

Cooperative Learning and Its Effects on Short Answer Responses

A Special Project

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FACULTY APPROVAL

Cooperative Learning and Its Effects on Short Answer Responses

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ABSTRACT

The Special Project focused on the effects of cooperative learning on student written responses to short answer comprehension questions. The researcher chose a convenience sample and conducted an experimental research design. The students who participated in the study were fourth grade students who went to Gilbert Elementary in Yakima School District during the 2009-2010 school year. The control group received no specific instruction on short answer responses to comprehension questions. The treatment group was taught to use cooperative learning when answering short answer responses to comprehension questions. After analyzing the data the researcher found significance in the relationship between the treatment given and student achievement. This was determined for $p \geq .05$, $.01$, and $.001$.

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CHAPTER 1

Introduction

Background for the Project

In education there have been strategies that became popular and promoted as ways to close achievement gaps and increase student learning. Unfortunately educators have replaced or stopped using strategies that have worked in order to use the newest ideas in classroom instruction. The researcher wanted to use the best practices to support reading and to help the students increase their comprehension. The experts said that if students had the opportunity to talk about their ideas and formulate answers together as a group, that it would help other students gain a deeper understanding of the information and develop better responses. The researcher used this strategy but wanted to determine its value.

Statement of the Problem

Every student learned differently. They also began with different levels of understanding. The job of the researcher was to insure that every student grew academically. Educators also had to ensure that all of the required material was covered and that no students were left behind. Because of this, teachers constantly looked for effective strategies that would help to increase student achievement, as well as student

involvement. In education, teachers have often been told what the current best practices were. They often were not given any further explanation other than it was researched based. The researcher wanted to find a way to increase student responses on comprehension questions. The struggles shown were often shared among most of the students. Students' answers were incomplete, had no details from the text, and were grammatically incorrect. The researcher decided to try cooperative grouping.

Purpose of the Project

The researcher wanted to find out if cooperative grouping would be beneficial in increasing the reading students' short answer responses to comprehension questions. The researcher noted that students needed the opportunity to communicate their ideas. Each student had their own set of background knowledge. The researcher thought that if the students were given the opportunity to process their own knowledge verbally, and at the same time could hear others do the same, they would be able to improve their written responses to comprehension questions; thus the researcher decided to use cooperative grouping to see the benefits first hand.

Delimitations

This study took place at Gilbert Elementary in the Yakima School District during the 2009-2010 school year. The reading class that the

researcher used consisted of 20 students. Of the 20 students 12 of the students were girls and eight of them were boys. In addition, six of them were English Language Learners (ELL). The curriculum that was used for this project was the Houghton Mifflin reading series. It was adopted by the Yakima School District eight years ago at the start of the 2002-2003 school year. This curriculum had six themes with three to four stories in each theme. Following each story were six comprehension questions titled Thinking About the Selection (TATS). These were used to test the students' ability to work both independently and in groups. This process took seven weeks total.

Assumptions

The researcher made several assumptions in conducting this study. One assumption was that the students in the group were reading at a fourth grade level or higher. Another was that the students did not have any prior experience working in cooperative groups. The researcher was also aware that since the same group was used for both the control and treatment groups, that there would be some natural growth because of time and maturation.

Hypothesis

One tool used to check for understanding in education has been handwritten answers to comprehension questions relating to a story. If

fourth grade students were to work in cooperative groups to answer short response comprehension questions, their scores would be significantly higher than scores from independent work on short response comprehension questions.

Null Hypothesis

There was no significant difference in scores between fourth grade short response comprehension questions done independently and those done with cooperative groups. Significance was determined for $p \geq .05$, $.01$, and $.001$.

Significance of the Project

In order to provide the best instruction possible to the students in the reading class, the researcher noted that it was important to test how effective cooperative grouping was, to discover if it had a significant impact on the students in the reading group.

Procedure

Theme three in the Houghton Mifflin (HM) reading curriculum consisted of three selections. On the Wednesday of each selection the researcher had the class work independently on six comprehension questions called Thinking About the Selection (TATS) that were related to the current story being read. The questions were read as a group, so that the researcher could answer any questions that the students had about the

comprehension questions before they began. The students began working independently on the TATS using four key points to drive their answers.

