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THE EFFECT OF DIFFERENT-SEX AND SAME-SEX COOPERATIVE LEARNING GROUPS ON ACHIEVEMENT

by
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ABSTRACT

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The purpose of this study is to explore the effects of different-sex and same-sex cooperative learning groups on the achievement of fourth grade students. The subjects for this study are nineteen fourth grade students in a regular education classroom in a southern New Jersey elementary school. The students worked in cooperative learning groups during science period. The academic performance of the same-sex cooperative learning groups and the different-sex cooperative learning groups was assessed through student artifacts/work, anecdotal notes/observations, teacher research journal, and a student end-of-study questionnaire. A qualitative approach was used to analyze the data, which revealed that students in the same-sex cooperative learning groups most often achieved more than the students in the different-sex cooperative learning groups. The influence of gender, monitoring of cooperative learning groups, and student and teacher training are some implications that emerged from my study.

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Chapter One

Scope of Study

Background of the study

This research grew out of observing an interesting phenomena during my clinical internship. I had planned a lesson where I would first teach students a concept; then, they would work in cooperative learning groups to discuss various questions that were given to them. I had planned that the students would form their own groups with the only requirement being they had to form groups of four. I told the students to form groups and observed them in doing so. I was extremely interested in what I saw. All of the groups were same-sex, except for one different-sex group because there was an unequal number of boys and girls in the classroom. I decided to try this experiment with a different class to see if this had just been a random happening or result. I taught a lesson that required the students to work in cooperative learning groups. Again, I allowed the students to form their own cooperative learning groups with the only requirement being that they had to form groups of four. After the students formed the various groups, the results were also quite interesting. There were three groups of four girls, one group of four boys, and one group that had two boys and two girls. After this experience, I felt that the way the students formed groups might not be random and should be looked at more closely. Did students feel more comfortable in their own gender groups? Did they feel that they performed better academically when they were in same-sex cooperative learning groups? These experiences pushed me to define my research question and to develop a plan to implement my study in a classroom. Consequently, my research question became: Do

students in a same-sex cooperative learning group achieve more than students in a different-sex cooperative learning group?

Statement of the problem

Cooperative learning is a method of instruction whereby students carry out an assigned task collaboratively with no direct and immediate supervision of the teacher. Some research (Johnson, Maruyama, Johnson, Nelson, & Skon, 1981) finds that cooperative learning groups promote higher achievement than do individualistic learning situations; however, other studies (Webb, 1984) conclude that while cooperative learning is a positive method of instruction, different-sex cooperative learning groups tend to allow males to dominate the activity and the females in the group are often times ignored. This latter finding leads to my research problem: Do students performing in a same-sex cooperative learning group achieve more than students performing in a different-sex cooperative learning group?

Significance of the Study

The purpose of this study is to explore the effects of different-sex and same-sex cooperative learning groups on the achievement of fourth grade students. One of the factors to consider when putting students into cooperative learning groups is gender. Webb (1984) states that many females are virtually ignored within different-sex groups. Her findings suggest that the females in the groups have little opportunity to share their ideas or views and, consequently, to learn or achieve full understanding of the targeted content. Webb's work also suggests the necessity of forming same-sex cooperative learning groups within the cooperative learning classroom in order for all students to achieve (Webb, 1984). Thus another research question: Should cooperative learning

groups be same-sex groups or different-sex groups? This study will add to the current research considering this question.

Overview of the methodology

The study was a qualitative research design that was carried out over a five-week period during science. There were twenty-three students in the classroom; nineteen of the students had permission to participate in the study. These students were broken into four mixed-ability learning groups with five students in three groups and four students in one group. There were two same-sex groups and two different-sex groups for the research study. The Student Team Achievement Division (STAD) developed by Robert E. Slavin (1978) that describes group learning and individual testing was implemented. The methodology is discussed in greater detail later in chapter three of the thesis.

Limitations of the study

There are some possible limitations of this study. One limitation is the short time period of the study, five weeks. Another limitation is that the sample population for this study is an intact classroom, precluding representative student sampling. Some other limitations are observer bias or observer effect. Observer bias is when no two researchers in the same situation would have identical field notes. The researcher might observe something occurring among the groups, but another person in the room might see the situation occurring in a totally different way. These procedures are often subjective. Observer effect is when persons being observed may behave differently than usual for that situation precisely because they are being observed. Another limitation is that many of the students had to leave for part of the science period for chorus practice or for TAG (Talented and Gifted Program) once or twice a week, so there were times during the

study where many of the students were not present. A final limitation is the small number of participants that are involved in the study. These limitations may restrict the generalizability of the results.

Overview of the study

Chapter One gives a statement of the problem and rationale for the study. Chapter Two consists of a review of the literature, followed by a summary, which establishes an understanding of previous work in the area of cooperative learning. Chapter Three describes the methodology and context of the study. Chapter Four discusses the data analysis and findings. Chapter Five presents a discussion of the findings and conclusions as well as implications and questions posed for future research.

Chapter Two

Review of the Literature

Introduction

The strategy in which students carry out an assigned task cooperatively with other students without the direct supervision of the teacher is called cooperative learning. Cooperative learning provides a substitute to competitive or individualistic classroom activities by encouraging teamwork among students in small groups (Emmer & Gerwels, 2002). The use of cooperative learning changes the organization of classroom activities and roles (Emmer & Gerwels, 2002) in that the class arrangement switches to a multigroup structure where in the teacher's role as an information giver is lessened and the student's role changes to that of group participant and decision maker (Emmer & Gerwels, 2002). Research concludes that cooperative learning groups promote higher achievement than do learning situations that consist of just the individual (Johnson, Maruyama, Johnson, Nelson, & Skon, 1981); however, research also finds that while cooperative learning is a positive method of instruction, different-sex learning groups tend to allow males to dominate the activity and females are often times ignored in the group (Webb, 1984). Further, although there exists much research on cooperative learning, there is a lack of recent research addressing this gap in the research-the effects of same-sex and different-sex cooperative learning groups on achievement.

