Action Research: Impact of Cooperative Learning Strategies on Student Engagement

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# Table of Contents

Abstract .................................................................................. 3

I. Introduction ........................................................................ 5
   Context of the Study ......................................................... 5
   District ............................................................................. 5
   Classroom/Self ................................................................. 12
   Background of Problem .................................................... 13
   History and Rationale ...................................................... 14
   Observation, Statement and Purpose ................................. 14
   Innovation and Significance ............................................. 16
   Definition of Terms .......................................................... 18
   Assumptions, Limitation and Delimitations ...................... 18
   Research Questions .......................................................... 19

II. Literature Review ............................................................... 20
   Introduction ....................................................................... 20
   Primary Question: Cooperative Learning and Engagement .... 20
   Guiding Question 1: Pair Share and Engagement ................ 25
   Guiding Question 2: Jigsaw and Engagement ..................... 26
   Guiding Question 3: Jigsaw with Technology and Engagement 28
   Conclusions/Recommendations .......................................... 29
   Writer’s Connection ......................................................... 32

III. Research Design and Methodology .................................... 34
   Purpose of Action Research ............................................. 34
   Worldview/Research Traditions/ Specific Research Design ...... 34
   Data Collection Tool ....................................................... 35
   Sampling Design ............................................................. 35
   Reliability ......................................................................... 36
   Validity ............................................................................. 36
   Action Research Steps and Timeline ................................... 37
   Ethical and Cultural Considerations ................................... 37
   Data Collection Matrix .................................................... 38
   Triangulation of Data ....................................................... 39
   Data Analysis ................................................................. 43

IV. Findings and Discussion ....................................................... 44
   Introduction to Findings .................................................... 44
   Steps to Action Chart ....................................................... 45
   Findings ........................................................................... 46
   Discussion ......................................................................... 59
   Summary and Conclusions ............................................... 64

References ............................................................................... 68

Appendix A ............................................................................ 73
Appendix B ............................................................................ 79
Appendix C ............................................................................ 76
Appendix D ............................................................................ 77
Appendix E ............................................................................ 78
Appendix F ............................................................................ 78
Appendix G ......................................................... 81
Appendix H ......................................................... 82
Appendix I ......................................................... 83
Abstract

The purpose of this action research project was to investigate the impact of the cooperative learning strategies of pair share, jigsaw and jigsaw with technology on student engagement in the classroom. This mixed methods study was concurrent using aggregated data from two sixth grade social studies classes. This was a quasi-experimental design using the alternative treatment post term with nonequivalent groups. This was a field experiment with Group A utilizing the cooperative learning strategies of instruction including pair-share, jigsaw and jigsaw with technology and Group B engaged in traditional conventional methods including lectures and working independently. The findings of this study were based on a pre and post student survey on student learning preferences, an engagement chart of time spent engaged on classroom activities, teacher anecdotal notes and observation were coded for emerging themes and patterns and focus groups were held to gage student comprehension, personal opinions, and reflections on the three cooperative learning strategies they were exposed to. The findings hold true that cooperative learning does have an impact in the classroom. This research showed some interesting findings regarding student preferences for a cooperative learning strategy and actual engagement in the classroom.
Chapter I: INTRODUCTION

Context of the Study

Louisville Public Schools

“Louisville Schools is a PreK-12 system located in the north portion of Cass County. The communities of Louisville, Cedar Creek and South Bend comprise the majority of the school district. Louisville Schools is housed in one building, consisting of one elementary including preschool through 5th grade, one middle school including grades 6th through 8th, and one high school made up of grades 9-12. District test scores are consistently well above state and national averages. In the high school a one-to-one laptop learning system provides student access to a computer 24 hours a day. In the elementary and middle school there are over 200 student computers available along with additional classroom technology including iPod touches, interactive white boards, and iPads. More than 69% of Louisville’s certified staff members hold advanced degrees. Louisville Public Schools meets the needs of each learner by providing instruction that results in problem solving, communication, and technology skills”, (Nebraska Department of Education State of Schools Report Card, 2013-14).

Louisville Middle School

“Louisville Middle School meets the unique needs of young adolescents, grades 6-8; and seeks to provide each child an opportunity to explore their interests in the areas of academics, performing arts and activities. Students also participate in several interdisciplinary academic units, a homeroom advisor-advisee program, teaming and student led conferences during the school year. Seven and eighth grade students have
one to one access to computers and sixth grade students access to a laptop computer during the school day. A specific area of the Louisville School building is designated as the middle school”, (Nebraska Department of Education State of Schools Report Card, 2013-14).

**District Demographics**

The charts below of Louisville Public Schools demographics help to explain the culture of our school over the past five years (Nebraska Dept. of education State of the Schools Report Card, 2013-14). We have 553 total students in our district with 137 students in middle school.