The first point was that they needed to write part of the question in the answer. The next was that the students needed to write their answers in complete sentences. They were also required to use details from the text somewhere in their answer. Finally, they needed to correctly answer the question in a clear and concise way. Prior to this theme the researcher spent the first theme answering the TATS questions with the students to show them what the expectations were. The researcher also asked verbal comprehension questions as the story was read each week together as a class. Based on test scores and oral responses the students demonstrated the ability to cognitively understand and comprehend the material presented in the HM reading series. Each week the researcher collected the students' answers to the TATS and graded them. A percentage was calculated based on how many points out of 24 they received. After three weeks the students' individual mean score was calculated. This process took place from October 5th through October 23rd.

For the next theme, which lasted from November 2nd to November 20th, the students were split into cooperative groups. There were four students in each group. The researcher informed the students of the expectations of cooperative grouping. The groups had to make a decision

on who would perform different jobs each week. The jobs were facilitator, recorder, timekeeper, and materials manager/reporter. The researcher was very clear in expressing that the final paper that was turned in represented everyone in the group and that they needed to know what was on it and agree with it. Each student had the opportunity over the three week period in November to do a different job. Again, after three stories the students' individual mean was figured. A *t*-test was then used to determine if the growth made was significant enough to show a positive impact from the cooperative grouping.

Definition of Terms

efficacy.The belief that a learner was capable of performing in a certain manner to obtain certain goals.

interdependence.The act or condition of depending each upon the other; mutual dependence.

intersubjectivity.A shared understanding among group members of the work to be accomplished.

Acronyms

ELL.English Language Learners

HM.Houghton Mifflin Reading Curriculum

TATS.Thinking About the Selection

CHAPTER 2

Review of Selected Literature

Introduction

The researcher used cooperative learning during instruction for the past several years. With new strategies being introduced every year, the researcher wanted to ensure that the strategies being used were the most effective and beneficial. To gain a deeper understanding, the researcher reviewed articles on a variety of topics related to cooperative learning. The researcher read articles that ranged from the history of shared learning to how students benefited from cooperative grouping in the past.

The History of Cooperative Learning

Colonel Francis Parker was an advocate of cooperative learning in the late 1800s (Smith, Sheppard, Johnson, and Johnson, 2005). Francis Parker was a Colonel in the Union Army before he became a schoolmaster in New England. After studying many educational philosophies in Europe Colonel Parker returned to the United States where he started schools in major cities including Chicago, Illinois and Quincy, Massachusetts. However, the concept that he was credited was the idea of putting the child at the center of the learning process. This meant adjusting the curriculum to accommodate the learner (Rowland, 2010). Colonel Parker brought the ideas of democracy, individuality, and a devotion to freedom into the

public schools (Smith et al., 2005). Cooperative learning was used to promote positive interdependence in education which encouraged students to support each other's efforts to learning (Smith et al., 2005).

In the late 1930s the idea of positive interdependence, or group based education, was challenged by the use of competition as a motivator in education. It became common for schools and educators to encourage competition among students. This concept was known as negative interdependence. The results of this were that students typically discouraged each other's efforts to achieve (Smith et al., 2005). Over time shared learning has been extensively researched. From 1897 to 1989 more than 700 studies were conducted "comparing the effectiveness of cooperative, competitive, and individualistic efforts in promoting learning" (Smith et al., 2005).

Over 40 years ago, the University of Minnesota began training educators on how to use cooperative learning within classrooms' instruction. Today cooperative grouping has become an accepted instructional tool in every subject and at every grade level from preschool to graduate school, throughout the world (Smith et al., 2005). From 1970 to 1990, the studies done on community instruction were at the K-12 level. However, in the 1990s interest increased in looking at the effectiveness of cooperative learning at the collegiate level. During this time, there were

305 studies “showing significant advantages for cooperative learning in promoting meta-cognitive thought, willingness to take on difficult tasks...intrinsic motivation, transfer of learning from one situation to another, and greater time spent on task” (Smith et al., 2005).

The Setup of Cooperative Learning

Cooperative learning was deliberately designed to be basic and simple (Haenen, Tuithof, 2008). The purpose of this was to make this model something that teachers would want to use, and not be scared away because of its complexity. In order to succeed in implementing shared learning several elements had to be present. The most important element has always been the instructor. It was the instructor that introduced the lesson and assigned the students into groups of two to five members. The instructor taught the skills needed to complete the task. The instructor also provided the students with the materials needed to perform the task.