Benefits of Cooperative Learning

Cooperative learning, an approach that has grown tremendously in popularity since the 1970's, offers a way not only to improve student achievement but also gives

students the chance to build up teamwork skills (Holloway, 2004). By using cooperative learning groups for some instructional activities, teachers give students the opportunity to enhance problem-solving skills and social skills that they will need to help them work with others in such areas as communication, leadership, and decision making (Holloway, 2004). Although higher student achievement is one of the main goals of the developers of cooperative learning, some additional benefits when using cooperative learning become improved motivation, positive attitudes, and better social skills (Emmer & Gerwels, 2002). There are cognitive and social-emotional benefits to cooperative learning as well (Nastasi & Clements, 1991). Having students work in cooperative groups in the classroom can have the effects of enhancing academic achievement and cognitive growth, motivation and positive attitudes towards learning, social competence, and interpersonal relations (Nastasi & Clements, 1991). Furthermore, learning in cooperative situations, compared to individual learning, seems to promote more active involvement in learning and more interaction among students (Nastasi & Clements, 1991). Cooperative learning groups also seem to enhance intrinsic motivation, self-perception, positive attitude towards learning and school, and self-esteem. Finally, cooperative learning seems to have universal claim for promoting cognitive development or academic achievement and social-emotional growth (Nastasi & Clements, 1991).

Components of Effective Cooperative Learning

Merely setting up cooperative learning groups, however, does not instinctively promote students' teamwork skills (Holloway, 2004). There are several components that should be in place to facilitate student teamwork and give students positive experiences while working in cooperative learning groups (Holloway, 2004). One such component is

that the thinking should be dispersed among all members of the cooperative learning group, so that every member of the group is able to participate and share their ideas and views about the targeted content they are suppose to be working on in their groups (Palincsar & Herrenkohl, 2002). Thus, each group member should be encouraged to share their thinking as they work together and should be able to do this by receiving respect from their group members (Palincsar & Herrenkohl, 2002). While some forms of cooperative learning could happen without collaboration, collaborative learning is generally assumed to include cooperation in order to function properly (Palincsar & Herrenkohl, 2002).

Another component of successful cooperative learning is sufficient time. It was found that although there are many frustrations and inequalities in cooperative learning groups, students generally develop teamwork skills and feel positive about engaging in group work (Holloway, 2004). Students that have engaged in cooperative learning groups list three main things that enable groups to function properly: adequate time for group members to talk and plan, opportunities for every group member to exchange ideas with the other members in the group, and a chance to present their findings to one another and to outsiders (Holloway, 2004). Often times, teachers assign group projects without giving the proper class time for the groups to build cooperative skills or become organized, which may be a reason why groups fail to work together effectively (Holloway, 2004).

Research has also found that teachers must plan and be comfortable with the collaborative approach to learning before they can successfully implement cooperative learning groups into their classrooms (Holloway, 2004). When teachers provide proper

advance planning, student teamwork skills improve and the students achieve more in the cooperative learning groups (Holloway, 2004). Teachers must keep in mind many things when planning for cooperative learning. First, they must propose group tasks with strict consideration of objectives for skill development and content. Next, teachers need to create groups that will use the skills required to complete the task that is required of them. Third, teachers must monitor and observe the progress of the groups to make sure the students are developing the skills. Finally, teachers must assess and reward the expansion of group process skills which frequently positively affects student motivation and teamwork (Holloway, 2004).

A fourth component of successful cooperative learning is giving the students training in group skills. Students who are taught and trained in cooperative group processes work together better and become more committed to their group. They also engage in more cooperative behaviors than students who did not have this training (Holloway, 2004). Students learn to listen to one another, share ideas and resources, and stay on task as a group (Holloway, 2004).

The final component for successful cooperative learning is teacher training. Research finds that teachers who take part in various workshops about cooperative learning are more likely to engage their students in activities that require teamwork skills (Holloway, 2004). When teachers provide positive, well-planned opportunities for their students to work in cooperative learning groups, they help students build these teamwork skills even in the earliest years of schooling (Holloway, 2004).

Different Types of Cooperative Learning Formats

There are many different types of cooperative learning formats that could be implemented into a classroom. One type is called peer tutoring, when one student tutors and assists another in learning a new skill (Salend, 2001). Another cooperative learning format used frequently in elementary classrooms is called jigsaw. This format divides students into groups with each student being assigned a task that they have to complete that is essential in reaching the goal of the group (Salend, 2001). This allows every member to make a contribution that is incorporated with the work of others to help create the groups' product (Salend, 2001). A third type of format used is called the "Learning Together Approach" where students are assigned to teams and each team is given an assignment. The group is to generate one product, which shows the combined work of all the students in the group (Salend, 2001). Another interesting cooperative learning format is called the Team-Assisted Instruction. In Team-Assisted Instruction, individual group members work on their own assignments and help their group members with their assignments (Salend, 2001). One of the cooperative learning formats that research addresses and that I have adopted for my research design is the team learning approach, specifically the Student Teams-Achievement Divisions (STAD) (Nastasi & Clements, 1991). In this type of team learning, students are directed by the teacher to learn assigned material that they will have to recall at a later time and are directed to assist teammates in their learning (Nastasi & Clements, 1991). The students work in teams on worksheets that relate to the content introduced by the teacher. Students are also quizzed or tested individually on the material (Nastasi & Clements, 1991). Research on this method shows

consistently positive effects on student learning across a wide range of subjects, but it has been most successful in math (Nastasi & Clements, 1991).

