comprehension?

Within peer tutoring, a teacher must decide what is actually going to occur. Students will need direction when they are working with each other, and educators must make the determination of who will be working with whom, what tasks must be
accomplished within these groups and also how they will be accomplished. Topping and Bryce (2004) took such factors into account when conducting research in which students worked with peers of different ages and altered the ways in which they worked together.

Based on prior research suggesting that students learn best when working with peers, Topping and Bryce (2004) designed a study in which 11-year-old subjects were paired with 7-year olds and randomly assigned to different peer-based conditions. One group involved paired reading (PR), in which students read texts with a partner but shared no explicit thinking or task. The other experimental group involved explicit paired thinking (PT), in which students discussed predetermined prompts based on reading they shared. The goal of PT is to effectively increase reading comprehension skill through socially constructivism. Both groups underwent a six week PR intervention, after which the PT participants split off and began their separate tasks for an additional ten weeks. Those in the PR condition continued their initial methods for this ten week period. Utilizing a pretest/posttest model, Topping and Bryce (2004) aimed to quantify a difference between pairs who were exposed only to PR and those who were exposed to both PR and PT.

Topping and Bryce (2004) found that students in the PT condition had significantly better performance on a researcher-made “thinking skills” assessment, which may otherwise be operationalized as reading comprehension skills. Beyond these skills, observers of students in the PT condition noted that they had better attitudes toward reading as a result of the intervention when compared to those who
were only exposed to PR. As a well-controlled study, the results are reliable and valid and add to the body of research related to peer tutoring methods. With such a strong field of evidence in support of peer tutoring, the difficulty might not become deciding upon the use of peer tutoring within reading, but rather the more specific processes and functions involved in these sessions.

In light of varied findings as to the effectiveness of certain forms of tutoring, further research regarding peer tutoring was conducted by Van Keer and Verhaeghe (2005) who planned and implemented a research-based study involving 444 second grade and 454 fifth grade students receiving reading comprehension instruction. They hoped to determine the impact of reading strategy instruction on reading comprehension, as well as student self-efficacy and attitude toward reading. Students were exposed to strategy instruction via whole-class instruction, same-age peer tutoring, or cross-age (involving students of varying ages) peer tutoring conditions. These three experimental groups were compared against a control group whose participants received no direct strategy instruction. In an attempt to limit possible constructs, the researchers provided teachers with lesson plans and all materials necessary to teach these reading comprehension strategies for the current body of research. The researchers administered self-made pretests, posttests and retention tests to determine the effects of these varying, yet standardized, types of instruction on student achievement.

Van Keer and Verhaeghe (2005) found that all three experimental groups demonstrated reliably higher levels of achievement following strategy instruction.
The same-age and cross-age peer tutoring groups, however, showed a more significant improvement in achievement than the other group in the study. Fifth graders were more successful in their retention of comprehension skills, but second graders also maintained their reading successes long after the initial intervention. Differences in self-efficacy and attitude toward reading, another component of the present study, were found to be insignificant following the intervention. Overall, the data suggests that students benefit most from strategy instruction when they work with peers.

Furthermore, the authors suggest, based on the results, that this level of one-on-one interaction is far more effective in helping to improve reading comprehension than whole-class instruction alone. The results of this study were influential because of the high level of success that peer tutored students achieved. Due to the increasing acceptance of social constructivism within the educational world as the definitive way of describing how people learn, strategies rooted in this ideology become ideal for the modern educator attempting to be the most effective teacher possible. Peer tutoring therefore appeared to be one of the best practices related to increasing reading comprehension in school-age students.

**Best practices and procedures within tutoring groups**

Once an educator has come to the decision that peer tutoring is a strategy which he or she would like to attempt in order to increase student achievement, there are some important facets related to reading comprehension that he or she might also want to consider in order to create ideal conditions for learning. Perhaps the most
important choice related to the implementation of the intervention is the selection of reading materials to which students will be exposed. Guthrie, Wigfield, Humenick, Perencevich, Taboada and Barbosa (2006) conducted research which suggested that reading comprehension achievement and motivation increase with the selection of stimulating texts and tasks.

Guthrie, et al. (2006) created a study to identify the effects of including “stimulating” tasks within reading instruction, hypothesizing that it would lead to positive effects in both motivation and reading comprehension achievement. After reviewing related literature, they determined several stimulating features which might lead to increases in motivation and reading comprehension. These included student choice of text, choice of questions on assessments and partner choice. Other stimulating strategies involved instructor choice of text materials which are of high interest to students and high levels of teacher involvement. With these strategies in mind, the researchers conducted a study involving 98 third grade students. Subjects were divided by classroom teacher into one of two “instructional groups.” One group, consisting of two teachers and their respective classrooms, exposed their students to high levels of stimulating tasks (HLT), while the other group was exposed to a low level (LLT). The distinction between these two levels of stimulation were not specifically defined, but rather related to baseline observational data of the classrooms.