What made cooperative learning unique were the roles that the instructor gave each member. There was a facilitator, note taker, recorder, and reporter. At the beginning of the process the instructor had to teach what each role was and what the responsibilities were. During the assignment, the instructor would intervene when students did not understand the academic task or when there were problems among group

members working together (Summers, Berctvas, Svinich, and Gorin, 2005).

Before the students could even begin working on their task, the instructor had to insure that intersubjectivity could be reached (Summers et al., 2005). This, along with positive interdependence, made cooperative learning as effective as it was. The concept of positive interdependence included the need for group members to, agree on an answer, that they made sure that each member could explain the group's answer, and that each member fulfilled their assigned role (Smith et al., 2005). This idea was similar to what Haenen and Tuithof stated about cooperative learning. "The ideas of pupils working together to accomplish shared learning goals [was] central to the concept of cooperative learning. This means that each pupil can only achieve a learning goal if other pupils achieve theirs" (Haenen, Tuithof, 2008). Summers stated that in order for the group to succeed, all members of the group must "attribute his or her successes to the success of the group to maximize the learning potential of the whole group" (Summers et al., 2005).

Finally, Smith (2005) stated that the last two elements that needed to be present to insure that community instruction was successful were face to face promotive interaction and individual accountability. Smith (2005) stated that face to face promotive interaction was when the

students were expected to orally explain to each other how to solve problems. Also, it included that the students discussed with each other the nature of the concepts and strategies being taught. Another key element of face to face promotive interaction between students was their ability to communicate past knowledge to classmates as well as giving each group member support, to encourage everyone's learning (Smith et al., 2005). Even though shared learning was designed to be a group centered activity, it also outlined the importance of individual accountability. "Students learn together so they can subsequently perform better as individuals. To ensure that each member was strengthened, students [were] held individually accountable to do their share of the work" (Smith et al., 2005). The entire setup of cooperative learning was based on the teacher being able to create conditions within their classrooms that promote self-efficacy, promote interest in new reading, connect out-of-school with inside school literacy, make sure an abundance of interesting texts were available, and provide for choice and options (Wilson et al., 2010). In order for cooperative learning to have had a positive impact on student achievement, an educator would have had to make sure that all of the previous elements mentioned had to be in place.

The Need for Cooperative Learning

“Often, the materials of a school’s reading program became a defined curriculum. Strict adherence to the materials may have lead to a narrow program in which there was little adjustment for the specific students in the school” (Wilson, Buteau, Hass, Montgomery, and Romei, 2010). The researcher was told about the importance of teaching a reading curriculum with fidelity. This restricted the use of strategies that could be used because of time requirements. However, if teachers found that certain strategies were beneficial to their students, they should have found the time to implement these strategies. Richardson and Arker stated that, at times teachers need to adjust their teaching styles to meet their students’ learning needs (Richardson, Arker, 2010). It was also suggested that when students shared similar goals and methods that they were more engaged and satisfied with their interactions (Richardson, Arker, 2010).

Cooperative Learning has helped students build a stronger relationship with their teachers because it gave the students an element of control. Students were not only lectured at but given the opportunity to communicate their thoughts and develop their own ideas about the material being taught. It created trust not only between the students, but with the teacher as well. This was significant because a positive rapport

with teachers established a pattern of motivation for students in elementary school and will lead to improved behavior and academic performance (Richardson, Arker, 2010). These positive interactions with the teacher also lead to improved attitude, efficacy, interest, and participation among students (Richardson, Arker, 2010). A byproduct of shared learning was the improved social and teamwork skills that were learned through the process. When students worked in cooperative groups, their social skills increased more than when they worked independently or in a competitive setting (Prince, 2004). When students were contributing to the success of a cooperative group, it required the use of several teamwork skills including leadership, decision making, trust building, communication, and conflict management (Smith et al., 2005).

The Negatives of Cooperative Learning

Hsiung (2010) argued that if students were required to work in cooperative groups that one of the results was off task behavior with increased socializing. This led to dysfunctional cooperative learning teams (Hsiung, 2010). It has been speculated that “students within dysfunctional team [have] attained a lower level of academic achievement than those who studied alone (Hsiung, 2010). Teachers have been able to “perceive the existence” of a dysfunctional team by listening to casual comments made by one or more of the teams members (Hsiung, 2010). In

some cases, dysfunctional cooperative teams have gone unnoticed because generally students were reluctant to confront teammates with a complaint. Students were also reluctant to rate their participation and behavior, even when it was done confidentially (Hsiung, 2010). Any feedback given from such groups lost its reliability. Hsiung continued by stating that “sooner or later, most cooperative learning teams have to deal with one or more members whose actions disturb the team” (Hsiung, 2010). The two most common forms of behavioral problems included lack of involvement and taking charge. These problems were generally resolved if the instructors were able to identify these dysfunctional teams at an early stage (Hsiung, 2010).