Our school is hardly culturally diverse in ethnicity with only 2% of our students being of color. We have no teachers with minority ethnic backgrounds currently teaching. The school has no ELL students. We have some social economic diversity with a 17% rate of free and reduced lunch participants, which is showing a rising tendency. HAL students (high ability learners) compose 14% of our school population. Fourteen percent of our students are verified in some way. Of the students who are verified 60% are currently in the middle school. District test scores are consistently well above state and national averages. Louisville Public Schools shows a small amount of cultural diversity if you consider the four demographic factors, language, income, race/ethnicity, and disability (Gordon, 2014).
This chart shows that our enrollment is on the rise. In 2012 an addition was added to the building to compensate for this trend.
Our school is experiencing a rise in poverty levels. We have had numerous low-income families who have moved into the district. Several have commented that they moved to Louisville because we are a one to one school. These parents cannot afford computers so they feel this is a way for their children to have access to one.
Classroom

Students for the focus of this study were two sections of sixth grade world history classes. These students met for 48 minutes a day with the instructor.

The classroom lent itself to different arrangements based on activities that are occurring. Desks are stand-alone rectangles with separate chairs that were usually arranged in groups of four. A large center area was attained quickly by moving desks to the sides or back of the room. Positive attitudes abounded in the room with posters and bulletin boards. The world was close at hand with a 12-foot by 9-foot map. Student work that is pertinent to the current course of study was continually visible including writing and artwork.

The online curriculum, History Alive, was implemented in the classroom with students working on laptops and class lectures presented on a Smart Board.

Self

My mission statement in education is to motivate and engage students to become contributing, innovative, and knowledgeable learners in a global society. In order to accomplish this, there are five pertinent areas that need to be addressed.

I believe in using best professional practices that reflect the whole child as a learner. This includes fostering a growth mindset, cultivating curiosity to acquire knowledge and promoting creativity of thought. Teaching to students’ individual modalities including kinetic, auditory and visual tendencies, left brain/right brain preferences, and preferred multiple intelligence assures that the whole child is addressed. When students are allowed to shine in their dominant styles and made to stretch in their less preferred styles, true growth is achieved.

Parent involvement is vital to a child’s learning. Parents are always welcome and
encouraged to come into the classroom. My website is updated weekly with pertinent information about what is happening in the classroom. Remind is used to keep students and parents aware of upcoming tests and quizzes. Parents are kept informed of students’ progress by emails, phone calls, and access to Power School to check students’ grades online daily.

Cooperative learning is a vital element in my social studies classroom. Students work in a variety of groups in structured activities to learn and work on projects.

Assessment is a vital key in analyzing a student’s progress. In the classroom a variety of assessments including performance-based tasks, observation, written evaluations and personal conferencing are utilized. Projects are graded by rubrics that the students received at the beginning of each unit.

Technology is implemented on a daily basis in the classroom. Each student will have his or her own laptop for which they have responsibility. Because our curriculum is web-based, students complete assignments online and use a variety of technology including I-movie, Prezi, Thinglink, keynotes, and Smart boards to produce projects and perk their creativity.

**Background of the Problem**

**What is the history of this problem?**

With many students in the classroom with various learning styles, abilities, and ethnic backgrounds, there is a need to keep all students engaged at appropriate levels. Performance and cohesiveness are extremely vital in a reward system to motivate
students (Slavin, 1980). Cooperative learning has emerged as a technique to approach these challenges. “Research suggests that students learn more, increase their understanding, and enjoy learning in cooperative learning groups (Burton, 1987; Lee & Jacobs, 1998 in Adams & Hamm, 2005). Cooperative learning has the potential to strengthen intellectual, social, and creative thinking skills in students of all ages.

Where/when did it begin?

Documentation of the term cooperative learning in the educational setting is an old idea that has accelerated in recent years (Slavin, 1980). In the 1920s, cooperative learning was being studied in laboratories (Maller, 1929 in Slavin, 1980). At this time the concept of small groups performing together for recognition was being developed into practical programs for educators to use in classrooms. From 1940-1970, cooperative learning was largely ignored (Johnson & Johnson, 2009). Cooperative learning as pedagogy in the classroom began in the 1970s (Slavin, 1995 in Colosi & Zales, 1998).

What is your rationale for doing this Action Research?

The rationale for this action research was to find a way to accommodate all students who are in my social studies classroom.

What observations led you to this research?

The observations that led me to doing action research on cooperative learning and its impact on education came with having autistic and moderately profound students
mainstreamed into my classroom. These students excelled when put into group situations. This lead me to want to research more strategies in cooperative learning that would benefit high ability learners, average ability students and low ability learners students in my classroom in developing engagement and critical thinking skills.