Guthrie, et al. (2006) coded student drawings and responses as they related to the reading tasks within the intervention, and students were pre- and post-tested on a
standardized measure. They found, after controlling the pre-test data, that students in the HLT conditions made the greatest gains in reading comprehension achievement when compared to those exposed to LLT. They noted that this distinction was not as clear as might be believed. When they controlled their standardized post-test measure for motivation, reading comprehension did not increase. They indicated that this suggested the level of stimulating tasks was not directly the cause of the increase in achievement, but rather the motivation which directly results from the stimulation. More simply, they determined that high levels of stimulating reading tasks caused higher levels of motivation, which in turn caused greater levels of achievement in reading comprehension.

In addition to selecting texts which elicit student stimulation and motivation, a teacher must always remain conscious of the types of feedback given to students and recognize the potential impact this feedback might have. One researcher who explicitly studied the impact of different forms of oral feedback to students was Crowe (2005).

Crowe's research (2005) attempted to identify which forms of oral feedback resulted in better achievement in student reading comprehension in grades three through five. In lieu of a control group, Crowe chose to divide participants into two separate intervention groups. One group received traditional, decoding-based feedback, rooted in the belief that students improve reading comprehension as they improve their decoding skills. The other experimental group was exposed to communicative reading strategies (CRS), in which the teacher or "interventionist"
observes student behavior and offers student-specific support, which included assistance in decoding, rephrasing, and simplifying of text as needed. Though this research study involved only eight participants, separated into equal groups of four, the results were overwhelmingly positive.

Crowe (2005) found that students, after being exposed to CRS for only ten hours, performed significantly better on the Gray Oral Reading Test-Revised and the Comprehensive Receptive and Expressive Vocabulary Test than those who received traditional feedback within interventions. Furthermore, students in the CRS condition performed better on successive informal reading assessments. Researcher observation also independently confirmed that students in the CRS condition became highly involved in their reading tasks, suggesting that this type of feedback not only impacts achievement but also attitude toward reading. The data as a whole suggest that CRS-based, individualized feedback and interaction results in the greatest levels of achievement in reading comprehension. Therefore, students of all ages and ability levels may potentially benefit from the addition of these strategies by educators.

In an attempt to build the most conducive environment for learning and improving reading comprehension achievement, a researcher or educator must consider all the data presented. This data includes a diverse body of research which can be converged in support of student learning.

Research on supplemental tutoring reveals that it is, in fact, an appropriate means of increasing student achievement in reading. While all forms are generally effective, most research suggests that the greatest gains result from the
implementation of peer tutoring. The data, however, remains inconsistent and varies greatly across different subjects and student populations. Further research must be conducted in order to determine if the effectiveness of these forms of tutoring, particularly peer tutoring, can be generalized to all populations. More importantly, research should be conducted to determine which is truly more effective in these aforementioned populations: direct tutoring or peer tutoring.
Chapter 3

Applications and Evaluation

Introduction

The primary question which has driven my research is: Is peer tutoring a more effective method of increasing the reading comprehension achievement of sixth grade students than teacher-directed tutoring? This research is based on the reading achievement of sixth grade urban students in Rochester, New York who have access to a one-hour tutoring block each week of school. Through an implementation of these varied forms of tutoring, I hoped to identify which method was most effective and apply this to my teaching practices. This information will help guide me as I work to improve my students' reading comprehension skills through utilization of my tutoring block.

Participants

This study included a heterogeneous group of twenty sixth grade students, attending an urban middle school, who were randomly assigned to one of two experimental groups; a peer tutoring group and a direct tutoring group. These groups were a representative sample of the 66 sixth grade students that are currently attending my school. The students in my two groups were pulled from all three of the ability-grouped sixth grade homerooms. I was certain to include a reasonable, representative number of male and female students so as to eliminate gender as a possible construct.
Peer tutors were selected based on their average class score in my reading class. In order for a student to correctly explain a concept or skill to another student, I had to be confident that they had mastered the skill for themselves. Students who had an A in my reading class at the time were given a brief quiz as a demonstration of their ability to both answer questions correctly and explain their procedures accurately. Based on this information, I selected five peer tutors for inclusion in the study.

Procedures

Included in my teaching schedule are four one-hour tutoring blocks, one a day Monday through Thursday. This is my sole opportunity to work with students in small groups. I pulled groups of five to seven students at a time, during which time they participated in the study.

Each hour-long tutoring block took a different form depending on whether I was working with the students in the direct tutoring or peer tutoring groups. When working with the direct tutoring group, I escorted students into my classroom, passed out materials, and delivered all instruction to students. Questions were addressed as necessary, but all the direction came from me.

Students in the peer tutoring group were exposed to a different format altogether. Once they entered my room, I paired-off students and placed them in different areas of my classroom. They were provided with all necessary materials and told to begin their tutoring. I monitored the classroom so as to keep students on task and observe the discussion and work that was being completed. Once they began, the
same procedures followed. They were stopped five to seven minutes before the end of
the class period to complete their student journals, before transitioning to their next
classes.