Dysfunctional groups were not the only reason for a non-effective cooperative group. Teachers who did not spend the time needed to effectively set up cooperative groups saw problems quickly and abandoned the strategy. Another barrier was that although teachers were knowledgeable of the benefits of differentiating instruction, they were often reluctant to employ it (Hawkins, 2009). Hawkins (2009) also noted that few teachers instructed in ways that were culturally and racially sensitive (Hawkins, 2009). Hawkins (2009) observed that the development of cognitive growth required significant social interactions. However, social interactions did not necessarily produce cognitive growth

(Hawkins, 2009). Students did not naturally benefit from social learning. They needed a structured system to be taught and modeled to be effective. Finally, Hsiung stated that “arguably [the] research in this field [was] hampered by the lack of an agreed standard for recognizing dysfunctional teams” (Hsiung, 2010).

The Benefits of Cooperative Learning

According to Gosse, children learned better and became better learners when engaged in cooperative groups (Gosse, 2003). There were several different models of cooperative learning discussed, but all of them had certain characteristics. They included face to face interactions, positive interdependence between group members, and individual accountability for each member of the group (Gosse, 2003). Summers mentioned these same benefits in addition to cognitive and social development (Summers et al., 2005). Gosse also stated that the empowering of students in group work increased individual accountability and motivation (Gosse, 2003).

The use of collaborative activities in the classroom has shown many other benefits, including increased conceptual gains and enjoyment of the learning task (Summers et al. 2005). When students were given the opportunity to share ideas and work together, they acquired new strategies and knowledge, both about the subject and about thinking in general

(Summers et al., 2005). In a supported environment students who worked in cooperative groups were invested in the success of the group and were more likely to encourage success and motivation among other members of their group (Summers et al., 2005). The benefits of cooperative learning were not restricted to just K-12. Collaboration among college students was found to be related to positive student outcomes (Summers et al., 2005).

Hsiung (2010) also noted that “previous research had shown that cooperative attitudes were more likely to emerge when students felt supported by their peers, both personally and academically”. Students from a more traditional model, where competition was encouraged among students, was compared with students from an environment in which cooperative grouping was used during instruction; Hsiung (2010) and Gosse (2003) found that the cooperative group tended to exhibit higher levels of on-task behavior and less disruptive behavior in class. In addition, the cooperative groups also showed a higher level of academic achievement than those who studied alone (Hsiung, 2010). When a successful cooperative environment was established and effectively used in the classroom, team members shared their partial knowledge, combined it, corrected it, and improved it in such a way that their knowledge and understanding were enhanced. As a result, a cooperative team had a

higher mean test score than that of students who studied alone (Hsiung, 2010).

Wilson (2010) stated that in order for students to learn the skills needed to become a productive member of society and succeed in education; adolescents needed opportunities to participate in respectful environments characterized by high expectations, trust, and care. In addition they also needed the opportunity to participate in active learning environments that offered clear and facilitative literacy instruction (Wilson et al., 2010).

The social aspect of shared learning was a beneficial strategy for English Language Learners (ELL) because it involved the reading, talking, writing, and listening of academic materials among students (Wilson et al., 2010). Cooperative learning was beneficial for ELL because Hispanic bilingual children tended to be more cooperative than white, non-Hispanic children. White, non-Hispanic children tended to be more competitive and individualistic (Madrid, Canas, and Ortega-Medina, 2007). Madrid et al. provided evidence that cooperative instructional formats produced superior academic gains for Hispanic bilingual children, than those working in a competitive format (Madrid et al., 2007). Cooperative learning grouping among ELL students resulted in stronger academic gains.

