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Determining the Effects of Jigsaw versus Think-Pair-Share on
Student Participation in an Inclusive Classroom

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Abstract

According to research, the cooperative learning strategies, Think-Pair-Share and Jigsaw, allow students to engage in more independent thinking, provide increased wait-time, and allow reassurance and collaboration for student thinking. However, while they are both beneficial, which one promotes the most student participation? Participation is especially important for inclusive classrooms, which are becoming more prominent each year. This study addresses ways to best motivate student participation in a second grade inclusive classroom during a social studies unit on ancient China. I incorporated Think-Pair-Share and Jigsaw into the two-week social studies unit and compared the participation that occurred with both strategies. Both students' perception of their participation and their actual participation were analyzed for comparison.

Keywords: participation, cooperative learning, Think-Pair-Share, Jigsaw

Introduction

Classroom discussion plays an important role in success in educating students. Discussion gives students the opportunity to participate in class, and gives teachers the insight they need on their students' comprehension and understanding of material. From there, teachers can manipulate their instruction to fit the needs of all diverse learners. All students need to master the skill of discussion in order to be successful later in life because it is important to know how to speak informatively and appropriately in public. Discussion and participation also allows students to be exposed to their peers' thought processes. Sometimes students might not grasp the directions or material from the teacher, but interacting with their peers may provide them with appropriate models of critical thinking that allow them to clear up misconceptions. This builds student confidence in their abilities to complete and master each subject. With confidence, the students may undertake more effort in learning and participate more—allowing them further to build their knowledge and understanding.

According to many researchers, cooperative learning strategies have been proven to be beneficial to both participation and confidence of students. Thus, there are many benefits for incorporating a cooperative learning strategy into the classroom. Every year, inclusive classrooms become more common in schools, which allows students with special needs to better learn essential content in the least restrictive environment. In fact, studies have proven that cooperative learning is useful for all learners, making it ideal for all classrooms today.

Two such strategies are known as Think-Pair-Share and Jigsaw. Both strategies provide students with some essential aspects of learning: independent thinking, increased wait-time, and collaborative learning. Think-Pair-Share involves presenting students with a task or question, giving them time to think individually, sharing and discussing their thoughts with a partner, and

then having the pairs share with the entire class. By using this strategy, students are encouraged to participate in discussions, as well as to have their ideas molded and developed through shared thoughts.

The second strategy on which I focus is Jigsaw. Similar to Think-Pair-Share, Jigsaw also allows for independent thinking and collaborative learning. Jigsaw involves students completing their own research, and teaching it to the class. For my purpose, I created a guide sheet that informed students of important questions they needed to think about, research, and eventually answer from such research. At the end of the unit, they presented their findings to the class. For this study, I will be incorporating Think-Pair-Share and Jigsaw into my inclusive classroom in order to determine the effect of both on student participation.

Literature Review

There are many benefits from incorporating a cooperative learning strategy into the classroom. Studies have shown that cooperative learning strategies can be very beneficial for students in the classroom today. These strategies include *Turn-to-your-neighbor*, *Think-Pair-Share*, *Round Robin*, *Inside-Outside Circles*, and *Jigsaw* (Green, 2000). Looking specifically at Think-Pair-Share and Jigsaw, these particular strategies inherently increase wait-time after students are presented with a question or given the opportunity to discover information on their own (Green, 2000). It is important to give students an appropriate amount of time to think. By doing this, students ultimately become more involved in discussions and improve the quality of their responses (Cortright, Collins, & DiCarlo, 2005). Not much research has been completed on which cooperative learning strategy works best for an inclusive classroom, yet it has been shown that these strategies are potentially good for such classrooms because many students with special

needs require extra time to process information and, additionally, need the assistance of others to talk through information.

Teachers strive for meaningful learning within their classrooms. In order for this to occur, students must interpret, relate, and incorporate new information with their prior knowledge and experiences (Cortright, Collins, & DiCarlo, 2005). It has been proven that students cannot, and do not, learn by simply listening to a teacher. They need to be actively involved in order to process and retain the information being taught, and methods like direct instruction do not always allow such opportunities. This is where using cooperative learning strategies can be so beneficial. These strategies allow students the chance to work together and develop a more meaningful understanding of what they are learning. By working in small groups, students can seek a common goal in order to increase the understanding of the material not only for themselves but also for their peers (Johnson & Johnson, 1999).

Since cooperative learning strategies have been widely proven to engage and guide students more effectively than other teaching styles, they are becoming more commonly used in classrooms. In their article, Johnson and Johnson (1999) determine five key components of cooperative learning, which have been incorporated into approaches like Jigsaw. These components were developed when the two men started training teachers on how best to use small groups.

First, Johnson and Johnson discuss positive interdependence. This means that students are responsible for their own learning as well as their other group members' learning. A student's success does not depend primarily on the teacher, but on the group as a team. Each individual is important, and provides different resources and perspectives, so it is crucial that everyone participates (Johnson & Johnson, 1999).

Second, they describe how cooperative learning promotes interactive skills. Students are encouraged to assist one another, cheer each other on, and challenge each other's conclusions to promote appropriate thought and discussion. By initiating interactive skills, this also allows students to give feedback to one another, and motivate each other to strive toward achieving mutual goals (Johnson & Johnson, 1999).

Third, the authors discuss individual accountability and personal responsibility. As stated, this means that students are in charge of their own learning, and held accountable for their efforts within the group for achieving goals. This concept ensures that each student is responsible for himself or herself, and the work he or she completes, so that other students are not forced to take on more than their share of the group's work (Johnson & Johnson, 1999).

The fourth key component of cooperative learning is the use of interpersonal and small group skills. Students must be able to communicate effectively with one another and have the ability to resolve conflicts (Johnson & Johnson, 1999). This not only requires students to learn how to work together, but also how to be individuals. They begin to rely upon themselves rather than on adults. The fifth and final component is the notion that students should determine what is successful and what should be changed within the group. By giving students this responsibility, the teacher is allowing students to self-evaluate as individuals and as a group.

These two researchers developed these components so that teachers would understand that working in small groups is not a magical process. This is particularly important for understanding the cooperative learning strategy Jigsaw, since it sometimes involves working in small groups. The two researchers gathered their data by implementing cooperative learning in elementary, middle, and high school classrooms, and then presenting the information they discovered at training sessions. Through their research they discovered that some learning

groups will facilitate student learning, while others were more likely to hinder it. The structure of the small group determines how well it will perform, so when teachers and educators understand the different ways cooperative learning may be used and the basic elements that should be structured, their small groups will be more effective. These authors' extensive research has successfully shown how cooperative learning is more beneficial than other types of learning (Johnson & Johnson, 1999). It is important for inclusive classrooms to use small groups, and Jigsaw is a strategy that works well. When implementing such a strategy into a classroom, using these two researchers' ideas would be beneficial.

Hedeem's article is greatly influenced by Johnson and Johnson's work. Hedeem (2003), a researcher for all grade levels, argues that Jigsaw is the most beneficial strategy because it requires smaller group work, which gives students more of an opportunity to participate. Students learn best when they are actively involved in the process, as well as through participating in small groups because they are more engaged (Hedeem, 2003). Students in their groups become "experts" with their peers, and then have the chance to teach what they learned to other groups. From the original version of this strategy developed in 1978, many other Jigsaw strategies have emerged. Using the original strategy, Myers and Lemon (1988), describe how the process was implemented into their social studies unit on native people. The class gathered into learning groups while material was divided into five sections. Each student in the groups became an "expert" on their particular native group, and then related the information to other members of their learning group, and then to the rest of the class (Myers & Lemon, 1988).

Within Hedeem's argument is the notion that Jigsaw can be used at most grade levels. Teaching it allows students to become responsible for their learning and participation. The process provides for an equal division of labor and responsibility, which creates a level of

interdependence and cooperation (Hedeem, 2003). This provides students with a deeper appreciation and understanding of the subject matter because they have to rely upon themselves and their peers for their learning. According to Hedeem, by putting the students in charge of their learning they are more likely to want to learn and thus participate.

Similar to Hedeem's study, Tarhan, Ayyildiz, Ogunc, and Sesen (2013) use aspects of Johnson and Johnson's work to complete their research on Jigsaw. Their study investigated the effects of Jigsaw on an elementary classroom learning science. They sought to determine which instructional strategy would help students understand physical and chemical changes better. They determined that Jigsaw was a more effective teaching strategy because students did not have as many misconceptions about the material. This technique properly challenged them, enhanced their motivation, learning achievements, and self-confidence.

Cortright, Collins, and DiCarlo (2005) attempted to use Jigsaw with two large groups to determine the outcome. They divided a class into two groups, "Group A" and "Group B." There were going to be three presentations to the class and after each, they distributed a quiz about the presentation. Students in Group A could discuss the questions with two or three other students within that group and students in Group B completed the quiz on their own. Lastly, the students completed a survey on their experiences. The performance on all quizzes was better for students who could discuss the questions with peers, indicating that this facilitated their learning. Additionally, the students in Group A explained that they appreciated peer instruction because it helped promote positive relationships between students. Collins, Cortright, and DiCarlo concluded that based on these results and feedback, this cooperative learning technique provided a more meaningful learning experience for the students. It also taught the students that using their peers in the learning process can be more effective than learning on their own.

Somewhat differently, while Green (2000) discusses how cooperative learning is beneficial within classroom groups, as opposed to whole class discussions, he also argues that students involved with such learning strategies also learn to become more active participants in whole class discussions. However, this is a more likely outcome if these learning strategies are modeled and explained to students before they are implemented in the classroom. Unlike Hedeem, Aronson, and Patnoe, according to Green, when Think-Pair-Share is implemented correctly it helps guide class discussions for students. This occurs because pairs are given the opportunity to share what they have discussed and then other students are given the opportunity to respond to those comments (Green, 2000). The teacher's role is to pose the first question or problem and then monitor the students to make sure equal participation occurs within each pair. Once the students are ready to discuss, the teacher is there to facilitate the whole class discussion. It is important to remember that initially students may be reluctant to share their responses with the entire class, but that by using this strategy repeatedly they will become comfortable with it.

Lujan and DiCarlo (2005) are another research pair who have determined that cooperative learning increases students' understanding and ability to integrate and synthesize new information. These two, along with others like Goodwin (1999), discuss how strategies of cooperative learning have been shown to increase academic achievement, promote positive social skills, and build students' self-esteem. However, we cannot assume that collaboration will result from cooperative learning simply because students are told to work together. Goodwin points out that students need to be taught social skills in order to make this effective. This should be accomplished at the beginning of the school year. Teaching social skills is similar to teaching academic skills, in that teachers simply need to provide appropriate learning

opportunities for students (Goodwin, 1999). This step is important because research has also shown that it can support critical thinking, problem-solving, and decision-making skills. Lujan and DiCarlo argue that one of the most successful cooperative learning strategies is Think-Pair-Share because this strategy can increase student participation in large group discussions. While the Think-Pair-Share strategy is one of many ways to incorporate cooperative learning into a classroom, it specifically allows students to process and apply a meaningful understanding to curriculum using a more individual approach (Lujan & DiCarlo, 2005).

Reinhart (2000), a math teacher, conducted his own study of classes he taught over the years. He noticed that students were not grasping concepts he taught through direct instruction, so he sought to improve his teaching by using a problem-based, student-centered approach incorporating cooperative learning techniques. His solution was Think-Pair-Share. This strategy helped improve large class discussions better than other techniques he incorporated into the classroom. He observed that this strategy offered many benefits, such as allowing students time to think before sharing, and promoting, even forcing, them to be responsible and accountable for their learning and participation. In this way, the students were providing relevant material for discussions. The term “relevant” refers to discussing the topic at hand (Reinhart, 2000). Participation increased in his class, and he found more students were willing to share their ideas with the whole class when they were given time to think and a chance to share their ideas with a partner or small group first. Reinhart’s conclusion was that Think-Pair-Share gave students the opportunity to understand the information being learned in class, as well as being able to appreciate what they understood.

In addition to the supporting research, cooperative learning is also consistent with educational theory. In his article, Bandura (1989) argues that there is a “triarchic reciprocal

causality” between behaviors, personal factors, and environmental factors. This is true whether it involves personal factors such as goals, self-efficacy, and cognition, or environmental factors such as models, instruction, and feedback. For example, if students are paired together, they can converse over each other’s thought processes. Looking at environmental factors, one student might receive useful feedback from a peer, while his or her partner contributes appropriate instruction. This ties in with personal factors to allow students a better understanding of the material. By better understanding the material, the student is encouraged to participate more in class, and thus generating productive behavior. Finally, the student should receive positive recognition from the teacher for the additional participation in class, which relates to the environmental factors (Bandura, 1989).

Although this example is hypothetical, the point that Bandura makes is that cooperative learning gives students the opportunity to receive feedback from their peers, which can build confidence. Students gain different perspectives and understanding that they might not have received directly from the teacher. With higher goals and an enhanced self-esteem, students are better motivated to succeed in the future (Bandura, 1989). In this system of triarchic reciprocal causality, students receive positive momentum from strategies in cooperative learning, making it beneficial to implement this in the classroom.

