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The effectiveness of using online discussion boards for students with learning disabilities in an American Literature II resource classroom

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THE EFFECTIVENESS OF USING ONLINE DISCUSSION BOARDS FOR STUDENTS WITH LEARNING DISABILITIES IN AN AMERICAN LITERATURE II RESOURCE CLASSROOM

By

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Dedications

I would like to dedicate this thesis to the wonderful students who have, and consistently do encourage and inspire me to become a better person each day. This process alone is a testament to the fact that anything can be accomplished one day at a time.

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I would like to express my deepest appreciation and gratitude to Dr. Amy Accardo for her words of wisdom and encouragement when I needed them most along with her endless patience and guidance throughout this study.

Abstract

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The purpose of this study was: (a) to examine the effectiveness of using online discussion boards to improve the active participation rate of students with specific learning disabilities (SLD), (b) to examine the effectiveness of using online discussion boards to increase the critical thinking of SLDs, and (c) to evaluate student satisfaction of the online discussion board intervention. Nine high school students, seven males and two females, with learning disabilities participated in the study. A single-subject ABAB design was used. During the baseline phases, students received American Literature II instruction through a traditional classroom model. Class time was used for instruction and anticipatory sets were used for discussions. During the intervention, students received American Literature II instruction through the online discussion board model. Active participation rates and critical thinking levels were recorded throughout all phases. Results indicate that students increased their rate of participation and critical thinking during the intervention phases. The student satisfaction survey suggests that students enjoyed using the online discussion board model and would like to use it in other classes. Further research is suggested investigating the academic and critical thinking outcomes of the online discussion board for students with learning disabilities.

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Chapter 1

Introduction

The common man using computers has been sharing and exchanging information via public forums ever since 1978 when Ward Christensen and Randy Seuss launched Bulletin Board System (BBS), an online adaptation of a bulletin board where users could "post" or "pin" information they wanted to share with others (Lee, 2013). Over time, BBS gave way to newer, more capable mediums for peer-to-peer exchange, such as UseNet, Internet Relay Chat (IRC), and eventually, online discussion boards as they are constituted today (Lee, 2013). Nowadays, many educational institutions rely on popular web-based learning environments, such as Blackboard or Moodle to deliver content. One major feature of these online classrooms is discussion boards, also known as a threaded discussion where students and teachers can freely exchange relevant ideas on content being taught in class (Hall, 2015). After starting as a casual environment to discuss politics, sports, or fan fiction, the discussion board has become a primary pedagogical tool of many colleges and high schools across the nation (Hall, 2015). As the use of discussion boards continues to expand, it becomes imperative to understand how to use discussion boards to facilitate learning outcomes most effectively in the Resource English classroom for students with learning disabilities.

Enhancing interaction in the classroom can lead to better and more effective learning (Siau, Sheng, & Nah, 2006). When included in curriculum design, a classroom response system provides a new dimension for interactivity in the classroom and can change the way students and instructors interact (Siau, Sheng, & Nah, 2006). One way to implement high levels of interaction among students, and thereby increase both the

quality of students' learning experiences and the efficiency of delivery, is to implement collaborative learning (Curtis & Lawson, 2001). Collaborative learning can take many forms including that of online discussion boards.

Statement of the Problem

Modern classrooms are still set up and designed in a lecture format. It is common that teaching centers around state and district initiatives and what information a student can retain while learning continues to focus on the students' abilities to retain and repeat the content being taught in class (Lawless, 2016). According to a national survey of teachers regarding the use of technology in their classrooms, nearly 70% of teachers reported that basic skills practice was the most common use of technology for instruction of their students (National Center for Educational Statistics [NCES]; Gray, Thomas, & Lewis, 2010). With educational trends continuously evolving and society becoming more digital, it is imperative that teachers begin to welcome and incorporate technology in their classroom (An, 2009). A focused and directed use of technology in the classroom will create a classroom in sync with the current needs of all learners (An, 2009). Charles Kilfoye, author of the article *A Voice From the Past Calls for Classroom Technology*, explains that, "while everyone talks about the importance of creating 21st century learners, few are willing to give teachers and students the tools to achieve that goal by using the most revolutionary development of the past 100 years - the Internet" (2013, 54). Studies have shown that although educational technology is useful, it might not be beneficial unless it is combined with a pedagogical shift or strategy (Kilfoye, 2013).

The participation of students with disabilities in both whole class and small group work is regarded as essential for their social participation and academic progress (Strogilosa & Stefanidis, 2015). Often, students with disabilities feel inferior to their peers and limit their participation as a safeguard to not being compared to their general education peers (Barab & Duffy, 2000). Classroom discussion has not been recognized as an important focal point in special education research and intervention (Barab & Duffy, 2000). Barbara Rogoff emphasizes in her research that when learning is viewed as interactive, it is more appropriately defined as participation in social exchange as opposed to the acquisition of knowledge (Rogoff, 1995). Threaded or online discussions provide online learning connections which go beyond the allotted class time and provide an effective, interactive learning environment where students can reflect, collaborate and discuss content being taught beyond the classroom (Rizopoulos & McCarthy, 2009). Discussion boards allow students with learning disabilities to create an initial post and respond to their peers anonymously.

The use of an online threaded discussion may be advantageous for the exceptional learner. According to Jinhong and Gilson (2014), discussion boards allow for deeper and more reflective responses, flexible response time management, the accommodation of various learning styles, and allow all students to participate. Students who participate in class tend to perform better on assessments (Reinsch & Wambsganss, 1994), are more motivated in the classroom (Junn, 1994), and possess more confidence in the classroom (Fassinger, 1995).

Significance of the Study

Most academic tasks are comprised of two components: subject matter and social participation. While subject matter is evident in classroom discussions, social participation requirements are often taken for granted in reference to students with learning disabilities (Erickson, 1996). Although many studies are conducted in the general education classroom or the inclusive classroom, with both general education students and students with disabilities (Norwich, 2014; Naraian, 2011), very little research to date examines effectively utilizing online discussion boards, or threaded discussions in the pull-out resource classroom. The present study will build upon the research of Norwich (2014) and Naraian (2011), to investigate the use of discussion boards in a special education resource room.

Purpose of the Study

The purpose of this study is to examine the use of online discussions in a pull-out resource English classroom and the effects on (a) active participation rate of students with learning disabilities and (b) critical thinking of students with disabilities. The aim of this study is to support students in deepening their thought processes and in supporting their responses with evidence.

Research Questions

Research questions investigated in this study follow:

1. Will the implementation of online or threaded discussions increase the active participation rate of students in a pull-out resource English classroom?

2. Will the implementation of online or threaded discussions increase the critical thinking of students in a pull-out resource English classroom?

3. Will students in a pull-out resource English classroom be satisfied with the use of online or threaded discussion boards?

Hypothesis

I hypothesize that the participation rate of students in a pull-out resource English classroom will increase through using online and threaded discussions.

I hypothesize that students with disabilities will increase their critical thinking skills through using online and threaded discussions.

Key Terms

For purposes of this study the term online discussion or *threaded discussion* shall be defined as "an online discussion where users can post comments. Users can reply to a previous post, which may have been a reply to an earlier post. This keeps the replies organized in a hierarchical pattern, so readers can easily follow the thread of one discussion" (Downing, 2013).

Chapter 2

Review of the Literature

When learning is interactive, it is better defined as participation in social exchange rather than the attainment of information (Rogoff, 1995). Such social exchange includes classroom discussion, yet classroom discourse has not been recognized as a pivotal component in special education research and intervention (Barab & Duffy, 2000). One of the biggest challenges that special education teachers who conduct whole-class lessons face is actively engaging all students with learning disabilities, who often have difficulties with attending and responding in classroom discussions and critical thinking (Montague & Rinaldi, 2001). Essentially, participation can be viewed a "two-way street." Although it is the students' responsibilities to pay attention and not get distracted by their computers or cellphones during class, it is also the job of the teacher to provide meaningful opportunities for questions and discussion during the class (Jones, 2015).

This chapter provides a review of the research related to the needs of students in a pull-out resource English classroom, and the use of online and threaded discussions, a strategy that may increase student participation and critical thinking.

Critical Thinking and Students with Learning Disabilities

Lombardi (2014) reports that critical thinking is an important aspect of contemporary learning and should be taught in secondary school instruction. Critical thinking includes a set of skills including intellectual openness, inquisitiveness, problem solving, precision and accuracy, and interpretation that high school teachers agree are important for students to learn (Conley 2007). The importance of critical thinking for students with and without disabilities is well documented and must be fostered and

facilitated within the classroom (Radulović & Stančić, 2017).

Lombardi, Kowitt, and Staples (2014) conducted a case study of students of all abilities and found students with learning disabilities gave less efficient and more off-task answers when compared to their peers without disabilities. Lombardi et al. (2014) report that it is crucial for schools to assess and measure skills such as critical thinking. The study was comprised of 857 participants enrolled at a high school in Connecticut. Eight disability categories were represented in the 127 participants who were classified as learning disabled (Lombardi et al., 2014). The participants were given an assessment called CampusReady, which measures critical thinking skills. The results from this study indicated that students without disabilities scored higher in each of the subscales of critical thinking. This case study also revealed that the grade point averages of students' with disabilities were negatively affected by their critical thinking skills (Lombardi et al., 2014). Results of this study suggest that students with learning disabilities need strategies to improve their critical thinking skills.

As defined by Conley (2010) critical thinking focuses on non-academic areas such as making inferences and supporting answers with evidence. Preuss (2012) investigated the use of scaffolding, an instructional strategy that has students build on previously learned skills, in a public junior high school. Participants included students both with and without disabilities. Findings reveal that students with and without disabilities benefit from the instructional strategy scaffolding, but that students with disabilities have a greater need for scaffolding to think critically about the content that is presented in class (Preuss, 2012). Preuss recommends using scaffolding to ensure a higher-level thinking for students with disabilities. Scaffolding suggests that students

with disabilities will be able to effectively participate in online discussion boards.

Classroom Participation and Students with Learning Disabilities

Jones (2015) defines participation in class as actively listening to your teacher and being engaged in class discussion. The participation of all students has become the main objective in the inclusive classroom setting (Naraian, 2011). Naraian (2011) emphasizes the urgency to prepare teachers to be aware of and accept multiple forms of student participation within inclusive classrooms. In a study examining inclusive classrooms in a school that contains Kindergarten through 8th grade, Narian (2011) observed participants within the inclusive classroom and collected data via taking detailed field notes. Narian (2011) interviewed and observed a special education teacher, Stephanie, four times, and interviewed the parents of three students in the classroom.

