

THE EFFECTS OF ONLINE DISCUSSIONS ON STUDENT PREPAREDNESS AND  
QUIZ SCORES

THESIS

Presented to the Graduate Council of  
Texas State University-San Marcos in Partial  
Fulfillment of the  
Requirements

for the Degree

Master of ARTS

by

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May 2012

THE EFFECTS OF ONLINE DISCUSSIONS ON STUDENT PREPAREDNESS AND  
QUIZ SCORES

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## DEDICATION

To those that have been my foundation, inspiration, counselors, and sense of sanity.

My walk with God has given me the strength to complete the most difficult tasks. You have humbled me, and you have given me hope when all seemed hopeless.

To Margery, you have stood by me through the most difficult times in my studies and given me support. Together we created a vision with high goals and together we have taken an important step to completing those goals. I cannot express how much I love you in the words on a dedication page, but know I look forward to a future with you and do this for you.

Mom, you gave me support when I needed it. You have always been the loving mother that few have the luxury of experiencing. Just as you loved and supported Dad through his education, you have mine.

Dad, I consider it an honor to look you proudly in the eyes. You have taught us all to be strong humble men. You always gave me the best advice and picked me up when times were rough. I look to you and Mom as my inspiration for everything I do in my life.

Lost July, you kept me sane throughout my graduate work. I spent many late nights preparing for shows after studying for hours. We signed our first record deal, and you stood beside me with support for whatever road I took. I know that all things must end, but my heart will forever live in the music. When the time comes, I hope I can catch that train with Lost July to see the world.

## **ACKNOWLEDGEMENTS**

I would like to sincerely thank Dr. Kathryn Lee, my thesis advisor and supervising professor, for all of her hard work in keeping me focused on achieving my goals by believing in me, counseling me through the research and writing process, and providing her expertise throughout the study. I would also like to thank my committee team: Dr. Ruth Kane, Dr. Doug Holschuh, and Dr. Liz Stephens for believing in me, supporting me, and guiding me through this rigorous process. Additionally, I would like to thank Dr. Gene Martin for inspiring me to set high goals and work to achieve them.

I would also like to thank all instructors, researchers, administrative personnel, and participants in the study for allowing me to conduct the study with ease and cooperation.

Thanks to Texas State University-San Marcos for providing me with the education and tools necessary to complete this study.

I'd also like to thank my family and close friends for supporting me and believing in me throughout these past few years.

This manuscript was submitted on April 3, 2012.

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## **ABSTRACT**

### **THE EFFECTS OF ONLINE DISCUSSIONS ON STUDENT PREPAREDNESS AND QUIZ SCORES**

by

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May 2012

#### **SUPERVISING PROFESSOR: KATHRYN LEE**

This mixed methods study investigated the effects of online discussions on student preparedness for chapter quizzes and quiz scores. Surveys, journal prompts, and paired t-tests, were used to determine student preparedness, frequency of participation in face-to-face classroom discussions, and a comparison of chapter quiz scores of two student groups in an 11<sup>th</sup> grade history class. For each chapter studied, students in the control group participated in a lecture and class discussions. Students in the treatment group completed online discussions over the material as homework in addition to the lecture and class discussion. Although comparisons of chapter quiz scores for the two groups indicated no significant differences, comments from the journal entries suggested that students in the treatment group reported feeling more prepared for class discussions and quizzes as well as desired more opportunities to utilize classroom technology.

An unexpected finding showed that the treatment group who engaged in the online discussions participated more frequently in the subsequent whole class discussion than the control group.

*Keywords:* online discussions, social studies, student preparedness, constructivism, educational technology, technology integration

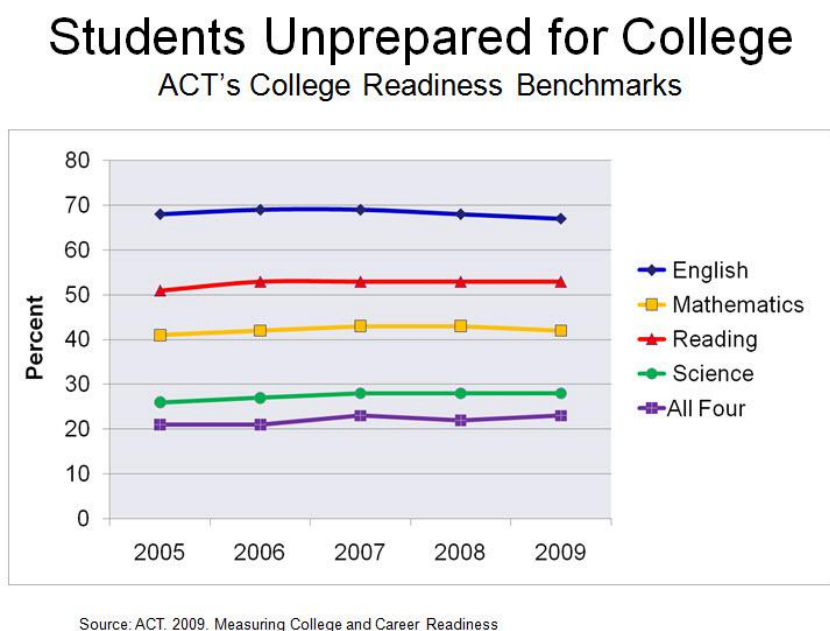
## **CHAPTER I**

### **INTRODUCTION**

Students' reading habits and test preparation have gone through multiple changes over the last two decades, particularly in relation to the availability of various digital tools for content learning (Kim & Bateman, 2010; Lineweaver, 2010). These changes include the use of message boards, content and task-oriented online discussions, and interactive online discussion activities (Kim & Bateman, 2010).

Advancements in digital tools have affected students' preparation strategies; however, traditional teaching methods, such as oral recitation and rote memorization, are still commonly used in the teaching profession (Beck, 2009; Marrero, Woodruff, & Schuster, 2010). Advances in technology have also increased the demand for online courses, structured online lessons, and online communication within the last decade. More availability of computers to students exists and will likely increase in addition to the demand for more Web-based classrooms, instruction, and discussions (Wilson, Cordry, & King, 2004).