Besides the positive benefits of the social cognitive theory discussed by Bandura, there are other advantages to Think-Pair-Share and Jigsaw, such as was mentioned earlier: wait-time (McTighe & Lyman, 1988). When discussing wait-time, there can be two types: the time after the teacher asks a question and the time that occurs after a student speaks. In the case of Think-Pair-Share, wait-time refers to that time after a teacher asks a question. With respect to Jigsaw, it is the time given to students to become an expert. A study of wait-time was conducted by Rowe

(2003) within elementary science programs. She discovered that giving students three or more seconds of wait-time after the teacher asks a question led to more student participation and less “I don’t know” responses, as well as more in-depth responses from the students (Rowe, 2003).

Additionally, Think-Pair-Share and Jigsaw provide teachers with a mechanism for formative assessment of students. They can use these strategies to help gauge where students are in the learning process. Ruiz-Primo (2011) explained that effective assessment is aided by providing learning goals, and allowing students the opportunity to respond to one another. Effective assessment gives teachers the opportunity to adjust their instruction to be more beneficial to the students. Using informal formative assessment, teachers obtain new information about student understanding. This can happen during either a student-teacher interaction or student-student interaction that takes place during cooperative learning strategies. Such interactions give teachers the chance to evaluate students’ think processes through their explanations (Ruiz-Primo, 2011).

According to Jenkins, Antil, Wayne, and Vadasy (2003), cooperative learning strategies can even be helpful when used in inclusive classrooms. This would be beneficial for students with special needs because, as stated previously, cooperative learning facilitates academic understanding, encourages active participation, and gives students the opportunity to interact socially with their peers (Antil et al., 2003). Socially, these students learn to listen, respond respectfully, and learn to work with peers. The major benefits for inclusive classrooms are that students will gain more, finish more, and learn more. They will gain self-esteem, feel more secure and less stressed, and can offer a more active voice in discussions. These inclusive groups would depend on their student members, but also might progress more working with

people who can assist them while still allowing them the opportunity to contribute (Antil et al., 2003).

Overall, it has been determined that Think-Pair-Share and Jigsaw are beneficial for all classrooms for a variety of reasons. However, not enough research has been completed to determine how such strategies impact inclusive classrooms, and whether or not one strategy provides for more productive participation in the classroom than the other. Rowe's findings (2003) concluded that wait-time increases student participation in whole class discussion. Does this remain true for students with disabilities? Classroom discussions are not intended to be an opportunity for students to hide and hope they are not called upon, thus using cooperative learning strategies can liven discussions and enhance participation. While students might find using one of these techniques unsettling at first, participation will ultimately become more active as students grow accustomed to them. Based on the research that has been conducted emphasizing the positive benefits of Think-Pair-Share and Jigsaw, it will be interesting to find which cooperative learning strategy positively impacts and influences students with disabilities in an inclusive classroom.

Methodology

For this study, I wanted to determine which, if either, cooperative learning strategy (Think-Pair-Share or Jigsaw) had a more positive effect on student participation in an inclusive classroom, as well as determine if student perception of participation differed from actual participation. Thus, I came up with the following questions. *How does Think-Pair-Share compare to Jigsaw? Is one strategy more beneficial than the other for student participation in an*

inclusive classroom? How does student perception of participation differ from actual participation that occurs during social studies?

I included twenty students in the second grade class in the testing of both strategies and collected data for the consented and assented students (*Appendix A and B*). There were thirteen males and seven females included in this study. Eleven out of the thirteen males were white; the other two males were African-American. Six of the females were white, and one was African-American. One female and one male had Individual Education Plans (IEP), and one male and one female were included in Response to Intervention (RTI) due to low achievement scores. Within the data collected, these students are known as IEP Male 1, IEP Female 1, RTI Male 1, and RTI Female 1. The other students are known as Male or Female with a number assigned to each. Once the data was collected, the results were split by responses, gender, and ability levels.

As stated, there were thirteen male participants, and seven female participants. The students took a survey at the beginning and end of the unit (*Appendix C*), and had to respond with one of four answers: Strongly Agree, Agree, Disagree, and Strongly Disagree. In terms of ability levels, students with an IEP and those who were part of RTI were grouped together. This group consisted of four students, while the other sixteen were grouped together because they were all at about the same ability level.

The study took place for four weeks, two of which were during social studies instruction on ancient China, where Think-Pair-Share was incorporated for one week, and then Jigsaw was incorporated for the second week. Social studies lessons occurred every day for about thirty minutes each day. I began by introducing students to the teaching models and explaining the expectations so that students would know in what ways they were going to be held accountable and know how they should act. During the Think-Pair-Share lessons, the students were given

questions to think about on a daily basis, which they first discussed with a partner, and then collectively discussed with the entire class. This strategy was used at least one time each day. On the first day, the students watched a BrainPop video on ancient China and were asked how China compared to Egypt. On the second day, the students were asked how people can travel to China, and which direction China is located from the United States and Egypt. On the third day, the students were to think about what they anticipated the architecture of China was before that topic was actually taught. On the fourth day, the students were asked how the environment of China compares to the environment of Egypt. On the final day of the Think-Pair-Share strategy, the students were asked to think about how the Huang He (Yellow River) compares to the Nile River. The questions were determined by the topic that was being taught for the day.

Typically, the Jigsaw strategy is used to make students dependent on each other to succeed. Students are broken down into groups, given specific sections of a topic to research, and then asked to present their research to their classmates. These final presentations help provide each student with an understanding of the whole unit. During my Jigsaw lessons, the students were separated either into pairs or worked alone based on the type of project they chose and whether or not they wanted to work with others (*Appendix D*). Independently or with their partners, they then had to sit with a teacher and determine which aspect of ancient China they wanted to research. Students had to use resources such as books and technology to derive answers, which was directed from a recording sheet as guidance. At the end of the unit and Jigsaw strategy period, the students presented what they had learned to the class.

In order to examine students' perception of their participation at the beginning of the unit, I administered a pre-study survey to measure the extent to which students believed they participated in the classroom. There were six statements that were used to get a sense of how

students felt about participating in class—using the “Strongly Agree,” “Agree,” “Disagree,” or “Strongly Disagree” responses. This data was analyzed based on the responses, their gender, and their ability levels, and then put into table and graph form to be compared to the post-study survey. The latter was administered after the unit was completed and was identical to the pre-study survey. For both surveys, the teacher read each statement aloud, and the students had to respond. The surveys took place during a morning meeting period, when students gathered to greet one another, and took about fifteen minutes to complete. The pre-study survey was administered the week before the ancient China unit and the post-study survey was administered the week after the unit was completed. The intent was to determine how students felt about their participation in a social studies class before and after the strategies had been implemented. At the end, I examined the differences between the first administration of the survey and the second administration.

The other data points collected were observation tallies. I observed four behaviors: raising hands, asking questions, replying with relevant responses, and contributing relevant material in groups. Specifically, for each observation, strict relevance was not required; students simply had to respond in some way related to the topic at hand. Each time students performed one of the behaviors I was observing they received a tally. Before the unit, one observation was taken of class participation during a social studies lesson on ancient Egypt to determine students actual participation based on four certain behaviors (*Appendix E: Table 1*). During the first observation, I asked the class what contributions they believed were from Egypt. The students were separated into three groups, and had to make a Venn diagram comparing the current contribution to that from ancient China. A second tally observation sheet was completed during the final Think-Pair-Share lesson, where students were asked how the Yellow River compared to

the Nile River. I tallied students who participated using the observation sheet in *Appendix E: Table 2*. A third tally observation sheet was completed during the final research day for the Jigsaw lesson, where the teacher walked around and tallied students based on the behaviors observed (*Appendix E: Table 3*). A final tally observation sheet was completed the week after the ancient China unit during a lesson on the water cycle. Students were asked about four contributions to the water cycle, and about any additional information they knew about it (*Appendix E: Table 4*). This allowed for more students to be given the chance to raise their hands and contribute. These observation sheets helped demonstrate the overall impact of these strategies on students' actual participation.

Results

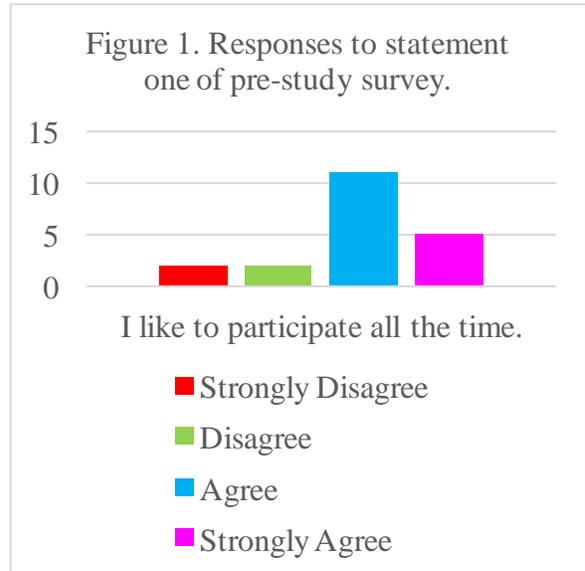
How does Think-Pair-Share compare to Jigsaw? Is one strategy more beneficial than the other for student participation in an inclusive classroom? How does student perception of participation differ from actual participation that occurs during social studies? To determine the students' actual participation, I observed students four separate times. A tally sheet, organized using Microsoft Word, was used for data collection. A "Y" represented students participating in one of the observed behaviors more than once. An "S" indicated that a student participated in the behavior only once. To determine students' perception of their own participation, I administered a pre- and post- study survey.

Week One: Pre-Study

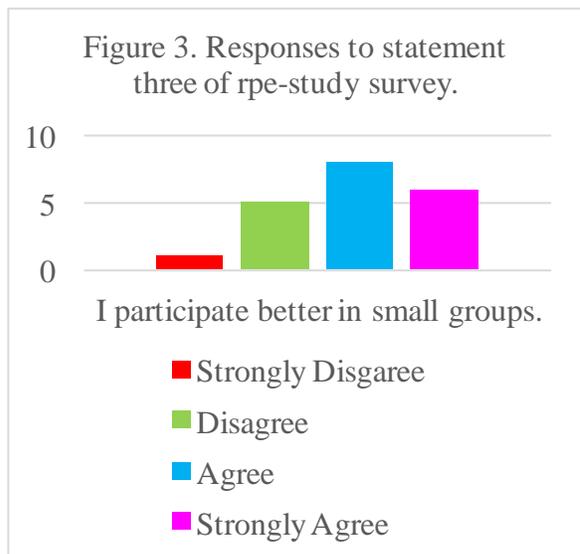
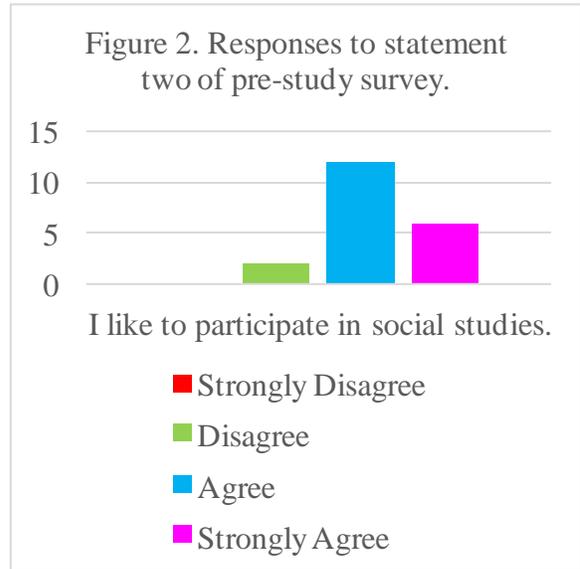
Appendix E: Table 1 indicates the results of the pre-study observation sheet. The first observation took place during a lesson on ancient Egypt, during which students discussed the inventions and creations of that civilization to items we use in our world today. The data

revealed that more students contributed ideas in groups than any other behaviors observed. Six students raised their hands during this thirty minute lesson, but only four students attempted a response to my questions. The best participation occurred within the small groups. Nine out of the twenty students contributed multiple ideas within their groups, and seven more students contributed one idea to discussions. The worst participation occurred with student questioning, during which only one student asked questions during this lesson. This one student, known as Male 1, was the sole student to receive multiple tallies for all behaviors and for every observation. This student always had a hand raised, asked questions, attempted to answer the questions with a response, and contributed to discussions--all of which pertained to the topic at hand.