Problem Statement

The concern was students’ lack of engagement in classroom learning and if cooperative learning could influence engagement. With a wide range of student ability in the classroom, there was a need to keep all students engaged during learning time at a challenging optimal level.

Purpose Statement

The purpose of this mixed methods study was to determine the best cooperative learning strategies to increase student engagement and involvement in the classroom. The intent of this study was to determine how to engage students of all learning styles, multiple intelligences, and a wide range of abilities into situations where learning time is optimized.

Innovation

One of the major shifts in my classroom was that my role was changed to being as a facilitator rather than being a traditional lecturer dispersing knowledge with explicit directives. I anticipated that student learning would become more self-directed and
self-actuating, but I did bracket my biases and was open to whatever results occurred. Students practiced real life skills that are demanded in the workplace. I was observing high, average, and low ability learners collaborating together to see which group shines the most in this setting. Change in pedagogy has occur primarily in my own classroom. Presenting concepts of cooperative learning to my middle school team and at weekly staff development meetings to promote best practices has been an outcome from this study.

Significance

The research into cooperative learning and engaging students does show to have a profound impact on students. This occurs by students taking responsibility for their learning and being accountable. Cooperative learning is based on students being able to reflect on their contributions as well as those of others. Students can learn many skills in this ideology including tolerance, acceptance, motivation, communication and organization. In our modern world, being able to master critical thinking skills in vital; cooperative learning affords situations for students to practice these skills.

Definition of Terms

• Cooperative learning - According to Rich (1993 in Goodwin, 1999, p. 29)

  “Cooperative learning is a teaching arrangement that refers to small, heterogeneous groups of students working together to achieve a common learning goal with a collaborative relationship among participants.”
• Engagement – Students are engaged if they are reading critically, writing to learn, creating, planning, problem solving, discussing, debating and asking questions, performing, presenting, inquiring, exploring, explaining, evaluating, experimenting, or interacting with other students verbally (Johnson, 2012, Student Directed Learning section, para. 1).

• Pair work – Simultaneous interaction and individual accountability in a one to one interaction (Kagan, 2009, p. 12.22).

• Jigsaw – Jigsaw (Aronson, 1979; Johnson, Johnson, & Holubec, 1990; Kagan, 1990 in Goodwin, 1999, p. 31) is a cooperative strategy in which the members of each cooperative group become experts on different aspects of one topic of study. After becoming experts on the assigned topic, teammates teach one another.

Assumptions

Student engagement is an ongoing challenge in education today. With students coming from different cultures; learning styles including kinetic, auditory and visual tendencies; left brain/right brain preferences; and their preferred multiple intelligences; we have to find ways to meet these needs. Some students may not enjoy working with others and fight the process. Doing research to ensure that students are benefiting from their education is vital for our society in the future.
Limitations

Time was a limitation as the students have 48-minute periods. Space was limited to the classroom and lab. Reading levels of the students were at extreme ends of the spectrum, which posed difficulties at times. Comfort level of the room was an issue, as the heat and air conditioning were not well regulated. Parents did not object to grading processes and the groups their child was working in however they could have.

Delimitations

Students were the incoming sixth graders who have not been exposed to middle school or the teacher previously. Cooperative learning and engagement are current pedagogy that need to be analyzed to verify that these tools are useful to students in the classroom as well as instructors.

Research Questions

Primary Question

How do strategies of cooperative learning impact student engagement in the classroom?

Guiding Questions

• How does using the cooperative learning strategy of pair share impact student engagement?
• How does using the cooperative learning strategy of jigsaw impact student engagement?
• How does using informational and communication technology (ITC) combined with jigsaw in cooperative learning impact student engagement?

Chapter II: Literature Review

Introduction

Cooperative learning, engagement, and collaborative learning are buzzwords from the 20th century, but pedagogy of the 21st century. Cooperative learning encompasses a broad base of activities including integrating different points of view, critical thinking skills, explaining concepts, analyzing misconceptions, discussion groups, and collaborative exercise (Souvignier & Kronenberger, 2007). With technology and communication moving forward at warp speed in our society, it is imperative that students are engaged and learning at accelerated rates in the school environment.
Cooperative learning is an educational strategy that has the potential to meet this need. The focus of this review is to explore how the strategies of cooperative learning impact engagement in the classroom. An overview of cooperative learning and the pros and cons of its use in the classroom will be explored. Attention will be focused on the cooperative learning strategies of pair sharing, jigsaw, and jigsaw in conjunction with technology.