How Should Students Be Grouped with Regard to Sex?

This is a difficult question that many teachers in the field have wrestled with when forming cooperative learning groups in their classrooms or when grouping in any given situation. It has been found that the nature of children's interactions and attitudes may vary as a function of group composition (Nastasi & Clements, 1991). One study concludes that male dyads engaged in more cognitive conflict, such as disagreements over how to do something, than female dyads (Nastasi & Clements, 1991). Findings suggest that males are more dominant and try to take control over a situation more than females do (Webb, 1984). Further, research finds that groups with equal numbers of boys and girls engage in more explaining and attain higher achievement scores than groups with unequal boy-girl composition (Nastasi & Clements, 1991). Research additionally states that in groups where there is an unequal number of boys and girls or different-sex cooperative learning groups, boys are more likely to receive requested help and because of that boys outperform girls on achievement levels: "Upper-elementary grade students working in single-sex groups perceived lower levels of competition and conflict within their groups compared to those working in mixed-sex groups" (Nastasi & Clements, 1991). This research also finds that students working in the same-sex groups do not want to work in different-sex groups in the future. This becomes an important implication for teachers and suggests that they carefully monitor the levels of participation and patterns of interaction within groups.

A Contrast Between Males and Females

Researchers find that in mixed-sex adult interactions males are reported to be more domineering, interrupt more, and occupy more conversational space (McClosky & Coleman, 1992). Women tend to ask more questions and act as the conversational facilitator (McClosky & Coleman, 1992). These differences are not only apparent in adult interactions but they could begin much earlier. Gender segregation is characteristic of the social lives of children, appearing as early as the pre-school years and increase with age during the middle childhood (McClosky & Coleman 1992). One study reports that kindergarten boys interrupted girls more often than each other and that in kindergarten cooperative play, boys made more assertive bids than girls (McClosky & Coleman 1992). Therefore, research suggests that gender-differences are observable and could be documented at an early age (McClosky & Coleman 1992). This same study (McClosky & Coleman, 1992) concludes that there is a significant difference in achievement between third grade males and females in mixed and same-sex dyads. This study also concludes that boys tend to be more talkative than girls in the same-sex pairs. Another study finds that girls are more willing to ask and answer questions in a girl only class than in a mixed-sex class (Eggen & Kauchak, 2001). This study also finds that girls in single-gender schools have higher self-esteem and feel they are in control of their learning (Eggen & Kauchak, 2001). Additional research concludes that masculine interaction in mixed-sex groups might be aversive to females in interaction and communication skills (Maccoby, 1990).

The Effect of Gender on Achievement

The sex differences in interaction and achievement in cooperative small groups were studied by Noreen Webb (1984). The groups were divided homogeneously according to ability and heterogeneously according to gender. Webb's study focused on the verbalization of the groups, documenting talk by audiotaping. The categories of verbalization and achievement were as follows: asks for explanation, asks procedural questions, gives explanation, and gives procedural information. Webb concluded that males and females achieved equally on the assignment, but the males tended to receive more explanations and help from the group, whereas the female requests went unanswered. In groups with three females and one male, the females tended to direct their requests for help to the male in the group rather than the other females (Webb 1984). Webb finds that males consistently dominate the activity in mixed-sex groups. Therefore, the presence of males in coeducational learning groups may be unfavorable to the achievement of females (Webb, 1984).

Additional research finds that for students to be successful and achieve in cooperative learning groups each member of the group must be able to share in the conversation and be able to explain concepts and experiences to the other members in their groups (Palincsar & Herrenkohl, 2002). Research finds that children who are in groups where they are able to freely share their ideas and views are more productive and achieve more than children who are in groups where they are not able to share their ideas or views (Mueller & Fleming, 2001).

Summary

Students in cooperative learning groups tend to experience higher achievement than do students in individualistic learning situations. Additionally, there are many benefits that can be found with cooperative learning, many different cooperative learning formats exist making it a potentially beneficial tool within the classroom. As this literature review indicates, much research supports cooperative learning and its benefits.

Research also shows that males in different-sex cooperative learning groups tend to dominate the activity and leave the females ignored and that females are given much less time to communicate with the group and therefore the opportunity to achieve (Webb, 1984). There remains, nevertheless, one area of cooperative learning where the research is not as certain: The learning within same-sex groups as opposed to different-sex groups. There exist few current studies on student achievement within different-sex and same-sex cooperative learning groups, a gap this study purports to address.

Chapter Three

Design of the Study

Introduction

My purpose of this study is to explore the effects of different-sex and same-sex cooperative learning groups on the achievement of fourth grade students. I argue that students' academic performance in same-sex cooperative learning groups will be higher than the students' academic performance in the different-sex cooperative learning groups. Cooperative learning groups can be an effective strategy in the classroom and a valuable tool for teachers; however I argue that the effects of different-sex versus same-sex learning groups on achievement needs to be further addressed (Webb, 1984).

My research for my study is qualitative based because of many reasons. First, my research is based on the collection and analysis of data that does not contain a lot of numbers. My data collection, analysis & interpretation happen through out the study rather than at the end, as is common with quantitative research. My sample size is small which is better for qualitative research. I interacted in great depth with my students through out my research study and collected a research journal, field notes, student work, and a questionnaire, which is common to qualitative research. Finally, I used qualitative research because I felt that my findings would be better revealed in a narrative way.