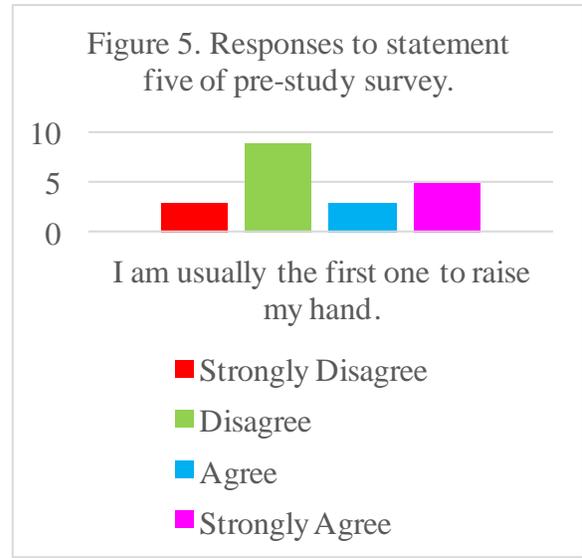
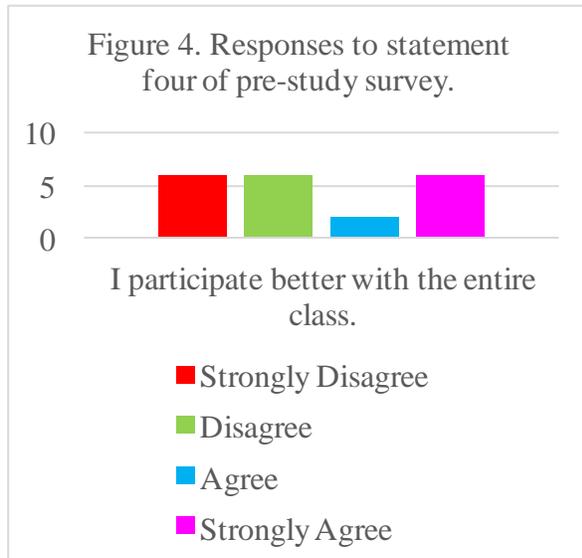
At the end of this week, I administered a participation survey that determined the students' perception of their participation before the ancient China unit was implemented. The data was assembled in table form (*Appendix F: Table 1*), which I then transferred to graphs for comparison. The table is separated by the individual students and their genders. This way I could group students by their responses, by their genders, and by their abilities (IEP, RTI, and everyone else). I created *Appendix G: Graph 1* in order to better understand and compare the information from the previous



table, specifically examining the grouped responses. This graph shows the students' perception of their participation from the table created from the pre-study survey. The following figures represent each statement separated from the previously mentioned Appendix. While the graphs are broken up by each response, I specifically examine whether or not students felt positively or negatively toward a statement. I used *Figure 1* to determine how students felt about participating all the time within the second grade class. Sixteen students felt positively toward participating all the time, while four students felt negatively toward it. *Figure 2* was used to determine how students felt about participating in social studies. Eighteen students felt positively toward participating in social studies, while only two students felt negatively toward it. It is important to note that no students strongly disagreed with this statement. I used *Figure 3* to determine if students felt they participated better in small groups. Fourteen of the twenty students had a positive perception of working in small groups, while six students did not agree with this statement. *Figure 4* determined whether or not students participate better with the entire class. Over half the class (twelve students) had a

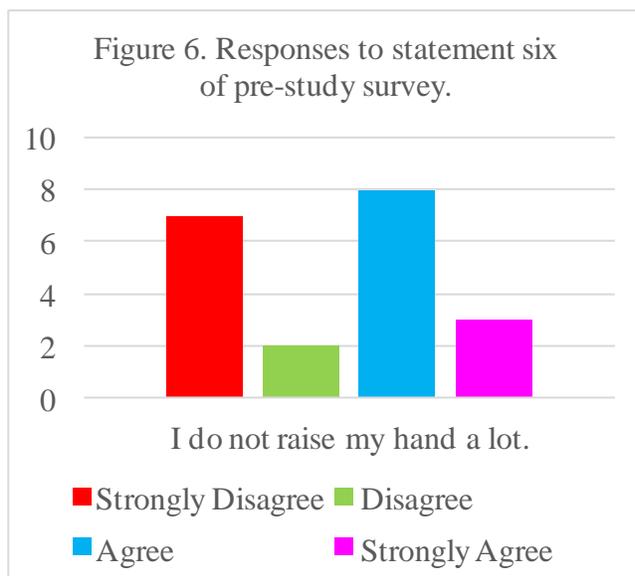


negative perception of participating in a whole group, while eight students preferred participating



with the entire class.

Figure 5 determined whether students perceived themselves as being the first to raise their hands. Twelve students did not believe that they were the first to raise their hands, while eight students were more positive about it. Figure 6 determined if students perceived that they do not raise their hands in class. Eleven students perceived that they do not like to raise their hand in class, while nine students disagreed with this statement. This statement was fairly balanced, with most students either strongly disagreeing or simply agreeing that they did not like to raise their



hands.

In addition to group responses, I analyzed gender and ability levels for the surveys as well. I used *Appendix G: Graphs 2 and 3* to compare ability levels of

the general education students (at or above grade level) and students with IEPs/RTIs. These two sample sizes were significantly different; there were sixteen general education students and only four students with IEPs and RTIs. Between the two ability levels, there were multiple similarities and differences. Half the students for both groups perceived that they liked to participate all the time. Also, most students did not feel they are the first to raise their hands. However, the general education students who did respond that they perceived themselves as the first to raise their hands, strongly believed it, whereas the students with the IEPs/RTIs responded that they only sometimes felt that was true for them. The same was accurate for students perceiving themselves as not raising their hands a lot. Both groups had a high number of students disagree with this statement, but the general education students felt more strongly than students with an IEP/RTI.

Dissimilarly, the students with IEPs/RTIs had a more negative perception of participating in social studies than the general education students. In fact, no students at or above grade level had a negative response at all. Another difference was in how the students with IEPs and RTIs felt about small groups. Every student except one strongly agreed that they prefer small groups, and the one student simply stated that they agreed as opposed to strongly agreed. While most general education students agreed that small groups work better, the next highest response was students disagreeing with this. In this case, there were more mixed feelings about small groups than with the students with IEPs/RTIs. Finally, while both groups had a fair number of students dislike working in whole groups, there were more general education students that strongly liked working with the entire class.

I used *Appendix G: Graphs 4 and 5* to compare gender-based student responses. Unlike with the ability levels, the responses of males and females were more balanced. As I have

previously mentioned, the first statement determined how students felt about their own participation in the classroom. Overall, the results showed that both males and females perceived participation in a positive light. Only a small number of both genders responded negatively. The second statement determined how students felt about participating in social studies. Similarly to statement one, both males and females perceived participating in social studies positively. In fact, no females and only two males responded negatively. The third statement determined whether or not students participated better in small groups. A slightly higher percentage of males responded positively than did females. The results revealed that ten of the sixteen males felt positively toward small groups, while only four of the seven females responded this same way. The fourth statement determined whether or not students preferred working in a whole group. Females perceived working in a whole group very evenly, while over half the males did not agree that they work better with the entire class. Statement five determined whether or not students felt like they were the first to raise their hands. More males believed that they are the first to raise their hands than did females. However, there was also a larger percentage of males that did not believe they raised their hands first. Lastly, statement six determined whether or not students felt they never raised their hands. Males either strongly disagreed or simply agreed to this statement, while females were more balanced among responses.

Week Two: Think-Pair-Share

The ancient China unit began using the strategy Think-Pair-Share. This was only supposed to be used for one week, but due to Snow Days during the months of February and March it was drawn out over two weeks with inconsistent teaching days. During the two-week period, Think-Pair-Share was incorporated for five days. On the last day of using Think-Pair-

Share, students were observed for a second time (*Appendix E: Table 2*). I had asked the class to compare the Yellow River to the Nile River. Two students received multiple tallies for all four observed behaviors, thus obtaining a “Y” on the observation sheet I created in Microsoft Word. Nine out of the twenty students raised their hands multiple times during this period, while seven students raised their hands once to make a total of sixteen students who raised their hands for the duration of this lesson. This differed from the first observation, where only six students had raised their hands. Three students asked more than one relevant question, while three additional students asked one relevant question relating to rivers and the two countries, which totaled six students asking questions. This differed from the first observation, where only one student had asked questions. Fourteen students were able to respond to a question with multiple answers, while three students were able to respond to a question with one answer, totaling seventeen students responding. This represented a positive increase in participation from the first observation, during which only four students had contributed. Sixteen students contributed with relevant ideas while they were paired with another student, which did not differ from the first observation. Overall, every student except one showed some progress in participation. The one student exception was the male with an IEP. The greatest participation occurred with students raising their hands and contributing in their discussions with a partner. The least participation occurred with student questioning.

Week Three: Jigsaw

The students partook in the cooperative learning strategy, Jigsaw, for the second half of the unit. This was also only supposed to be one week, but, again, due to additional Snow Days in March and students missing school due to illness, this was spread out over two weeks. The Jigsaw lessons took a total of eight days to complete. Four were dedicated to research and four

were dedicated to presenting. As is displayed in *Appendix D*, the students were given a sheet that required them to choose which project they wanted to complete and whether or not they wanted to work in pairs or by themselves. Eight students chose to work independently, while the other twelve preferred working with a partner.

To begin, I sorted the students into their pairs based on the type of project in which they were interested. Next, they sat with a teacher to discuss the topic they wanted to research and received a sheet that guided them through their research. In addition, the students could use books and technology to research their topic. Over the next four days (two days one week, two the following week), the students researched their projects. On the fourth day of researching, I took another observation tally (*Appendix E: Table 3*). Twelve out of the twenty students received multiple tallies for all four observed behaviors. Seventeen students raised their hands, which was one more student than had done so with Think-Pair-Share. Twelve of the students asked questions relating to their topic, which was double what it had been with the previous strategy. I gave the students an opportunity to share their answers from the guide sheet, and those who shared received a tally. Every student except one shared multiple answers they had discovered thus far. The male student with the IEP only shared one answer. All twenty students contributed to discussions within their group, or if they were working independently, on their guide sheets. All twenty students made additional progress since the first week of observation.

Week Four: Post-Study

After finishing the ancient China unit with student presentations, I completed one more observation tally sheet (*Appendix E: Table 4*). During this lesson, the class made the water cycle. As with the other observations, students that received a “Y” exhibited a behavior multiple times, and students with an “S” exhibited a behavior once. Ten students raised their hands more

than once, and eight students raised their hand once, resulting in eighteen students participating in this behavior. Again, this behavior was increased by one student since the last observation. One student asked multiple questions, and three other students asked one question, resulting in less participation than with Jigsaw and Think-Pair-Share. However, all twenty students contributed to discussions.

At the end of the week, the students completed a post-study participation survey. The

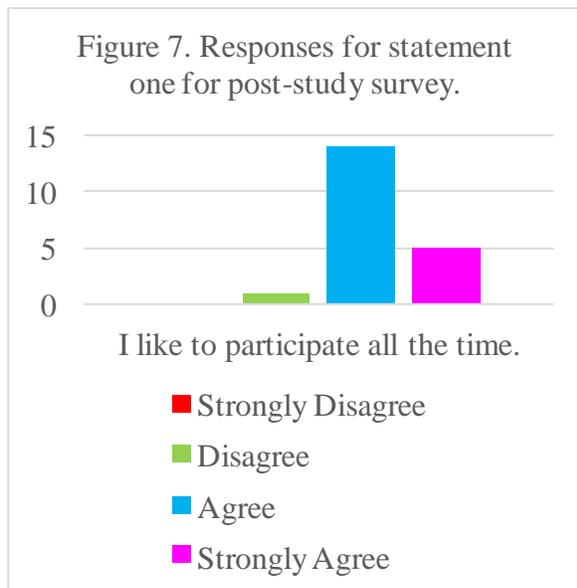
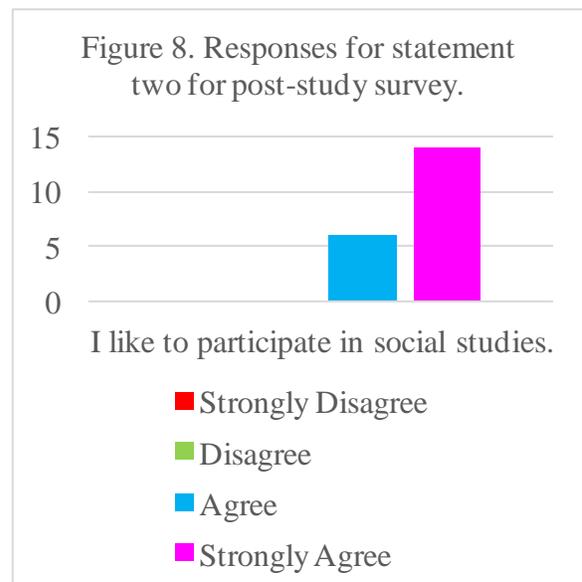
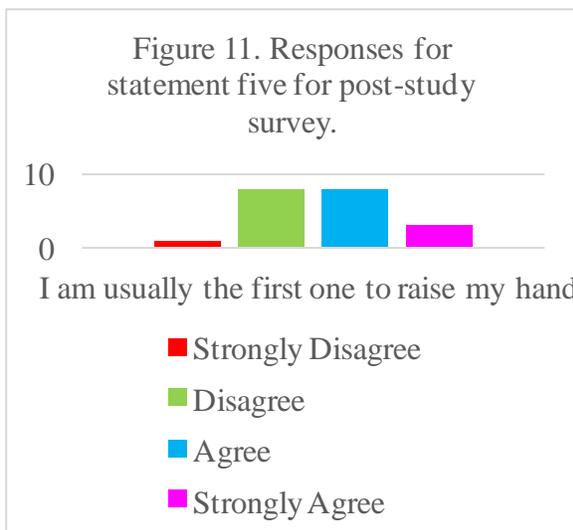
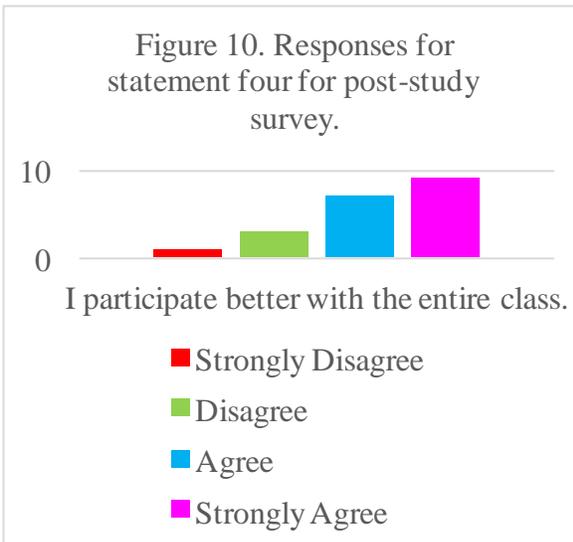
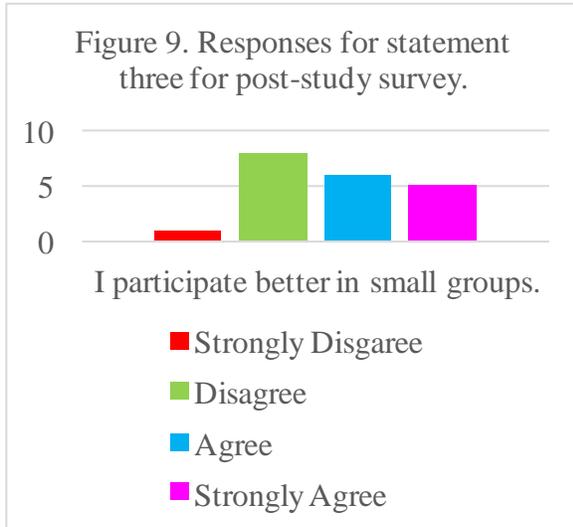