The challenge with peer tutoring was that the student tutors needed to
understand what it meant to be a tutor. Therefore, prior to allowing them to work in
their groups, I trained them on the procedures and routines of tutoring. I provided
them with an outline of tutoring and modeled a tutoring session with each student.
Before the outset of the study, I participated in a shortened mock tutoring session in
which I acted as the student who did not understand, and I provided them with
feedback on how to address the problems of their peers. This was done to focus peer
tutors on their job and allowed them to demonstrate an understanding of what it
meant to effectively tutor.

The materials used with my study were based on the current skill of focus in
my reading class and therefore varied from session to session. All the skills that I
taught, however, fell within the realm of reading comprehension and therefore
maintained relevance to this study.

*Instruments of study*

To establish a baseline of reading comprehension achievement at the outset of
my study, I administered a pretest to all subjects involved in the study. I created a
multiple question pretest which included three reading passages and several questions
per passage (see Appendix A).
Following the full-scale intervention, I collected posttest data across all groups utilizing a test with the same type and difficulty of questions with different passages (see Appendix B). All details and methods used during the initial test administration were consistent with the posttest administration so as to limit any potential constructs. After collection of the posttest data, I compared the pretest data with the posttest data collected. Such a comparison was used as a way of analyzing changes in test scores from pre to posttests. This aided me in determining which, if any, of the conditions of my study led to significant differences in test scores.

To further track student progress throughout the intervention, I collected observational data. Whether working directly with my students in the direct tutoring group or monitoring those working in small, peer tutoring groups, I monitored the students as a means of determining their demeanor and exhibited level of understanding within the groups. Specifically, I took notes on a data sheet about student levels of engagement, on-task behavior, and their active participation in the tutoring session (see Appendix C). The level to which they appear to be enjoying the tutoring session might potentially impact the learning gains they will make, so I wanted to be sure that I recorded this data as another reference point in data collection.

Another form of data collection which aided me in determining which type of tutoring would be more effective in increasing reading comprehension was student journals. Following the completion of each tutoring session, students completed a journal entry in which they described something that they learned, how they learned
it, and what was still difficult for them (see Appendix C). This helped me to identify, in their own terms, what each student learned and allowed them to explain what worked best for them. Through triangulation of the three forms of data I collected, I determined whether peer tutoring or direct tutoring was more effective in increasing the reading comprehension achievement of my students.
Chapter 4

Results

Student achievement

The present research was designed to test whether direct tutoring or peer tutoring was more effective in increasing the reading comprehension achievement of sixth graders. Students in both experimental groups took pre and posttests which were designed to measure general reading comprehension achievement. The pretest was administered by the researcher prior to the intervention, and consisted of short reading passages coupled with multiple choice and open response questions which gauged a range of skills including main idea, recalling facts and details, and inferences. After the completion of the intervention, a posttest was given to all students with different passages and questions relating to the same skill areas. These data points were compared as a means of determining the respective impact of direct tutoring and peer tutoring on reading comprehension achievement. A second point of data was student journal responses, which were completed by participants following each of the eight tutoring sessions. A third data point was the teacher observation sheet, completed by the researcher, which provided qualitative observational data on the on-task behavior and participation of the subjects during tutoring sessions.

Table 1 illustrates pre and posttest data from both the direct tutoring and peer tutoring groups. The first column identifies which group each student was in. These students are listed by number in the second column. The third and fourth columns indicate each individual student’s percentage score on the pre and posttest.
assessments, respectively. Column five indicates the positive or negative change in student scores from the pretest to the posttest, and column six indicates the mean change for each experimental group.

Table 1

Comparison of the Pre and Posttest Scores for Direct Tutoring and Peer Tutoring Groups

<table>
<thead>
<tr>
<th>Student</th>
<th>Pretest score (%)</th>
<th>Posttest score (%)</th>
<th>Change (%)</th>
<th>Mean Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Tutoring</td>
<td>1</td>
<td>73</td>
<td>90</td>
<td>+17</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>80</td>
<td>81</td>
<td>+1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>87</td>
<td>81</td>
<td>-6</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>100</td>
<td>90</td>
<td>-10</td>
</tr>
<tr>
<td>Peer Tutoring</td>
<td>5</td>
<td>80</td>
<td>86</td>
<td>+6</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>60</td>
<td>81</td>
<td>+21</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>73</td>
<td>76</td>
<td>+3</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>93</td>
<td>81</td>
<td>-12</td>
</tr>
</tbody>
</table>

The data indicates that two of the four students in the direct tutoring group had an increase in test scores while the other two demonstrated a decrease. In other words, 50% of the students in this group exhibited positive gains in their test scores. The mean change of +0.5, however, shows that the direct tutoring group participants did increase their scores overall. In the peer tutoring group, three of the four, or 75% of the participants demonstrated a positive change in test scores. The mean change from
pretest to posttest for this group was +4.5. Through this comparison, the data shows that students in the peer tutoring group had greater positive change in test scores than those in the direct tutoring group.

*Student self-reported learning and perception*

For each of the eight tutoring sessions, students in both groups completed a journal in which they indicated what they learned, what helped them to learn, and what they still found to be difficult. The point of focus on this journal as related to the present research was the second question on the journal sheet, in which students indicated what helped them learn.