Population and Sample

The population for this study consists of fourth grade students ranging in ages from eight to ten years old. The sample for this study is taken from Sunset Township in southern New Jersey. According to the township data taken from census 2000, the

inhabitants are primarily middle class. The municipality is a mixture of many ethnic groups, but has a high percentage of whites. The break down consists of 84.8% white, 11.2% Black or African American, 0.2% American Indian, 1.2% Asian, 2.7% Hispanic. The participants in the study are from one of the four elementary schools within the township and, as previously stated, an intact classroom of fourth grade students. Out of the twenty-three students, eleven students are males and twelve students are females. Twenty-two students are Caucasian and one student is African American. Out of the twenty-three students, four parents did not want their child to take part in the research; consequently, nineteen students participated in the research study.

Research Procedure

The entire study spanned a five-week period during science periods. The students were placed in cooperative learning groups during this study. Students were broken into four mixed-ability learning groups with five students in three groups and four students in one group. This allowed for the same content, same assessment, same time frame, and included all nineteen participants.

The Student Team Achievement Division developed by Robert E. Slavin was implemented in the classroom. The STAD cooperative learning procedure consists of group learning and individual testing (Eggen & Kauchak 2001). I used the STAD for five weeks, implementing group activities, quizzes, and positive reinforcement during science periods. After I presented a lesson, the students, as a group, completed activities, worksheets, or a project. The students were reminded that group work is not complete until each member of the group understands the material given, so everyone has to work together and listen to one another share their ideas and views (Eggen & Kauchak 2001).

At the end of the group activity, a teacher- prepared test or quiz was administered to each student to assess academic achievement. The test measured only the material taught during group work sessions.

At the end of each cooperative learning session, the group reflected about what they had accomplished during the science period. Questions asked of each group included: Did we accomplish our task? Did each of us have an equal chance to share our ideas and views? Responses to these questions helped me to determine the amount of learning that took place during the group work.

To establish the structure of the cooperative learning groups, I considered the students' past performance on tests and quizzes. I averaged and listed student grades. Race, gender, and achievement were also considered. In each group, there was a high achiever, a low achiever, and two average achievers. Therefore, mixed ability grouping occurred across the cooperative learning groups.

After group assignments, the various job assignments were explained to the students. The leader kept the group on task and communicated with the teacher. A second student was reader and another was the recorder. The final student, the encourager, provided various students in the group with praise. These jobs rotated every week so that students experienced the different jobs.

To create order and structure during the cooperative learning activity, rules were established through student brainstorming and discussion. The class-generated rules were: appreciate the thoughts and opinions of your group members, use indoor voices, help each other, share your thoughts, and work things out. This final list of rules was posted above the classroom cooperative learning bulletin board.

Data Collection

During the study, data was collected to determine the groups' academic performance. Data collected consisted of student artifacts/work, anecdotal observations taken during group work, teacher research journal, and an end-of-study student questionnaire. The sample observation forms can be found in Appendix A and the end-of-study questionnaire can be found in Appendix B.

Data Analysis

The process of data analysis consisted of data collection, data explanation, and descriptive writing (Creswell, 1994). The data analysis was based primarily on data reduction and interpretation (Creswell, 1994). I gathered the information that I collected from the field and divided it into categories. I looked across these categories searching for patterns or themes. Ultimately, I constructed a narrative based upon these findings.

Chapter Four

Findings of the Study

Miss Olshefski's Exciting Science Lesson About Fossils

"All right class, please settle down. It is time again for a very exciting science lesson where we are going to complete a science experiment in our assigned groups."

"Are we going to blow something up!" Jim shouted excitedly. "That would be so cool!"

Nick, Rick, and Jared, drawing on a piece of paper, looked up and shouted, "Yea, that would be so awesome! Can we blow something up?"

I smiled and shook my head. "Nope, we are not going to blow anything up, but we are going to do something better and just as exciting!"

"What is it! What is it!" The class asked in an excited voice.

I shrugged my shoulders, smiled, and scratched my head. "Shall we put on our thinking caps?"

Rick jumped to his feet. "YES!" he stated insistently. "Lets think!"

"What are we learning about in science and what did we talk about in yesterday's class? Does anyone know?" I asked the class.

"We are learning about fossils and yesterday we talked about how the soft parts of animals rot away and what is left is the bones of the animals," said Jared.

I smiled and said, "Exactly, and the experiment we do today will model that process, so let's get started! The materials you need are on the table. Remember, first you read the steps closely and follow the procedure carefully. After the experiment is completed, you answer the questions at the end of the lesson."

"I am one smart cookie!" Jared smiled smugly and laughed.

The students started the experiment and I walked around observing the different groups working together.

Abby calmly asked her group members, "Do each of you want to get a material that is needed from the table to do the experiment?"

"No, I'll get the materials that are needed for the group and you can just stay sitting there!" Nick said in a forceful way.

"You are not the boss of me and I can contribute to the group if I want to!" Abby shouted in a loud voice.

"I don't care and I am still getting the materials anyway!" Nick smiled smugly and crossed his arms.

Abby jumped to her feet and shouted. "I'm getting the materials!"

"Just ignore him! We'll still get the experiment done that is required of us. Don't be sad or get upset about it. I am sick of this fighting." Sandy opened her book and slammed it on her desk.

"All right, let's read the procedures together, so we can get a clear idea of what to do for the experiment." Abby got out her book.

Rick said, "I think my idea would be better. We should read the procedure silently by ourselves."

"I don't know if that is a good idea. Can we discuss it?" Abby said in a patient way.

"Oh stop, Abby! I think Rick's idea is excellent and we'll do it that way," said Nick.

"All right, can we begin the experiment before we run out of time?" Sandy said shaking her head.

Abby puts her hands in the air. "Can I switch groups? I am not learning anything in this one!

Revisiting this classroom scenario, do you think the girls in the group got a chance to express their ideas and were able to participate equally in the group with the boys? Do you see a sense of learning and achievement occurring in this group? My research question is: Do students in a same-sex cooperative learning group achieve more than students in a different-sex cooperative learning group? This chapter will discuss the findings of my study. It will help to answer my research question and show that students performing in a same-sex cooperative learning group most often times achieve more than students performing in a different-sex cooperative learning group.