table is located in *Appendix F: Table 2*. As with the pre-study survey, this table became the basis for graphs. The table is separated by the individual students and their genders. This way I could group students by their responses, by their genders, and by their abilities (IEP, RTI, and everyone else) in order to compare the results to the pre-study survey. I created *Appendix H: Graph 1* in order to better

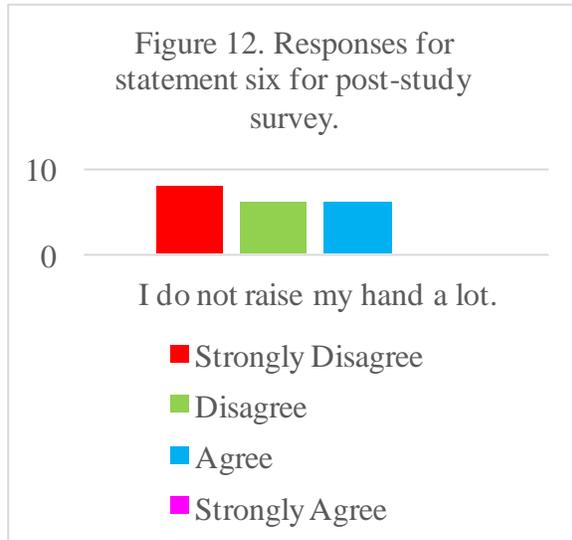
understand and compare the information from the previously mentioned table.

Again, I divided this graph into figures and focused on the positivity and negativity of responses as opposed to the specific replies. As with the pre-study survey, I used *Figure 7* to determine how students felt about participating all the time. Nineteen students felt positively toward participating all the time, while only one





student felt negatively toward it. *Figure 8* determined how students felt about participating in social studies. All twenty students felt positively about participating in this subject. No students had any negative feelings about participating in social studies. I used *Figure 9* to determine if students felt they participated better in small groups. Eleven of the twenty students had a positive perception of working in small groups, while nine students did not agree with this statement. *Figure 10* was used to determine if students participated better with the entire class. Only four students had a negative perception of participating in a whole group, while sixteen students preferred participating with the entire class. This contrasted to the first survey's results. *Figure 11* determined whether students perceived themselves as being the first to raise their hands. Nine students did not believe that they were the first to raise their hands, while eleven students were more positive about it. Overall, students did not respond with strong feelings one way or the other. *Figure 12*



determined if students perceived that they do not raise their hands in class. Six students perceived that they do not like to raise their hands in class, while fourteen students disagreed with this statement. More students felt negatively toward this statement than from the pre-study survey. Most students perceived themselves as hand raisers.

As with the pre-study survey, I analyzed gender and ability levels. I used *Appendix H: Graphs 2 and 3* to compare ability levels of general education students and students with IEPs/RTIs. As a reminder, these two sample sizes were significantly different and made it difficult to come to conclusions based on the results. However, there were multiple similarities and differences. Both groups felt positively toward participating in social studies. Not a single student responded with either disagree or strongly disagree. In general, both groups felt very positively about participating. Only one student with an IEP felt negatively towards it. While both groups responded positively toward participating with the entire class, more general education students strongly preferred it, and students with an IEP/RTI sometimes preferred it.

Dissimilarly, the general education students did not prefer small groups. More of these students had negative perceptions of small groups, while most students with an IEP/RTI preferred them. Similar to the pre-study survey, students with an IEP/RTI believed that they are not typically the first ones to raise their hands, while the general education students responded more positively. However, half the students with IEPs/RTIs perceived themselves positively in

response to the more general question about raising their hands, while the other half responded negatively. Most general education students believed they usually raised their hands.

I used *Appendix H: Graphs 4 and 5* to compare genders based on student responses. As with the pre-study survey, there are significant similarities and differences in these results. The first statement determined how students felt about their participation in the classroom. Similar to the first survey, the results indicated that both males and females perceived participation in a positive light. Only one male disagreed with this statement. The second statement determined how students felt about participating in social studies. Out of all the statements, the results for statement two were the most balanced. Both males and females perceived participating in social studies very positively. Both genders had more students strongly believed this, and no students negatively responded. The third statement determined whether or not students believed they participated better in small groups. Unlike the first survey, more females responded positively than males. More males responded that they did not work better in small groups.

The second half of the survey had much more mixed results than that of the first half. The fourth statement determined whether or not students preferred working in as a whole group. Both genders believed that they worked better with the entire class, but there were two males and two females that disagreed. Statement five determined whether or not students felt that they were the first to raise their hands. Both groups responded very differently. Males did not perceive that they were the first to raise the hands, but many more females felt the opposite. Lastly, statement six determined whether or not students believed they never raised their hands. Again, both groups had opposite responses. Over 75% of the males disagreed and believed they do raise their hands in class, while more females responded that they agreed that they do not

raise their hands a lot in class. Overall, there was not a significant different between the responses of the males versus the responses of the females.

Discussion

Perception vs. Actual Participation

At the beginning of the study, few students had accurate perceptions of their actual participation as measured by classrooms observations. However, throughout the study, their perceptions became more in line with their actual participation due to the cooperative learning strategies I was incorporating. I believe this was because the strategies, and related discussions about the strategies, made students more conscious of their behavior than before. They understood that I was completing a project relating to participation, and their understanding of what that meant increased as these cooperative learning strategies were implemented.

There was only one student who had an accurate account for his behavior during the entire study. Male 1 always participated multiple times in every observed behavior. For this student's participation pre-study and post-study surveys, he had all positive responses. The pre- and post-study data sets paralleled each other, which indicated that he had a good understanding of his actual participation. On the other hand, there were also students for whom perceptions of their participation was skewed. For example, Male 6 responded in the pre-study survey that he believed his participation was comparable to that of Male 1. However, based on my observations before starting the unit, he never raised his hand, asked questions, or attempted to answer questions. His only true participation was that he minimally contributed during discussions with his peers. However, this changed after the unit was implemented. His participation greatly increased, and by the end, Male 6 was raising his hand, attempting to

answer questions, and contributing much more with his peers. Overall, as the unit progressed and observations were made after each cooperative learning strategy was implemented, all students' participation increased to some extent.

I found that students' perception of their participation started off as expected with students believing their participation was more than was actually displayed. As both cooperative learning strategies were implemented, the students all changed their participation habits. After Think-Pair-Share, I found there was a dramatic change in participation. While this change was not equal for everyone, every person had some sort of progress based on my observations in the classroom and the number of tallies students received. Whether it was students raising their hands, attempting to answer questions with a relevant response, or contributing to discussions, there was a dramatic difference from the very first observation. During the first observation, only six students raised their hands, by the last observation, eighteen students completed this behavior. Instead of four students attempting to respond to a question as occurred in the first observation, eighteen students completed this behavior by the last observation.

I believe such changes occurred for two reasons. First, the students were becoming more adjusted to my teaching, and second, I believe both cooperative learning strategies Think-Pair-Share and Jigsaw were providing these students with opportunities to be more involved. As the students were transitioning into my teaching style, they became more comfortable talking aloud and answering my questions. I also found that giving students an opportunity to participate boosted their confidence and increased participation in these behaviors. The only behavior that showed limited change was that of asking questions. As second-graders, they have not quite developed the skills needed to ask questions. In addition, while I believe that Think-Pair-Share provides opportunities for students to answer questions, it did not provide similar opportunities

to question the material. The strategy, Jigsaw, provided students with the opportunity to question their material, either because they could not find answers in their research or because their research left them with more questions. It is just as important for students to question information, as it is to learn it from a teacher or classmates. With the opportunity to practice this skill, they will become better at it.

Think-Pair-Share vs. Jigsaw

With these considerations in mind, I then compared Think-Pair-Share to the cooperative learning strategy, Jigsaw. Comparing the first observation sheet that records observations before the study to the observation that occurred during the use of the Jigsaw strategy, there was a greater difference than was found when comparing any other observation. During the Jigsaw lesson, every student except three had their hands raised at least once. Even more notable was the fact that all twenty students attempted to answer research questions, either asked by the teacher or through their guide sheets. In fact, every student except one received multiple tallies for this behavior. This was also true for students contributing within their pairs or on their own. Every student except two participated in this behavior multiple times. The one person who had limited participation with both of the above mentioned behaviors was the male student with an IEP, and this might have been due to the fact that his medications for ADHD were changing and inconsistent.

The most distinctive difference between Think-Pair-Share and Jigsaw was the students' participation with asking questions. Many of the raised hands were to ask a question that was related to their research. Over half of the class had questions during this research lesson. It is this difference that sets these two cooperative learning strategies apart. While Think-Pair-Share had an increase in actual participation behavior, Jigsaw had all the same increases (and more) as

well as displaying multiple tallies for asking questions. Another major difference occurred with the students with IEPs and RTIs. The IEP female and RTI male both had 100% participation during our Jigsaw weeks, which meant that they completed each behavior multiple times. They were more engaged than I had seen them before. Even the RTI female completed 75% of each behavior. For all students with IEPs/RTIs, this represented a dramatic change, not only from before the unit began, but compared to the Think-Pair-Share results as well. To me, this data indicates that Jigsaw was most successful at increasing student participation. I believe this is because students felt more in control of their learning. They were able to choose how they wanted to learn, thus making them more engaged and excited about the process.

Additional Reasons for Outcome?

While in many ways it was my activities for the unit that made students engaged and showing progress, there were other reasons as well. The male student with an IEP was undergoing changes in medication, which affected his behavior every day. Some days, he was very talkative, but would be completely off-topic, while other days he would not speak at all. As an incentive from the special education teacher, he was given speaking chips. When he raised his hand, the teacher would take a chip away. This strategy did not show signs of working until my last week of observation and, even at the end of the period, he continued to have mixed participation days. There were also a few instances in which, while progress was made in this student's actual participation throughout the unit, the student put minimal effort into his work. This was a continued reoccurrence and, ultimately, led to a conference with the parent. It is important to remember that there are outside factors, such as these, that can affect these studies.

Limitations

While my research study answered my questions, I found some limitations throughout the process. First, because we had an entire week of snow days at the beginning of my action research project, I was not able to interview the students. Instead of students being forced to simply answer questions or statements, with interviews, students would have been given the opportunity to guide the discussion based on their feelings. The interview opportunity might have allowed for a better understanding of student perceptions of participation. Additionally, it would have allowed for student quotes that would have provided a more personal understanding of the interviews, since I would have been working directly with students.