In 2000, researchers reported that the percentage of students reading and preparing for classroom discussions had declined (Burchfield & Sappington, 2000; Hayes & Devitt, 2008). This was likely a result of teachers continuing to use traditional teaching methods, such as oral recitation and rote memorization, while students were increasingly engaging in online reading and forum discussions. Furthermore, ACT© reports (ACT, 2006) suggest that students are not meeting reading standards in the classroom and are encouraged to engage in reading complex material through multiple resources. See Figure 1.



**Figure 1**  
*ACT's College Readiness Benchmarks*

Working in academic online discussions affords students an opportunity to use multiple resources, gain multiple perspectives, and collaborate with fellow students. Students who collaboratively work on assignments in small groups report experiencing more benefits than students who work individually (Bryant, 2005; Meyers, 1997; White,

1978). Furthermore, studies in secondary education show higher achievement levels in classroom activities when the students participate in online discussions (Althaus, 1997 Journell, 2009).

Online engagement in the classroom is a growing area of research, and many universities are encouraging future teachers to organize their lesson plans around activities that utilize technology and online collaboration (Kim & Bateman, 2010; Lineweaver, 2010; Marrero, Woodruff, & Schuster, 2010).

#### Statement of the Problem

A lack of research exists on systematically assessing the effect of online discussions and the direct effects on high school students' preparation and examination scores (Lineweaver, 2010). History classrooms at the secondary level, in particular, require high levels of preparation that rely on rote memorization and the conceptualization of ideas.

A lack of preparation regarding literacy requirements in secondary history classrooms can be directly associated with the "inadequate teaching methods," such as hands-on and discovery approaches, used by instructors (Nokes, 2010). While assignments designed around student collaboration can generate many benefits, such as different perspectives, increased motivation, and multiple resources (Cicco, 2010), the courses that are built around large quantities of material, such as history classes, often do not afford students the opportunities to engage other classmates in their discussions (Dengler, 2008; Lineweaver, 2010).

Research suggests that high school students tend to disregard the reading or are inadequately prepared for class readings prior to the due dates (Marchant, 2002;

Sappington, Kinsey, & Munsayac, 2002). However, when students are engaged and participate in online discussions, researchers have reported positively perceived learning, quality of assessment, achievement, satisfaction, and retention rate (Hrastinski, 2008).

### Purpose of the Study

The purpose of this study was to determine the effect of online discussions pertaining to textbook readings assigned to two secondary history classes. The study compared face-to-face large group classroom discussions (control group) with small group online discussions (treatment group). The students' levels of preparation, as measured by self-report surveys and chapter quiz scores, were the determining factors that defined the effectiveness of the online discussions.

Lineweaver (2010) conducted a study in college classes; however, no evidence of substantial research has been applied at the secondary education level. This study is unique in that it applies researchers' knowledge of online discussions to a secondary level history class in an urban school district.

The study was designed around a secondary history course, with the same instructor teaching both the control group and treatment group. The control group consisted of students who participated in face-to-face large group discussions, lesson activities, and group work, such as writing a script and performing a skit. The treatment group also participated in face-to-face large group discussion, lesson activities, and group work, and additionally participated in online discussions as homework. One school, classroom subject, and instructor were selected to ensure consistency between the control and treatment groups. The school provided Web access and computer laptops for the students



to use in the classroom and at home; consequently, all participants in the treatment group had access to computers and the Internet.

### Statement of the Research Questions

The main goals of this study were to examine the following research questions: (a) do students participate in online discussion homework and if they do, does that influence their perception of preparedness for subsequent quizzes; (b) do students who complete the online discussion forum assignments achieve higher examination scores than students in the control group; (c) do students who participate in online discussions feel adequately prepared for examinations; and (d) what factors, if any, did the students find helpful with using the online discussion assignments?

### Significance of the Study

History classes encompass large quantities of information that students are required to learn to reach achievement levels on statewide assessment-tests and classroom assignments. Therefore, alternative teaching strategies should be considered to provide students with opportunities to analyze subject content through the use of appropriate digital tools (Huang & Russell, 2006; Journell, 2009). The demands of today's education involve developing networking, collaboration, research, technical and critical analysis skills. Implementing online discussions can contribute to the scaffolding required to develop student capabilities regarding the new standards of success (ISTE, 2008).

## **CHAPTER II**

### **REVIEW OF LITERATURE**

#### **Technology in the Classroom**

The adjustments teachers make to accommodate changing demands in the classroom and with students can be evident through online discussions, real-life situational problems, test preparation tactics, and student involvement. The National Education Technology Plan (2010): “Recognizes that technology is at the core of virtually every aspect of our daily lives and work, and we must leverage it to provide engaging and powerful learning experiences and content, as well as resources and assessments that measure student achievement in more complete, authentic, and meaningful ways.” Many students are engaged daily in technology, having access to resources and information, multimedia, and social networks (NETP, 2010). The NETP challenges the education system to contrast traditional classroom instruction through the inclusion of more student centered coursework and empowering students to take control of their own learning through several flexible dimensions designed around the use of technology.

Educational practices have begun to focus on integrating technology as tools for learning in the classroom (ISTE, 2008). The International Society for Technology (ISTE) has set standards for the use of technology in the classroom, which include:

“designing developmentally appropriate learning opportunities that apply to technology-enhanced instructional strategies, as well as applying current research on teaching and learning with technology when planning learning environments and strategies” (ISTE, 2008). The teaching strategies of the future that are student-centered and allow developmental approaches to learning will likely become a more “constructivist” model of instruction.

Constructivism is a conceptual framework studied for instituting creative teaching methods in the classroom. Constructivists have found that the students’ engagement in social interaction has created a demand for collaboration and group learning (Zhu, Valcke, & Schellens, 2009). Constructivism is not considered a pedagogical method rather it is a theoretical method of how knowledge is obtained (Carswell, 2001; Carwile, 2007). According to Carswell (2001), constructivism is based on the notion that “the only important reality is in the learners mind, and the goal of learning is to construct in the learner’s mind its own, unique conception of events” (Carswell, 2001, p. 2).