After looking through all of my data sources for common themes, I concluded that the data seems to fall under two broad categories. The first category is social interaction, which is where I looked at the boy same-sex group, the girl same-sex group, and the mixed-sex groups separately to analyze the social interactions within each of the groups. I came up with a chart to code my data and the themes that emerged from my data for this category. The second category that my data seems to fall under is learning and academic

performances among the various groups, which is where I looked at the work of the students across all of the groups to analyze the learning and academic performance of the different groups. I also came up with a visual display to code my data for this category.

Social Interactions Among the Different Groups

Looking across the various data sources I developed charts to code emerging patterns and themes. The following chart explains my findings concerning the social interactions of the various cooperative learning groups.

Coding Chart for Social Interactions Among the Different Groups

	Field Notes	Teacher Research Journal	Student Questionnaires	Student Work
Boys dominate girls in the different-sex groups	X	X	X	
Different-sex groups are chaotic	X	X	X	X
Same-sex groups use collaboration	X	X	X	X
Students feel more comfortable in their same-sex group	X	X	X	X

Figure #1

As you can see from the chart, the conclusions or findings that surface from my data are (a) boys dominate girls in the different-sex groups, (b) same-sex groups are chaotic and

fighting often occurs, (c) different-sex groups use collaboration and work together, and (d) students feel more comfortable and learn better in their same-sex group.

Boys dominate girls in the different-sex groups

In triangulating my field notes, teacher research journal, and student questionnaires, I found constant and clear instances of boys in the different-sex groups controlling the activity among the group. The boys controlled the conversation in the group, interrupted the girls when they were trying to share their ideas or views on a certain concept, and argued that the girls were not right. All of these male behaviors contributed to the girls often becoming frustrated and not wanting to work in the group. Research (Webb, 1984) also finds that although cooperative learning is a positive method of instruction, different-sex learning groups tend to allow males to dominate the activity and females are often times ignored in the group. In different-sex learning groups, males are reported to be more domineering, interrupt more, and occupy more conversational space (McClosky & Coleman, 1992). After five weeks of observing in the classroom, I could see many things that support this research.

An interesting happening occurred during a group activity that opened my eyes and helped me to verify what I had been seeing in the different-sex cooperative learning groups. One of the girls in the different-sex cooperative learning groups started crying and was not able to continue with her group work and I had to take her out in the hallway to calm her down.

> Teacher: What is wrong, why are you crying? What is bothering you?
>
> Diane: The boys aren't letting me share my ideas or views on what I want to include on the poster. They tell me to be quiet or that they don't like my idea.

Teacher: That isn't nice of the boys at all! What else is making you so upset in your group?

Diane: Every time I ask to do something on the poster, they ignore me or tell me that I can't add anything. I feel like I am not a part of the group and I am not learning anything in my group!

Teacher: All right, let me go inside and talk to those boys in your group and we will figure out something.

Taken from teacher research journal, April 18, 2004

This conversation provided insight into the dynamics of this particular group. I learned that the boys in her group were in fact controlling the group and that many times during the group work the boys in the group ignored her. Diane felt like she couldn't contribute her ideas or views to the task that they were trying to complete in their groups. Diane became frustrated and upset. She felt like she was not part of the group or was learning anything from what she was trying to accomplish.

Another similar experience occurred while I was observing students working on a group assignment. The students were assigned to read a text excerpt and find a way creatively together to present the information they read to their fellow peers. This is what occurred between the members of the group when they were working to complete the task.

Nicole: Okay, come on we should start. Should we read the passage to ourselves or read it out loud and than talk about what information we want to include?

James: I think that we should read the passage out loud.

Kerri: I think it would be a better idea if we read the passage to ourselves because than we could understand what we are reading better.

Sean: Nah, that is a stupid idea. I don't like it.

James: Yea, we are going to do it the way I suggested to begin with and it doesn't matter what you think.

(Students read the passage and than discuss what they want to share with the class and put on the poster.)

Sean: I think we should write that the Ginkgo leaf is a living thing that has not changed much over time.

James: We should put that scientists can find out the age of a fossil from studying rock layers.

Sean: That sounds like a good beginning. We should begin our poster.

Kerri: Wait, I have an idea to add.

James: We are running out of time, so we can't add it.

(The boys don't let the girls work on the poster and the girls get upset and start fighting with the boys and hence they do not get done their task in time.)

Taken from field notes, April 14, 2004

This interaction among this mixed-sex group showed that boys do, in fact, control the members of this group. When the students were deciding on how to read the passage, Kerri tried to state her view on what things would work best; but Sean and James gang up and say that her way is stupid. They state they're not going to do it that way and it doesn't matter what she thinks. The boys quickly ignore Kerri's other ideas as well. In this instance, the boys do control the talk activity in different-sex groups. The girls are often ignored or put down and can't share their ideas easily.

Different-sex cooperative learning groups are chaotic

Data analysis also indicated that the different-sex cooperative learning groups were rather chaotic and much fighting occurred between the group members. This finding is again supported by research, which suggests that elementary students who are in same-sex cooperative learning groups profess lower levels of competition and conflict within their groups compared to those working in mixed-sex cooperative learning groups

(Nastasi & Clements, 1991). There were lowers levels of competition and conflict in the same-sex groups than the different-sex groups. I also found that the arguing and conflict among students in the different-sex groups delayed their work, which then caused them to run out of time. I witnessed this behavior consistently through out the five weeks of the study. One entry in my field notes documents such an instance.