I also determined that tallying could have been made easier through recorded lessons. If I were to replicate the study, I would record each lesson that I am observing so that I can include more precise tallies, detailed field notes, and quotes from the students during these lessons. Similar to the interviews, this could have made the perception component of the study more informative.

Also limiting was the low number of inclusive students. Originally, a little more than a quarter of the students were part of the inclusive aspect of the classroom, but four left the class in December, and the parents of one student did not agree to be a part of this study. Due to this limitation, my comparisons focused on whole groups instead of solely comparing inclusive versus non-inclusive students. While I used and compared data for different ability levels, there was not enough data to reach any valid conclusions.

Observations Compared to Literature

One immediate thing I learned that aligned with some of the literature I found was the importance of wait-time. Consistent with what Cortright, Collins, and DiCarlo discussed in their article, I observed that by giving students more time to think, this led to more involvement in

their discussions and responses. As teachers, we need to give students opportunities to participate. As many of the articles and studies predicted, both cooperative learning strategies were successful in my classroom. However, for maximum participation, Jigsaw worked the best because students had more responsibility for their own learning. This made the learning process more meaningful for them, and as Johnson and Johnson discussed, this is one of the most important aspects of learning.

One important factor in making these strategies successful was the method of their introduction. Green stated that for cooperative learning strategies to be most beneficial, students need to become familiarized with them. Being fully aware of this importance, I took sufficient time to introduce and practice Think-Pair-Share and Jigsaw with the class before officially implementing the teaching strategy. For example with Think-Pair-Share, I gave a practice question to the students, had them think about it, talk it out with a partner, and share it with the class. They also received this strategy in other subjects for additional exposure. For Jigsaw, I paired up the students, gave each one a Chapter from their social studies text book and asked them to pull out three important facts to share with the class. This allowed them to practice identifying what information is important and practice sharing it with the class.

Implications

If I were to do this research again, I would want to complete it in a more defined inclusive classroom. My goal was to compare the effects of these two strategies on participation in a classroom that had students with special needs. The results might have been different with a student population that had more diverse ability levels. Of necessity, my results reflected a

general education classroom and showed how these strategies helped build such participation in this environment. In a more inclusive classroom I might not have reached the same conclusion.

Another physical change I would have preferred would have been a change of season. Because it was winter, there were many snow days, which created unavoidable interruptions in learning. While the timing was necessary in this educational situation, it would have been preferable to complete the study in the fall or spring. This is not to say that additional obstacles would have arisen, but at least Snow Days might have been avoided.

Finally, as alluded to earlier, I would have preferred to have been able to interview the students before, during, and after the teaching units. I think this would have enhanced my understanding of the students' perceptions. I had surveys that they completed before and after, but the interviews would have given me their direct feelings about participation in general. I would also have been able to learn the extent to which they enjoyed each strategy and why.

I believe both strategies I used fit well with my teaching style because I really value independence and guiding the students toward problem solving and critical thinking. Think-Pair-Share and Jigsaw both require students to think on their own, and then share ideas or research with the class which is parallel with my teaching. I believe that the best way to engage students is to allow them, as much as is practical, to learn for themselves. These strategies not only allow for this, but also give students the opportunity to learn in different ways and be social with their peers.

Conclusion

While Think-Pair-Share and Jigsaw are both cooperative learning strategies, their classroom implementation is very different. I discovered that Think-Pair-Share might be best

used for students to confirm their knowledge and share with their classmates. This strategy worked well when I had a series of questions about which I wanted the class to think. While many of the questions they might not be able to answer right away, the questions made them think and problem solve. However, when it came to overall participation, while substantially higher than the first week, I would have preferred more from all the students.

Notably, Jigsaw allowed for students to create a project of their own and do their own research. They still were answering guided questions from the teacher, but had to both figure out answers on their own or with a partner, and then take it a step further and make something from it. As my objective was to get more people to participate, I determined that Jigsaw was more beneficial for this task. This was much more engaging and most students were contributing in the observed behaviors.

The final aspect of my research delved into the students' perception of their participation. At the beginning, many students responded that they felt they were participating much more than was observed. Only a few students' perception originally aligned with observations. Throughout the weeks, the students showed great progress in participating, which also was reflected in their perceptions. By the week of observations for Jigsaw, almost everyone was participating with at least one of the observed behaviors. However, during a lesson on the water cycle fewer people participated than during the Jigsaw session. Although, this number was still significantly higher than that of the first observation. Thus, I came to the conclusion that the level of participation is also going to be influenced by the activities implemented in class. The more interactive and hands-on they are, the greater the degree of participation that will result.

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Appendix A

Parental Consent Letter

Dear Parent or Guardian,

Hello, my name is Gaelyn Quirey, and I am a student teacher in your child's second grade classroom. I am currently in the graduate program at the University of Mary Washington for Elementary Education with a specialization in Special Education. A requirement for our program is to conduct an action research study in an area related to our specialization. I am inviting your child to participate in the research study I am completing. Participation is voluntary for this study, so you may choose to have your child involved or not involved.

I am interested in learning the effect of the cooperative learning strategies, think-pair-share and jigsaw on student participation during social studies. Think-pair-share is when students come up with their own answers to a problem or question, they then share their answer or ideas with a partner, and then share the combined discussion with the class. Jigsaw is when students learn material through different sources on their own and teach their classmates. For two weeks, our class will be using these strategies in our social studies lessons in order to strengthen participation, and determine if one is more effective.

I am requesting permission to give your child a survey about his or her feelings on their participation in social studies. I am also requesting permission to potentially interview and tape record your child answering questions before and after this study. This study is part of your child's work for class, so no additional work will be required! Responses will be kept confidential and your child's name will not appear anywhere in data or the final project. Names will be changed for their privacy.

Involvement in this project is voluntary and will not affect your child's grade in any way. You have the right to keep your child out of the study, and your child has the freedom to stop participating in this study at any point. If you do not wish for your child to participate, he or she will continue to participate in the classroom study, but data for the research study will not be collected or used. However, if you choose to allow your child to participate, this will help me understand if using think-pair-share makes in influence on student participation.

If you have any questions or concerns, please feel free to contact my University Supervisor Dr. Roberta Gentry (rgentry@umw.edu) or myself (gquirey@mail.umw.edu). Please return this form by January 30, 2015.

I look forward to working with you and your child!

Thank you,

Gaelyn Quirey

I have read the above letter and give my child, _____,
permission to participate in this study.

Parent/Guardian Signature Date

I give my child permission to be tape recorded during interviews.

Parent/Guardian Signature Date

I do not wish for my child to participate in this study.

Parent/Guardian Signature Date

I, _____ agree to keep all information and data collected
during this research study confidential.

Researcher Signature Date

Appendix B

Student Assent Letter

Dear Student,

I am very excited to be your student teacher this spring! There will be a lot of new social studies we will be working on, so to help us learn we will be using two cooperative learning strategies known as think-pair-share and jigsaw. Think-pair-share is when we think about the question or problem being asked, share our thoughts with a partner, and then share our collaborated thoughts with the class. Jigsaw is when students learn something in a small groups and then teach their peers (your other classmates) the information as opposed to the teacher.

During the two week unit, I will be collecting information for a research project for my school to see how effective these strategies are in your social studies classes. I will interview some of you to see how you feel about participating in the classroom and I will tape record you to remember what is being said. You will not be graded for your assistance in my study, and it will not require you to do extra work after school. You will be asked to talk with me and answer some questions in a survey.

Your parents have already been informed about this study, and have been given a letter as well. If you are reading this, then they have allowed you to be included in my project. I encourage all of you to participate in this study. After your parent's permission, it is your decision if you do or do not want to be a part of this study. Nothing bad will happen if you choose not to partake in it. Even if you choose not to participate in this study, you will still be included in the activities, but I will not use your work for my research. If you start by participating, but decide you no longer want to do it, you can stop at any point. If you decide to be a part of this study, your information will remain confidential, in that I will not use your names or personal information in my data or final project.

Signing this form means that you have read this letter (or had it read to you), and that you are willing to participate in my study. Feel free to ask any questions you may have about my study, at any point.

Thank you,

Ms. Quirey

Appendix C

Student Participation Survey

How do you feel about participating in class? Circle the best answer that describes how you feel.

1. I like to participate in all the time.

Strongly Agree **Agree** **Disagree** **Strongly Disagree**

2. I like to participate in social studies.

Strongly Agree **Agree** **Disagree** **Strongly Disagree**

3. I participate better in small groups (about 5 people).

Strongly Agree **Agree** **Disagree** **Strongly Disagree**

4. I participate better with the entire class.

Strongly Agree **Agree** **Disagree** **Strongly Disagree**

5. I am usually the first one to raise my hand.

Strongly Agree **Agree** **Disagree** **Strongly Disagree**

6. I do not raise my hand a lot.

Strongly Agree **Agree** **Disagree** **Strongly Disagree**

Appendix D

Chart 1: Student Jigsaw Options

Ancient China Project Options*Choose One:*

1. Make a picture book: You will create your own story using your knowledge of ancient China and other sources.
2. Diorama or model: You will create a diorama or model of something from ancient China.
3. PowerPoint: You will choose a specific topic to research and make a PowerPoint on it.
4. Make a brochure: Make a travel guide of China.
5. Make up a skit: You will pick a topic and then make up your own skit.

Choose One:

1. Partner
2. Independent

Appendix E

Table 1: Pre-Study Observation Sheet

Students	Raise Hand	Ask Relevant Questions	Attempt to answer relevant question	Relevant discussion among groups
Male 1	Y	Y	Y	Y
Male 2				S
Male 3	Y			Y
Male 4	Y			
Male 5				S
Male 6				S
Male 7	Y		Y	Y
Male 8				Y
Male 9				Y
Male 10	Y		Y	Y
Male 11				Y
IEP Male 1				
RTI Male 1				
Female 1				
Female 2				S
Female 3				Y
Female 4				S
Female 5				Y
IEP Female 1	Y		Y	S
RTI Female 1				S

Table 2: During-Study Observation Sheet (Think-Pair-Share)

Students	Raise Hand	Ask Relevant Questions	Attempt to answer relevant question	Relevant discussion among groups
Male 1	Y	Y	Y	Y
Male 2	Y		Y	Y
Male 3	Y		Y	Y
Male 4	Y		Y	
Male 5	Y		Y	Y
Male 6	Y	Y	Y	Y
Male 7	Y	S	Y	Y
Male 8	Y		Y	Y
Male 9	S		Y	Y
Male 10	S		Y	Y
Male 11	S	S	Y	Y
IEP Male 1				
RTI Male 1			S	
Female 1				Y
Female 2	S		Y	Y
Female 3	S		Y	Y
Female 4	S		S	Y
Female 5	S	S	S	Y
IEP Female 1	Y		Y	Y

RTI Female 1		Y		
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Table 3: During-Study Observation Sheet (Jigsaw)

Students	Raise Hand	Ask Relevant Questions	Attempt to answer relevant question or research	Relevant discussion among groups
Male 1	Y	Y	Y	Y
Male 2	Y	Y	Y	Y
Male 3			Y	Y
Male 4	Y		Y	Y
Male 5	Y	Y	Y	Y
Male 6	Y	Y	Y	Y
Male 7	Y	Y	Y	Y
Male 8	Y	Y	Y	Y
Male 9	Y	Y	Y	Y
Male 10	Y		Y	Y
Male 11	Y	Y	Y	Y
IEP Male 1			S	S
RTI Male 1	Y	Y	Y	Y
Female 1			Y	Y
Female 2	Y		Y	Y
Female 3	Y	Y	Y	Y
Female 4	Y		Y	Y
Female 5	Y	Y	Y	Y

IEP Female 1	Y	Y	Y	Y
RTI Female 1	Y		Y	Y

Table 4: Post-Study Observation Sheet

Students	Raise Hand	Ask Relevant Questions	Attempt to answer relevant question	Relevant discussion among groups
Male 1	Y	Y	Y	Y
Male 2	Y		S	Y
Male 3	Y		Y	Y
Male 4	S		S	Y
Male 5	Y		Y	Y
Male 6	Y		Y	Y
Male 7	Y	S	Y	Y
Male 8	S		S	Y
Male 9	Y		Y	Y
Male 10	S	S	Y	Y
Male 11	Y		Y	Y
IEP Male 1	S		S	Y
RTI Male 1	S		S	Y
Female 1				Y
Female 2	Y		Y	Y
Female 3			S	Y
Female 4	S		S	Y
Female 5	S	S	S	Y