There have been several hundred studies done to evaluate the effectiveness of cooperative learning over the last hundred years. The American educational system has historically been based on a competitive model. However, cooperation has been more effective than competition for promoting a range of positive learning outcomes. These results included enhanced academic achievement and a number of attitudinal outcomes (Prince, 2004). “At its core, cooperative learning [has been] based on the premise that cooperation [was] more effective than competition among students for producing positive learning outcomes” (Prince, 2004). The environment that community instruction has created in classrooms was one that has promoted effective teamwork and interpersonal skills. As Prince stated, “it [was] reasonable to assume that the opportunity to practice interpersonal skills coupled with explicit instructions in these skills [has been] more effective than traditional instruction that emphasized individual learning and generally has no explicit instruction in teamwork” (Prince, 2004). As stated before, cooperative learning was not just limited to young students. Studies of cooperative learning have shown that “positive peer relationships [were] essential to success in college” (Smith et al., 2005). Two major reasons for dropping out of college have been failure to establish a social network of friends and classmates, and failure to become academically involved in

classes (Smith et al., 2005). The main focus in all of the studies that have been done was to provide the best possible instruction for every student, no matter what their learning style. The positive interpersonal relationships promoted by cooperative learning have been crucial to learning communities for many years (Smith et al., 2005).

Summary

Cooperative learning has been a researched based instructional strategy for the last hundred years. Studies done have focused on the history of cooperative learning, benefits of shared learning, how to effectively set up a cooperative community in the classroom, the need of collaborative strategies, and the potential negatives to group work.

The history of cooperative learning goes back as far as the late 1800s. Colonel Francis Parker introduced the idea of students discussing their work rather than competing with their classmates (Smith, Sheppard, Johnson, and Johnson, 2005). The focus of the studies on cooperative learning has ranged from Kindergarten through Collegiate levels.

According to Haenen and Tuithof (2008) cooperative learning was designed to be basic and simple. The instructor's role was to introduce the lesson and provide the materials needed to complete the task. The students then were each responsible for a role within the group. As a team they completed the task and received a group evaluation.

Richardson and Arker (2010) noted that educators must, at times, adjust their strategies and teaching styles to meet the needs of their students. Cooperative learning also provided educators and students additional time to interact and build positive relationships. This increased student motivation at the elementary level (Richardson, Arker, 2010).

If a cooperative group became dysfunctional then student achievement in those groups dropped (Hsiung, 2010). It was hard to identify dysfunctional groups because students were uncomfortable and unwilling to confront teammates. Educators who did not take the time to set up cooperative groups and give the appropriate support also hindered the effectiveness of cooperative learning (Hawkins, 2009).

Both Summers (2005) and Gosse (2003) noted that students who participated in cooperative groups showed increases in peer interaction and social development. In addition, when students shared ideas and worked together they acquired new strategies and knowledge, both about the subject and about thinking in general (Summers et al., 2005). Cooperative learning was shown to be beneficial to all grade levels including college students (Summers et al., 2005).

CHAPTER 3

Methodology and Treatment of Data

Introduction

The following sections provide details on how the researcher conducted the study on cooperative learning. The researcher's goal was to provide evidence to support the idea that cooperative learning would increase student responses on short answer comprehension questions. A study lasting two months was done to test the effectiveness of this strategy.

Methodology

This project was an experimental study on cooperative grouping. The researcher used a posttest only model on 20 students.

Participants

The participants used for the study consisted of 20 fourth grade students that were performing at or above grade level. Of the 20 students, 12 of them were girls and eight of them were boys. They averaged 82% and 85% on the first two theme tests in the Houghton Mifflin (HM) reading series.

The researcher had five previous years of experience before the 2009-2010 school year. For the first three years the researcher taught in a school that was awarded a Comprehensive School Reform grant. One of the requirements of the grant was for the school to choose a school reform

model to follow for at least three years. The staff at Gilbert Elementary adopted the Professional Learning Communities (PLC) model. This model strongly encouraged the use of cooperation among both staff and students. To gain a deeper understanding of PLC the researcher went to a national conference during the summer of 2004. This conference featured workshops given by Richard and Rebecca Defour who were among the professionals that developed the PLC model. Since then, the researcher completed the required work to earn his professional teaching certificate through Central Washington University.

Instruments

To collect the data needed for the study the researcher used a series of six weekly questions that tested the students' comprehension on each story that they read in the HM reading series. The section was called Thinking About the Selection (TATS). The papers were graded on a four point system. The four points included:

1. Restate the question in the answer
2. Answer must be written with complete sentences
3. Details or examples from the story must be used
4. The question must correctly answer the question

After the papers were graded the percentage was put into an Excel sheet. The researcher kept track of the weekly mean of the class as well as the

overall mean of each student over the entire theme. This process took the entire month of October. The same data was collected and recorded for theme four where cooperative grouping was used. The mean of each student was then compared with the data collected from theme three to see if sufficient gains were made.