Throughout the course of Naraian's (2011) interviews with Stephanie, the teacher noted that her goal was to create an atmosphere where all learners are welcomed and accepted. It was observed, however, that students did not readily express themselves, but felt more compelled to participate because of the teacher's openness about her welcoming beliefs (Naraian, 2011). A method that was observed during the inclusive classroom lesson was *Turn and Talk*. Through this method students literally turned and talked to classmates answering questions and discussing topics freely with one another (Naraian, 2011). The two adults in the room modeled the method for the students two times, first in a manner which was vague, but realistic to what might occur in the classroom, and the second in a manner that held more depth in responses (Naraian, 2011). The teacher was also observed to model each of her activities as well using proximal seating for herself. During a lesson on writing strategies, for example, Stephanie sat next to a student named

Trevor who struggled with writing strategies. As she addressed the class, she positioned her notes in a manner that Trevor could read and access them as she spoke. When students broke up into groups, she was already positioned in a manner to assist Trevor through discussion and through helping him express himself through writing (Naraian, 2011). Naraian (2011) concluded that teachers must be willing to listen and allow for various forms of participation to take place with students with learning disabilities.

Building on the research of Naraian (2011), Norwich (2014) investigated the concept of protection versus participation. Norwich (2014) reports that there is a lack of investigation of student participation in inclusive settings. A student's participation can be represented in various forms such as through outward participation in a whole class setting or through speaking with a classmate (Norwich, 2014). The research conducted by Norwich (2014) suggests that students with disabilities protect their self-esteem by not participating in class. Students with disabilities may view participation in class as a threat to their abilities as it can draw attention to their intellectual limitations (Norwich, 2014). Norwich (2014) concludes that students with disabilities are more likely not to participate in the inclusive setting based on an innate instinct to protect themselves.

The present study aims to build on the research of Norwich (2014) and Naraian (2011), through further investigation of the participation of students with learning disabilities. Students with learning disabilities that are classified as emotionally disturbed also experience a decline in classroom participation when compared to their non-disabled peers (Lane et al., 2006). Although the classification of emotionally disturbed (ED) falls under the umbrella of a learning disability according to the Individuals with Disabilities Education Act of 2004 (IDEA, 2004), the participation of students classified as ED is

typically lower than that of students with other learning disabilities (Lane et al., 2006). Teachers report that high school students classified as ED exhibit lower levels of social competence which negatively impacts their ability to participate in the classroom (Lane et al., 2006).

Technology as an Instructional Tool

Present-day teachers are presented with and challenged by a wide variety of instructional tools that are pushed by administration and commonly utilized by students such as a one-to-one laptop initiative, using podcasts, and the frequent use of the internet (Boles, 2011). Due to the students' expanding use and knowledge of technology, teachers must be up-to-date with current trends in educational technology (Boles, 2011). Technology is also not only used as an instructional tool, but also as a motivational spark in the classroom. Technology can be used to change the common assessment of writing a paper to report findings in class, to creating a multimedia presentation students may be motivated to present in front of their peers (Boles, 2011). In alignment with Boles (2011) finding that technology increases student motivation and engagement, Wankel and Blessinger (2013), report instructional technology is becoming more widespread in today's classrooms and that these tools "better engage students and create more participatory and engaging learning environments" (p 3). When technology is used properly in the classroom, it can create a more creative, meaningful, and sociable learning experience for all learners (Wankel & Blessinger, 2013, p. 4). Due to the flexible nature of using technology in the classroom, teachers can tailor it in order to fit their specific students' needs (Wankel & Blessinger, 2013).

A common, simple use of technology in today's classroom involves word

processing programs such as Google Docs or Microsoft Office (Pitler, Hubbell, & Kuhn, 2012). These programs allow teachers to create documents, assignments, and graphic organizers that may increase students' performance and organization within the classroom (Pitler et al., 2012). Another use of technology as an instructional tool is to elicit formative and summative assessment data. Websites such as SurveyMonkey and PollEverywhere along with Google Forms provide a simple means to assess students while simultaneously collecting organized, accurate data (Pitler et al., 2012). A study conducted at Penn State College of Medicine aimed to increase student engagement and participation through use of SurveyMonkey (George et al., 2013). The participant pool was comprised of 154 first year students at the college. As professors taught, students had access to SurveyMonkey so that they could respond and give feedback during the discussion. The responses could be seen in real time and served to drive the professor's lecture throughout the course (George et al., 2013). Findings from the study show that student engagement increased throughout the semester using SurveyMonkey. Beyond the collection of formative assessment data, teachers also use technology to communicate with administrators, colleagues, parents, and students, typically using E-mail (Pitler et al., 2012).

The benefits of interactive lessons may include increasing student participation and critical thinking and reviewing important information for students with learning disabilities (Berry, 2006). Within the special education classroom, the special education teacher can control the pace and intensity of the lesson in order to accommodate students' various needs.

Gok (2011) studied the effects of classroom response systems on students'

participation in the classroom. Participants in the study included 6 faculty members in a school located in Turkey (Gok, 2011). Each participant was of a different academic rank and familiar with clicker technology (Gok, 2011). The participants' genders were an equal split comprised of three males and three females. Gok (2011) collected data through interviews, observations, and surveys. Findings revealed that clickers were used for multiple reasons within the classroom including answering questions in discussions and reviewing class content (Gok, 2011). Gok's (2011) study also revealed that the use of clickers raised the level of student engagement and participation. One of the participants in the study, a professor of over 40 years, said in an interview that the use of clickers raised the level of participation in his class (Gok, 2011). Another finding of this study, obtained through a Likert Scale survey, was that male students liked using clickers more than females. Male students recorded more positive answers in regard to the use of the clickers (Gok, 2011). This study not only notes increased student participation through the use of a classroom response system, but also serves as a model for teachers to use technology in order to accommodate students with varied learning abilities (Gok, 2011). Gok (2011) found that technology tools must be used based on the students' needs for them to be effective.

Wankel and Blessinger (2013) built on Gok's (2011) research and reported, "building social learning communities within the classroom has the potential to foster a greater sense of belonging, interactivity, and group cohesiveness which are important factors in student motivation and their willingness to participate in these communities" (Wankel & Blessinger, 2013, p.6). The principles of an interactive classroom include the importance of technological growth within the classroom and the need for educators to

meet the needs of all learners in their respective classrooms (Wankel & Blessinger, 2013).

Donnelly (2016) suggests that technology can be used to support and create desirable behaviors from students classified as ED. Donnelly (2016) conducted a mixed method study in three elementary schools located throughout Bucks County, Pennsylvania. The participants included teachers who work with students classified ED. Donnelly (2016) facilitated a mixed-methods study by utilizing both personal interviews and questionnaires. Results from the study indicate that 31.6% of teachers strongly agree and 47.4% of teachers agree that using technology in the classroom promotes desirable behaviors from students classified as ED (Donnelly, 2016). Teachers interviewed perceived that technology positively impacted the attitudes and participation of students classified as ED (Donnelly, 2016).

Online or Threaded Discussion Boards

When students are provided opportunities to process, share, and confirm their understanding of the material, a deeper level of learning is more likely to occur in the classroom (Hall, 2015). Rizopoulos and McCarthy (2009) define a thread as "an online discussion that exists among students and their peers" (p. 374). In a threaded discussion the teacher can present a question or problem and the students are able to respond to both their teacher and their classmates (Rizopoulos & McCarthy, 2009). As the threaded discussion is being produced, the teacher can participate or respond to students' comments directly on the board (Rizopoulos & McCarthy, 2009). The teacher may use threaded discussions across their subject to promote critical thinking and participation (Rizopoulos & McCarthy, 2009). The thread is based on the content being taught in class

and can be tailored to specific students' needs or levels of critical thinking (Rizopoulos & McCarthy, 2009).

Rizopoulos and McCarthy (2009) report the benefits of threaded discussions include meeting the needs of both intrapersonal and interpersonal students. Intrapersonal students feel more comfortable with the ability to be able to think about their responses and then post their comment online in a threaded discussion, as opposed to feeling the pressure of randomly being called on in class (Rizopoulos & McCarthy, 2009). Interpersonal students enjoy the ability to share and expand on their responses as well as the interactivity of the threaded discussion (Rizopoulos & McCarthy, 2009).

Summary

Kilfoye (2013) suggests 21st century educators must embrace the constant use of technology in the classroom. Schools have acknowledged and observed for years that technology influences the way students work, think, collaborate on assignments, and communicate with each other (Kilfoye, 2013). Siau's (2006) research on classroom response system aligns with Kilfoye's (2013) recommendation for educators to embrace technology within the classroom. Siau (2006) reports that the interaction between teachers and students is crucial as far as factors that influence learning. When technology is present and implemented in the classroom, students are more apt to participate in discussions among their peers and in the whole-group setting (Siau, 2006).

Rizopoulos and McCarthy (2009) introduced online threaded discussions as a means to enhance participation and critical thinking while using technology. Threaded discussions are at the forefront of using technology to promote interaction amongst students in today's classroom (Rizopoulos & McCarthy, 2009). Jung (2014) expanded on

the research of Rizopoulos and McCarthy (2009) and suggests that online threaded discussions increases participation for students who are intimidated and do not actively participate in face-to-face scenarios. In addition to an increase in students' participation, online threaded discussions also increase critical thinking skills due to the nature of response (Jung, 2014).

Due to the increase of inclusion classrooms and students with disabilities being placed in them, participation has become a central focus (Naraian, 2011). Naraian (2011) proposed that participation is often defined by a student's voice but confirms that there are many other ways a student's voice can be heard.

While there is research that looks into both participation in the inclusive classroom setting, and the effects that online threaded discussions have on participation, little research has been conducted to examine the effects of online threaded discussions on the participation and critical thinking of students with disabilities in the resource classroom. This study aims to examine how the use of online threaded discussions effect the participation rate and the critical thinking of students with disabilities in an American Literature II resource setting.

Chapter 3

Methodology

Setting

School. This study was conducted in a public high school in a central New Jersey school district. The school district is comprised of two high schools with students separated by where they live in town. Each high school in the district houses one of the following special education programs: The Visions Program for students with behavioral needs, or the Autism and Learning Language Disability Program. This high school also offers a STEM pathway and a Government, Law, and Policy pathway. Both high schools operate on an 80-minute four block schedule with an hour lunch and study hall built into the schedule.

The high school consists of approximately 1400 students in grades nine through 12. Approximately 17% of these students have an IEP and receive special education services. This school's demographics are not very diverse. According to the New Jersey Performance Report (New Jersey Department of Education, 2016), 92.3% of the students are Caucasian, 3.2% are Hispanic, 2.2% are Asian, 1.6% are African American, and 0.6% are of Pacific Islander, Native American, or Multi-Racial decent.