IEP Female 1	Y		Y	Y
RTI Female 1	S		S	Y

Appendix F

Female 4	Agree	Strongly Agree	Strongly Agree	Strongly Disagree	Disagree	Strongly Agree
Female 5	Strongly Agree	Strongly Agree	Disagree	Strongly Agree	Strongly Agree	Strongly Disagree
Students Female 1	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Disagree	Strongly Disagree	Strongly Disagree
RTI Female 1	Agree	Agree	Strongly Agree	Disagree	Strongly Disagree	Strongly Disagree
Male 1	Agree	Strongly Agree	Agree	Strongly Agree	Strongly Agree	Strongly Disagree
Male 2	Agree	Agree	Disagree	Strongly Disagree	Disagree	Agree
Male 3	Strongly Agree	Strongly Agree	Disagree	Strongly Agree	Strongly Agree	Strongly Disagree
Male 4	Agree	Strongly Agree	Strongly Agree	Strongly Disagree	Disagree	Agree
Male 5	Agree	Agree	Agree	Disagree	Disagree	Agree
Male 6	Strongly Agree	Strongly Agree	Strongly Disagree	Strongly Agree	Agree	Strongly Disagree
Male 7	Strongly Agree	Agree	Strongly Agree	Disagree	Strongly Agree	Strongly Disagree
Male 8	Strongly Agree	Strongly Agree	Agree	Disagree	Strongly Disagree	Agree
Male 9	Strongly Disagree	Agree	Agree	Strongly Disagree	Strongly Disagree	Strongly Agree
Male 10	Agree	Agree	Agree	Strongly Agree	Strongly Agree	Strongly Disagree
Male 11	Agree	Strongly Agree	Agree	Strongly Disagree	Disagree	Agree
IEP Male 1	Strongly Disagree	Disagree	Agree	Disagree	Disagree	Disagree
RTI Male 1	Disagree	Disagree	Strongly Agree	Strongly Disagree	Disagree	Agree
Female 1	Disagree	Strongly Agree	Disagree	Strongly Agree	Agree	Strongly Disagree
Female 2	Agree	Agree	Disagree	Agree	Disagree	Agree
Female 3	Agree	Agree	Agree	Disagree	Disagree	Strongly Agree

Table 1: Pre-Study Survey based on Gender Responses

Students	I like to participate all the time.	I like to participate in social studies.	I participate better in small groups.	I participate better with the entire class.	I am usually the first one to raise my hand.	I do not raise my hand a lot.
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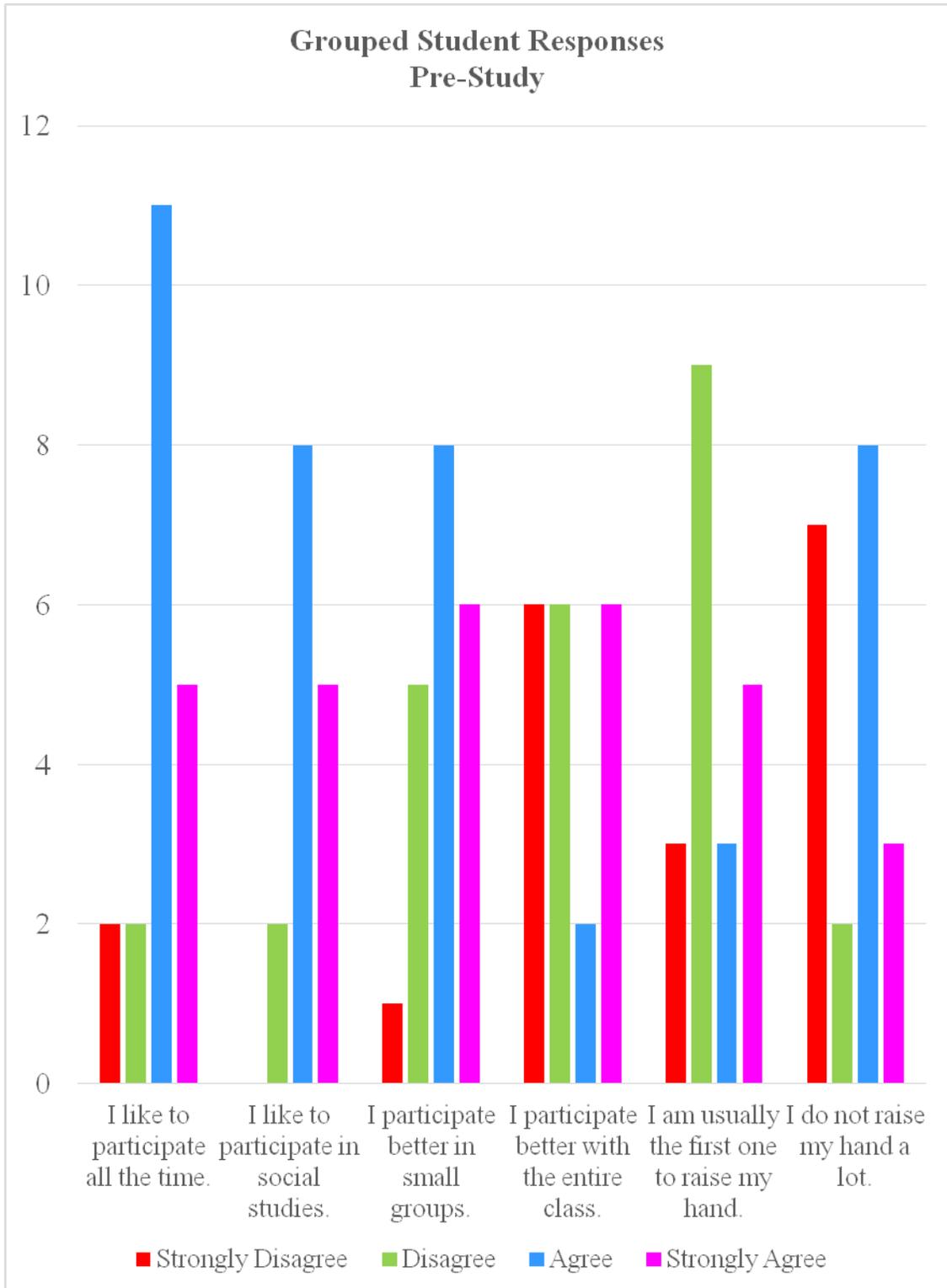
Table 2: Post-Study Survey based on Gender Responses

	Male 1	Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Disagree
Female 3	Male 2	Agree	Strongly Agree	Disagree	Strongly Disagree	Disagree	Agree
	Male 3	Agree	Strongly Agree	Agree	Disagree	Disagree	Strongly Disagree
Female 4	Male 3	Agree	Strongly Agree	Agree	Disagree	Disagree	Strongly Disagree
	Male 4	Agree	Strongly Agree	Agree	Agree	Disagree	Agree
	Male 5	Agree	Strongly Agree	Disagree	Agree	Disagree	Strongly Disagree
	Male 6	Agree	Strongly Agree	Disagree	Strongly Agree	Agree	Disagree
	Male 7	Strongly Agree	Strongly Agree	Disagree	Strongly Agree	Strongly Agree	Strongly Disagree
	Male 8	Strongly Agree	Strongly Agree	Strongly Disagree	Agree	Disagree	Strongly Disagree
	Male 9	Agree	Strongly Agree	Strongly Agree	Strongly Agree	Agree	Strongly Disagree
	Male 10	Agree	Agree	Strongly Agree	Strongly Agree	Agree	Disagree
	Male 11	Strongly Agree	Strongly Agree	Disagree	Agree	Agree	Strongly Disagree
	IEP Male 1	Strongly Agree	Agree	Disagree	Agree	Strongly Disagree	Disagree
	RTI Male 1	Agree	Strongly Agree	Agree	Agree	Disagree	Disagree
	Female 1	Disagree	Agree	Agree	Disagree	Agree	Agree
	Female 2	Agree	Strongly Agree	Agree	Strongly Agree	Agree	Disagree

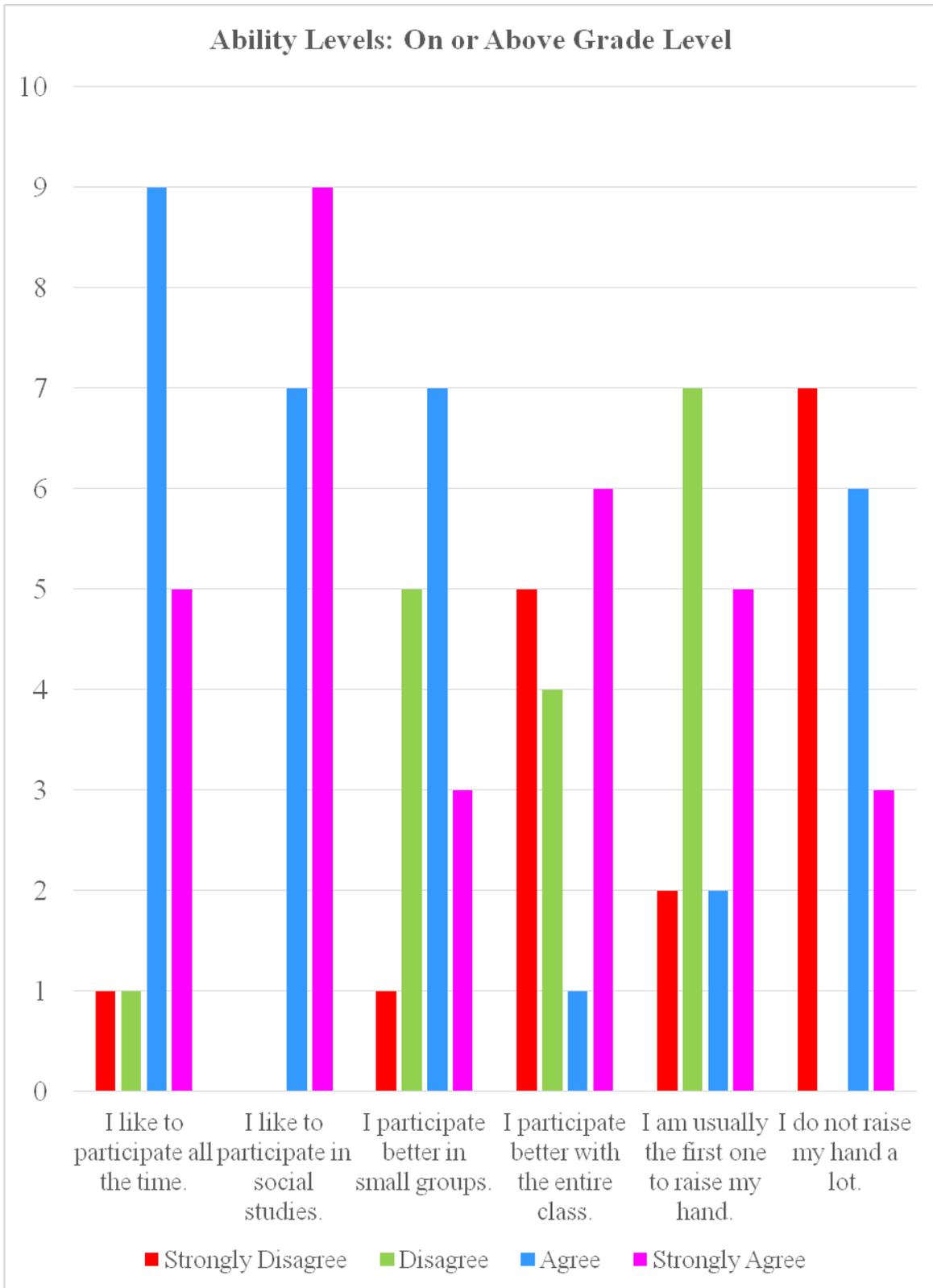
Female 5	Strongly Agree	Strongly Agree	Disagree	Strongly Agree	Strongly Agree	Strongly Disagree
IEP Female 1	Agree	Strongly Agree	Strongly Agree	Strongly Agree	Agree	Agree
RTI Female 1	Agree	Agree	Strongly Agree	Disagree	Disagree	Agree