In 2008, reports suggested few classrooms engaged students in online constructivist approaches; subsequently, teachers used an objectivist approach where knowledge was passed from the teacher to the student through lecture (Gulati, 2008). The employment world has increased demand for people to communicate online through its employees and consumers (Gulati, 2008). However, a theoretical assumption can be made that a social, constructivist, learning environment can be effective in enhancing students’ problem solving abilities, constructive learning, and learning with peers (Zhu, Valcke, & Schellens, 2009).

## Technology and Literacy of Students in the Classroom

Today's adolescents have access to popular culture, mass media, communications, and online resources, which have contributed to the development of multiple literacies in the classroom (King & O'Brien, 2002). For example, students born in the "digital age," referred to by Prensky (2001) as "digital natives," are raised with modern technological literacies such as computers, video games, and the internet, whereas teachers born prior to the "digital age," referred to as "digital immigrants," are adapting to modern technological literacies.

The development of technology, accompanied by its availability, will likely increase the students' reliance on the different literacies involved with interpreting common digital text. This prompts a redefinition of literacy to include the comprehension of images, media, and digital text (Collier, 2007). The technological literacy practices in which students engage outside of the classroom differ drastically to those practices focused on the traditional texts of primary schools, namely emailing and Web surfing (Moore et al., 1999).

Non-traditional reading practices and in-class reading tactics have not been assessed together, nor have any attempts been made to bridge the multiple forms of text for the students' benefits. Researchers have found that students increasingly engage in reading non-traditional texts through different online sources (Collier, 2007). The problem, is that

Teachers assume students already know all the 'tech stuff' and need only to have their writing and thinking skills sharpened. First, not all students have technological knowledge; second, even those who do have it need to know how to manage these skills. (p. 5)

Although students are engaging in their writing outside of the classroom, a study of this phenomenon suggests that educators might better reach the 21<sup>st</sup>-century students by integrating online learning and discussion boards into the classroom (Keller, 2009; Yancey, 2009). In a study to determine the effects of online learning activities on student literacy, Burkart (2010) found that the constructivist learning theories that engage students in Web-based learning models are more closely linked to the way students learn outside of the classroom than the current behaviorist work models.

Students' lifestyle in writing and socializing outside of the classroom has afforded opportunities for them to communicate, collaborate, and learn from others locally and globally. Researchers Zhu et al. (2009) found that students engaging in Web-based or e-learning environments (ELE) often collaborate with students from different regions of the world, requiring the use of different literacies.

Zhu et al. (2009) also suggest that the languages used in online literacies are globally developed through digital text and images communicated through online sources where students may collaborate with students of a different country. Practices in constructivist ELEs repeatedly emphasize the importance of online collaborating and social communication as an alternative to face-to-face communication (Zhu, Valcke, & Schellens, 2009).

#### Effects of Online Discussions

Face-to-face classroom discussions may be influenced by the logistics of the social structure in which the students participate (Yu, 2009). For example, Yu (2009) found that students listened in the classroom as a prerequisite to entering the discussion. Sahlstrom (2002) found that even though some students engage in discussions, classroom time

restraints, other student participation, and role identities often lead to a lack of participation in classroom discussions.

Furthermore, Yu (2009) found that students participating in online discussions had more time to formulate and compose appropriate responses. Additionally, non-native speakers benefit from asynchronous formats, as online discussions allow time for comprehension skills and clarification to occur for a complete and coherent response (Kassop, 2003).

Asynchronous content-and-task-oriented threaded discussion is a method online educators use to facilitate critical thinking techniques (Kim & Bateman, 2010); however, the online educators reported that students participating in this method do not routinely practice techniques that lead to critical thinking. Although students do not routinely engage in critical thinking skills through content-and-task-oriented online discussions, developmentally appropriate questions may foster the co-construction of knowledge (Kim & Bateman, 2010).

Lineweaver (2010) found that students engaging in developmentally appropriate online discussions about the textbook reading felt more confident and better prepared for the classroom discussions and subsequent examinations. Even though the students felt more confident about their learning, their performance on quizzes did not change significantly. Nevertheless, the researcher asserted that online discussions can have merit when applied to face-to-face small classrooms (Lineweaver, 2010).

Distance learning classrooms generally allow students to have dialogue through online discussions, which in turn provides multiple viewpoints to any given subject (Lawrence, McNeal, & Melda, 2009). Guided online discussions can promote student

preparedness for classroom discussions and allow them to make contributions (Dengler, 2008). When students are actively engaged with the content in a learning environment, they become active through multiple outlets, such as student led discussions (Collier, 2007).

Student-led discussions are becoming more common practice at the college level, as is access to online courses and degree programs (Dengler, 2008; Lineweaver, 2010). For example, one researcher taught a higher level geography course where she had college students actively engaged in class through a role model lesson design followed by online discussions. The students found the online discussion portion of the classroom to be helpful. One student stated, “I like the way that we have a lot of discussion of our readings as it helps us to understand better,” and another student commented that he/she “liked the fact that much is taught through discussions, which allows everyone to voice an opinion” (Dengler, 2008). Research suggests that implementing online discussions into the classroom curriculum generates multiple benefits as students bring their own knowledge from sources available outside the classroom to help meet in-class expectations (Lawrence, McNeal, & Melda, 2009).

Lineweaver’s (2010) results support the theory that online discussion can have merit when applied to small face-to-face classrooms. While studies suggest that students perform similarly on examinations, regardless of online discussions, students may have read the assigned chapters right before the examinations (Conner-Greene, 2000). However, Lineweaver suggests that “Finding that students who completed the online discussions required less time... [and] that the discussions improved their understanding of course material” (p. 6). Lineweaver continues “one way to evaluate this possibility

would be to ask students to record or estimate the amount of time they spent preparing for each exam including online discussions and the assigned reading” (p. 6). Public education institutions are still struggling to meet the education demands of their respective standards (Lineweaver, 2010).