Students in the direct tutoring group provided generally uniform responses. In all but one case, students indicated that they learned from their classroom teacher because he was the one who was teaching them about the skills and how to answer and consider the questions they discussed. One student noted, "I did what you told me to do, and so it became a lot easier with some more practice. I think I get it now!" The one student whose response varied from that of the others indicated that she had not learned anything during that particular session. The rest of the sessions for this particular student, however, did help her to learn. She stated, "I really didn’t learn anything today. I still have a hard time finding character traits because you can’t just look back in the text and find the answer. Can you help me some more?" This impacted the same student’s response to the question about what was still hard for her. She indicated that finding character traits was still difficult. As stated, however,
most students claimed to have learned based on what their teacher taught them directly, which aligns with the format of instruction.

The journals of students in the peer tutoring group offered more variance. In most cases, students indicated that they had learned from their peer tutors. One student stated that she had learned from her peer tutor, and added, “She was able to explain it to me in a way that worked that we didn’t really talk about in class (no offense). I tried a couple questions that way and it worked.” This representative response indicated that the peer tutors were able to speak to the students they tutored in a manner which was not possible outside supplemental instruction.

One student in particular, however, did not claim to learn from his tutor and was clear in his explanation and preference against peer tutoring. In the final journal entry, he wrote, “I didn’t really learn anything from [my tutor]. Inferencing makes more sense when you teach me about it 1 on 1. I kinda felt stupid since one of my classmates had to teach me. It made me feel like they were better than me.” This unprompted commentary illustrated one of the potential dangers of peer tutoring. Students uncomfortable with their tutors and the situation may not learn as well as they might otherwise, which could hinder progress.

The final question on the journal asked students to describe what they still found to be difficult. Student integrity might have to be considered when reading their self-reported responses, but in every journal except the aforementioned two, they indicated that they had learned whatever skill they were working on at the time, whether it was main idea, inferencing, or character study.
Overall, the general tendency of all students was to explain that they learned from the classroom teacher or their peer tutor, respectively, depending on their assignment to a group. Their responses did, however, provide more specific data as to why they learned and what they still found to be confusing.

*Observed student on-task behavior*

The third formal assessment measure in this research was a qualitative measure completed during each tutoring session by the researcher. A data collection sheet was completed by the classroom teacher during each tutoring session as a means of identifying and describing student engagement, on-task behavior, and active involvement. Table 2 illustrates changes in these three areas when compared with baseline data gathered within classes before the intervention. A “+” indicates an observable increase in target behaviors, a “-” indicates an observable decrease in target behaviors, and an “=” indicates that there appeared to be no change at all.
Table 2

General Behavioral Observations of Direct Tutoring and Peer Tutoring Groups

<table>
<thead>
<tr>
<th></th>
<th>Student</th>
<th>Engagement</th>
<th>On-task Behavior</th>
<th>Active Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Tutoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>=</td>
<td>+</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>+</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>Peer Tutoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>=</td>
<td>-</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

According to Table 2, the first area of observation was student engagement, or the degree to which students appeared to be interested in what was occurring during the tutoring sessions. There was a slight difference between the groups in student engagement. Peer tutored students were observed as being more engaged in 50% of the cases, while only 25% of those in the direct tutoring group appeared to be actively engaged.

On-task behavior was the second area of observation. This indicates the degree to which students remain focused on and pay attention to the tasks at hand during the tutoring sessions. On-task behavior was observed to be equal between the
two experimental groups, with 25% of the students appearing to be less on-task and 75% of the students being more on-task.

The largest statistical change as a result of this intervention was in student active involvement, or the extent to which students raised their hands, talked, and participated in the tutoring sessions. In the direct tutoring intervention, one student (25% of the subjects) was more actively involved, while there appeared to be no change at all for the others with previous tutoring sessions. In the peer tutoring group, however, 75% of the students (three in all) were visibly more actively involved than in previous tutoring sessions, while one student (25%) appeared to be less so. The teacher indicated on the data sheet, however, that the student who was less actively involved tended to struggle with social relationships in school.
Chapter 5

Conclusions and Recommendations

The purpose of my research was to determine the relative impact of peer tutoring and direct tutoring on reading comprehension achievement in an urban middle school setting. I wanted to determine which method was most effective in increasing the achievement scores of the students involved in the study. I also wanted to observe any changes I noted in their on-task behavior, engagement, and participation over the course of the intervention. I implemented my study over the course of eight one-hour tutoring sessions, then analyzed the data I had collected therein. This data included pre and posttest assessments, student journals, and observational data as recorded by myself. Based on the triangulation of this data, I have been able to draw conclusions about the relative effectiveness of direct tutoring and peer tutoring on reading comprehension achievement with my urban middle school students.