Appendix G

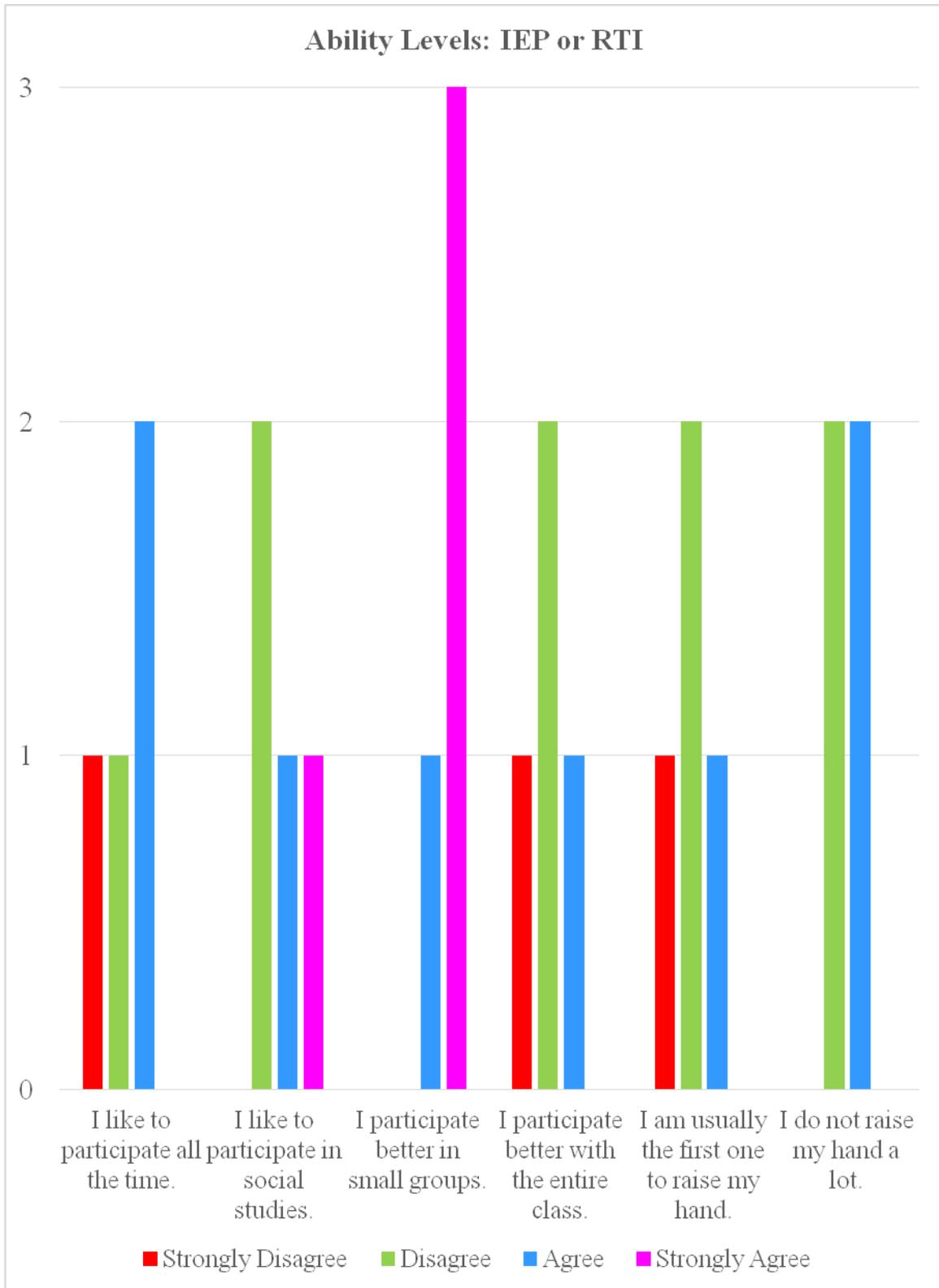
Graph 1: Pre-Study Survey Grouped by Answer



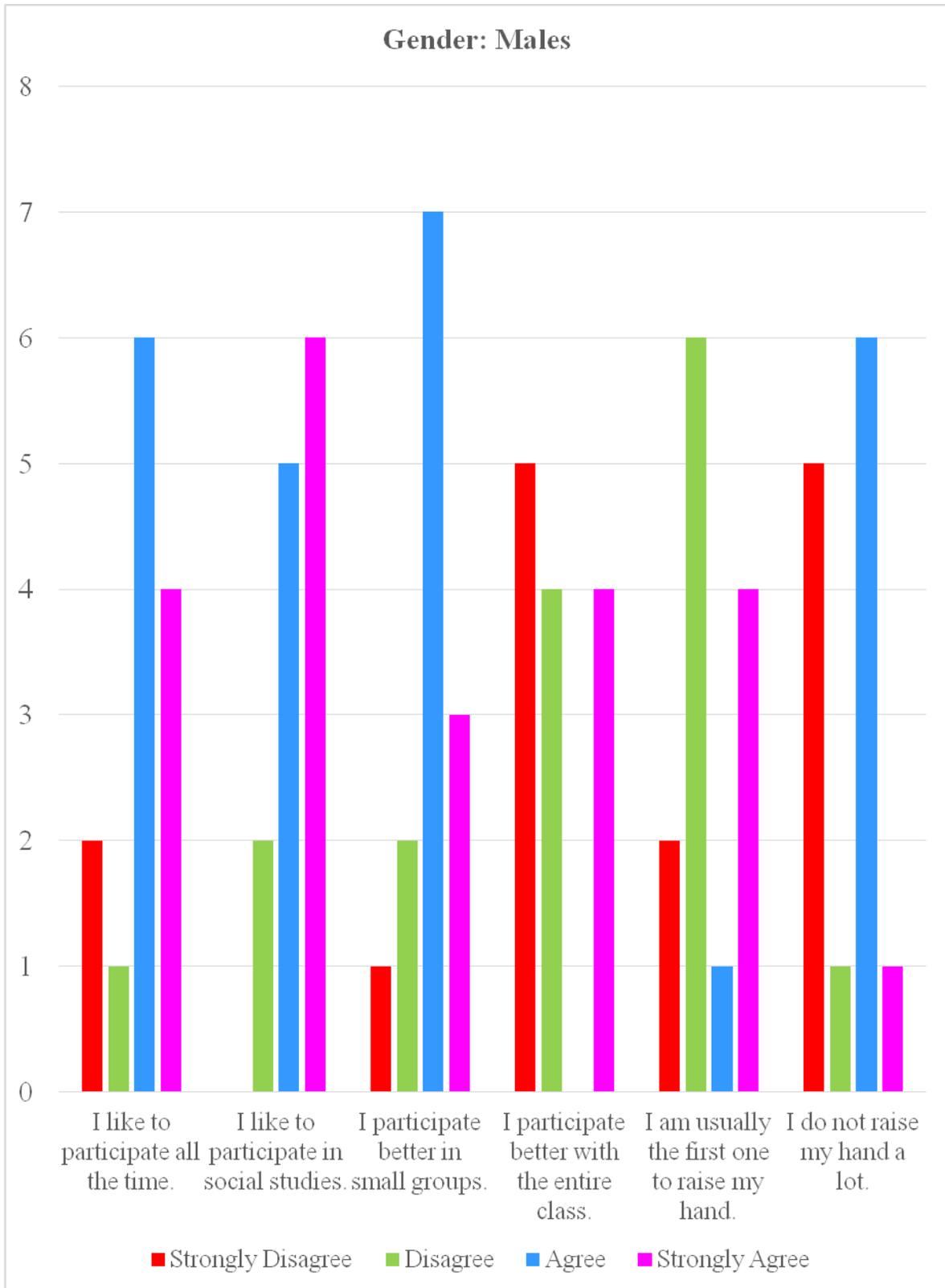
Graph 2: Pre-Study Survey Ability Levels On or Above Grade Level



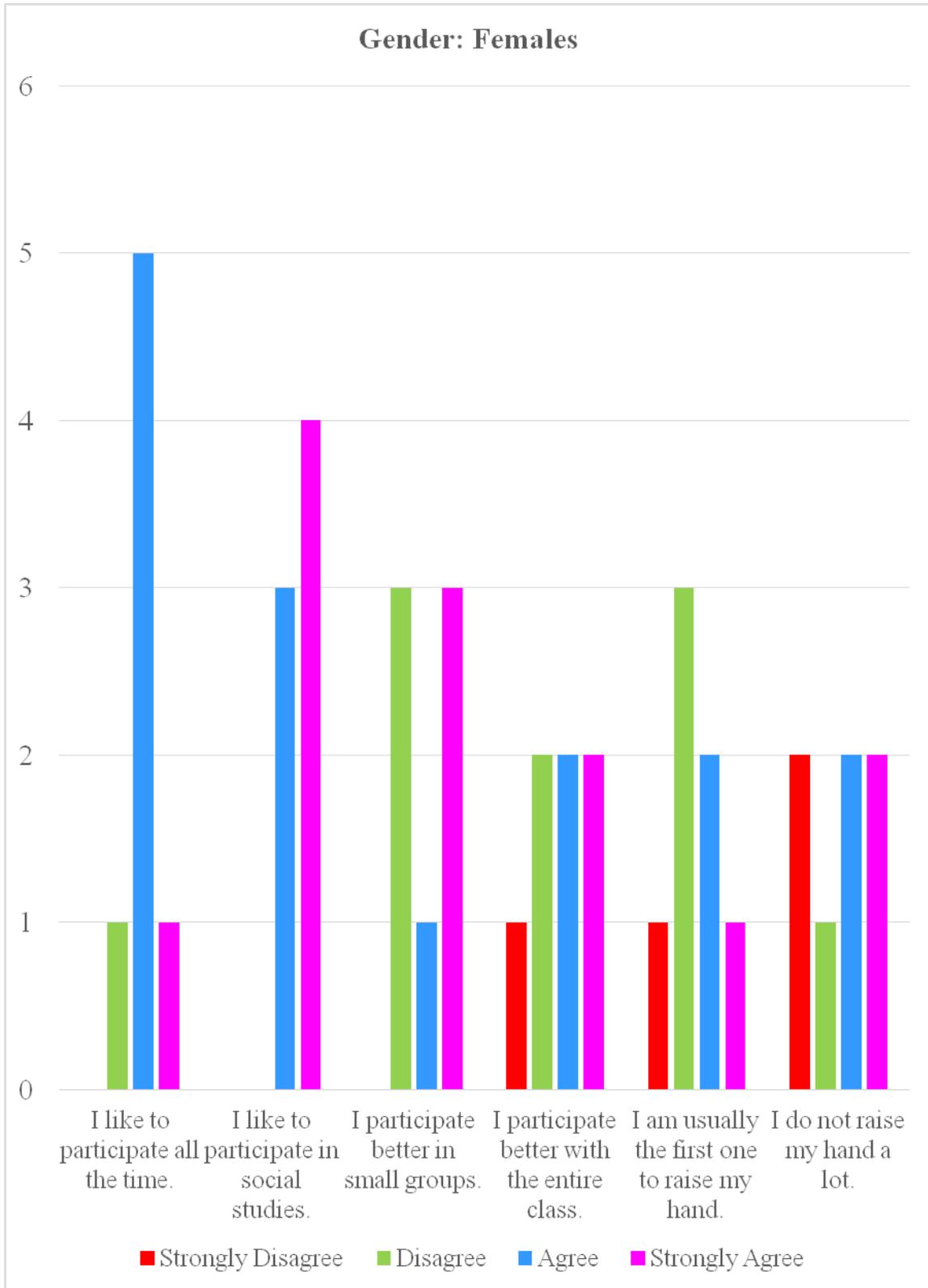
Graph 3: Pre-Study Ability Levels IEP or RTI