Classroom. The classroom where the study took place is used by two special education teachers for both History and English resource classes. The classroom consists of one teacher desk and 12 student desks. There is one teacher computer that is connected to an overhead projector and interactive Smartboard. Each student in the classroom has a personal Google Chromebook.

The study was conducted in one of the school's American Literature II resource classes. The class is held every other day during block 6B. There is one student in the class who has a one-to-one paraprofessional.

Participants

This study included nine eleventh grade high school students, two females and seven males. Eight of the students in the study were classified with a specific learning disability (SLD), and one was classified as other health impaired (OHI). These students were determined eligible for special education services under a variety of sub-classifications including: written expression (WE), reading fluency (RF), listening comprehension (LC), reading comprehension (RC), mathematical calculations (MC), and mathematical problem solving (MPS).

Table 1

General Information of Participating Students

Student	Age (Years)	Grade	SLD Sub-Classification
A	16	11	WE RF MC
B	17	11	MC MPS
C	16	11	MC MPS WE
D	16	11	WE MPS MC
E	16	11	RF MC
F	16	11	MC
G	16	**11**	RF MPS
H	16	11	LC
I	16	11	RF MPS

Participant 1. Student A is a 16-year-old Caucasian male. He is eligible for special education services under the classification of SLD. Academically, this student is strong and always participates in class. Although he struggles on summative assessments, he understands his mistakes and performs better when provided retake assessments.

Socially, he is confident in his interactions with both peers and adults in the school. At times, he talks too much in class and often has to have his attention redirected to the targeted task in class. His work ethic is inconsistent, while at times he is working hard, paying attention and other times he is too tired and not paying attention. He enjoys participating on the school's lacrosse team and wants to attend community college when he graduates high school.

Participant 2. Student B is a 17-year-old Caucasian male. He is eligible for special education services under the classification of SLD. This student struggles with organization and staying on task. He is often easily distracted by his peers, cell-phone, and other interruptions in class. He is respectful to his peers and both the teacher and paraprofessional in class at all times. His critical thinking skills are limited as evidenced by his inability to express himself beyond what is stated in the novels we read in class. This student is a member of the varsity football team and is undecided as to what he wants to do after graduating high school.

Participant 3. Student C is a 16-year-old Caucasian male. He is eligible for special education services under the classification of OHI. This student struggles to pay attention and is easily distracted by his phone and computer. This student shows strength in critical thinking by analyzing what the text conveys and exploring options beyond what is provided. He often becomes too entangled in his thoughts, but once he is redirected back to the targeted focus his answers are deep. This student participates in a vocational program that allows him to explore different career options upon graduating from high school.

Participant 4. Student D is a 16-year-old Caucasian male. He is eligible for special education services under the classification of SLD. This student is very polite and respectful to all of his peers and the adults in the classroom. He performs well on summative assessments but is inconsistent in turning in and completing homework and classwork assignments. Socially, this student is very quiet, sits in the back of the class, and keeps to himself. When he is called on to participate he does so without any resistance but prefers to remain quiet in class. This student is enrolled in a vocational program that focuses on automotive mechanics. He has expressed that he wants to be a mechanic when he graduates high school.

Participant 5. Student E is a 16-year-old African American male who is eligible for special education services under the classification of SLD. This student struggles with attendance, reading fluency, and confidence in his academic abilities. Socially, this student is vocal and pleasant when talking to his classmates and the adults in the class. He does not like to raise his hand for participation due to the fear of being wrong or feeling vulnerable about his disability. This student lives with his great-grandmother and four half siblings.

Participant 6. Student F is a 16-year-old Caucasian male who is eligible for special education services under the classification of SLD. This student is very bright and excels in creative writing and critical thinking beyond what a text says. This student struggles to decide on answers during summative assessments and utilizes extra time. This student is very quiet in class and often seems to block out his peers by putting headphones on. He admits that the headphones are used to escape from the chatter in

class. Student F benefits from positive reinforcement and encouragement while completing work in class.

Participant 7. Student G is a 16-year-old Caucasian female who is eligible for special education services under the classification of SLD. This student is highly distracted by her cell-phone and computer in class. When redirected, she gives attitude and tends to shut down for periods of time. Her recall is among the highest in the class, and she often participates when the discussion is a review on material previously read in class.

Participant 8. Student H is a 16-year-old Caucasian female who is eligible for special education services under the classification of SLD. This student is extremely diligent in completing all of her work to the best of her ability. Her critical thinking skills are among the highest in the class as she often dives further into discussions out of a genuine thirst for knowledge. Behaviorally this student creates a lot of problems in the classroom. She is confrontational towards her peers and needs to be redirected frequently. Positive reinforcement is used to keep Student H working hard and focused on her schoolwork instead of other distractions.

Participant 9. Student I is a 16-year-old Caucasian male who is eligible for special education services under the classification of SLD. This student has a one-to-one paraprofessional in class. Although he tries to be independent throughout class activities, when he needs help he advocates for himself and asks his paraprofessional or the teacher for assistance. He struggles with grade-level reading comprehension and mathematical calculations. He is very concrete in his thinking, so his critical thinking skills are limited.

Behaviorally he is well received by all of his classmates. Student I needs redirection, and for directions to be stated slowly and clearly so that he may understand.

Research Design

A single subject design with ABAB phases was used throughout the course of this study. This study explored the effect of the independent variable, online discussion boards, on the dependent variables of critical thinking and participation rate. The active participation rate of students and their critical thinking abilities were measured throughout the study. During Phase A, baseline data was collected for five sessions over the course of two weeks. The instruction throughout Phase A modeled that of a traditional classroom. Throughout discussions, questions were asked orally and students who participated raised their hands and were called upon. Everyday a question was posed that would ask students to think critically about the novel *The Great Gatsby* and then participate.

During Phase B, the online discussion boards were introduced. Data was again collected for five days over the course of two weeks. After students had read a portion of *The Great Gatsby*, they were directed to Google Classroom, where an online discussion question was posted. Students were given 15 minutes to respond to the question thoughtfully while elaborating on their posts and were then asked to respond to two classmates' posts, stating whether they agree with them or not, and why. Students were graded on their participation in the online discussion, and the critical analysis of the question.

During the second Phase A, students returned to the traditional classroom model. This phase included two classes over the course of one week. During the second Phase B,

students returned to the instruction using online discussion boards. The data for this second Phase B was also collected for three classes over the course of one week.

Materials

Two sets of materials were used for this study. During phase A, materials used included discussion questions, response journals, daily assessments, and The Great Gatsby novel. During the intervention phases, materials used included Google Classroom, Google Questions using Google Classroom, and The Great Gatsby novel.

Measurable Materials

Response journals. A targeted question on a theme or portion of the story was asked each day. The response journal was assigned for students to respond to the question before a discussion was held. It was a mandatory assessment where students must write 3-5 sentences answering the question and explain their answer thoughtfully. Response journals were graded at the end of each class and submitted as a classwork grade. They were given a grade 0-5 and scored on a 5-point rubric.

Daily assessments. Each day the students were given 10-15 minutes to complete an assessment. During phase A and phase B, the daily assessments were given as a warm-up activity, or an anticipatory set. The students' daily assessments were given a grade of 0-10 and scored on a 10-point rubric

Google Classroom discussions. The Google Classroom discussions were used during the intervention phase B. Each discussion required students to respond to the question, and then to two of their classmates' responses. These discussions were graded using a 3-point rubric and took into consideration the thought behind their answer, and if they responded to two of their classmates.

Procedures

This study took place over six weeks. During weeks 1 and 2 baseline data was collected on the amount of times students participated during oral class discussions. The teacher used a tally chart to keep track and note every time a student participated. If a student did not participate at all during the discussion, a "0" was marked on the chart. At the end of week 2 students were introduced to online discussions through Google Classroom. Weeks 3 and 4 were the intervention weeks. Online discussions were implemented, and records were kept as to who participated in the discussion. Notes were taken on the level of critical thinking applied to the students' responses in the online discussions. Week 5 returned to the baseline conditions with traditional classroom model with oral discussions. Week 6 returned to the intervention conditions using online discussions. At the end of week 6 students were asked to complete a voluntary, anonymous student satisfaction survey regarding the online discussions.

Measurement Procedures

Oral participation. Throughout the study oral participation was monitored and graded on a scale of 0-3: 0 indicated no participation was attempted at all, 1 indicated a student raised their hand, but gave a brief and off-topic answer, 2 indicated a student raised their hand and spoke clearly and on topic, but struggled to formulate a clear answer, and 3 indicated that the student raised their hand and responded to the question clearly.

Online discussion participation. The participation for the online discussions was graded and monitored during the intervention phase of the research. The grading was done using a 3-point rubric. The students scored a "0" if they did not participate at all; a

"1" if they participated but did not respond to two classmates; a "2" if they participated and responded to one classmate; and a "3" if they participated, and thoughtfully responded to two of their classmates.

Critical thinking. The students' levels of critical thinking were monitored using a 2-point rubric. The students received a "0" if they did not answer the question at all; a "1" if the students answered the question without any explanation; and a "2" if the students answered the question with a thoughtful explanation.

Survey. At the conclusion of the study, the participants were asked to fill out a student satisfaction survey using a Likert scale. Students answered eight questions pertaining to their satisfaction with the online discussions. The researcher distributed the survey to each student and gave them time to read and respond to each question honestly and thoroughly in regards to the use of online discussions in their classroom. Participants answered each question with a rating of 1-5: 1 representing strongly disagree, 2 representing disagree, 3 representing undecided, 4 representing agree, and 5 representing strongly agree. Participants were advised not to put their names on the surveys, so that their answers were anonymous. Figure 1 shows the survey participants were asked to complete.

Statements	Strongly Agree 5	Agree 4	Undecided 3	Disagree 2	Strongly Disagree 1
1. I found Online Discussion Boards easy to use.					
2. The Online Discussion Board kept me on task.					
3. I would rather use technology to stay on task.					
4. The Online Discussion Board was a distraction.					
5. I would use the Online Discussion Board in other classes or settings to help me participate.					
6. I enjoyed using the Online Discussion Board in class.					
7. I am prepared to participate more in class after using the Online Discussion Board.					
8. I would like to share this technology with friends and other students.					

Figure 1. Student satisfaction survey

Data Analysis

Survey results were compiled and reported in a table. The scores gathered from the students' oral participation and online discussion responses and were converted into percentages. The data from these two variables were displayed in visual line graphs.