Design

The design used in this study was an experimental posttest-only design. A convenient sample was used consisting of 20 fourth grade students. In this study the control group was also used as the treatment group. Since the study lasted for two months and mortality was not a factor. The groups remained the same in size and ability. When the students finished the third theme, they did a posttest to measure their ability in short answer response comprehension questions. The same group then took a posttest after the treatment was given in theme four. Posttest scores were then compared to determine the effectiveness of the treatment. A posttest design was used because it had many benefits. Specifically it was chosen because “if the study is to be short, and if it can be assumed that neither group had any knowledge related to cooperative learning, then the posttest-only design may be the best choice” (Gay, Mills, Airasian, 2006). Benefits to using a posttest-only design included history, maturation, and testing.

The history of the study referred to any event that may have occurred during the study that was not part of the treatment but may have affected the dependent variable (Gay, Mills, & Airasian, 2006). If a study was to last a long time history may affect the outcome. Since this study only lasted two months history did not affect the outcome.

Maturation referred to any physical, intellectual, and emotion changes that occurred to the individuals participating in the study during its duration (Gay, Mills, & Airasian, 2006). If a study lasted for a long time the natural maturation of the participants could cause a change in scores that were not related to the treatment. Again, this study was short enough that maturation was not an issue. If a study was to last a long time history may affect the outcome. Since this study only lasted two months history did not affect the outcome.

Finally, a posttest-only design was used to ensure that testing would not be an issue. When studies use a pretest to evaluate were participants began there is a threat of improved performance on the posttest as a result of participants having taken the pretest (Gay, Mills, & Airasian, 2006).

The only potential negative to using a posttest-only design was the possibility of mortality. However, mortality was not an issue due to the short time period of the study. No students were dropped from the study in either group.

Procedure

Theme three in the Houghton Mifflin reading curriculum consisted of three stories. On the Wednesday of each story, the researcher had the class work independently on six comprehension questions that were related to the current story being read. The questions were read together so that the researcher could answer any questions that the students had about the comprehension questions before they began. The students began working independently on the six questions using four key points to drive their answers.

The first was that they needed to write part of the question in the answer. The next was that the students needed to write their answers in complete sentences. They were also required to use details from the text somewhere in their answer. Finally, they needed to have the correct answer to the question as given in the HM teacher guide. These requirements were chosen because they correlate with the Washington State Reading Standards at fourth grade. These standards were listed on the website for the Office of the Superintendent of Public Instruction for Washington State (OSPI, 2010). In addition, student samples were available to the researcher as a scoring tool. Prior to this theme the researcher spent the first theme answering the TATS questions with the students to show them what the expectations were. Each week the

researcher collected the students' answers and graded them based on the four points previously described. To ensure that the scores were consistent the researcher had two other colleagues help with the grading process. The papers were placed face down and chosen randomly by each educator for grading. A percentage was figured based on how many points out of 24 they received. After three weeks, the students' individual mean was calculated. This process took place from October 5th through October 23rd.

For the next theme, which lasted from November 2nd to November 20th, the students were split into cooperative groups. There were four students in each group. The researcher informed the students of the expectations of cooperative grouping. The groups had to make a decision on who would perform different jobs each week. The jobs were facilitator, recorder, timekeeper, and materials manager/reporter. The job of the facilitator was to keep the group focused on the task at hand. They were not the leader, but rather the guide. The timekeeper's job was to pay attention to the amount of time spent on each question. They had a time limit of 45 minutes to complete their task. The recorder wrote down the group's response and read it back to the group when they were done. The materials manager/reporter gathered anything that the group needed, and they were the students that would ask the researcher questions if needed,

and also reported their group's responses to the class. The researcher was very clear in expressing that the final paper that was turned in represented everyone in the group, and that they needed to know what was on it and agree with it. Each student had the opportunity over the three week period in November to do a different job. Again, after three stories the students' individual mean was figured. A *t*-test was then used to determine if the growth made was significant enough to show a positive impact from the cooperative grouping.

Treatment of Data

After all of the data was collected in November of 2009 the researcher used statistical software called Statpak (Gay, Mills, & Airsian, 2006) to analyze the data. The researcher calculated the mean score for both the control group and the treatment group. A *t*-test for independent samples was used to calculate *t*.