Primary Question: Cooperative Learning and Engagement


According to Slavin, Hurley, and Chambers, there are four major theoretical perspectives in cooperative learning including social cohesion, developmental cognition, cognitive elaboration, and motivation (Slavin, 2003). The social cohesion perspective entails that a group must have interconnections to have quality interactions and be effective. Students will help each other learn because they have empathy for one another. Team building is the integral part of cooperative learning that builds those
foundations of trust among group members. The developmental cognitive perspective shapes the idea that students at similar developmental stages doing tasks at their developmental stage will show greater mastery of concepts presented. The cognitive elaboration perspective asserts that if students want to retain information in memory it is vital that they participate in some type of elaboration or discussion. A structure of cooperative learning called jigsaw, involving peer teaching, is a great tool for this. The motivation perspective states that for a student to perform a task there needs to be an incentive, reward, or goal structure. In cooperative learning for an individual to be successful, his or her group must be successful.

According to Kagan, four major interrelated crises in education have emerged from changes in economics, technology, urbanization, migration, and socialization in the modern world (2009). These crises include achievement, achievement gaps, race relations, and social skills. Cooperative learning addresses all of these with various learning structures.

In a cooperative learning classroom, students are divided into heterogeneous groups that are a mix of gender and ability levels. The optimum is to have one high ability learner, two average ability learners, and one low ability learner in each group. The premise behind this is that all students are more likely to have equal voice in the group. With heterogeneous groupings, students are apt to experience diverse attitudes, cultures, and value systems (Hooper, Temiyakarn, & Williams, 1993). The instructor makes the deliberate design of groups as well as assigning what phase of learning each student in the group is responsible for. Grades are given out individually and not as a
whole group grade. When students are made aware that their performance determines the success of the entire group there is a motivation to be productive in the group (Johnson & Johnson, 2009). The tasks and lessons that students are assigned are organized into cooperative learning structures. Structures are instructional strategies that describe how students interact with curriculum.

“We were engaged. Captivated. We had something in common that brought us close together. We were all passionately rooting for the same thing – an Indians victory” (Haudan, 2008, p. 10). Haudan paints a picture of the type of engagement that educators would like to observe in their classrooms; students totally immersed in their learning. When using cooperative learning in the classroom, engagement is necessary for success. According to Forsyth and McMillan, “Intrinsic motivation is a key element in teaching and learning” (1991 in Panitz, 1999). For students to be engaged they must be motivated. Engagement and motivation go hand in hand in the cooperative learning setting.

Cooperative learning has advantages for learners of all levels. Inclusion happens seamlessly with teacher-designed groups. With teambuilding and class building activities students improve their social interactions. Students with emotional and behavior disorders often have a difficult time relating to peers. Cooperative learning is a strategy that may help students with emotional and behavior disorders, learn better social skills in most cases (Prater, Bruhl, and Serna, 1998).

Cooperative groupings allow instructors to circulate the room and assist groups and individuals as questions arise. Instructors are afforded the opportunity to socialize
with students, one to one, in a professional setting. This can lead to openings for discussions with students in non-threatening situations (Panitz, 1999).

Cooperative learning has the capacity to increase academic achievement, boost self-esteem, improve attendance at school, and heighten the pleasure and enjoyment of school (Nagel, 2008). With students relying more on their own abilities and those of their peers, they may tend to decrease dependence on the teacher for direction and reinforcement (Augustine et al., 1989-90; Good, Reys, Grouws, & Mulryan, 1998-1990, Slavin, 1990, Wood, 1997 in Nagel, 2008). Cooperative learning allows for an environment where students can model behavior (Panitz, 1999).

Cooperative learning is highly effective in many areas of education. The findings of Hwang, Lui, and Tong (2005, p. 152) state “Students in a passive learning environment who were taught using a cooperative learning method significantly out performed those taught using a traditional lecture format”. The teaching of multicultural issues in social studies is highly effective when using cooperative learning (Salko, Eze, & Add, 2013). Corcoran and Sim, in a study on cooperative learning and art, found that learning in cooperative groups enabled low ability learners to develop creativity and problem solving skills more readily (2009). Many studies have been conducted on the positive impact of cooperative learning in the areas of math and science.

There can be drawbacks to cooperative learning. Goodwin suggests that students that do not have adequate social skills may struggle in working in groups (Goodwin, 1999). There may be a student who just refuses to participate in a group activity, as they prefer to do work by themselves on their own (Colosi & Zales, 1998). Low ability
learners may need added assistance from the teacher to keep up with high ability learners. High ability learners may become frustrated if they feel they are being slowed down (Colosi & Zales, 1998).

Guiding Question #1: How does using the cooperative learning strategy of pair sharing, impact student engagement?

Cooperative learning is based on the premise that learning is social (Adams & Hamm, 2005). Talking is an engagement. The more times a student can interact with another student the more engagement occurs. In a traditional classroom setting only one student at a time would make a statement to a question posed by a teacher. In the cooperative learning strategy of pair share, numerous students can talk at the same time on the same topic. Johnson and Johnson state, “As group size increases, individual members tend to communicate less frequently (Johnson & Johnson, 2009). In a smaller group more engagement occurs among its members.