Results were also compared for phase A and phase B. The data points were used to identify changes in mean performance between conditions. Mean and standard deviations for oral participation rates and online discussion posts are reported in tables. A comparison of results between phases helped to determine the positive effects of using online discussion boards in an American Literature II resource classroom.

Chapter 4

Results

The single-subject design study utilized ABAB phases to examine the effect of online discussion boards on classroom participation rates and critical thinking responses of students with learning disabilities. Nine high school juniors, receiving American Literature II instruction in a resource room setting, participated in this study. Research questions investigated follow:

1. Will the implementation of online or threaded discussions increase the active participation rate of students in a pull-out resource English classroom?
2. Will the implementation of online or threaded discussions increase the critical thinking of students in a pull-out resource English classroom?
3. Will students in a pull-out resource English classroom be satisfied with the use of online or threaded discussion boards?

Data was collected throughout all phases. Discussion boards on Google Classroom were checked daily for the completion of the assignment and academic grades were measured through the daily assignments. At the end of the study, students had the option to participate in a voluntary Likert scale survey regarding their satisfaction with using online or threaded discussion boards.

Active Participation

Participation rates were obtained through warm-up activities and anticipatory set questions. These participation rates were graded on a ten-point rubric displaying points earned for completion, thoughtfulness, and textual support.

Table 2

Student Participation Rates

	Baseline 1		Intervention 1		Baseline 2		Intervention 2	
Student	Mean	SD	Mean	SD	Mean	SD	Mean	SD
A	70	3.5	90	9.4	80	7.07	85	0
B	75	9.4	90	5.0	75	7.07	85	5
C	80	10.4	95	5.0	85	7.07	90	5
D	75	3.5	80	12.8	75	7.07	85	5
E	65	10.0	80	7.9	70	7.07	85	5
F	80	7.9	80	7.9	85	7.07	95	5
G	80	17.8	90	6.1	80	7.07	90	5
H	75	18.4	80	7.9	80	7.07	90	10
I	65	11.7	75	3.5	70	7.07	80	8.7

Student A is a 16-year-old Caucasian male. He is eligible for special education services under the classification of SLD and the sub classifications of written expression, reading fluency, and mathematical calculations. During the first baseline phase, Student A's mean score on his active participation rate was 70%. Student A's mean score increased during the first intervention phase to 90%. During the second baseline phase when the intervention was removed, Student A's mean score decreased to 80% and then increased with the second intervention phase to 85%. Student A's daily data is shown in Figure 2. As seen in the figure, Student A's scores went down during the baseline phases.

When the online discussion boards were introduced, Student A's scores displayed an increase in both intervention phases.

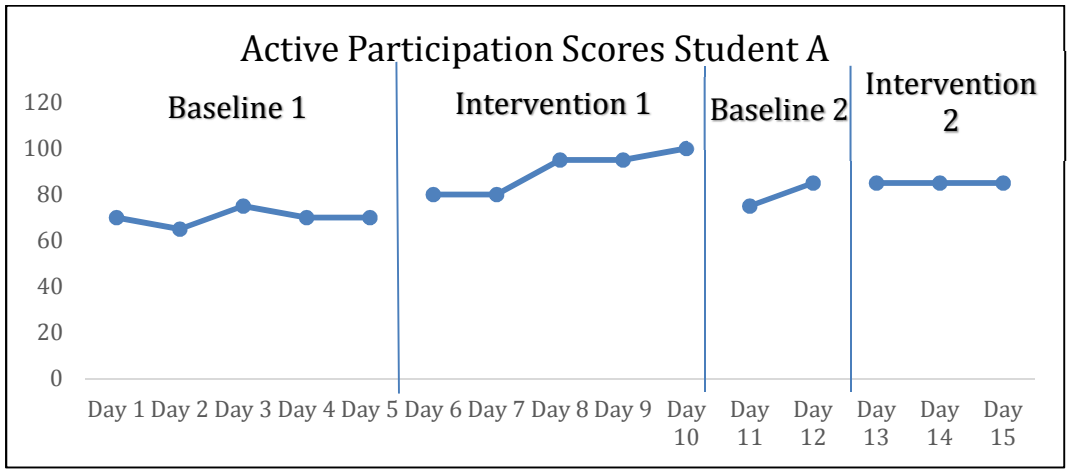

Figure 2. Student A participation rate.

Student B is a 17-year-old Caucasian male. He is identified as having a specific learning disability and is eligible for special education services under the sub classifications of mathematical calculations and mathematical problem solving. During the first baseline phase, Student A's mean score on his active participation rate was 75%. Student B's mean score increased during the first intervention phase to 90%. During the second baseline phase when the intervention was removed, Student B's mean score decreased back down to 70% and then increased with the second intervention phase to 85%. Student B's daily data is shown in Figure 3. As seen in the figure, Student B's scores went down in the baseline phases, and increased with both intervention phases.

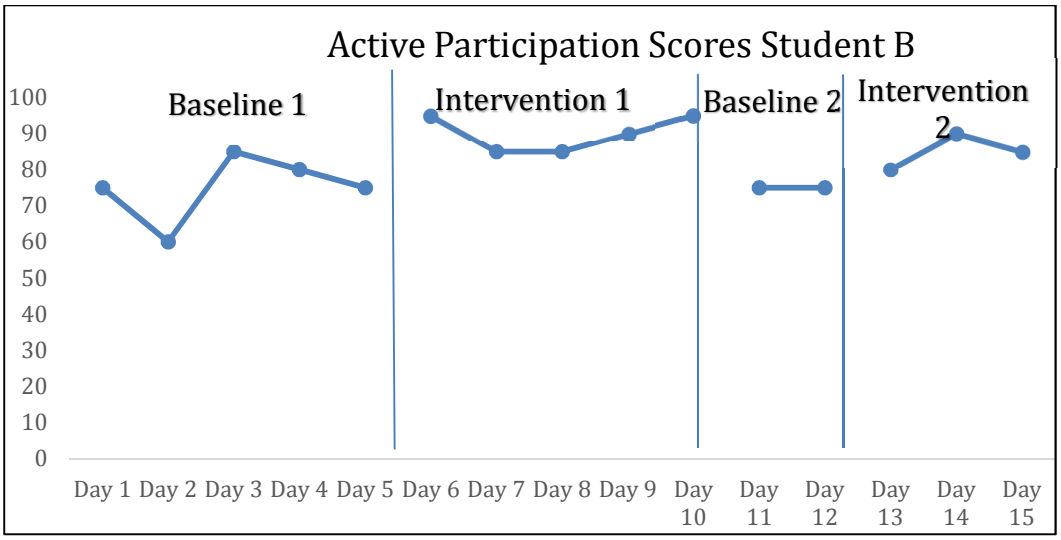

Figure 3. Student B participation rate.

Student C is a 16-year-old Caucasian male. He is identified as other health impaired and is eligible for special education services under the sub classifications of mathematical calculations, mathematical problem solving, and written expression. During the first baseline phase, Student C's mean score on his active participation rate was 80%. Student C's mean score increased during the first intervention phase to 95%. During the second baseline phase when the intervention was removed, Student C's mean score decreased to 85% and then increased with the second intervention phase to 90%. Student C's daily data is shown in Figure 4. As seen in the figure, Student C's scores went down in the baseline phases, and increased with both intervention phases.

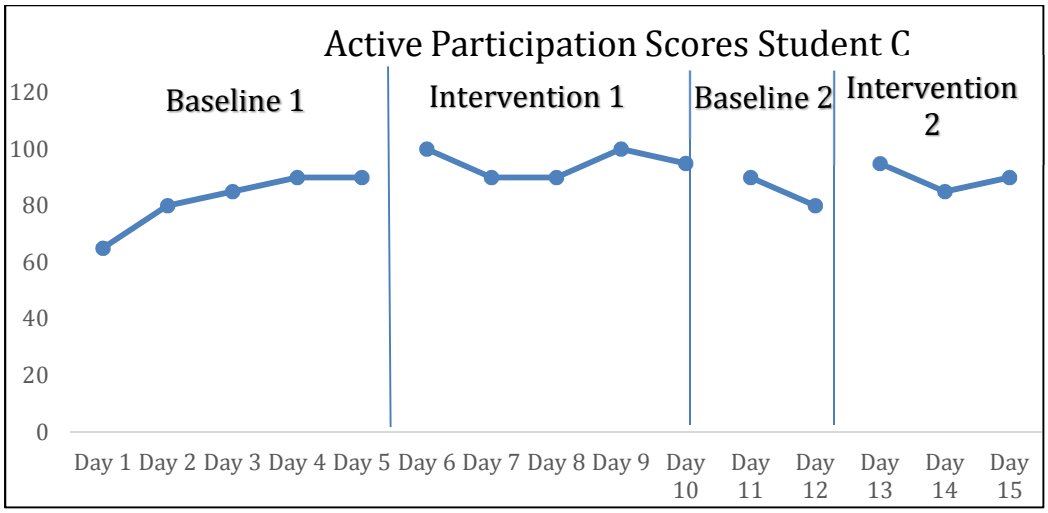

Figure 4. Student C participation rate

Student D is a 16-year-old Caucasian male. He is identified as having a specific learning disability and is eligible for special education services under the sub classifications of written expression, mathematical problem solving, and mathematical calculations. During the first baseline phase, Student D's mean score on his active participation rate was 75%. Student D's mean score increased during the first intervention phase to 80%. During the second baseline phase when the intervention was removed, Student D's mean score decreased to 75% and then increased in the second intervention phase to 85%. Student D's daily data is shown in Figure 5. As seen in the figure, Student D's scores went down during the baseline phases, and increased with both intervention phases.

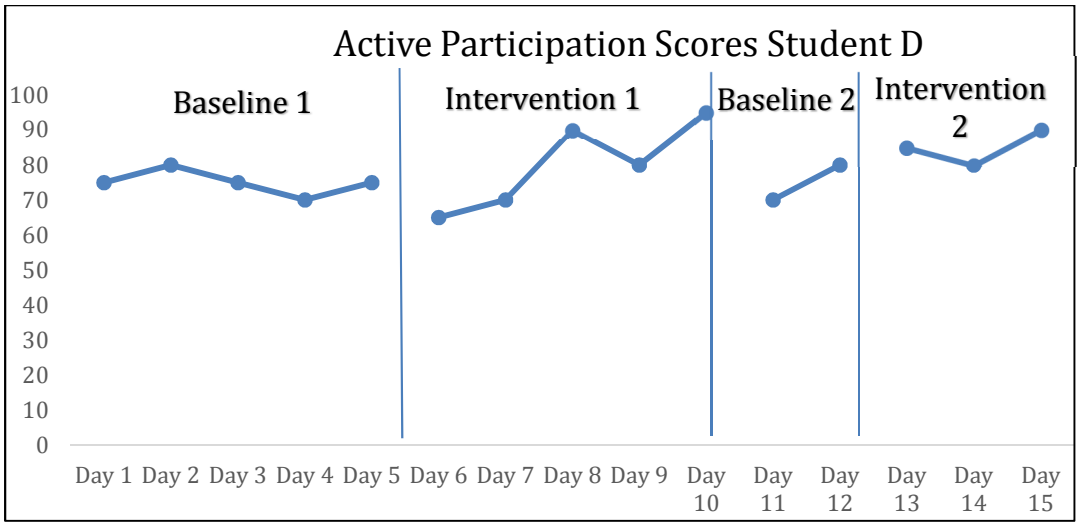

Figure 5. Student D participation rate.