### Using Technology in a History Classroom

Introducing students to technology and implementing it into classroom lesson designs can positively enhance students’ learning experience (Huang & Russell, 2006; Page, 2002; Tally & Goldenberg, 2005). Students’ perceptions can be affected by the method in which educators perform the instruction rather than present the facts, which in turn can skew perceptions even more than the material or subject matter itself (Chiodo & Byford, 2004). Research and self-surveys suggest that while adolescents progress through school, their motivation toward academic success declines; however, the motivation in history classes has been consistent and has even increased in some cases (Gottfried, Fleming, & Gottfried, 2001). While motivation for success in the history class has not waived much through students’ development through their adolescence, the perception of the study of history being boring and full of rote memorization is still evident (Journell, 2009). Journell (2009) argues that traditional text books are “static” and outdated, and that modern students who are engaged in online activities require more updated teaching methods such as Web-focused lessons.

Research supports the theoretical assumption that students’ perceptions about the material learned in a primary history class can increase with the addition of technology into the lesson plans (Tally, & Goldenberg, 2005). The movement from recall to inquiry in which the lesson is student-centered instruction encourages collaborative learning and



is intrinsically engaging (Fosnot & Perry, 2005; Gergen, 1995; Richardson, 2003). Using technology in the classroom as student-centered instruction allows students to discuss information online and create a more empathetic response to the material; students collaboratively research and respond with to findings rather than sit idly in the classroom (Journell, 2009). While legislation has encouraged technology-based learning, the use of technology in the classroom has been more of an additive (DeWitt, 2007).

### Theoretical Framework

Social constructivists view learning as an active process in which knowledge is socially constructed as individuals discuss concepts and principles. Lev Vygotsky's social constructivist theory proposes that intellectual development occurs when speech and practical activity converge. Many scholars have made use of Vygotsky's theory, applying it to classroom instruction. For example, Journell (2009) examined the effects of implementing online discussions to increase students' level of engagement with the content being studied and develop their digital skills. Findings showed that students engaged more fully in the content due to the integration of using technology in the online discussions.

## **CHAPTER III**

### **STUDY DESIGN AND PROCEDURES**

This study examined the effects of online discussions on students' preparedness for their quizzes and chapter quiz scores. Both the treatment and control groups participated in the same learning activities. Each chapter was introduced through an instructor-led lecture and was followed with large group face-to-face classroom discussions. The treatment group was assigned homework requiring the students to respond to questions over the chapter content via online discussions. To ensure consistency in the study, the selected sample had the same instructor, lesson plans, books, and classroom procedures. The length of the study was conducted over four weeks (three chapters) to provide multiple chapter quiz scores, multiple opportunities for the treatment group to participate in online discussions for homework, and adequate time to effectively complete the study.

#### **Population and Sampling**

Ninety-six students in a junior level (11<sup>th</sup> grade) U.S. history class at a central Texas high school participated in this study. The participants would be considered "digital natives" (Prensky, 2001). All had a computer and Internet access at their homes.

The participants were 36 percent male and 64 percent female and consistent with the regional demographics, the ethnicity of the students were 90 percent White, 5 percent Black, and 5 percent Hispanic. The ages ranged from 16 to 17 years.

The high school principal selected the instructor for the study, and the instructor chose the classes of students who would participate. Two classes (24 students in each class) participated in this study and one class served as the control group and the other served as the treatment. The sampling method was selected based on convenience.

#### Instrumentation and Apparatus

The instruments used were (1) Lineweaver's (2010) Cognitive Discussion Forum Data Collection Form, (2) a student technology survey, (3) journal prompts, and (4) a discussion participation frequency chart.

Lineweaver's data collection form is a five-point Likert scale (see Appendix A) that allowed students to rate how prepared they felt, how well they understood the material, as well as asking them how much they read, and whether they participated in the online discussions.

The student technology survey (see Appendix B) was used to gather data on student familiarity and usage with technology in the classroom and at home. The instrument also collected data pertaining to the types of technology the students preferred to use in their spare time. Students also responded to an open-ended question that asked, "How would you like to use computers with learning?" Understanding the students' familiarity with technology provided data to support interpretations of coding and analysis.

Journal prompts were developed to allow students an opportunity to respond in a format designed to accurately collect qualitative data. The journals were comprised of the following three questions:

- Discuss two things you liked about the online discussions.
- Discuss two things you did not like about the survey.
- If you could change anything about the online discussions, what would you change?

The discussion participation frequency chart was used to tally the face-to-face discussion participation of the students in both the treatment and control groups.

#### Procedures and Time Frame

In preparation for the study, the researcher presented the proposed study to the students in the two history classes (treatment group) that the teacher had selected for participation. Parent/guardian informed consent forms were distributed to the students. After the return of signed consent forms, the students in the treatment group began participating in the online discussions for homework. The classroom teacher provided instructions and modeled how to navigate the online discussion board through the Blackboard Learning System™.

Students in both the treatment and control group had the same teacher and engaged in the same classroom activities which consisted of (1) a lecture introducing the chapter content, (2) a subsequent class discussion facilitated by teacher-guided prompts, and (3) a multiple choice quiz at end of chapter study. The learning activities for each week under investigation are outlined in Tables 1, 2, and 3. The treatment group participated in the

online discussions for homework. The entire investigation was conducted over a period of 4 weeks over three chapters in an 11<sup>th</sup> grade history textbook, which included the *American Revolution*, *Westward Expansion*, and the *War to Save a Union*.

**Table 1**

*Student schedule throughout Chapter 4*

	Treatment Group	Control Group
Day 1	Instructions for participating in the online discussions. Introduction to Chapter 4.	Introduction to Chapter 4.
Day 2	Class discussion on Chapter 4.	Class discussion on Chapter 4.
Day 3	Video of Chapter 4.	Video of Chapter 4.
Day 4	Student selection for semester thesis.	Student selection for semester thesis.
Day 5	No class; homecoming weekend.	No class; homecoming weekend.
Day 6	Group activity; finish selection for semester thesis.	Group activity; finish selection for semester thesis.
Day 7	Class discussion; review Chapter 4.	Class discussion; review Chapter 4.
Day 8	Chapter 4 quiz.	Chapter 4 quiz.