In Kniveton’s study of pairs, he found that working in pairs increased the number of correct answers to questions compared to working individually and that boys benefitted in working in mixed gender pairs more than girls (Kniveton, 2006). Storch found that ESL students working in pairs were highly effective and productive (Storch, 2001).

Learners of all levels benefit from explaining to partners information, this promotes deep intrinsic learning of information (Webb, 1989 in Hooper, 1993). Students have the ability in a pair setting to make connections between existing
knowledge they have to new concepts they are learning. The setting is less threatening for students to explore and state their thoughts and ideas. Students are more likely to accept positive criticism from a partner if it helps to increase a student’s understanding of a concept (Hooper, 1993). Cooperative learning is a paradigm shift from conventional educational settings where all students are seated and quiet and all aspects are teacher directed.

**Guiding Question #2: How does the cooperative learning strategy of jigsaw impact student engagement?**

The jigsaw strategy, “Provides a cooperative learning environment which fosters learner activity, joint acquisition of content and mutual explaining” (Aronson, Blaney, Stephan, Sikes & Snapp, 1978 in Souvignier & Kronenberger, 2007, p. 756). In the jigsaw strategy, students are first placed in a heterogeneous home or jigsaw group. The teacher then assigns a certain portion or topic of a lesson for each student in the group to become an “expert” on the topic. Then all the students in the room who have the same topic come together as an expert group to study in depth their topic and plan strategies for teaching their topic to the jigsaw group. Students then return to their home or jigsaw group as the “expert” to explain to the rest of the group or “novices” their topic. Each member of the jigsaw group will teach or explain their topic to their group members. Finally, all students will be given a formative test over all of the material covered (Souvignier, 2007). In this strategy each student is part of an academic “puzzle” and has the capacity to bring unique knowledge to the group (Lai & Wu, 2006).
This strategy addresses the perspective of cognitive elaboration as students explain and paraphrase to others what they have learned. This process strengthens retention levels for the expert. In Souvignier & Kroger’s study jigsaw showed significant gains from pretesting to post testing (Souvignier & Kroger, 2007). Johnson and Johnson found jigsaw showed significant improvements of achievement in black and Chicano students, positive effects in race relations, and improvement in students’ self esteem (Johnson & Johnson, 2009). According to Hedeen, “Jigsawing is a strategy that encompasses positive interdependence, face to face interaction, individual accountability, interpersonal and small group skills (including leadership, decision-making, trust-building, communication, and conflict management), and group processing” (Hedeen, 2003, p. 326).

A drawback to the jigsaw strategy may be that a student will master his or her topic but fail to teach it to the other students (Slavin, 1995 in Souvignier, 2007). Aggressive or impatient students may sabotage a group by overpowering more timid students (Colosi & Zales, 1998). The instructor will be required to spend more time with this group. The authors also note that absenteeism may have a profound influence on the progress a group makes: however, some groups problem solve and find ways to accomplish tasks even though a member is absent.

Guiding Question #3: How does using informational and communication
technology (ITC) combined with jigsaw in cooperative learning impact student engagement?

This strategy uses jigsaw but with the use of technology. Lai and Wu state, “The mobility and connectivity of handhelds allows members of a group to have the physical control of the hardware, to continuously work on task, and to communicate with others while away from the group” (Lai & Wu, 2006, p. 284). Students of today are connecting with others through the Internet with all kinds of social media (Scheuerell, 2010). Working at a computer does not mean students are working alone by any means. Technology affords students the opportunity to interact during the process of a task as well as for the outcome of the task.

Cooperative learning in conjunction with technology is a method of connecting students in face-to-face collaborating with their peers. Students today are technology-hungry (Scheuerell, 2010). The use of technology in the classroom in core subjects has the potential to increase engagement.

According to 21 Century Skills Framework, “Learning and innovation skills are what separate students who are prepared for increasingly complex life and work environments in today’s world and those who are not. These skills include creativity, innovation, critical thinking, problem solving, communication and collaboration” (Partnership for 21st Century Skills, 2013, Learning and Innovation Skills, para. 1). Students need to apply these skills when working with ICT. Computers change the style of interactions and participation that students have (Mavrou, Lewis, & Douglas, 2010). Technology allows for reading materials to be dispersed by audio or video
benefiting below reading level students. Documentation is easily accomplished and monitored with programs like Google Classroom or Google docs. Hand held devices allow students to move easily between expert groups and jigsaw groups. Teachers can disperse materials, messages, or information students might need during the activity. Students enjoy technology in the classroom and are engaged (Lai & Wu, 2006). According to Mavrou, Lewis, and Douglas, “Pictures, symbols, words, etc. can be combined in interactive ways to facilitate pupils’ understanding and engagement” (Mavrou et. al., 2010, p.499). Technology allows for students to interact on multiple levels.