Student E is a 16-year-old African American male. He is identified as having a specific learning disability and is eligible for special education services under the sub classifications of reading fluency and mathematical calculations. During the first baseline phase, Student E's mean score on his active participation rate was 65%. Student E's mean score increased during the first intervention phase to 80%. During the second baseline phase when the intervention was removed, Student E's mean score decreased to 70% and then increased in the second intervention phase to 85%. Student E's daily data is shown in Figure 6. As seen in the figure, Student E's scores went down during the baseline phases, and increased with both intervention phases.

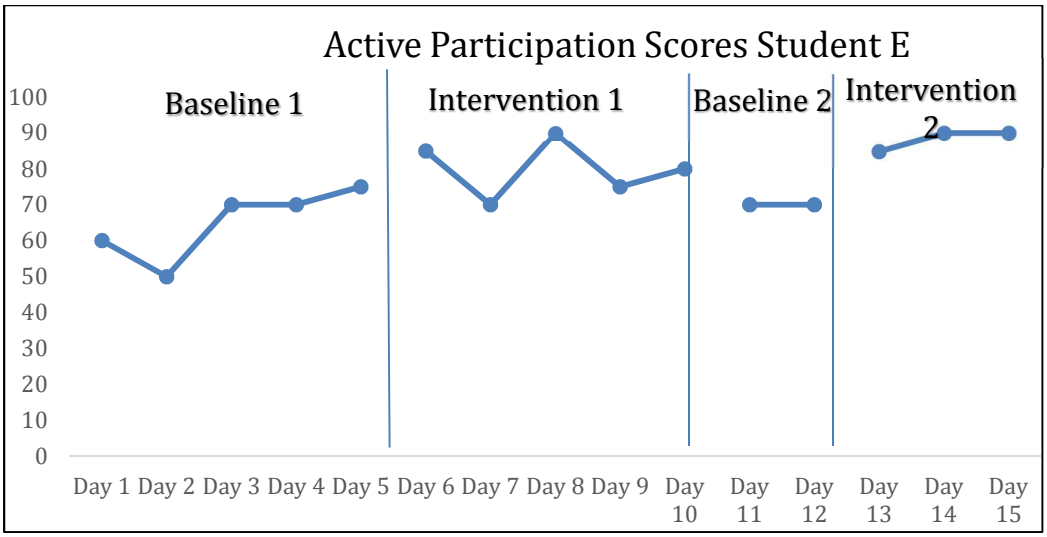

Figure 6. Student E participation rate.

Student F is a 16-year-old Caucasian male. He is identified as having a specific learning disability and is eligible for special education services under the sub classification of mathematical calculations. During the first baseline phase, Student F's mean score on his active participation rate was 80%. Student F's mean score stayed the same during the first intervention phase at 80%. During the second baseline phase when the intervention was removed, Student F's mean score increased to 85% and then increased again in the second intervention phase to 90%. Student F's daily data is shown in Figure 7. As seen in the figure, Student F's scores stayed neutral during the baseline phases, and increased with the second intervention phase.

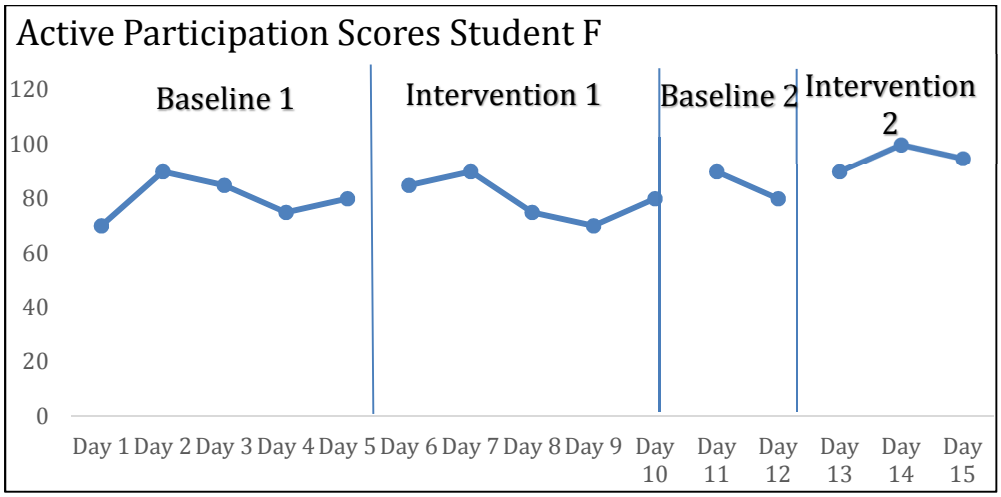

Figure 7. Student F participation rate.

Student G is a 16-year-old Caucasian female. She is identified as having a specific learning disability and is eligible for special education services under the sub classifications of reading fluency and mathematical problem solving. During the first baseline phase, Student G's mean score on her active participation rate was 80%. Student G's mean score increased during the first intervention phase to 90%. During the second baseline phase when the intervention was removed, Student G's mean score decreased to 80% and then increased in the second intervention phase to 90%. Student G's daily data is shown in Figure 8. As seen in the figure, Student G's scores went down during the baseline phases, and increased with both intervention phases.

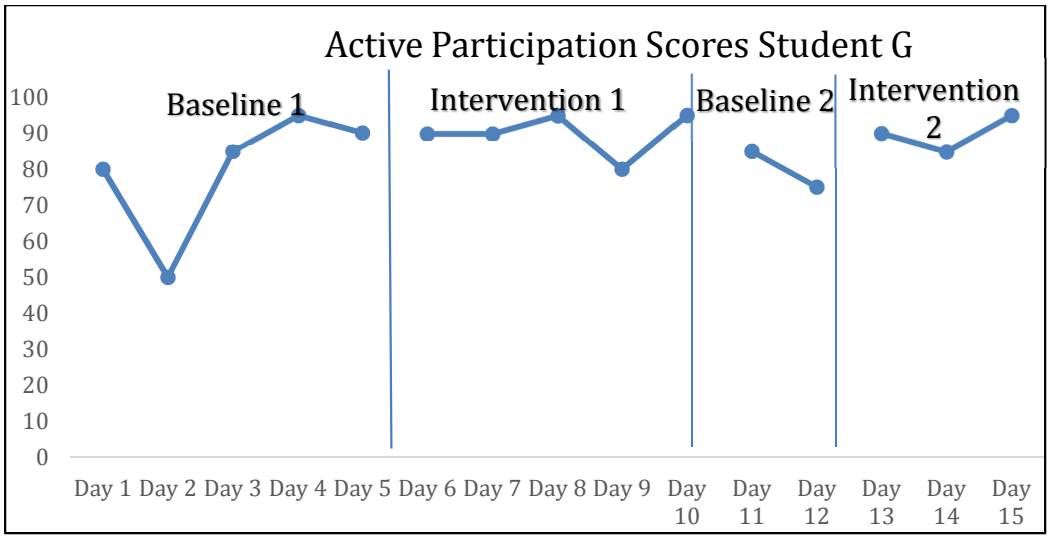

Figure 8. Student G participation rate.

Student H is a 16-year-old Caucasian female. She is identified as having a specific learning disability and is eligible for special education services under the sub classification of listening comprehension. During the first baseline phase, Student H's mean score on her active participation rate was 75%. Student H's mean score increased during the first intervention phase to 80%. During the second baseline phase when the intervention was removed, Student H's mean score stayed at 80% and then increased in the second intervention phase to 90%. Student H's daily data is shown in Figure 9. As seen in the figure, Student H's scores went down during the baseline phases, and increased with both intervention phases.

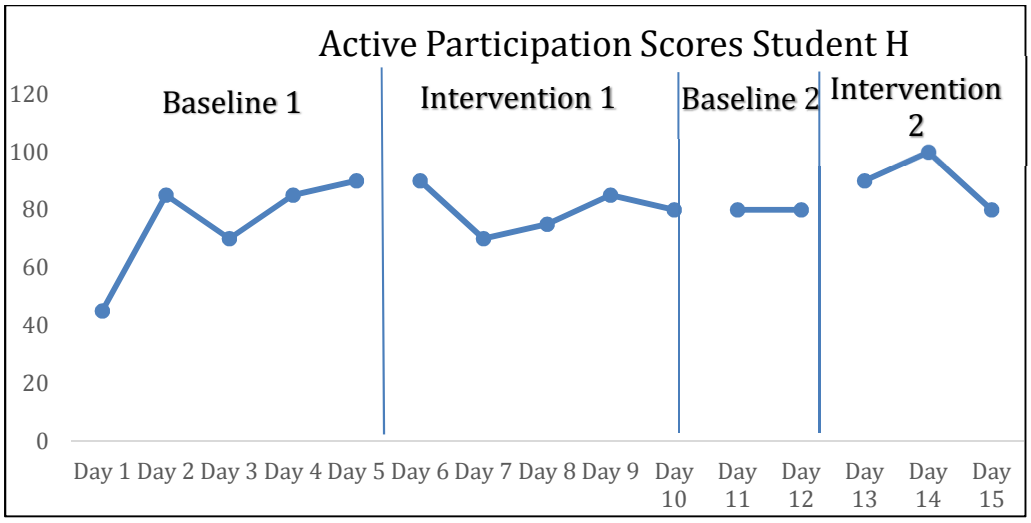

Figure 9. Student H participation rate.

Student I is a 16-year-old Caucasian male. He is identified as having a specific learning disability and is eligible for special education services under the sub classifications of reading fluency and mathematical problem solving. During the first baseline phase, Student I's mean score on his active participation rate was 65%. Student I's mean score increased during the first intervention phase to 75%. During the second baseline phase when the intervention was removed, Student I's mean score decreased to 70% and then increased in the second intervention phase to 80%. Student I's daily data is shown in Figure 10. As seen in the figure, Student I's scores went down during the baseline phases, and increased with both intervention phases.