Through analysis of the pre and posttest data, it became evident that, on average, peer tutoring was far more effective in increasing the reading comprehension achievement of my students. While both groups made positive gains, those in the peer tutoring group had a mean change of +4.5 percent from pretest to posttest as opposed to +0.5 for those in the direct tutoring group. Individual changes varied from student to student, as some in each group actually made decreases in achievement from the pretest to the posttest. This may have happened for a variety of reasons.
Some of the variance in the pre and posttest scores may relate to social roles within the classroom, which may have a potentially major impact on the study. This possible construct, however, might be difficult to control when working with students from within the same population. For example, I noted that one student in particular was not very outgoing and was very soft-spoken when compared with her peers. She was assigned to the peer tutoring group, and her scores actually decreased between the pre and posttests. This student also indicated in her journal that she felt like her peer tutors were "better than [her]" due to the fact that she was being taught by a peer and not a teacher. In a far more socially-oriented style of tutoring, this student appears to have struggled. Therefore, social roles and student personalities may need to be taken into consideration when planning peer tutoring groups in order to maximize the effectiveness of supplemental instruction. I believe that this student would have demonstrated an increase in achievement had she been assigned to the direct tutoring group. Such direct tutoring groups far better represent the traditional instruction at the school in which I teach, which may have increased her comfort level. The synthesizing of the data from this student indicates that when social interaction is involved in learning, students who are not as socially apt may have more difficulty learning appropriately in peer-based groups as opposed to teacher-led groups.

The instruction at the school in which this intervention took place is worth noting as a result of the school leader’s uniquely mandated approach to lesson delivery. All instruction occurs in a whole group setting, and is direct. In other words, students do not engage with one another throughout the school day in small group
settings and are instead taught skills and strategies directly by the teacher. I believe that this may have impacted my research in one of two ways. I felt it was possible that students would feel uncomfortable being tutored in a peer tutoring group due to the fact that this would be an unfamiliar way for them to learn. Conversely, since students are not given much opportunity to interact socially, I thought it was also possible that students might take advantage of the opportunity to communicate socially and learn more effectively. What I found was that, on average, students did appear to learn more effectively when learning in peer tutoring groups.

Even though the data regarding general gains appeared to be rather conclusive, I also noted that this varied on an individual basis from student to student. One student, for example, made a significant gain of 17 percentage points between the pre and posttests in the direct tutoring condition. This same student demonstrated observational increases in engagement, on-task behavior, and active involvement. I believe this child would likely not have made the same gains in a peer tutoring group, based on what I already know about his typical social relationships within the classroom. This suggests that, for some students, peer tutoring may not always be the most effective approach. It would be worthwhile for a teacher to consider student social ability when planning supplemental tutoring of any kind, and choose the method based on these student preferences. Even if peer tutoring is favored by a particular teacher or school district, one must consider that if the ultimate goal of supplemental tutoring is simply to increase student achievement, then whatever is most effective for that individual child is what should be put into practice.
Student journals were also completed after each of the eight tutoring sessions. Student responses were read and categorized as a means of determining what they believed they had learned and what, in their own words, had helped them to learn. Students in the peer tutoring condition overwhelmingly noted that they were learning from their peers and having fun doing so. Their enthusiasm appears to have helped them to participate in tutoring more effectively, as these same students posted the greatest gains on their assessments. The one student who posted a decrease in posttest scores in this group indicated, as discussed previously, that she did not have an enjoyable tutoring experience.

Though students in the peer tutored groups actually made the largest gains in achievement, journal responses from students in the direct tutoring group were equally positive. Most noted that they learned from me because I taught them a direct strategy. One student, for example said, “I think I get it now!” after noting that he had simply followed the steps I had outlined. This suggests that student motivation and self-reported learning does not always correlate exactly with assessment results. Students may also have been aware that I was reading their responses, and since I am both the researcher and also their teacher, they may have held back full disclosure in their journals. This is speculative, however, and there is no specific data to suggest that this occurred.

The observational data I collected throughout the duration of the study on on-task behavior, engagement, and active involvement were also telling regarding the effectiveness of the intervention. In the direct tutoring group, most of the students
involved exhibited either a decrease in engagement or no change at all. These students also made fewer gains on the posttest assessment when compared with their initial scores. This suggests that the lack of increased engagement directly impacted their assessment scores; however, it remains unclear whether this relationship is causal.

The data resulting from my research indicates that students working in peer tutoring groups made greater gains in reading comprehension achievement than students in direct tutoring groups. There is, however, a great deal of further study which could be completed to add to the body of research in this area. This research was conducted in a highly specialized school, where cooperative groups are disallowed and students do not have the opportunity to socially interact within the context of learning. This school is also a charter school in an urban area. There is the potential for variance if this study were conducted in a school which regularly includes cooperative group work as part of the curriculum. Perhaps in these instances, students would be more familiar with the procedures, which could impact the resulting changes in achievement. Furthermore, little research on tutoring has been conducted in a charter school setting. Due to the inherent flexibility of curriculum and differences between these schools and district schools, there may be an impact on the data.