**Table 2**

*Student schedule throughout Chapter 12*

	Treatment Group	Control Group
Day 1	Introduction to Chapter 12	Introduction to Chapter 12
Day 2	Class discussions on Chapter 12	Class discussions on Chapter 12
Day 3	Open day: Work towards semester thesis	Open day: Work towards semester thesis
Day 4	Video & chapter quiz preparation	Video & chapter quiz preparation
Day 5	Chapter 12 quiz	Chapter 12 quiz

**Table 3**  
*Student schedule throughout Chapter 15*

	Treatment Group	Control Group
Day 1	Introduction to Chapter 15	Introduction to Chapter 15
Day 2	Class discussion; group activities	Class discussion; group activities
Day 3	Internet research activity; review for quiz	Internet research activity; review for quiz
Day 4	Chapter 15 quiz	Chapter 15 quiz
Day 5	Introduction to Chapter 16; answer surveys; journal	Introduction to Chapter 16

At the end of the fourth week, the students completed the Cognitive Discussion Forum Data Collection Form and the student technology survey. Then they constructed their responses to the reflective journal prompts. Additionally, each day after the treatment group had completed the online discussions for homework, the researcher tallied the students' participation in the face-to-face classroom discussions in both the treatment and control group classes. The researcher tallied one mark for each task-oriented student response/comment made during the classroom discussions.

### Data Analysis

Data analysis began immediately after the surveys and quiz results were collected.

### Cognitive Discussion Forum Data Collection Form

The means and percentages were calculated from the data collected in the Cognitive Discussion Forum Data Collection Form to measure how prepared students felt, how well they understood the material, how much they read, and whether they elected to participate in the online discussions.

### Student Technology Survey

The percentages were calculated from the data collected in the student technology survey to measure student familiarity and usage with technology in the classroom and at home.

### Journal Prompts

Student responses to journal prompts were examined and analyzed. The two themes that emerged were an appreciation of the (1) ability to view the content from multiple perspectives and (2) chance to share their thoughts with their peers.

### Discussion Participation Frequency Chart

A matched paired t-test was calculated on the in-class discussion frequencies to determine if there was a significant difference between the treatment and control group.

### Chapter Quiz Scores

Quiz averages were calculated to compare the chapter quiz scores between the treatment and control group. A t-test was used to determine the importance of the difference between the means of both groups. Given that the sample in the study was not random, the probabilities and significances were reported as crude indices.

Probability was calculated for both the chapter quiz scores and frequency charts to examine relationships between the treatment and control group.

### Validity and Reliability

The validity of the instrument was content-related evidence of the study where the researcher used a replication approved by the creators of the instruments. The variable was identified, and the problem was defined and presented to multiple experts familiar with the study. Experts had previously conducted the same study or similar studies on college students, and also approved of the instruments being used in this particular study.

The reliability of the scores obtained and the test itself was determined through several methods. Collections were made of the number of items on the test, the mean, and the standard deviation. This data was then used to calculate the Kuder-Richardson approach (KR21). The reliability of the test should be at least 0.70 or higher.

#### Scope and Limitations

Randomization in the study could not be obtained, so the ability to generalize the findings to the target population was not available. The accessible population of the study was students enrolled in a high school U.S. history course at a central Texas high school under the instructor used in the study.



## **CHAPTER IV**

### **FINDINGS**

This mixed methods study provided valuable information on the effects online discussions have on student preparedness and chapter quiz scores. The findings will be presented according to each data collection instrument employed.

#### **Cognitive Discussion Forum Data Collection Form**

Due to student absences only 67 percent of the students completed The Cognitive Discussions Forum Data Collection Form, and the interpretive statistics derived from the data were based on the 67 percent of the students who participated.

As shown in Table 4, the students who engaged in online discussions reported that less than half (47%) had completed the chapter readings prior to the classroom discussions. Of the students participating in the online discussions, 81 percent reported that they were somewhat or more prepared for the chapter quiz (somewhat prepared: 10; mostly prepared: 15; very prepared: 1; N = 32). More than 91 percent of the students also reported believing they understood the material somewhat or better after participating in the online discussions.

**Table 4***Student responses to cognitive discussions data form on a Likert scale of 1 - 5*

	Not at all	A little bit	Somewhat	Fairly	Very well	Scale Averages
How carefully did you read the chapter?	1	0	16	12	3	3.125
How well did you feel you understood the material presented and discussed in class?	0	3	10	15	4	3.5
How well prepared are you to answer questions about this topic on the next examination?	1	5	10	15	1	3.28

### Student Technology Survey

According to the data collected from the student technology survey 41 percent of the students reported that they were completing school-oriented assignments weekly and 58 percent reported they were completing assignments daily with the assistance of the Internet. Fourteen percent of the students reported that they have never communicated online with the classroom instructor; however, 26 percent reported they communicated once a year; 38 percent monthly; and 20 percent weekly.

According to the survey 79 percent of the students reported that they are actively engaged in social networking sites on a daily basis and 17 percent reported engaging on a weekly basis.

### Journal Prompts

Students reported in their journal entries that the use of online discussions helped them to reread the chapters, as well as read other students' responses. Some students reported that they did not read and that the online discussions were not helpful.

Online discussions afford students an opportunity to participate and ask questions that they may not in class. For example, one student stated, “One benefit of using online discussions is that it gives me a chance of getting my ideas out there.”

Students reported other positive results in their journal entries explaining that online discussions allowed them an opportunity to help their peers. One student’s response supported this when she reported “understanding others’ viewpoints and helping to answer peers’ questions” was beneficial. Another student reiterated this concept when she wrote, “The online discussions gave me a better understanding of the chapter from [reading other students postings] in my grade level.”

Several students reported that they found that reading the online discussions was a helpful tool to study for the quizzes and the ability to “ask other students questions about the chapter while studying.”