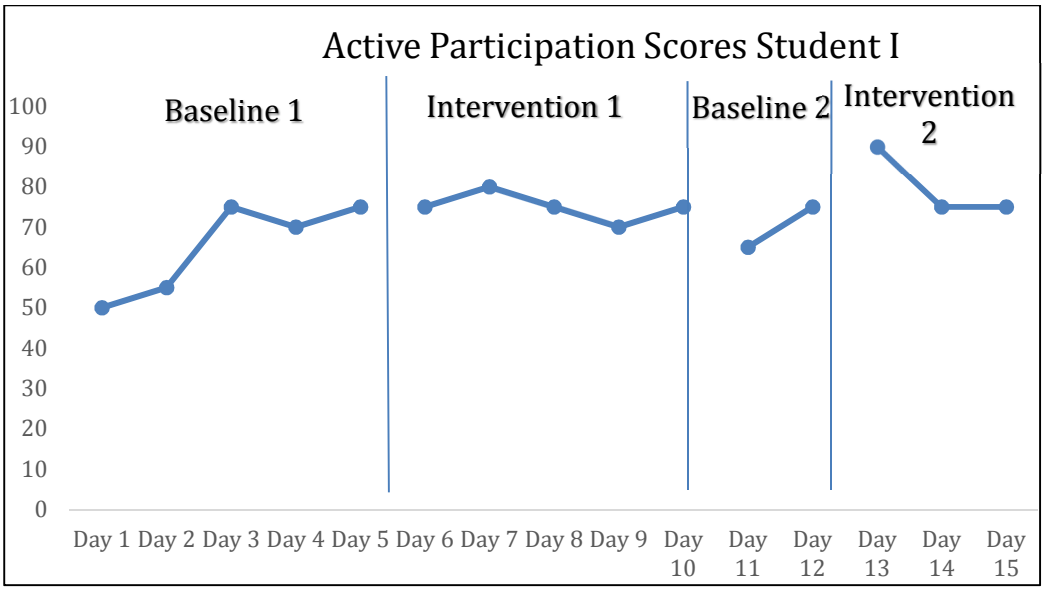

Figure 10. Student I participation rate.

Critical Thinking

Critical thinking scores were obtained through daily anticipatory sets and discussions. Critical thinking responses were scored on a 10-point rubric and then converted into percentages. Means and standard deviations of students' critical thinking scores are shown in Table 3.

Table 3

Student Critical Thinking

	Baseline 1		Intervention 1		Baseline 2		Intervention 2	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
A	60	7.9	80	7.9	65	7.07	80	8.7
B	70	12.8	85	7.9	75	7.07	90	0
C	55	7.9	80	7.9	65	21.2	85	8.7
D	65	11.7	75	20	75	0	85	10
E	70	12.8	90	3.5	80	7.07	90	8.7
F	75	7.9	85	7.9	80	0	95	5.0
G	80	7.9	85	5.0	80	7.07	90	5.0
H	60	10.6	70	12.8	65	0	80	10.0
I	55	12.6	70	10.0	65	7.07	85	13.2

During the first baseline phase, Student A's mean score for critical thinking was 60%. Student A's mean score increased during the first intervention phase to 80%. During the second baseline phase, Student A's mean score decreased to 65% and then increased again to 80% during the second intervention phase. Student A's daily data is shown in Figure 11. As shown in the figure, Student A's rate of critical thinking tended to decrease during the baseline phases and increase during the intervention phases with the implementation of the online discussion boards.

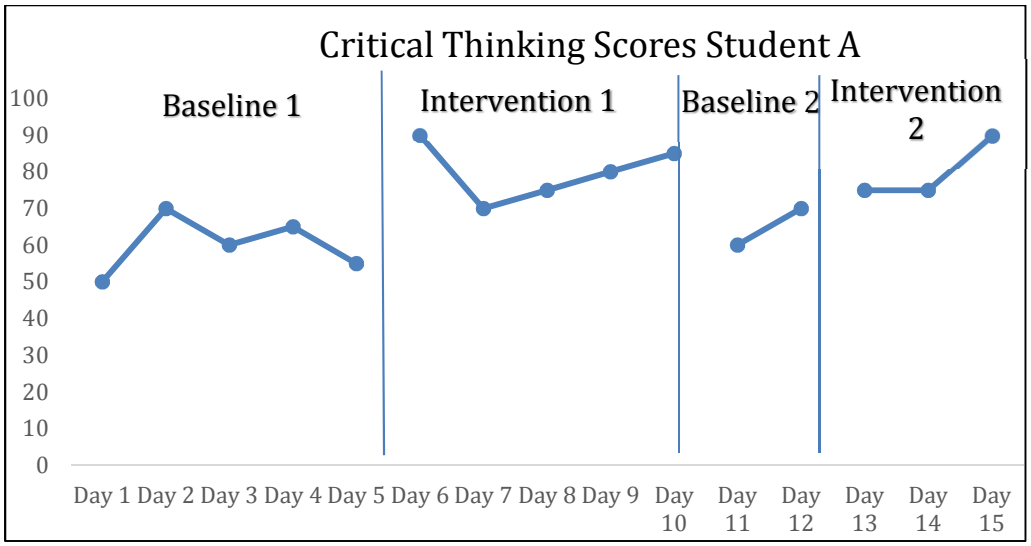

Figure 11. Student A critical thinking.

During the first baseline phase, Student B's mean score for critical thinking was 70%. Student B's mean score increased during the first intervention phase to 85%. During the second baseline phase, Student B's mean score decreased to 75% and then increased again to 90% during the second intervention phase. Student B's daily data is shown in Figure 12. As shown in the figure, Student B's rate of critical thinking tended to decrease during the baseline phases and increase during the intervention phases with the implementation of the online discussion boards.

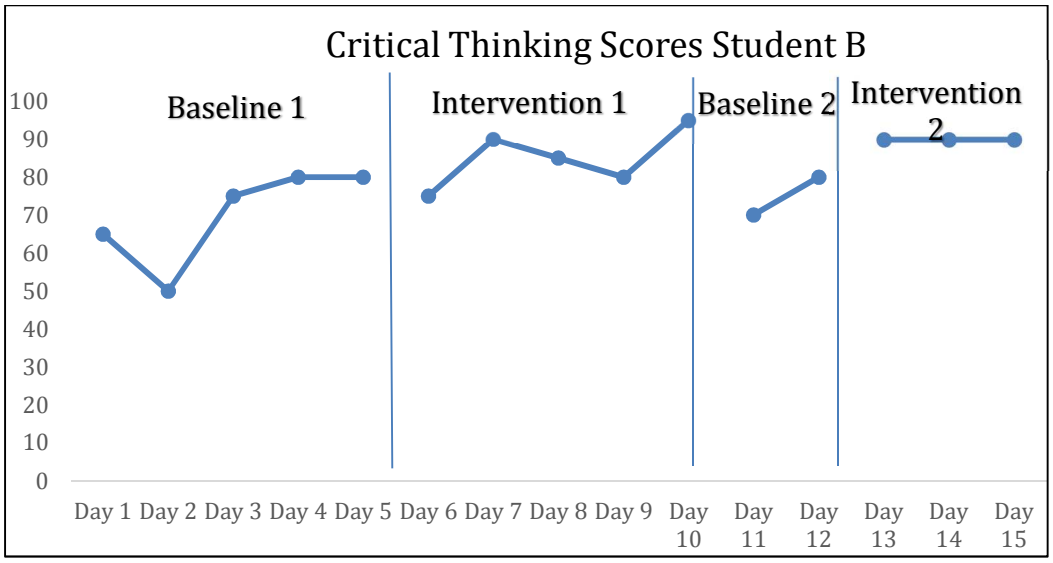

Figure 12. Student B critical thinking.

During the first baseline phase, Student C's mean score for critical thinking was 55%. Student C's mean score increased during the first intervention phase to 80%. During the second baseline phase, Student C's mean score decreased to 65% and then increased again to 85% during the second intervention phase. Student C's daily data is shown in Figure 13. As shown in the figure, Student C's rate of critical thinking tended to decrease during the baseline phases and increase during the intervention phases with the implementation of the online discussion boards.

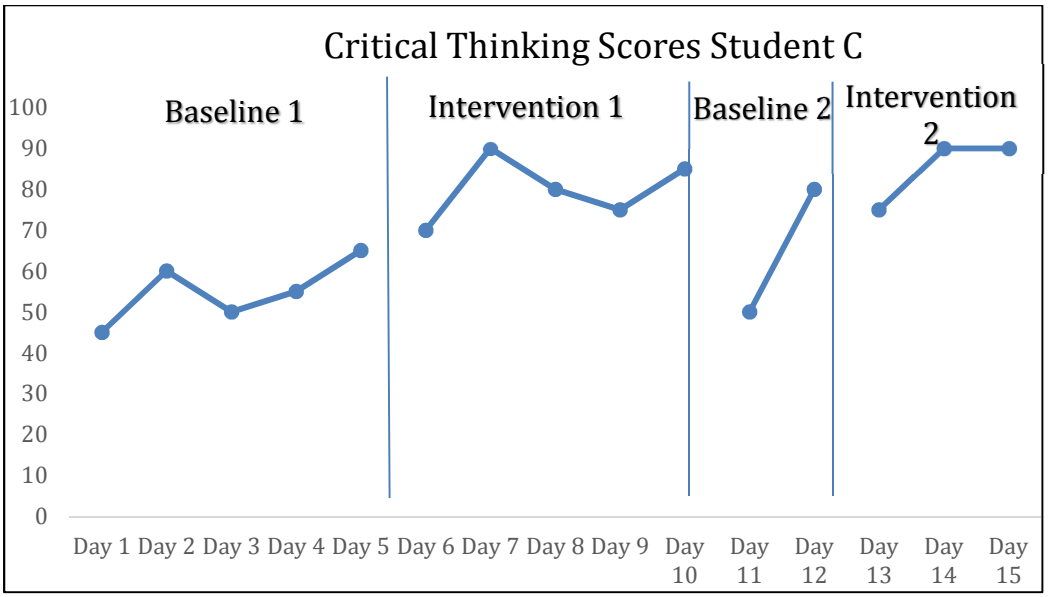

Figure 13. Student C critical thinking.

During the first baseline phase, Student D's mean score for critical thinking was 65%. Student D's mean score increased during the first intervention phase to 75%. During the second baseline phase, Student D's mean score remained at 75% and then increased again to 85% during the second intervention phase. Student D's daily data is shown in Figure 14. As shown in the figure, Student D's rate of critical thinking tended to decrease during the baseline phases and increase during the intervention phases with the implementation of the online discussion boards.