> During group work during science period, I noticed some things occurring in the different-sex cooperative learning groups. I observed that there was some fighting and much arguing among the different-sex groups and it took the groups awhile to get started on the task that was required of them. The males in the group were not letting the girls share their ideas or views on the topic they were learning at the time. I noticed that the different-sex groups had a hard time working together to get the task completed. There was fighting and the boys seemed to say things to the girls. Some of the things they would say would be, "It's my turn", or "You have to do it this way, your answer is not right", or "You're not doing it right at all." I could see some of the girls become visibly upset in the different-sex cooperative learning groups and give up on participating in the group. I did not see the girls being able to experience any learning in the different-sex cooperative learning groups.
>
> Taken from teacher research journal, March 30, 2004

This has helped me to understand that because of the chaotic nature of mixed-sex groups a good learning environment did not exist. The girls became frustrated, didn't want to participate in the activity, and often gave up on the work all together. The girls did not learn the content because they did not participate.

Same-sex cooperative learning groups use collaboration

Data sources indicated that the same-sex cooperative learning groups got started quickly and I could see a sense of collaboration among the groups. They took turns and everyone got to share their views and ideas. This finding is also supported in the research. Nastasi & Clements (1991) find that groups with equal numbers of boys and girls often engage in more explaining and attain higher achievement scores than groups

with unequal boy-girl composition. The students in this group did support each other. They often explained a piece of information if someone did not understand, as evidenced in the following excerpt.

> Brandy: Okay, how should we go about completing this task? We should all discuss it and than take a vote on what we are going to do. Is everyone okay with that?
>
> Holly: That sounds like a great idea!
>
> Mary (To Tina): I think that is a good idea. What do you think?
>
> Tina: I think that will work!
>
> (Each of the students go around the circle and take turns discussing how they are going to complete the task.)
>
> Brandy: I think each of us should read a different question.
>
> Holly: I think we should all take turns saying what we think the answer is.
>
> Mary: I think we should discuss the answers and listen to each other.
>
> Tina: I like all of your ideas. Should we each take turns reading a different questions and than go around and discuss possible answers?
>
> Brandy, Holly, and Mary: Sounds like a plan!
>
> Taken from field notes, April 21, 2004

Such a supportive learning environment occurred frequently in the same-sex cooperative learning groups. Students told each other they had good ideas and listened patiently during discussion. An excerpt from my teacher journal provides further insights:

> I have noticed today many of the things I have been noticing for the past couple of weeks in the same-sex cooperative learning groups. The students in the same-sex cooperative learning groups took turns with answering questions and were able to work together to accomplish the task that was required of them. The students did not argue or fight while they were working together. The groups were able to get to work right away, had plenty of time to complete their work, and they worked more cooperative. They talked to each other in a nice way and made sure all

> their group members got what they were going over. The groups were working as a team and the students were happy and learning.
>
> Taken from teacher research journal, April 21, 2004

Students feel more comfortable in their same-sex group

Another finding indicated that some of the students preferred to work in groups where they were with members of their own sex and if they happened to be in groups with the other sex that they would rather work alone. Field notes and teacher research journal comments documented countless times that students in the different-sex groups were not having a good experience. Some of the students would ask me daily if they could switch groups. This seemed an interesting phenomenon that the students felt more comfortable and felt that they learned more while they were in groups of the same-sex. It became evident that the students knew that they achieved more and learned more when in same-sex learning groups.

> Julie: If I would like to work alone or in a group would depend on who my group is. For instance, if I were in a group of all boys I'd feel uncomfortable and would not be able to share my ideas or views, so I would want to work alone. However, if I were in a group with my girl friends I would feel one hundred percent more comfortable.
>
> Ted: Sometimes, I like to work in groups when I am among my guy friends, but when it's with all girls I rather work alone.
>
> Student questionnaires, May 7, 2004

Interestingly, Students were just as aware of gender issues in groups as I was. Again, Research supports this finding that students working in the same-sex groups did not want to work in different-sex groups in the future (Nastasi & Clements, 1991).

Learning and Academic Performances Among the Groups

In analyzing my data, I also considered the products or student work of the various cooperative learning groups. The following chart shows visually how the students achieved in each of the groups.

Group Grades for the Various Work Samples

	Lab report	K-W-L-S-H Chart	Fossil Journals	Questions/Organizer
All boys Group 1	5.5/6 92%	4.5/5 90%	8/8 100%	8/8 100%
All Girls Group 2	6/6 100%	5/5 100%	8/8 100%	8/8 100%
Boys and Girls Group 3	5/6 83%	4/5 80%	7/8 88%	7/8 88%
Boys and Girls Group 4	4.5/6 75%	4.5/5 90%	7.5/8 94%	7.5/8 94%

Figure #2

In looking closely at the chart, I found that the same-sex groups scored higher than the different-sex groups. The scores of the same-sex groups were ninety percent and better, but the scores of the different-sex groups were in the seventy to ninety range. I also looked at students' work to try to discover why same-sex groups most often achieved more than the different-sex groups. Two things that I found that impacted learning were

understanding of content and completing the material required of them during the activity.

Understanding of content

As it was mentioned in the review of the literature, research finds that children who are in groups where they are able to freely share their ideas and views are more productive and achieve more than children that are in groups where they are not able to share their ideas or views (Mueller & Fleming, 2001). In the present study, the students in the same-sex groups completed more content, which indicated better comprehension.

Question Sample from Organizer/Set of Questions-Understanding content

How Living Things Have Changed

Sample Question:

How was the archaeopteryx like a bird? How was it different from a bird?

Answer from same-sex group

The archaeopteryx is like a bird because it has feathers, flies, and it lays eggs just like a bird. The archaeopteryx is different than a bird because it is a reptile, has a long tail, has claws, and has teeth.