Summary

To determine the effects of cooperative learning on student short answer responses to comprehension questions the researcher designed an experimental posttest only study. For this study the researcher used a convenient sample of 20 students. These students were at or above grade level in reading. Using guidelines found on the Office of the Superintendent of Public Instruction website (OSPI, 2010) the researcher

created a scoring rubric to grade student responses. The researcher began in October and finished in late November. After collecting data the researcher used a *t*-test for independent samples to analyze the data.

CHAPTER 4

Analysis of the Data

Introduction

The researcher studied the effectiveness of cooperative learning with a fourth grade reading group. Cooperative learning was chosen because it was one of the most common strategies mentioned by administrators and instructional facilitators during professional development trainings. The theory was that if students had the opportunity to discuss and share their ideas that their understanding of the material would be more concrete. To ensure that the classroom strategies being used were the most effective the researcher conducted a study to determine the significance of cooperative learning.

Description of the Environment

This study took place at Gilbert Elementary in the Yakima School District during the 2009-2010 school year. The reading class that the researcher used consisted of 20 students. Of the 20 students 12 of the students were girls and eight of them were boys. In addition, six of them were English Language Learners (ELL). The curriculum that was used for this project was the Houghton Mifflin reading series. It was adopted by the Yakima School District at the start of the 2002-2003 school year. This curriculum had six themes with three to four stories in each theme.

Following each story were six comprehension questions titled Thinking About the Selection (TATS). These were used to test the students' ability to work both independently and in groups. This process took two months to complete. It started in early October and ended in late November.

Hypothesis/Research Question

One tool used to check for understanding in education has been handwritten answers to comprehension questions relating to a story. If fourth grade students were to work in cooperative groups to answer short response comprehension questions, their scores would be significantly higher than scores from independent work on short response comprehension questions.

Null Hypothesis

There was no significant difference in scores between fourth grade short response comprehension questions done independently and those done with cooperative groups. Significance was determined for $p \geq .05$, $.01$, and $.001$.

Results of the Study

The researcher used the data which was collected during a two month period in 2009 to determine whether a treatment done with a reading group showed any significance. Both groups were equal in size

and no mortality took place during the study. The researcher used a Statpak (Gay, Mills,& Airasian, 2006) to analyze the data collected.

After collecting student scores for three weeks the researcher found the mean score for each student. These scores were used for the control group. After the treatment was administered and a new set of scores were collected a new mean was found. These two means were compared to show significance.

Table 1.

Thinking About the Selection Posttest Data

Control	Student	Treatment
78	S1	83
72	S2	92
77	S3	83
82	S4	85
75	S5	74
60	S6	92
75	S7	83
88	S8	92
65	S9	85
54	S10	74
77	S11	74
68	S12	74
65	S13	79
68	S14	79
65	S15	79
74	S16	92
69	S17	79
67	S18	85
43	S19	83
61	S20	85

The researcher used statistical analysis software to determine the value of t . With 20 students participating in the study there were 38 degrees of freedom. It was determined that the mean of the control group was 69.15% and the mean for the treatment group was 82.60%. When compared using the equation below the researcher found that the treatment group was significantly higher than the control group and showed support for the hypothesis at all levels.

Table 2.

Statpak Analysis

Statistic	Value
No. of scores in Group X	20
Sum of Scores in Group X	1652.0000
Mean of Group X	82.60
Sum of Squared scores in Group X	137180.00
SS of Group X	724.80
No. of Scores in Group Y	20
Sum of Scores in Group Y	1383.0000
Mean of Group Y	69.15
Sum of Squared scores in Group Y	97579.00
SS of Group Y	1944.55
<i>t-value</i>	5.07
Degrees of freedom	38

The calculated value of $t=5.07$ was greater than the threshold values of t (Gay, Mills, & Airasian, 2006) for .05, .01, and .001. Thus, the null hypothesis was rejected and consequently there was support for the hypothesis that cooperative learning will increase student responses to short answer responses to comprehension questions.

Table 3.

Distribution of t

df	p		
	.05	.01	.001
30	2.042	2.750	3.646

Findings

After analyzing the data the researcher rejected the null hypothesis that cooperative learning would not affect student responses to short answer comprehension questions. The data did support the hypothesis that cooperative learning would increase student responses. This was determined by calculating the value of t . With a t value greater than the threshold for .05, .01, and .001 significance was found at all levels.