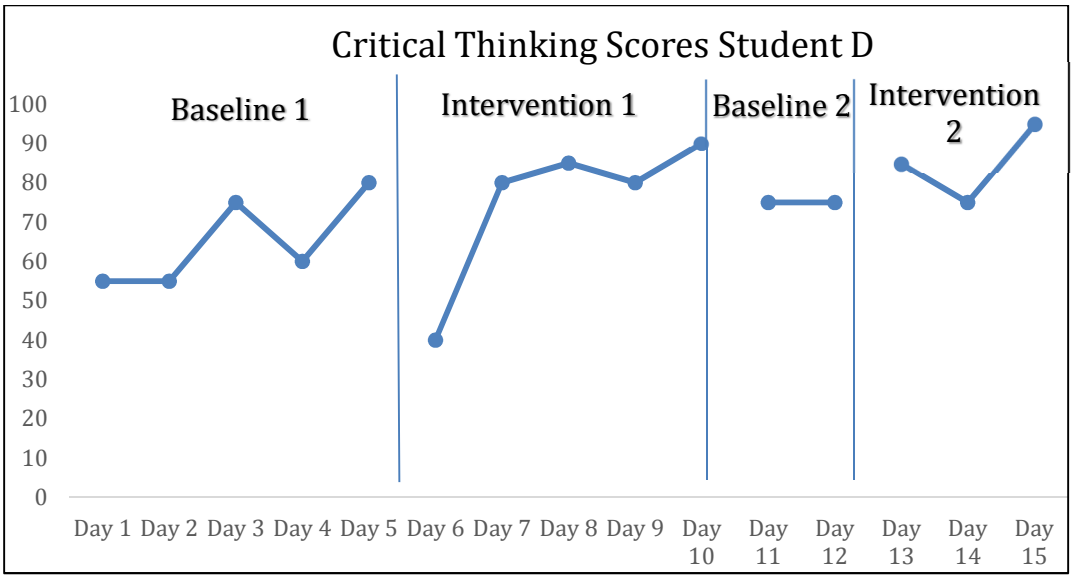

Figure 14. Student D critical thinking.

During the first baseline phase, Student E's mean score for critical thinking was 70%. Student E's mean score increased during the first intervention phase to 90%. During the second baseline phase, Student E's mean score decreased to 80% and then increased again to 90% during the second intervention phase. Student E's daily data is shown in Figure 15. As shown in the figure, Student E's rate of critical thinking tended to decrease during the baseline phases and increase during the intervention phases with the implementation of the online discussion boards.

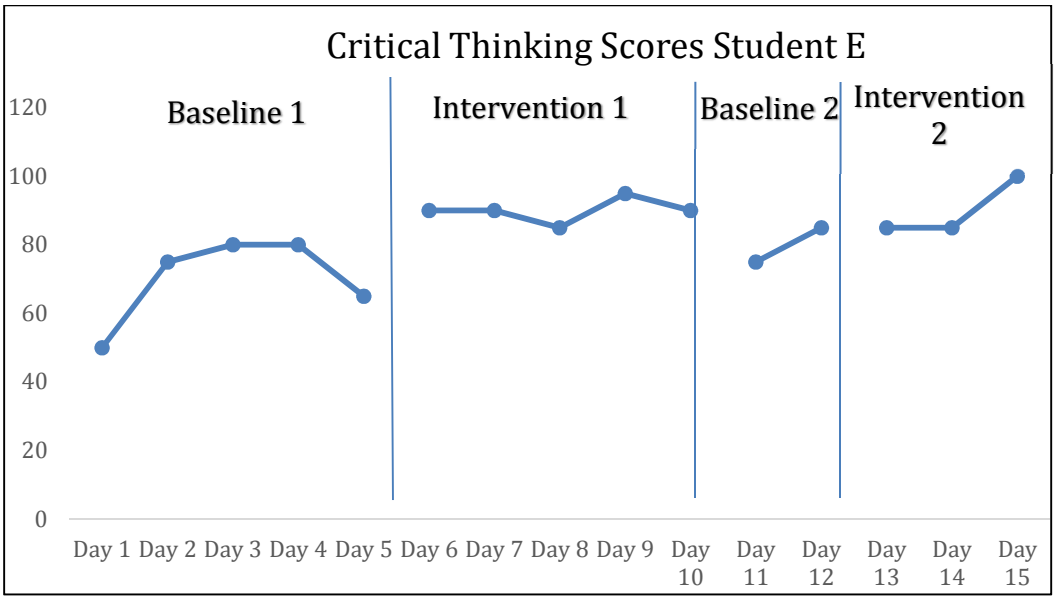

Figure 15. Student E critical thinking.

During the first baseline phase, Student F's mean score for critical thinking was 75%. Student F's mean score increased during the first intervention phase to 85%. During the second baseline phase, Student F's mean score decreased to 80% and then increased again to 95% during the second intervention phase. Student F's daily data is shown in Figure 16. As shown in the figure, Student F's rate of critical thinking tended to decrease during the baseline phases and increase during the intervention phases with the implementation of the online discussion boards.

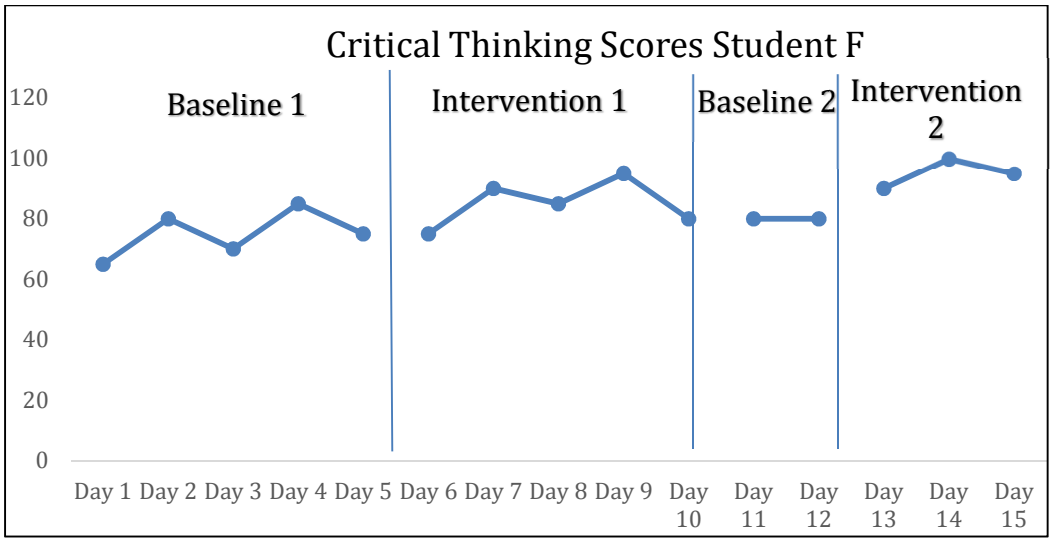

Figure 16. Student F critical thinking.

During the first baseline phase, Student G's mean score for critical thinking was 80%. Student G's mean score increased during the first intervention phase to 85%. During the second baseline phase, Student G's mean score decreased to 80% and then increased again to 90% during the second intervention phase. Student G's daily data is shown in Figure 17. As shown in the figure, Student G's rate of critical thinking tended to decrease during the baseline phases and increase during the intervention phases with the implementation of the online discussion boards.

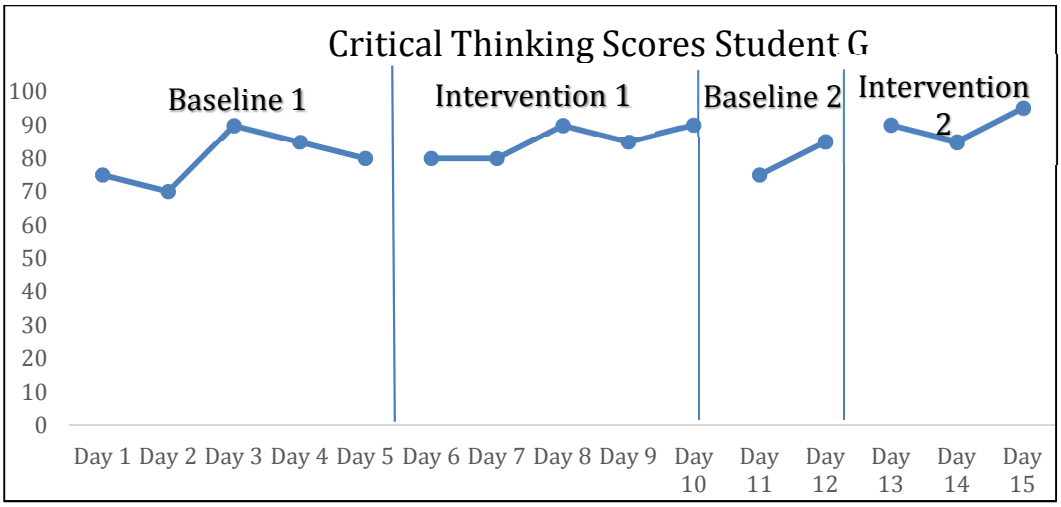

Figure 17. Student G critical thinking.

During the first baseline phase, Student H's mean score for critical thinking was 60%. Student H's mean score increased during the first intervention phase to 70%. During the second baseline phase, Student H's mean score decreased to 65% and then increased again to 80% during the second intervention phase. Student H's daily data is shown in Figure 18. As shown in the figure, Student H's rate of critical thinking tended to decrease during the baseline phases and increase during the intervention phases with the implementation of the online discussion boards.

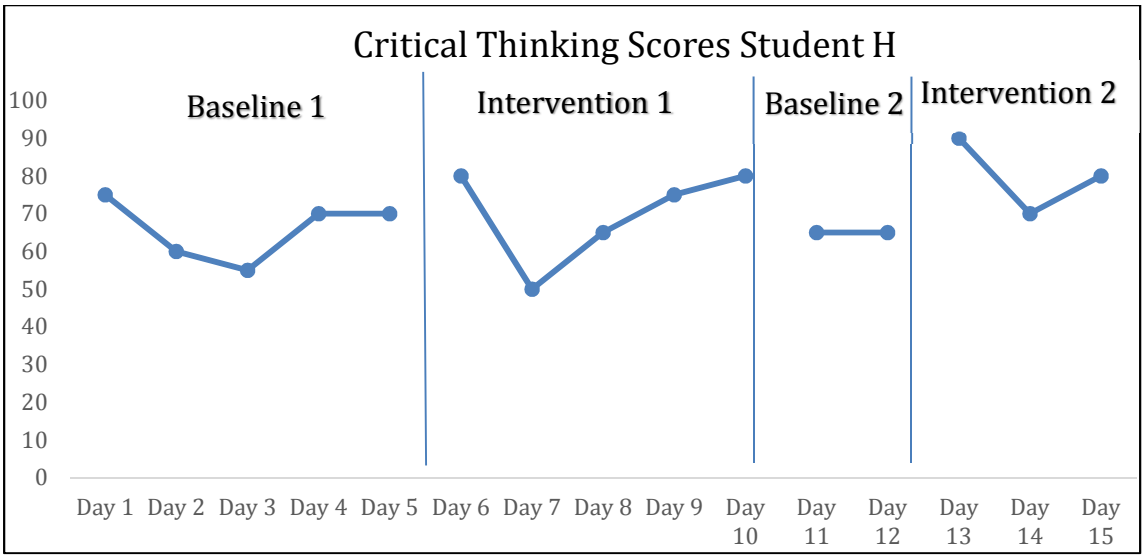

Figure 18. Student H critical thinking.