Of the 48 students enrolled in the class 35 percent reported wanting more computer use in the classroom, whereas 8 percent of the students reported that the use of computers in the classroom hinders learning. The students who wanted more computer use in the classroom reported that they would like to use social network sites such as Facebook, create PowerPoint presentations, use the internet for research purposes and locating resources, and communicate online. One student commented, “It would be nice to set up a website at school that allowed us to work online with provided resources.” Another student reiterated this theme with the statement, “Having an online program at school could help us if we miss a day of school to learn what was taught in class.” One student

said, “A chat room would benefit the classroom because we could all discuss the chapters before the quiz to share our knowledge of the material.”

Not all of the students reported positive feedback about the study or the use of technology in the classroom. Multiple students discussed the difficulties in having to do extra work outside of class, as well as what was required in class. One student discussed his frustrations with the online portion of the class when he stated, “I dislike the idea of having my education, grades, and future reliance on a piece of technology that is not always reliable.” That same student said, “I also believe that I retain knowledge better when doing things by hand, and do not want to rely on a website to get homework that a teacher could provide while using the same amount of paper as I and every other student.” Another student said, “I don’t like using computers in school because it is more of a hassle and creates more work.”

#### Discussion Participation Frequency Chart

As shown in Table 5, students in the control group participated in classroom discussions a total of 435 times, whereas the students in the treatment group participated a total of 628 times. The total male student participation in the classroom discussions was 499, and the total female student participation was 628. Students’ participation in face-to-face classroom discussions with the inclusion of online discussions averaged 13.08 responses per student whereas the students only participating in face-to-face classroom discussions participated 9.06 times per student. In comparing the discussion participation frequency counts, results of the matched-pairs t-test yielded a statistical significant improvement  $t(5) = 4.18$  at  $p = .009$ . This confirms that the students in the treatment

group who participated in the online discussions significantly participated more in the subsequent face-to-face classroom discussions than the control group.

**Table 5**  
*In-class discussion frequencies*

	Treatment Group		Control Group	
	Male	Female	Male	Female
Chapter 4 Day 2	27	54	21	56
Chapter 4 Day 7	40	53	33	34
Chapter 12 Day 2	58	38	27	30
Chapter 12 Day 4	78	47	30	40
Chapter 15 Day 2	46	54	36	43
Chapter 15 Day 3	62	71	41	44
Subtotal	311	317	188	247
Totals	628		435	
Paired t-test scores and significance	$t = 4.18, \alpha = 0.009$			

### Chapter Quiz Scores

Although students in the treatment group participated in face-to-face classroom discussions more than the students in the control group, the chapter quiz scores suggested no significant difference between the variables. From a 100-point scale, the students' scores ranged from the lowest score of 10 to the highest score of 100 in the treatment group and a low score of 20 to the highest score of 90 in the control group through Chapter four. Chapter 12 quiz scores ranged from 58 to 95 in the treatment group and 40

to 96 in the control group. Chapter 15 quiz scores ranged from 41 to 100 in the treatment group and 34 to 90 in the control group.

As shown in Table 6, the students in the treatment group averaged 71.04 ( $M = 71.04$ ,  $SD = 16.53$ ) on their chapter four quiz, whereas the students in the control group averaged 70.0 ( $M = 70.0$ ,  $SD = 15.29$ ). Chapter 12 quiz results were slightly higher in average, with the treatment group averaging 75.0 ( $M = 75.0$ ,  $SD = 8.77$ ) and the control group averaging 74.08 ( $M = 74.08$ ,  $SD = 12.21$ ). Similarly, Chapter 15 results were, averaging 74.41 ( $M = 74.41$ ,  $SD = 11.65$ ) for the treatment group and 72.18 ( $M = 72.18$ ,  $SD = 11.27$ ) for the control group.

**Table 6**

*Quiz averages and t-test scores*

	Ch. 4 Treatment	Ch. 4 Control	Ch. 12 Treatment	Ch. 12 Control	Ch. 15 Treatment	Ch. 15 Control
Quiz averages	71.04	70.00	75.00	74.08	74.41	72.18
Paired t-test scores and significance	$t = 0.961, \alpha = 0.764$		$t = 0.417, \alpha = 0.678$		$t = 0.911, \alpha = 0.367$	

The quiz results reflect a slight variation in the classroom averages; however, the tests show no significance between the treatment group and the controlled group ( $t = 0.764$ ,  $t = 0.961$ ,  $t = 0.417$ ,  $t = 0.911$ ,  $p < 0.05$ ).

## **CHAPTER V**

### **DISCUSSION**

The study was designed to utilize three history chapters to identify the effects online discussions have on student preparedness and chapter quiz scores. The results of the study reflect previous studies conducted at the college level regarding the chapter quiz scores and students' feeling of preparedness as reported in the surveys.

Question A. Do students participate in online discussion homework and if they do, does that influence their perception of preparedness for subsequent quizzes?

Although only 47 percent of the students in the treatment group reported reading the text, their participation in face-to-face discussions was significantly higher than the control group. The results showed that the students engaging in the online discussions participated more in the face-to-face classroom discussions than the students who did not. Perhaps students' confidences in articulating responses were increased from their participation. Students participating in the online discussions (67%) may have used other students' responses as an alternative reading source to learn the material. This would support the comments of the student that mentioned, "The online discussions gave a better understanding of the chapter from students in my grade level."

Additionally, the results support Lineweaver's (2010) theory that online discussions give merit to small face-to-face discussions.

Question B. Do students who complete the online discussion forum assignments achieve higher examination scores than students in the control group?

Even though 67 percent of the students in the treatment group participated in the online discussions, there was no significant relationship between the chapter quiz scores of the treatment and control group. The results of this study showed that students who participate in face-to-face discussions with the addition of online discussions do not achieve higher exam scores than students that only participate in face-to-face discussions. A variable that may have influenced the results was the use of a multiple choice exam, whereas the online discussion was in an essay format. This supports the theory of Kim and Bateman (2010) that developmentally appropriate lessons and assessment can influence student performance.