There are drawbacks to using technology in the classroom including dead batteries, loss of connection, and problems submitting files. Using technology in the classroom requires a considerable amount of teacher preparation before, during, and after the class. Some teachers are hesitant to incorporate technology into their classroom, as they may no longer be considered the expert. (Mostmans, Vleugels, Bannier, 2012).

Conclusions/Recommendations

Cooperative learning is one of the leading pedagogies in education today. It is multifaceted from the standpoint it incorporates students as individuals, students in a group setting and the teacher are all responsible for best practices to be put into place. In this method, students utilize critical thinking skills, explain concepts, address different points of view, analyze misconceptions, take part in discussions and work
collaboratively with others through teacher guidance. Cooperative learning is a strategy where students take responsibility and ownership for their learning.

The four major theoretical perspectives that cooperative learning is based on are motivation, social cohesion, developmental cognition, and cognitive elaboration (Slavin, 2003). These perspectives are the pathways that support the effectiveness of cooperative learning. Students have to make interconnections to have quality interactions with others. Cooperative learning allows students to have more opportunities for interaction with others than traditional conventional methods of education.

Students are social beings. The more opportunities students have for interaction transfer to more engagement in the classroom. Engagement and motivation are pivotal for the success of cooperative learning,

Cooperative learning focuses on students working in heterogeneous groups that are designed by the instructor using different strategies or structures to work on topics of learning. Each student has a specific task to accomplish in every strategy. For individual student success, his or her group must also be successful.

The strategy of pair share affords the opportunity for several students to engage at one time. With more engagement comes more learning and self esteem. Students have the opportunity to restate information for better retention.

Jigsaw is a strategy where students work in two groups, a jigsaw or home group and an expert group to learn information and then disseminate that information back to the jigsaw group. This strategy addresses the perspective of cognitive elaboration
where students paraphrase their learning to teach others. This type of activity strengthens retention of knowledge. Jigsaw gives students opportunities to engage in two groups for learning. With this process students show significant gains in scores from pretest to posttest. Students experience positive interdependence and improved self-esteem in this strategy (Johnson & Johnson, 2009).

The third strategy of adding technology to the jigsaw strategy showed that students had more control and engagement in their learning. Technology changes the style of how students relate to each other (Mavrou, 2010). This strategy allows for easier documentation by the student. Technology is definitely a part of every classroom and affords students many more avenues for learning. This strategy allows for many modifications that can be made for inclusion students. Instructors have the ability to easily monitor students’ progress through programs like Google Classroom and Google Docs.

**Writers Connection**

*Language makes us human*

*Literacy makes us civilized*

*Technology makes us powerful*

*The arts add resources for thoughtfulness and enlightenment*

*Inquiry gives us intellectual tools for making sense of the world*

*And being in community with others can make us free*

(Adams & Hamm, 2005, p. 35)
This poem found in the *Redefining Education in the 21st Century* states to me the true meaning of cooperative learning. Cooperative learning as pedagogy in education fits the whole child in their learning process. The literature review showed that cooperative learning is a valuable teaching style in the classroom.

It was a new concept to me that cooperative learning could have a profound influence on multicultural understanding in classrooms. It makes sense that students working closely together collaborating become more aware and tolerant of each other.

After reading and reflecting on all the literature and data on cooperative learning, I feel that I have a better perspective about the psychological bases for cooperative learning. I was surprised to learn that cooperative learning is based off of four physiological perspectives. The perspectives of motivation, social cohesion, developmental cognition, and cognitive elaboration in themselves explain why cooperative learning is successful in the classroom.

All of the literature indicated a strong connection between cooperative learning and engagement. In the course of my study, I will be interested to see if all three of the strategies I have chosen (pair share, jigsaw, and jigsaw with technology) show a high level of student engagement.
Chapter III: RESEARCH DESIGN AND METHODOLOGY

Purpose of Action Research

The overall thrust of this action research project was to find a method to keep students engaged for optimal learning. The specific purpose of this study was to see if the strategies of cooperative learning impacted student engagement in the classroom.

Worldview
The worldview of this study was pragmatism, as the focus was on what methods would produce a desired solution.

Research Tradition

Mixed methods was used for this research, as both quantitative and qualitative information were used for findings.

Specific Research Design

The design of this research was concurrent. Aggregated data from two sixth grade social study classrooms was compared. This research was conducted as a quasi-experimental design using the alternative treatment post term with nonequivalent groups model (see below). The setting was a field experiment, as it occurred for six weeks in the classroom. Group A received cooperative learning and teambuilding for their treatment. Group B received teambuilding and conventional traditional methods of teacher/lecture and all work was done individually for their treatment.