Answer from the different-sex group

An archaeopteryx is like a bird because it has feathers. It is different because

Answer from another different-sex group

An archaeopteryx is like a

Figure #3

The chart, (Figure #3) shows that in the different-sex groups, students only answered one part of the question or began a response, but did not finish. It seemed as if they started their thoughts but became distracted by what was occurring in their group interactions. Many students lost points on their work, resulting in a lower grade and some did not learn the content they were supposed to learn. Figure #3 shows that the students in the same-sex groups answered all parts of the questions that were required of them and answered all of their questions with examples, resulting in higher grades on their work.

Completion of Work

As was mentioned in the review of the literature, research suggests that for students to be successful and to achieve in cooperative learning groups each member has to be able to share in the conversation and explain concepts to other members in their group (Palincsar & Herrenkohl, 2002). As evidenced in the following chart (Figure #4), students in the same-sex groups completed more work than the students in the different-sex groups.

Question Sample from Lab report-Completion of work

Drawing Conclusion

Sample Question:

- In your model, what parts of a plant or an animal did the sugar cube stand for?

  What part of a plant or an animal did the dried glue stand for?

Answer from same-sex group

The sugar cube stands for animal skin. The dried up glue stands for bones.

Answer from different-sex group

My model stands for a chicken.

- In your model, what process did the warm water stand for?

Answer from same-sex group

The water stands for when the model decayed.

Answer from different-sex group

The water stands for when

- From this experiment, what can you infer about how fossils are formed?

Answer from same-sex group

When things decay that is how fossils are formed.

Answer from different-sex group

Nothing is filled in

Figure #4

The chart shows that students in the different-sex groups often left the last question unanswered; in some groups students did not get to the last two or three questions. Time presented a problem for the students in the different-sex groups, which could be explained by the social interactions of the groups. Consequently, the students lost points on their work and received a lower grade. Furthermore, because these students did not get to all the questions, it was difficult to assess content knowledge. The chart also indicates that students in the same-sex groups answered all the questions that were required of them and even had time to look over their work. They learned the required content as seen by their complete responses, thus achieving higher grades on their work.

Summary of findings

In looking across my teacher research journal, field notes, student work, and questionnaires, I was able to divide my data into two major categories. These categories were social interactions within the different groups and learning and academic performance across the different groups. From looking at the social interactions within the groups, I found that students in different-sex cooperative learning groups did not have a good learning environment because the boys and their views dominated the girls in the groups and girls' ideas were not heard, which made it difficult for them to learn. Students in the same-sex cooperative learning groups took turns and worked better together, which allowed them to feel good about being in the group and helped them to learn. The students in the different-sex groups fought a lot, which led to a chaotic learning environment. I also learned that students feel more comfortable in groups of their same gender. By looking at the learning and academic performances across the groups, I found that the students' work in the different-sex groups was less complete and

indicated less understanding of content. Students in the same-sex groups had higher grades on their student work and most often times achieved more than the students in the different-sex cooperative learning groups.

Chapter Five

Conclusions and Implications

Introduction

This chapter presents a discussion of the findings and conclusions as well as implications and questions posed for future research. To reiterate, my research problem is: "Do students performing in a same-sex cooperative learning group achieve more than students performing in a different-sex cooperative learning group?" The study is a qualitative research design that was carried out over a five-week period during science periods. There were twenty-three student participants placed in four mixed-ability learning groups, two same-sex groups and two different-sex groups. The Student Team Achievement Division (STAD) developed by Robert E. Slavin (1978) that describes group learning and individual testing was implemented. Many interesting findings emerged from my data about cooperative learning groups that could be valuable for teachers and their practice.

Conclusions

As the research suggests, cooperative learning groups improve student achievement but also give students a chance to build up teamwork skills (Holloway, 2004). Cooperative learning is a strategy that teachers can use in the classroom that both benefits students and enables them to learn in a different way. This became quite evident through out the five weeks of my study. I found that the students preferred working together in groups rather than working alone to complete a task. The students loved the

science period and would ask me almost every day if we were going to be working in our groups to complete a task. I observed throughout my study that if I gave my students a writing task or an activity where they would have to brainstorm on their own they would have trouble completing the task individually, but if I allowed them to work in groups they had no trouble coming up with ideas. In groups, the students were able to bounce ideas off one another; when one student said something, it triggered a thought in another student's head. Many times, we learn much from people around us and from conversations. In my study, students learned the content that they needed from talking with each other. Interestingly, sometimes my students were better able to explain things to their peers than I would have been able to explain it. Data analysis and conversations with my cooperating teacher indicated that students do truly achieve and learn in cooperative learning groups; furthermore, for some children, they learn better in that kind of learning environment than having to complete the task individually. This is something that teachers should be aware of and take into consideration when planning teaching activities for their classrooms.

There are many positive benefits to cooperative learning that research suggests when students are involved in this type of learning. Cooperative learning groups in the classroom can have the effects of enhancing student achievement, motivation and positive attitudes towards learning, and interpersonal relationships (Nastasi & Clements, 1991). This can be quite true, but from looking at my data findings, I found that this really depends on what type of cooperative learning group the student is placed in for the given activity. I found many interesting things from looking at the social interactions among the different-sex and same-sex cooperative learning groups. Often, the boys in

the different-sex cooperative learning groups would control the activity that was taking place in the classroom. They would accomplish this by controlling the conversation in the group, interrupting the girls when they were trying to share their ideas or views on a certain concept, and arguing that the girls were not right when they presented an idea to the group. This caused the girls to become quite frustrated and feel that they did not want to learn what was going on in the group or even want to participate. My data sources also indicated that the different-sex cooperative learning groups were rather chaotic and much fighting could be seen between the group members. Students in the different-sex groups took a longer time to get started on their task because of this chaotic behavior; often times the group ran out of time on their assignments and consequently failed to check over their work.