Question C. Do students who participate in online discussions feel adequately prepared for examinations?

Although the results of the study showed that there was no significant relationship between the chapter quiz scores of the treatment and control group, 91 percent of the students in the treatment group reported feeling better prepared for the quiz as indicated in the self-reported surveys and journal entries. One variable that may be influencing the relationship between online discussions and students' preparation could be that the online discussions afford students the opportunity to discuss the chapter content at any time outside of the classroom. The results support Lineweaver's (2010) findings that students



engaging in online discussion feel more prepared for in-class discussions and examinations.

Question D. What factors, if any, did the students find helpful with using the online discussion assignments?

Students reported that learning from peers was helpful in that it provided interpretations of the text on a level that they could understand. Additionally, one student commented that a helpful factor of online discussion was that it gave her a chance to answer her peers' questions.

#### Recommendations

Additional comments and responses provided by the students in their journal entries suggested that online discussions can improve students' perception of their level of preparedness. If students are more involved in technology-oriented activities, implementing these strategies may encourage more classroom participation. The instructor commented that the high school was moving towards a more technology-oriented instructional design because the administration asserted that students will perform better and will have access to more tools to aid in test preparation. The students desired more technology-based assignments, and the instructor reported plans of incorporating online discussions as a learning strategy in future classes. The instructor also commented that the online discussions could be more effective if the students' participation were a significant part of their course grade and planned to make that course assessment modification.

## Future Research

The significant difference between the frequency of the face-to-face discussion participation in the treatment group and control group over four weeks should be noted. Following the online discussion homework, the treatment group in-class discussion frequency was 628 and the control group was 435. Instructors need to be aware of the benefits online discussions can have in face-to-face discussions. There is a need to conduct further research to explore the relationship between students engaged in online discussion and student participation in face-to-face discussion.

As Lineweaver (2010) found, students engaging in online instruction report feeling better prepared for the classroom discussions and quizzes. Research of this subject has been conducted at different universities; however, additional research is needed at the high school level (Kim & Bateman, 2010). More in-depth research is needed to identify the effectiveness of online-discussions and to examine to what extent the effects can be calibrated.

Furthermore, a longitudinal study may provide sufficient replication to accurately generate theoretical assumptions. Over a period of one year, the results could differ significantly. As students are becoming more engaged in technology, the results could also differ with time. No tools are currently available for assessing the effects of online discussions as the dependence on technology continues to increase (Lineweaver, 2010). Therefore more research is required to identify the patterns and relationships among instructional activities that integrate the use of digital tools with achievement.

## Conclusion

Our educational system is charged with the responsibility to apply the advanced technologies that are widely used in our personal lives and in today's workplace to improve student learning and adequately prepare individuals to function effectively in our society. Working in academic online discussions provides students practice with 21<sup>st</sup> Century skills by providing them opportunities to collaborate with others, view issues from multiple perspectives, access multiple resources for learning, think critically about what they are learning, and practice with the digital tools that are commonplace in today's workplace. "Education is the key to America's economic growth and prosperity and to our ability to compete in a global economy" (NETP, 2010, ix).

## APPENDIX A.

### Cognitive Discussion Forum Data Collection Form

Research ID Number \_\_\_\_\_

Group Number \_\_\_\_\_

Chapter Number \_\_\_\_\_

Did you read the entire assigned chapter before the second class lecture over the book material?

Yes      No

How carefully did you read the book chapter?

Not at all      A Little Bit      Somewhat      Fairly      Very

Carefully      Carefully      Carefully      Carefully      Carefully

How well did you feel you understood the material presented and discussed in class?

Not Well      A Little Bit      Somewhat      Mostly      Very Well

How prepared do you feel to answer questions about this topic on the next exam?

Not at all      A Little Bit      Somewhat      Mostly      Very

Prepared      Prepared      Prepared      Prepared      Prepared

If you completed the discussion forum for this chapter please answer the question below.

How helpful did you find each of the following?

	Not At All	A Little Bit	Somewhat	Mostly	Very
Re-reading the book chapter to answer the question	1	2	3	4	5
Explaining the theories in my own words	1	2	3	4	5

Applying the material to my everyday life	1	2	3	4	5
Creating my own examples	1	2	3	4	5
Reading other people's thoughts on this topic	1	2	3	4	5
Reading other people's examples	1	2	3	4	5
Reading other people's responses to my comments	1	2	3	4	5
Other—please briefly specify below	1	2	3	4	5

## APPENDIX B.

# *Student* Technology Survey



**Directions:** Please answer the following questions and remember, it is important that you answer the questions truthfully and to the best of your ability. Your name will not be used at any time, and your answers will not be available to anyone else, beyond the researcher.

Your Name: \_\_\_\_\_ Grade \_\_\_\_\_  
Date \_\_\_\_\_  
Your Age: \_\_\_\_\_ years old Your gender: ☐ Female ☐ Male

### Your Experience with Computers:

1. Does your family have a computer at home? ☐ Yes ☐ No
2. Do you have internet access at home? ☐ Yes ☐ No
3. Since what grade have you been using computers at school? Grade \_\_\_\_\_
4. How do you get online at home?  
☐ No Internet ☐ Dial up modem ☐ Cable ☐ Wireless
5. How often do you use social networking sites (e.g. Facebook, Twitter, Google+)?  
☐ Never ☐ Once or twice a year ☐ Monthly ☐ Weekly ☐ Almost daily
6. How often do you use the internet to complete school assignments?  
☐ Never ☐ Once or twice a year ☐ Monthly ☐ Weekly ☐ Almost daily
7. How often do you use the internet to communicate with your teacher?  
☐ Never ☐ Once or twice a year ☐ Monthly ☐ Weekly ☐ Almost daily
8. How often do you use computers to play video games?  
☐ Never ☐ Once or twice a year ☐ Monthly ☐ Weekly ☐ Almost daily

9. How often do you use your smart phone to get online?  
☐ Never    ☐ Once or twice a week    ☐ Once a day    ☐ 5-10 times a day    ☐ Almost hourly
10. How much time per week do you spend online watching videos?  
☐ Never    ☐ 1-2 hours    ☐ 3-5 hours    ☐ 5-10 hours    ☐ 10 or more hours
11. How much time per week do you spend online listening to music?  
☐ Never    ☐ 1-2 hours    ☐ 3-5 hours    ☐ 5-10 hours    ☐ 10 or more hours
12. How much time per week do you spend online playing video games?  
☐ Never    ☐ Once or twice a year    ☐ Monthly    ☐ Weekly    ☐ Almost daily
13. How much time per week do you spend on social networking?  
☐ Never    ☐ Once or twice a year    ☐ Monthly    ☐ Weekly    ☐ Almost daily
10. Write on the back how you would like to use computers with learning.