During the first baseline phase, Student I's mean score for critical thinking was 55%. Student I's mean score increased during the first intervention phase to 70%. During the second baseline phase, Student I's mean score decreased to 65% and then increased again to 85% during the second intervention phase. Student I's daily data is shown in Figure 19. As shown in the figure, Student I's rate of critical thinking tended to decrease during the baseline phases and increase during the intervention phases with the implementation of the online discussion boards.

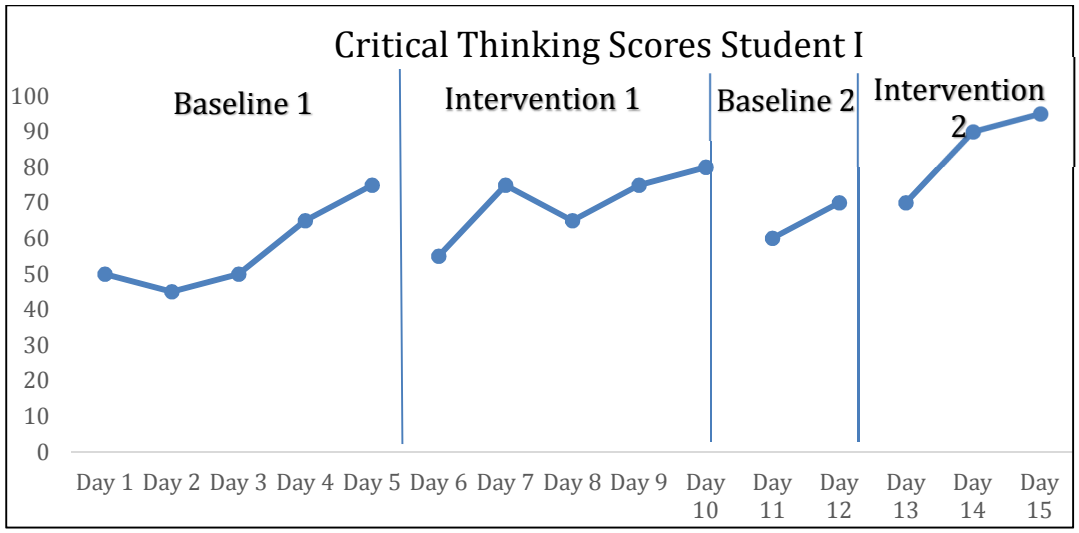

Figure 19. Student I critical thinking.

Survey Results

All students voluntarily completed a Likert scale satisfaction survey after the completion of the second intervention phase. Results were tallied and then converted into percentages. The student response percentages for each category in the eight-statement survey are presented in Table 4.

Table 4

Student Satisfaction Survey Percentage Results

Statements	Strongly Agree (%) 5	Agree (%) 4	Undecided (%) 3	Disagree (%) 2	Strongly Disagree (%) 1
1. I found Online Discussion Boards easy to use.	89	11	0	0	0
2. The Online Discussion Board kept me on task.	67	22	11	0	0
3. I would rather use technology to stay on task.	78	22	0	0	0
4. The Online Discussion Board was a distraction.	78	11	11	0	0
5. I would use the Online Discussion Board in other classes or settings to help me participate.	89	0	0	11	0
6. I enjoyed using the Online Discussion Board in class.	78	0	0	22	0
7. I am prepared to participate more in class after using the Online Discussion Board.	67	0	0	22	11
8. I would like to share this technology with friends and other students.	0	56	11	33	0

As seen in Table 4, a score of 4 or 5 shows that the students agreed or strongly agreed with the statement. If a student marked a score of 3, it shows that they are undecided on the statement. A score of 1 or 2, shows the students disagreed with the statement. Table 4 indicates that all students agreed or strongly agreed with the statement "found Online Discussion Boards easy to use." Almost all of the participants strongly agreed that they "would use Online Discussion Boards in other classes to help them participate," but a small percentage of students said they disagreed. The majority of students strongly agreed that they are "prepared to participate more in class after using the Online Discussion Boards," with a small percentage of students disagreeing or strongly disagreeing with the statement. Most of the students shared that they strongly agreed with the statement "the Online Discussion Board was a distraction," with a few students expressing that they agreed or were undecided with the statement. Overall, Table 4 shows that most students enjoyed using Online Discussion Boards in the American Literature II resource classroom.

Chapter 5

Discussion

The purpose of this study was to determine the effectiveness of using online discussion boards as an intervention for improving participation and critical thinking skills for American Literature II students with learning disabilities. At the end of the study, participants were asked to complete a voluntary satisfaction survey to assess feelings towards the online discussion boards intervention.

Findings

Research has suggested that online discussions are an effective intervention to promote peer collaboration and increase participation (Miller, 2008). The results from the present study solidify Miller's findings in that all nine students' participation rates increased as a result of using online discussion boards. The present study also confirmed the research of Arend (2017) in that critical thinking levels were higher through the use of the online discussion platform. Students displayed their satisfaction in a survey that corroborated the research of Rizopoulos and McCarthy (2009) stating they enjoyed using the online discussion boards.

The results from the present study confirm the findings of Miller (2008). Student A and student B's mean scores for active participation increased from the first baseline phase to the first intervention phase. Student A's baseline for active participation was set at 70% and rose to 90% with the implementation of online discussion boards. Student A's active participation score decreased when the intervention was removed, but again rose to 85% with the second intervention phase. Student B's baseline for active participation was

set at 75% and rose to 90% as well with the implementation of online discussion boards. When the intervention was removed student B's score decreased to a mean score of 70% but increased in the second intervention phase to 85%.

The present study also reinforced the research of Preuss (2012) who suggested that scaffolding be used as a means to improve and build critical thinking skills. The present study found that all of the students' levels of critical thinking increased throughout the use of online discussion boards. The present study confirms Preuss' (2012) findings that scaffolding is necessary for students with disabilities to strengthen their critical thinking skills. Student D's first baseline score for critical thinking was a 65% and increased during the first intervention phase to a 75%. His scores remained at 75% during the second baseline phase which shows improvement after the initial intervention, and then increased again to 85% during the second intervention phase. Student E's mean score for critical thinking was a 70% during the first baseline phase and increased to a 90% with the first implementation of the online discussion board intervention. Student E's mean score decreased to an 80% in the second baseline phase and then increased again to a 90% with the second intervention phase. The present study confirms that the implementation of online discussion boards fosters a means by which students' critical thinking skills are elevated so that they may best formulate answers for discussions.

Contrary to Gok's (2011) research that concluded in a Likert scale survey that mostly males expressed their satisfaction in using online discussion boards, the present study indicates that all students were satisfied with using online discussion boards. The present study indicates that the two female participants were satisfied just as much as the

male participants. In the Likert scale survey conducted during the present study, 89% of the participants expressed that they found the online discussion boards easy to use, and that they would enjoy using them in other classes.

Limitations

The present study has several limitations. One limitation may have been the novels used to facilitate questions on the online discussion board. The novella "Of Mice and Men" by John Steinbeck challenged the students in a manner that may have been too difficult to produce higher levels of critical thinking. However, a modification made after this realization was a teacher produced guided question and cue to lead students into their responses.

The most challenging limitation is the management of technology in the classroom. The participants use a computer in every class they have, and often stray from the website they are supposed to be on. With the widespread use of technology in the classroom, it is difficult to ensure that each student is taking the proper amount of time on the discussion board to produce high levels of participation and critical thinking. There were days when students were focused and doing work as expected, and then there were also days were students were easily distracted by outside influences such as gossip, or other teachers walking into the classroom.

The final limitation was the time period in which data was being collected for the present study. The school district was closed four times due to inclement weather, which pushed back lessons in which the online discussion boards would be used. The delayed schedules decreased the amount of class time available to conduct the study. When the

school district was on a delayed opening schedule, the classes were shortened from 80 minutes to 60 minutes, and each day school was cancelled shortened the marking period. With the decrease in class time, it forced certain components of the class to be removed or altered so that the quarterly assessment could still be administered.

Implications and Recommendations

This study builds upon the research examining the use of online discussion boards in the special education classroom. The implementation of online discussion boards may produce an effective means in which students with learning disabilities are both actively participating and critically thinking. A practical implication of this research is that online discussion boards provide an outlet for students with learning disabilities who would not ordinarily participate orally, to participate in discussions. Although this intervention may not be effective for all students with learning disabilities, it may still increase overall participation in a resource classroom setting.

Taking into consideration the limitations of this study, the data collected from the study reveals that online discussion boards are an effective way to increase active participation rates and critical thinking skills among students with learning disabilities. Although most research conducted on the effectiveness of online discussion boards has been done at the college level (Lombardi et al., 2014; Norwich, 2014; Siau et al., 2006) the present study concludes that it is also effective in the high school level resource classroom. The outcomes of the study elicit the need for more research to be conducted on the use of online discussion boards in the special education setting.

In this study, all nine of the participants increased their levels of active participation and critical thinking with the implementation of online discussion boards. Research should be conducted on specific learning disabilities and other special education classifications to determine its effectiveness on more specific populations.

The survey results indicate that students enjoyed the implementation of online discussion boards in the American Literature II resource classroom. Further research should be conducted to determine if online discussion boards would be enjoyed in other academic settings. Research should also be conducted to determine if the use of online discussion boards brought students closer together within the classroom.

Conclusions

Overall, it appears that online discussion boards with help students with LD increase their active participation and critical thinking skills in class. Additionally, students with LD were pleased to use online discussions boards as a form of technology within the classroom. Further research is needed to determine how effective this intervention will be with more specific learning disability categories. This research should be conducted with a larger population of students who all have the same disability.

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