Graph 4: Pre-Study Gender Males

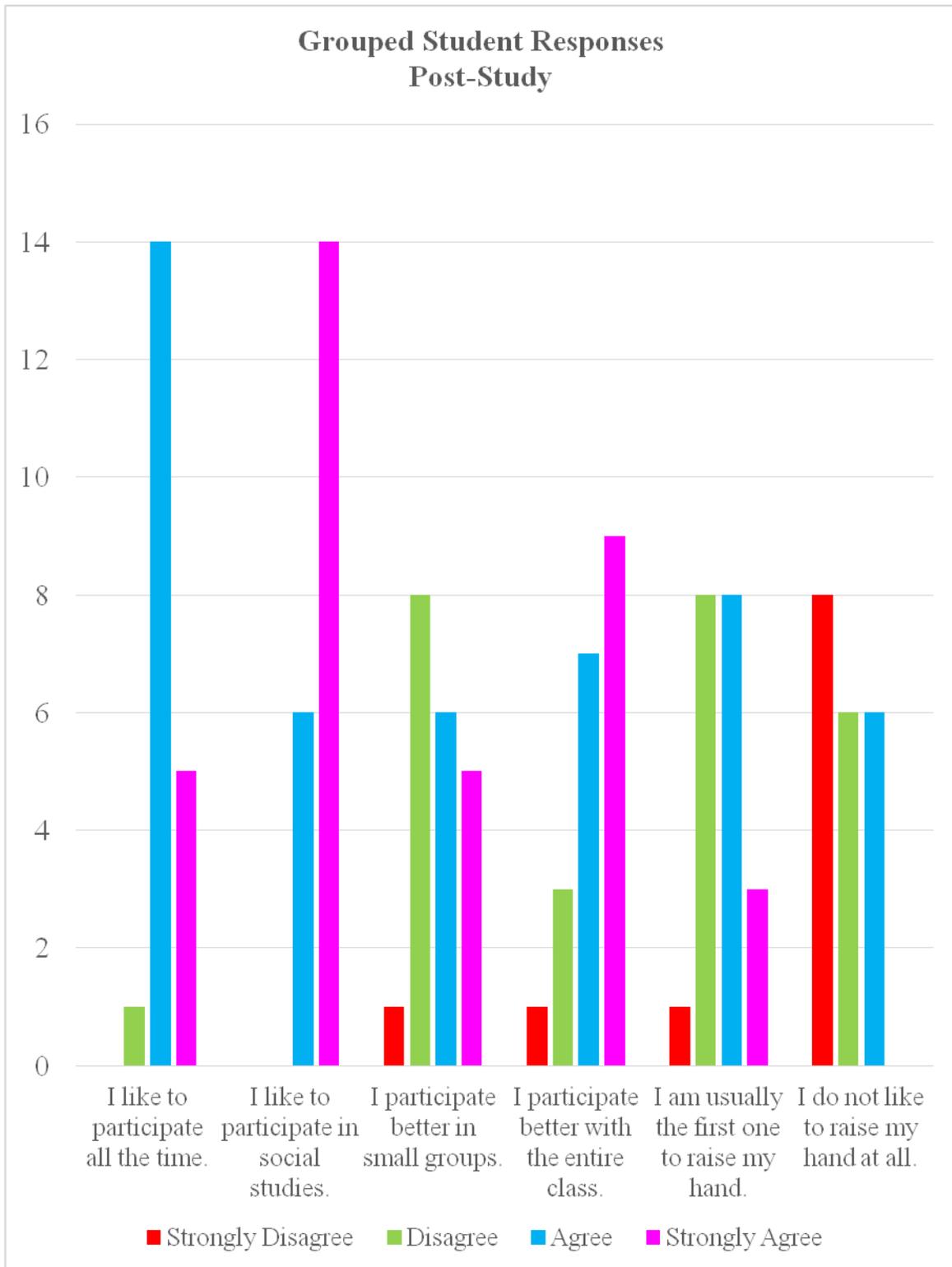


Graph 5: Pre-Study Gender Females

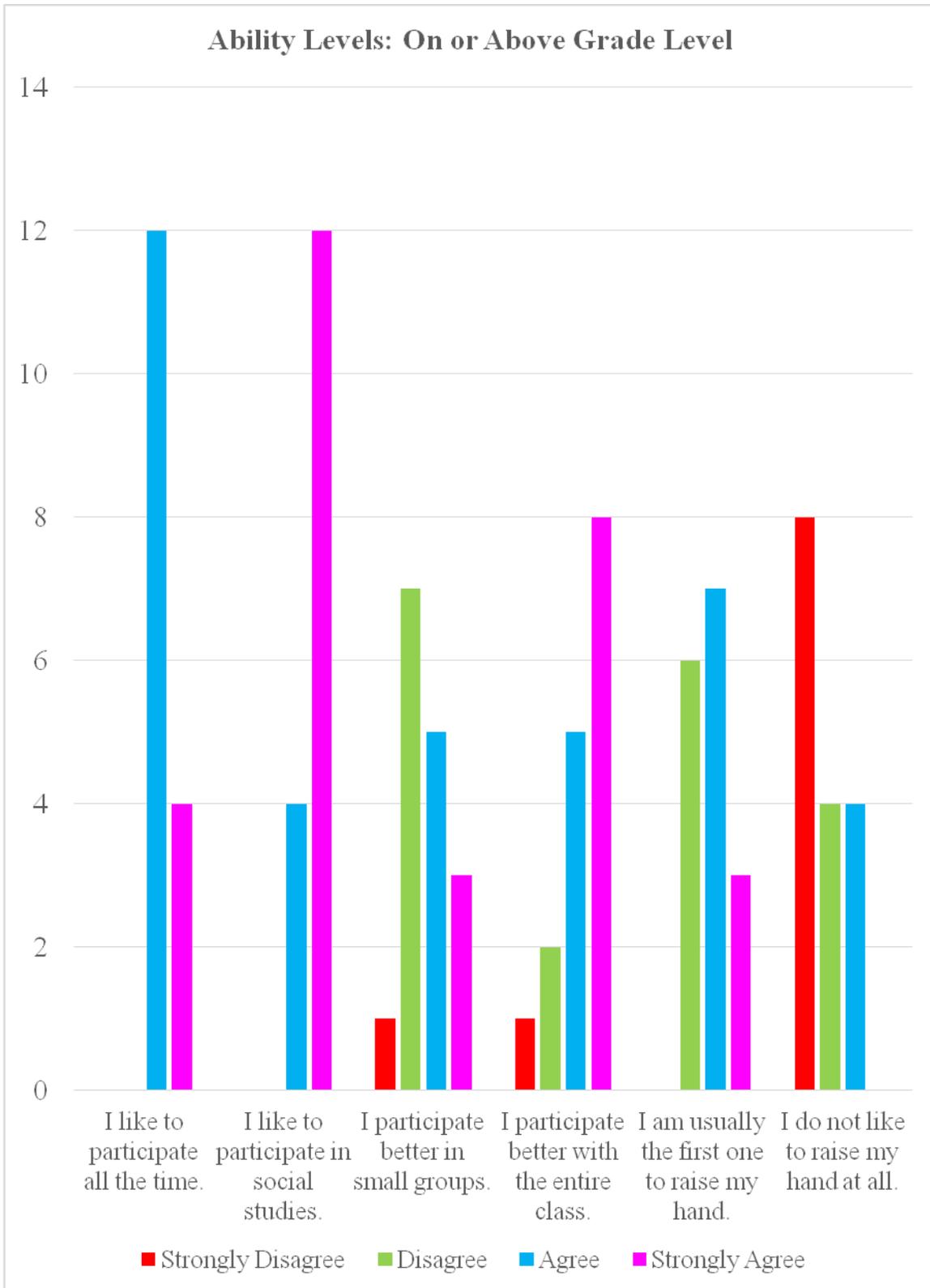


Appendix H

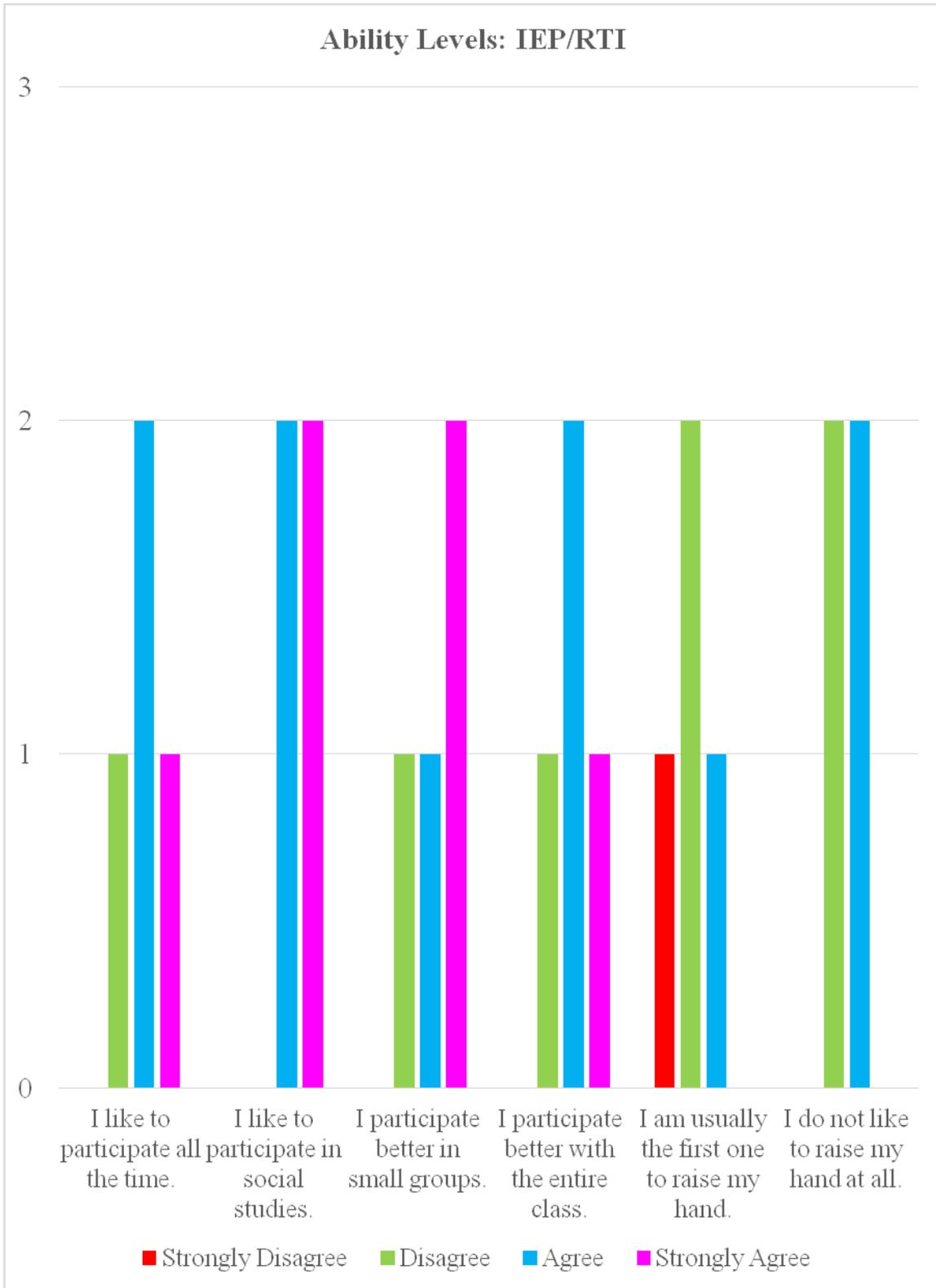
Graph 1: Post-Study Survey Grouped by Answer



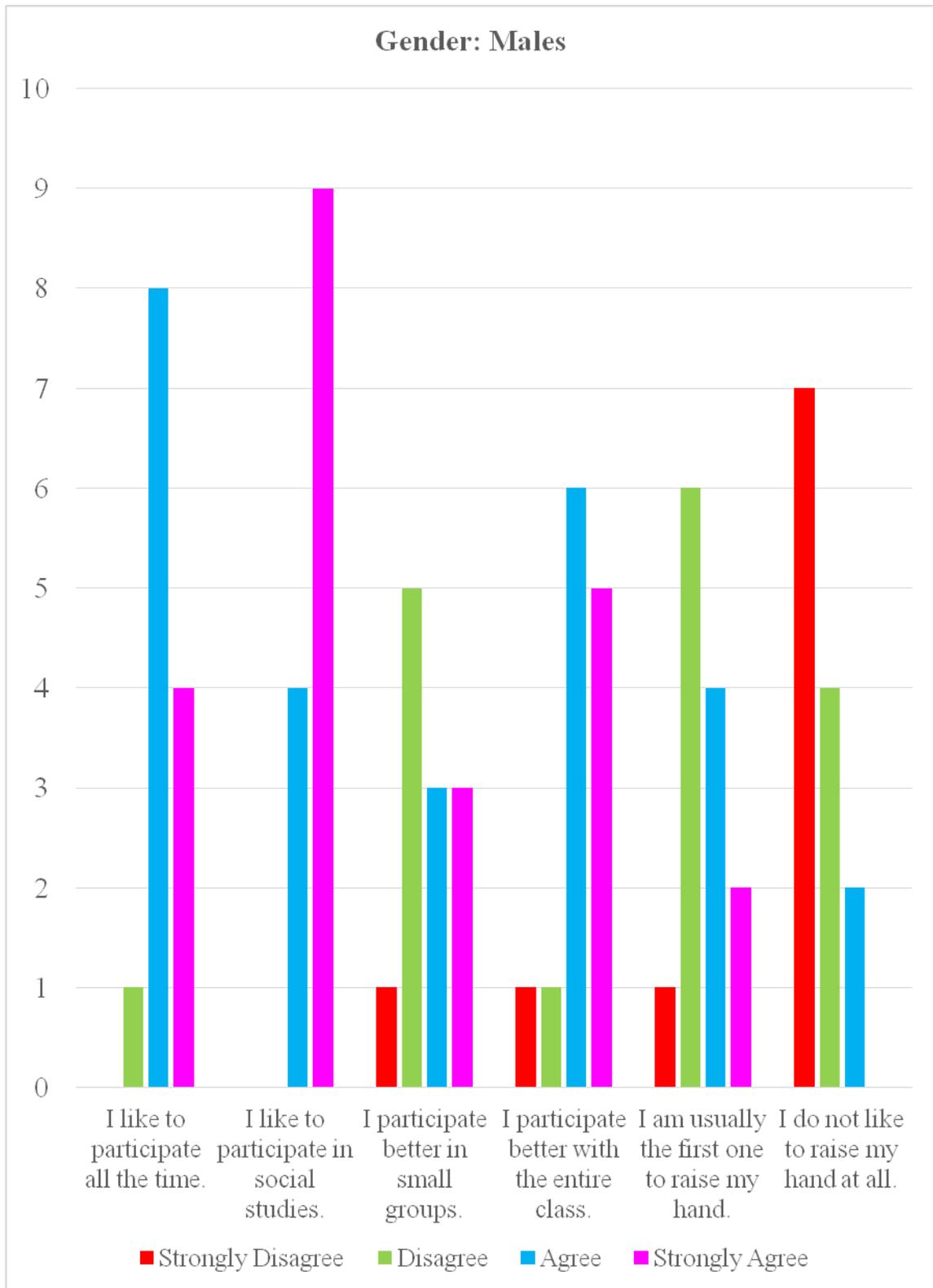
Graph 2: Post-Study Survey Ability Level On or Above Grade Level



Graph 3: Post-Study Survey Ability Level IEP/RTI



Graph 4: Post-Study Gender Males



Graph 5: Post-Study Gender Females