Model of Alternative Treatment Post Term

with Nonequivalent Groups Design.
Data Collection Tools

The collection of data involved a student survey at the beginning and end of the research, teacher anecdotal notes and observation, daily engagement evaluation chart, and focus groups.

Sampling Design

This study utilized a purposive sample. The entire frame was the complete middle school; however, only sixth graders whom have not previously been in my classroom and are new to middle school were in the sample. This was an enumeration sample of the entire sixth grade class. A stratified sampling of students by high/average ability and low ability levels was utilized.

Reliability

Using the different cooperative learning strategies in two-week intervals was employed. Inter-rater reliability was not an issue as the classroom teacher was the only facilitator and used a pre-constructed rubric [or protocol].

Validity
Criteria for validity was based on the Andersen System (1984 in Mills, 2014).

- Democratic Validity – The entire sixth grade was used.
- Outcome Validity – Data drove how cooperative learning will be used in the classroom in the future.
- Process Validity – The strategies of cooperative learning were used in two-week intervals.
- Dialogic Validity – The results of the study were shared with my middle school team, in staff development, and with my students.

**Action Research Steps and Timeline**

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<thead>
<tr>
<th>Date</th>
<th>Step</th>
<th>Details</th>
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<tbody>
<tr>
<td>June 15</td>
<td></td>
<td>Present proposal for study to principal</td>
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<tr>
<td>July 15</td>
<td></td>
<td>School Board approval of proposal for study</td>
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<tr>
<td>Sept 9</td>
<td>Week 1</td>
<td>Give Pre- Survey</td>
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<tr>
<td></td>
<td></td>
<td>Collect Data on pair share</td>
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<tr>
<td>Sept 16</td>
<td>Week 2</td>
<td>Collect Data on pair share</td>
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<tr>
<td>Sept 23</td>
<td>Week 3</td>
<td>Collect Data on jigsaw</td>
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<td>Sept 30</td>
<td>Week 4</td>
<td>Collect Data on jigsaw</td>
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<tr>
<td>Oct 7</td>
<td>Week 5</td>
<td>Collect Data on jigsaw and ICT</td>
</tr>
<tr>
<td>Oct 14</td>
<td>Week 6</td>
<td>Collect Data on jigsaw and ICT</td>
</tr>
<tr>
<td>Oct 21</td>
<td></td>
<td>Focus Groups / Post Survey</td>
</tr>
</tbody>
</table>
Ethical and Cultural Considerations

In this study the paradigms of high and low context, family structures, directness and indirectness, along with internal verses external locus of control were considered and addressed. As noted in the demographics in Chapter I, our school has little diversity in terms of race and cultures. We do have a few students from cultures who exhibit external locus of control; these students tend to not engage easily. These students were monitored and encouraged to be active participants. Students in the school come from all types of family situations, which required being cognizant of those situations during group discussions on some topics. Direct and indirectness was addressed before the study starts about being open, honest and direct and students were not graded on positions taken. Students were encouraged not to answer based on acceptance of the teacher or peers. Concerning high and low context, teacher action and voice were toned so that students took the responsibility for their learning and did not listen to teacher direction.

The National Institutes of Health Office of Extramural Research training course “Protecting Human Research Participation, certificate number, 780364 (Appendix A) was completed on June 9, 2015. To preserve confidentiality, all student data was aggregated. The plan was to send letters informing parents but upon advise of my principal letters were not sent to parents about the research project as data was
aggregate and teaching methods were not out of the ordinary.

### Data Collection Triangulation Matrix

<table>
<thead>
<tr>
<th>Data Source #1</th>
<th>Data Source #2</th>
<th>Data Source #3</th>
<th>Data Source #4</th>
</tr>
</thead>
<tbody>
<tr>
<td>GQ #1 Pairing</td>
<td>Time engaged</td>
<td>Focus group</td>
<td>Pre and Post Survey</td>
</tr>
<tr>
<td>GQ #2 Jigsaw</td>
<td>Time engaged</td>
<td>Focus group</td>
<td>Per and Post Survey</td>
</tr>
<tr>
<td>GQ #3 Jigsaw &amp; Technology</td>
<td>Time engaged</td>
<td>Focus group</td>
<td>Per and Post Survey</td>
</tr>
</tbody>
</table>

### Triangulation of Data

During the course of this study one primary question and three guiding questions were addressed. The guiding questions and explanations of data sources are described below.

**Guiding Question #1: How does using the cooperative learning strategy of pair share impact student engagement?**

Data Source #1 was to conduct a pre and post survey using a verbal frequency scale design on how students view cooperative learning and students’ preferences. This was given to both group A and group B (see Appendix B).

Data Source #2 step was an engagement chart using a linear, numeric design (Appendixes C & D). Students’ performance of engagement was charted using various
pair share strategies including Time-Pair-Share, Rally Robin, Paired Shared Heads, Pair Interviews, Circle-the-Stage, Stand Up-Hands Up-Pair Up, Wagon Wheel and Stroll Pair Share. The students worked on journal questions (Appendix E) and a study guide (Appendix F).