Conversely, data indicated that the same-sex cooperative learning groups got started quickly and showed a sense of collaboration within the groups. They took turns and everyone got to share their views and ideas. I found that some of the students would rather work in groups where they were with members of their own sex; if they were placed in groups with members of the other sex that they preferred to work alone. Students in the same-sex cooperative learning groups generally experienced a positive learning environment that allowed them to want to work together and helped to enhance academic performance, attitudes towards learning, and interpersonal relationships. In the case of these same sex groups, cooperative learning showed many benefits. But, as previously stated, I believe that it depends on the kind of cooperative learning group in which students are placed.

Many interesting findings about the learning and academic performances of the various groups resulted from data analysis. Students' work in the different-sex groups did not have the answers completely filled out and many times ending questions were left blank. Students' work in the same-sex groups showed complete responses and all questions answered. Students in the same-sex groups had higher grades on their student work than the students in the different-sex cooperative learning groups. This indicated that students in the same-sex groups most often times achieved more than the students in the different-sex cooperative learning groups.

Implications

The Influence of Gender

Teachers frequently put students into cooperative learning groups and often do not think about the influence that gender can have on the cooperative learning groups. The data of my study produced rather eye opening findings that I never knew about or thought about when I placed students in cooperative learning groups. Teachers can learn from my study that same-sex cooperative learning groups often produce a better learning environment, which allows for better achievement on assigned group work. Many of the students that were in the different-sex cooperative learning groups did not like the learning environment they were put in because they were not able to be contributing members of the group and many of the students got frustrated and even some of the students became physically upset. As teachers we want to create the best learning environment for our students; we work to engage them in learning and achieving in school. So, the findings of my study imply that all students should be placed in same-sex cooperative learning groups in the classroom; however, realistically, that is not likely to

be the case in every classroom. There is not always an even number of boys and girls in any given classroom, so you would ultimately have some different-sex cooperative learning groups. This makes it extremely important for teachers to do their best to deal with the conflicts and disagreements that might come up among members in different-sex cooperative learning groups.

Monitoring of Cooperative Learning Groups

Another implication that emerges from my study suggests that teachers must carefully monitor levels of participation and patterns of interaction within the groups in their classrooms, especially the different-sex groups. My study found that the students in the different-sex cooperative learning groups often times did not have a productive learning environment where they could share ideas and equally participate. Students became upset and wanted to change groups. How a student is treated in their group can have a lasting impression on that student and ultimately could have an effect on their self-esteem. Consequently, as teachers we must carefully monitor group dynamics in the classroom. Teachers should make sure that all students have an equal chance of sharing their ideas and views in his/her group.

Student and Teacher Training

A third implication that emerged from my study is the importance of student training in group skills and teacher training in facilitating group work. My study found that most of the time students in different-sex cooperative learning groups did not work well together. This could be because the students were not used to working in cooperative learning groups or were never taught how to work in a cooperative learning group. They did not know the proper behaviors to display while working in groups. As

teachers we must model how we expect students to work together, so that they learn how to respect each others' views and work together effectively to accomplish a common goal. Consequently, it becomes imperative that teachers as well as students have training in the cooperative learning process.

Suggestions for Further Research

In conclusion, I have several suggestions for further studies in cooperative learning groups. First, I would suggest more than five weeks to complete the study in order to accumulate more data. Second, I would ensure that a second person keep field notes, so that I could compare both findings and reduce observer bias. Thirdly, if future research were to replicate my study, researchers should put students into groups based on how they get along, instead of by achievement scores to see if it would make any difference in the interactions among the various groups. And finally, I would focus further research, on the effects of same-sex and different-sex groups on achievement, an area where there appears to be a gap in current knowledge about group learning.

Suggestions for other teachers who want to teach through cooperative learning

Suggestions for teachers who would like to teach through cooperative learning groups are several. First, teachers need to show their students how they should interact with each other in groups. We must teach students the importance of respect-that we respect each and every member in our group and that we respect everyone's opinions or views even if they are not the same as what we think or believe in. Secondly, I would make sure that the students had sufficient time. Many times I would plan on one day to complete an activity and realized I needed another day to finish the activity. It is important to give the groups time to interact with each other and complete the project that

is required of the students. Finally teachers must understand that cooperative learning is often extremely noisy; learning is less structured which allows for more opportunities to interact positively or negatively. Thus, teachers must understand and be comfortable with the collaborative approach to learning before they implement cooperative learning in their classrooms.

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Appendix A

Sample Observation Forms

Group One: Same-Sex Cooperative Learning Group (All Males)	
Date:	Activity:
Behaviors/Actions observed in the group:	

Group Two: Same-Sex Cooperative Learning Group (All Females)	
Date:	Activity:
Behaviors/Actions observed in the group:	

Group Three: Different-Sex Cooperative Learning Group	
Date:	Activity:
Behaviors/Actions observed in the group:	

Group Four: Different-Sex Cooperative Learning Group	
Date:	Activity:
Behaviors/Actions observed in the group:	

Appendix B

Student End-of-Study Questionnaire

End of the study questionnaire

Directions: Please answer the questions that are on this sheet. Thank you for taking the time to answer the questions.

1) How do you feel when you are participating in cooperative learning groups?

2) Do you like to work in groups or would you rather work alone? If you like to work in groups, why do you like to work in groups? If you like to work alone, why do you like to work alone?

3) What is the best thing about working in cooperative learning groups?

4) What is the worse thing about working in cooperative learning groups?

5) Do you feel that you can participate and share your ideas and views when you are in cooperative learning groups?

6) Do you feel like you learn more when you are put into cooperative learning groups?