Further research may also explore the comparison of peer tutoring and direct tutoring with a larger number of participants over a longer intervention period. Limitations in the school calendar and schedule limited the time within which I could
pull the same students for tutoring. If students could demonstrate sizable changes after only eight tutoring sessions, the possibility for growth in a longer study increases exponentially.

Another area which could be improved upon in future research is the inclusion of more quantitative data and the opportunity for more specific and reliable qualitative data. In my research, the data was observational and at times note-based, which limited the amount of categorization possible. There was also no opportunity for multiple observers who could compare data for more reliable information. With respect to the qualitative data, there were only two major data points in my research, the pretest and the posttest. If assessments were given more frequently, researchers could better track the progress of student achievement over the duration of the intervention.

Ultimately, I conducted research which was designed to compare the respective effects of peer tutoring and direct tutoring on reading comprehension achievement. Through an intervention and the triangulation of multiple data points, I found that while students in both groups made gains in reading comprehension achievement, students in the peer tutoring group had a greater mean change overall. This suggests that peer tutoring may be more effective in increasing the reading comprehension achievement of middle school students in urban populations. As a result of my findings, I plan to discuss the possibility of integrating peer tutoring into more of my tutoring sessions over the course of the school year. These practices
would otherwise be disallowed. My findings support the notion that peer tutoring can be effective, and therefore I hope to include such practices in my instruction.
References


A Sour Taste in Your Mouth
by E. Sohn
Aug. 30, 2006

Think of all the amazing things that your tongue does for you. Specialized cells on your tongue, for example, give you the power to enjoy (and gag at) the spices and other flavors of the world’s cuisines.

For years, scientists have been investigating the cells that allow us to detect five distinct tastes: salty, sweet, bitter, sour, and umami. Umami describes the taste of a substance called monosodium glutamate (MSG). So far, sweet, bitter, and umami are pretty well understood. The other two have remained mysterious.

Now, at long last, researchers may have discovered the secret behind the puckering flavor of lemons, vinegar, and sour gummy candy. One protein, called PKD2L1, might do the trick.

To make sense of the sour system, the scientists started by assuming that sour-sensing proteins would share basic traits with proteins that allow us to sense other tastes. In general, these molecules, called receptors, are embedded inside certain tongue cells.

Also, each tongue cell contains a receptor that senses just one type of flavor. One cell might have a sweet receptor, for instance, while another cell responds only to bitter flavors.

The scientists zeroed in on PKD2L1. This protein caught their eye because it appeared to be a specific protein in taste bud cells. At the same time, it did not show up in cells that sensed sweet, bitter, or umami flavors.

The researchers then created a strain of mice that did not make the PKD2L1 protein. Tests of the animals’ nerves showed that the mice continued to respond to all flavors except sour ones. When the scientists gave them sour chemicals, such as citric acid or vinegar, nothing happened.

The mice “were completely unfeeling, just like we were dabbing their tongues with water,” says research-team leader Charles S. Zuker of the University of California, San Diego.
The discovery may eventually help chemists make foods more or less sour, from the inside out.

Here's what I'd like to know next: Why do some people like to eat sour candy? I'm not a fan, and I never will be, but I know people who love it. The mysteries of science never cease to amaze me!

Source: http://www.timeforkids.com

What is this article mainly about?

A. Mice without PKD2L1 proteins could not taste sour.
B. Scientists think the taste of sour is the result of the PKD2L1 protein.
C. Two of the tastes that humans can experience are mysterious.
D. Tongues can experience five different tastes.

1. All of the following are tastes that are pretty well understood by scientists EXCEPT
   A. Salty
   B. Umami
   C. Sweet
   D. Bitter

2. What happened to mice that didn’t have the PKD2L1 protein when they had citric acid or vinegar put on their tongues?
   A. They didn’t react at all to the difference.
   B. They seemed to enjoy the taste.
   C. When they tasted the PKD2L1 protein, they tasted sour.
   D. Their tongues twitched in response.

3. How might this discovery help chemists?
   A. They might be able to find out why some candy is sour and why others are not.
   B. They might be able to determine why some people like sour foods and why some do not.
   C. They might be able to enjoy the taste of sour foods more.
   D. They might be able to create foods that are more or less sour.

4. What is umami?
   A. Sour taste
   B. Sweet taste
   C. MSG taste
   D. Salty taste
5. What type of story is this text most like?
   A. A myth
   B. A fantasy
   C. A textbook article
   D. Realistic fiction

6. All of the following are examples of foods that can be sour EXCEPT
   A. Lemons
   B. Sour gummy candy
   C. Apple cider
   D. Vinegar

7. How do humans taste?
   A. There are receptors on the tongue.
   B. Different foods go into different parts of the mouth.
   C. Different foods taste differently.
   D. Their teeth have small receptors behind them.

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**Are ’Wii’ Ready?**

In May 2006, at the Electronic Entertainment Expo (E3), Nintendo shared the secret it had been keeping for years with the world. They showed off their upcoming system, Wii (pronounced “we”). This system had been code named Revolution until its official name was revealed at E3.