Discussion

With support for the hypothesis the researcher confirmed what was expected; that cooperative learning would increase student responses to

comprehension questions. This result is also supported by the articles read by the researcher. One study stated that cooperative learning helped to increase “intrinsic motivation, transfer of learning from one situation to another, and greater time spent on task” (Smith et al., 2005). In another it was noted that “children learned better and became better learners when engaged in cooperative groups” (Gosse, 2003). With finding significance at all levels the researcher found this to be true in this study as well.

Summary

In an experimental study done at Gilbert Elementary, during the 2009-2010 school year, the researcher found support for the hypothesis that cooperative learning would significantly increase student responses to short answer comprehension questions. Support for the hypothesis was determined after analyzing the data between the treatment group and the control group. A t value of 5.07 was found. This exceeded the threshold for t at .05, .01, and .001.

CHAPTER 5

Summary, Conclusions, and Recommendations

Introduction

The researcher set up an experimental study on the affects of cooperative learning on fourth grade student responses to comprehension questions. A posttest only design was used with the two groups to determine the significance of the treatment. After two months of collecting data from both a control group and a treatment group the researcher used an independent t -test to determine whether the treatment was effective.

Summary

The researcher used shared learning in the classroom but wanted to know if it was an effective strategy. During the 2009-2010 school year the researcher conducted a study to determine the value of cooperative learning.

To gain a deeper understanding of cooperative learning the researcher read articles and previous studies that were done on the subject. These readings were related to many different areas of cooperative learning. The concept of shared learning dates back as early as the late 1800s. Since then hundreds of studies have been done to determine the effectiveness of cooperative learning. The researcher found

many studies that showed the benefits and the need for cooperative learning but also read studies that discussed the negatives to a shared learning approach.

Using a convenient sample of 20 fourth grade students the researcher studied the affects of cooperative learning. Over a two month period the researcher collected data from an experimental posttest only study. The control group worked individually to answer comprehension questions that were graded using a four point rubric based on Washington State standards. For the treatment group the same process was followed except cooperative grouping was used to answer the questions. The means of the control group and the treatment group were then compared to determine whether the treatment was effective in increasing student scores.

The researcher used a *t*-test to determine the affect that cooperative grouping had on student scores. A *t* score of 5.07 was calculated which exceeded the threshold for .05, .01, and .001.

Conclusions

The researcher found many articles that highlighted the benefits of cooperative learning. The data collected for this special project also showed support for the hypothesis that cooperative learning increases student achievement at all levels. Thus, the null hypothesis that

cooperative learning would have no significant affect on student responses to comprehension questions was rejected.

Recommendations

After reviewing the data the researcher has two recommendations involving cooperative learning. It is recommended that a future study be done in a different subject area as well as different grade levels. It is also recommended that a study be done on the different models and their benefits.

In the study described in this special project cooperative learning was used in reading to see its effectiveness. The researcher recommends that educators test this strategy in other educational areas as well. The subject of mathematics has moved towards a team based approach. Cooperative learning would not only give students an opportunity to share their strategies to solving problems with peers, but it gives second language learners an opportunity to practice and strengthen the language that they are acquiring.

This study focused on cooperative grouping as a strategy to increase student achievement. Cooperative grouping is not the only way to use cooperative learning in the classroom. There are other models of cooperative learning that could be beneficial to students. Educators should study the affects of activities such as think-pair-share and

collaborative grouping. These activities also give students an opportunity to interact while learning. Think-pair-share can be used during a direct instruction lesson to give students a quick opportunity to interact and share their ideas. Collaborative grouping is less formal than cooperative learning. Collaborative grouping does not use roles but still requires students to work together toward a common goal.

Finally, the researcher recommends that educators conduct studies that introduce the process of cooperative at an early age. If a student has previous experience with a strategy they may need less instruction on the strategy before it is used in classroom instruction. This may help building test scores and it could make the transition between grade levels smoother.

The researcher plans to continue the use of cooperative learning with the Houghton Mifflin reading series. The results of this study will also be shared with the researchers building. While attending a Professional Learning Communities conference in 2004 the researcher was told by a consultant that “the one doing the talking is the one doing the learning.” This idea fits with the concept of cooperative learning. In order for students to use what is being learned and communicate their knowledge they must first learn how to process their thoughts and effectively communicate with both their peers and teacher.

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