The Data Source # 3 was a focus group, which the teacher facilitated to maintain inter-rater reliability with 5-6 students at a time. Before asking the icebreaker question, the strategies of cooperative learning were written on the board. The “focused” icebreaker questions were, “What do you think the cooperative learning strategy of pair share means and can you give an example when you have used it before in the classroom? What did you like about it? What did you not like about it? The second ice breaker question was, “What do you feel would be the perfect cooperative learning style for you in the classroom and explain why?”

The grand tour question was, “Can you rank order the cooperative learning strategies of pair share, jigsaw and jigsaw technology we used in class as to which you liked first, second, and third and explain why?”

The follow up questions included, “How did you feel about working in a pair share group? How did you feel about working in teams using jigsaw to work on your reading notes? How did you feel about using the laptops and jigsaw to work on group activities?”

When the group was finished discussing their rank ordered responses were put on the board.

Data Source #4 was a journal of anecdotal records and observations of each day’s
Guiding Question #2: How does the cooperative learning strategy of jigsaw impact student engagement?

Data Source #1 was a pre and post survey using a verbal frequency scale design on how students view cooperative learning and students’ preferences. This was given to both group A and group B (see Appendix B).

Data Source #2 was an engagement chart using a linear, numeric design (Appendixes C and D). The students’ performance of engagement using the jigsaw strategy was charted. The students worked on a comic book page on the Neolithic Age (Appendix G) and review sheet comparing and contrasting the Flintstones to the Neolithic Age (Appendix H).

The Data Source #3 was a focus group, which the teacher facilitated to maintain inter-rater reliability with 5-6 students at a time. Before asking the icebreaker question, the structures used were listed on the board. The “focused” icebreaker questions were, “What do you think the cooperative learning strategy jigsaw means and can you give an example when you have used it before in the classroom? What did you like about it? What did you not like about it? My second ice breaker question was, “What do you feel would be the perfect cooperative learning style for you in the classroom and explain why?”

The grand tour question was, “Can you rank order the cooperative learning strategies of pair share, jigsaw and jigsaw technology we used in class as to which you
liked first, second, and third and explain why?"

The follow up questions included were, “How did you feel about working in a pair share group? How did you feel about working in teams using jigsaw to work on your reading notes? How did you feel about using the laptops and jigsaw to work on group activities?”

When the group was finished discussing, rank ordered responses were written on the board.

Data Source #4 was a journal of anecdotal records and observations of each day’s strategy and engagement.

Guiding Question #3: How does using informational and communication technology (ITC) combined with jigsaw in cooperative learning impact student engagement?

Data Source #1 consisted of a pre and post survey using a verbal frequency scale design on how students view cooperative learning and students’ preferences. This was given to both group A and group B (see Appendix B).

Data Source #2 was the use of an engagement chart using a linear, numeric design (Appendixes C and D). The students’ performance in engagement using the jigsaw strategy combined with technology was charted. Student’s worked on designing a vocabulary slide using Google slides.

The Data Source #3 was a focus group with 5-6 students, which the teacher facilitated to maintain inter-rater reliability. Before asking the icebreaker question,
structures were listed on the board. The “focused” icebreaker questions were, “What do you think the cooperative learning strategy of jigsaw with technology means and can you give an example when you have used it before in the classroom? What did you like about it? What did you not like about it? The second ice breaker question was, “What do you feel would be the perfect cooperative learning style for you in the classroom and explain why?”

My grand tour question was, “Can you rank order the cooperative learning strategies of pair share, jigsaw and jigsaw technology strategies we used in class as to which you liked first, second, and third and explain why?”

The follow up questions included, “How did you feel about working in a pair share group? How did you feel about working in teams using jigsaw to work on your reading notes? How did you feel about using the laptops and jigsaw to work on group activities?”

When the group was finished discussing, rank ordered responses were written on the board.

Data Source #4 was a journal of anecdotal records and observations of each day’s strategy and engagement.

**Data Analysis**

This action research project focused on how cooperative learning impacts engagement in the classroom. The strategies of pair share, jigsaw, and jigsaw with technology were used to analyze engagement of students. Data Source #1 (pre and
post survey using a verbal data frequency scale) was given with those results being shown on a bar graph to compare student preferences and what changes may have occurred from pre to post survey. Data Source #2 (student engagement) was explored on a horizontal cluster bar graph to compare engagement between the strategies. In Data Source #3 (focus groups) students rank ordered their preferences and those were reported on a pie chart. Anecdotal observations were coded for themes and bullet pointed in the findings. Data Source #4 (journal of anecdotal records and observations) was coded for themes.