The Wii marks a new age in console gaming. Rather than choosing to use a traditional controller with a directional pad and buttons for character movement, Nintendo modeled the Wii controller after another household item that just about everybody knows how to use. The Wii’s controller looks like a television remote, designed to be held by only one hand. It also has special sensors built in it to track the way the controller is moved.

What does this mean for Wii gamers? In a planned tennis game, players must grip the controller like a tennis racket and swing it as if they were really playing the game. To fish, they might have to jerk their controller as if they were casting a pole. These features may cause a new wave in videogaming. Nintendo gamers should be prepared for more interaction and bigger changes in the way they think of games.

1. The Wii’s remote is designed after...
   A. A boomerang
   B. An Xbox controller
   C. The original NES controller
   D. A TV remote
2. The code name of the Wii was...
   A. Nintendo 64
   B. NeoNintendo
   C. Revolution
   D. Wii

3. Based on the motion sensors in the controller, someone playing a golf game on the Wii might have to...
   A. Hit certain buttons in order
   B. Swing the controller like a golf club
   C. Use infrared to guide character movement
   D. Touch the television to putt a golf ball

Potatoes: An American Favorite

Of the many kinds of vegetables grown all over the world, which remains the favorite of young and old alike? Why, the potato, of course. Perhaps you know them as “taters,” “spuds,” or “Kennebees,” or as “chips,” “Idahoes,” or even “shoestrings.” No matter, a potato by any other name is still a potato— the world’s most widely grown vegetable. As a matter of fact, if you are an average potato eater, you will put away at least a hundred pounds of them each year.

That’s only a tiny portion of the amount grown every year, however. Worldwide, the annual potato harvest is over six billion bags—each bag containing a hundred pounds of spuds, some of them as large as four pounds each. Here in the United States, farmers fill about four hundred million bags a year. That may seem like a lot of “taters,” but it leaves us a distant third among world potato growers. Polish farmers dig up just over 800 million bags a year, while the Russians lead the world with nearly 1.5 billion bags.

The first potatoes were grown by the Incas of South America, more than four hundred years ago. Their descendants in Ecuador and Chile continue to grow the vegetable as high as fourteen thousand feet up in the Andes Mountains. (That’s higher than any other food will grow.) Early Spanish and English explorers shipped potatoes to Europe, and they found their way to North America in the early 1600s.

People eat potatoes in many ways—baked, mashed, and roasted, to name just three. However, in the United States most potatoes are devoured in the form of French fries. One fast-food chain alone sells more than $1 billion worth of fries each year. No wonder, then, that the company pays particular attention to the way its fries are prepared.

Before any fry makes it to the people who eat at these popular restaurants, it must pass many separate tests. Fail any one and the spud is
rejected. To start with, only russet Burbank potatoes are used. These Idaho potatoes have less water content than other kinds, which can have as much as eighty percent water. Once cut into “shoestrings” shapes, the potatoes are partly fried in a secret blend of oils, sprayed with liquid sugar to brown them, steam dried at high heat, then flash frozen for shipment to individual restaurants.

Before shipping, though, every shoestring is measured. Forty percent of a batch must be between two and three inches long. Another forty percent has to be over three inches. What about the twenty percent that are left in the batch? Well, a few short fries in a bag are okay, it seems.

So, now that you realize the enormous size and value of the potato crop, you can understand why most people agree that this part of the food industry is no “small potatoes.”

1. How many pounds of potatoes does an average American eat each year?
   A. 500
   B. 20
   C. 100
   D. 150

2. How much of a bag of french fries can be short shoestrings?
   A. 40%
   B. 20%
   C. 10%
   D. 60%

3. Which country produces the third largest amount of potatoes in the world?
   A. Russia
   B. United States of America
   C. Ecuador
   D. Spain

4. What is the main idea of this passage?
   A. French fries were invented by the Incas.
   B. Idaho potatoes are the most eaten vegetable in the world.
   C. Six billion bags of french fries are eaten each year.
   D. Potatoes are a key vegetable in America.
The Shipwrecked Impostor

The shipwrecked Chimpanzee had been clinging for a long time to a small piece of wood, when a Dolphin came up and offered to carry him ashore. This kind proposition was immediately accepted, and, as they moved along, the Chimp commenced to tell the Dolphin many marvelous tales, every one of them a bundle of falsehoods. "Well, well, you are indeed an educated chap," said the Dolphin in admiration. "My schooling has been sadly neglected, as I went to sea when but a week old." Just then they entered a large bay, and the Dolphin, referring to it, said, "I suppose you know Herring Roads?" The chimp, taking this for the name of a fellow, and not wishing to appear ignorant, replied: "Do I know Rhodes? Well, I should almost think so! He's an old college chum of mine, and related to our family by-" This was too much for the Dolphin, who immediately made a great leap, and then diving quickly, left the impostor in the air for an instant before he splashed back and disappeared.

"A liar deceives no one but himself."

Source: http://www.aesopfables.com/cgi/aesop1.cgi?4&TheShipwreckedImpostor; adapted by Patrick Pastore

1. What is the moral of this story? How do you know?
2. Identify the SCP of this story. (Don’t worry about the “R”!)
   S: ____________________________________________
   C: ____________________________________________
   P: ____________________________________________

3. Why did the Dolphin toss the Chimp into the water?
   ____________________________________________
   ____________________________________________
   ____________________________________________

4. Who or what is Herring Roads?
   A. An old friend of the Chimp’s.
   B. The ocean the Chimp and Dolphin were swimming into.
   C. The bay the Chimp and Dolphin were swimming into.
   D. The name of the ship the Chimp fell off.

5. What is this story mostly about?
   A. A Dolphin becoming friends with a Chimp.
   B. A Dolphin lying about where he came from.
   C. A Chimp lying about knowing someone who wasn’t a person at all.

6. What is another way to ask question #5?
   ____________________________________________
   ____________________________________________
   ____________________________________________
On a hot, clear day, an umbrella can provide cooling relief from the sun's scorching rays. The same concept might one day help protect Earth from the accumulating, or increasing, heat of global warming.

Building a single umbrella big enough to shade the entire planet will never be possible. Instead, astronomer Roger Angel of the University of Arizona wants to launch a trillion tiny sunshields into outer space.

Each mini-umbrella would be a small, light spacecraft, weighing about a gram (0.04 ounces) and carrying a sunshade measuring half a meter (1.6 feet) across. Working together, hordes of the devices could act as a sunscreen for the globe.

Such a sunscreen would stretch across about 100,000 kilometers (62,000 miles) of space. And the pressure of sunlight on attached solar reflectors would keep the little flyers in orbit around Earth at a distance of about 1.5 million kilometers (932,000 miles).

The sunshade would be mostly transparent, or see-through, but it would cut the amount of sunlight reaching Earth by 1.8 percent. This would be enough to reduce the impact of global warming, Angel says.

In Angel's scheme, people on Earth could make the lightweight sunscreens out of transparent film. Each shade would be full of holes like Swiss cheese.

Angel says his plan is a big improvement over previous ideas for shading Earth from the sun. Those scenarios have typically involved large, heavy spacecraft that would need to be built in outer space out of pieces of asteroids or other space rocks.

To reduce the environmental impact of launch, Angel says, astronomers could use magnetic fields instead of rocket fuel for acceleration. He envisions launching 800,000 flyers at a time for a total of 20 million launches over a decade.

Angel thinks that the first launch could happen in just 25 years. And, once the flyers are up there, he says, they would shade the planet for 50 years.
The idea is certainly creative, but critics say there are easier and much cheaper ways to tackle global warming. Covering large areas of ground with white paint, for example, could reflect light back into space and reduce heating. Better yet, by reducing the pollution we create, we can all help keep the planet from heating up.

Source: http://www.timeforkids.com

1. What is the main idea of this article?

2. What are the “mini-umbrellas?”

3. What are the “mini-umbrellas” made out of?
   A. plastic
   B. rock
   C. metal
   D. magnets

4. What are two easy and inexpensive ways that scientists suggest how people can fight global warming?
   1. 
   2. 
5. What directs the small “spacecrafts?”
   A. a person steering inside the craft
   B. solar reflecting tabs
   C. magnetic fields
   D. gas propellers

6. What do scientists think can be used to accelerate the “mini-umbrellas?”
   A. rocket fuel
   B. gasoline
   C. magnetic fields
   D. solar power

7. What effect might the mini-umbrellas have on global warming?
   A. It will increase global warming
   B. It will reduce global warming
   C. It will not affect global warming
   D. Global warming will stop completely

A Fence for the Border

President George W. Bush signed a bill authorizing construction of a 700-mile fence along the border between Mexico and southwestern United States. The new law, signed November 4, 2006, aims to stop people in Mexico from illegally entering the U.S. "The United States has not been in complete control of its borders for decades, and therefore, illegal immigration has been or the rise," Bush said. "We have a responsibility to secure our borders."

Mexico’s president, Vicente Fox, called the fence “shameful.” Critics argue that fence will not be effective way to stop illegal immigration. They also worry about paying for the fence.

Bush praised the new fence as "an important step in our nation’s efforts to secure our borders."

Source: http://www.timeforkids.com

1. Across what border of the US will this fence be built?
   A. North
   B. South
   C. East
   D. West
2. What is the purpose of the fence at the Mexican border?
   A. Increasing the rate of illegal immigration.
   B. Keeping illegal immigrants out of the United States.
   C. Helping people to pass through the border legally.
   D. Signing a bill last Thursday.

3. Who is the current Mexican President?

4. What is this text mainly about?
   A. George W. Bush passed a law November 4, 2006.
   B. A 700 mile fence is going to be built.
   C. A fence is being put up along Mexico-United States borders to keep illegal immigrants out.
   D. A fence will help secure United States borders near Mexico.
Appendix C: Data Observation Sheet

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<th>Engagement</th>
<th>On-task Behavior</th>
<th>Active Involvement</th>
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Appendix D: Student Reading Journal

___'s Reading Journal

What I learned today!

What helped me learn?

What is still hard for me?