## **APPENDIX C.**

### **Reflective Journal Response**

In the space provided below, please reflect on the online discussions that you engaged in prior to the classroom discussions and quizzes.

1. Discuss two things you liked about the online discussions.

2. Discuss two things you did not like about the online discussions.

3. If you could change anything about the online discussions, what would you change?



4.



Thank you again for your time and efforts in helping me with this study. If you have any questions please refer to the consent forms for contacting me, and I can answer any questions pertaining to the study.

## **APPENDIX D.**

Texas State University-San Marcos IRB Application 2011F9108

Parent/Guardian Informed Consent

4-15-2011

Dear Parent/Guardian:

I am Brian Rook (br1254@txstate.edu), a student in the Graduate Secondary Education Program at Texas State University. I am conducting a study as part of my thesis for my graduate degree. I am conducting a research project on history students engaging in online discussions of the content in their textbooks. I want to see if the online discussions of the chapter content will result in students reading more carefully, and preparing effectively for the class. Your child was chosen because s/he is in a history class at Midlothian High School. I am requesting permission for your child to participate in this study.

The study will include your child discussing and answering guiding questions with fellow classmates in an online discussion forum. Your child may also be asked to “journal” about the process of participating in the online discussion and complete a survey describing how participating in the online discussion prepared them for a quiz on the chapter content. Under the supervision of my thesis committee at Texas State, I will review the journals, surveys, and quiz results at the end of the study (two chapters). The students will complete a seven-question survey after each chapter test. Only myself, and the thesis committee (Dr. Kathryn Lee, Dr. Liz Stephens, and Dr. Ruth Kane) will have access to the data associated with the study. All information collected in the study

will remain confidential. No individual identities will be used in any reports or publications that may result from this study.

Participation in this study is - voluntary. Participants may choose not to answer any questions for any reasons. Your decision whether or not to allow your child to participate will not affect the services normally provided to your child by the Midlothian High School. Your child's participation in this study will not lead to the loss of any benefits to which he or she is otherwise entitled. The study will be part of a customary instructional strategy. The strategy will be tested for effectiveness, and there are no risks to the participants.

The records of this study will be kept private. In any sort of report we make public we will not include any information that will make it possible to identify your student. Research records will be kept in a locked file; only the researchers will have access to the records. A summary of the findings will be provided to the participants upon completion of the study, if requested, by contacting Brian Rook at br1254@txstate.edu.

Should you have any questions or desire further information, please call me or email me at br1254@txstate.edu (972) 824-0835 or my supervising professor, Dr. Kathryn Lee at K110@txstate.edu (512) 245-8680. Any questions about the research, research participants' rights, and/or research-related effects to participants should be directed to the Texas State Institutional Review Board chair, Dr. Jon Lasser (512-245-3413) – lasser@txstate.edu, or to Ms. Becky Northcut Compliance Specialist (512-245-2102). Please keep this portion of the letter for your records and send your decision from the bottom portion and return with your child to his/her teacher.

Sincerely,

Brian Rook

Texas State University

This consent form will be kept by the researcher for at least two years beyond the end of the study and was approved by the IRB on \_\_\_\_\_.

The Texas State Institutional Review Board has reviewed this project for the protection of human subjects in research. Approval Number \_\_\_\_\_.

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Please indicate whether or not you wish to allow your child to participate in this project by checking one of the statements below, signing your name and returning the form to the student's teacher. Sign both copies and keep one for your records.

\_\_\_\_\_ I grant permission for my child to participate in this study investigating the effects of secondary history students engaging in online discussions on their reading behaviors and quiz performance.

\_\_\_\_\_ I do not grant permission for my child to participate in this study investigating the effects of secondary history students engaging in online discussions on their reading behaviors and quiz performance.

\_\_\_\_\_  
Printed Parent/Guardian Name

\_\_\_\_\_  
Signature of Parent/Guardian

\_\_\_\_\_ Date

\_\_\_\_\_  
Printed Name of Student

\_\_\_\_\_  
Signature of Student

\_\_\_\_\_ Date

## **APPENDIX E.**

### **Child Assent Form**

My name is Brian Rook and I am doing a study to learn about the effects of the addition of online discussions on history students. I am asking you to help because I don't know how effective online discussions are with preparing students for class and tests.

If you agree to be in my study, I am going to ask you to participate by going online and discuss some guiding questions about the chapter you are reading in your history class. I want to know if the discussions will be effective, so I will ask you some questions on a survey. You can respond to them and let me know how prepared you felt for the class and tests after discussing the chapters online. I also want to give you a chance to journal about the effectiveness of the online journals so you can write anything about the online discussion study.

You can ask questions about this study at any time. If you decide at any time not to finish, you can ask us to stop.

The questions we will ask are only about how prepared you were after the online discussions. There are no right or wrong answers because this is not a test.

If you sign this paper, it means that you have read this and that you want to be in the study. If you don't want to be in the study, don't sign this paper. Being in the study is up to you, and no one will be upset if you don't sign this paper or if you change your mind later.

Your signature: \_\_\_\_\_

Date \_\_\_\_\_

Your printed name: \_\_\_\_\_

Date \_\_\_\_\_

Signature of person obtaining consent: \_\_\_\_\_

Date \_\_\_\_\_

Printed name of person obtaining consent: \_\_\_\_\_

Date \_\_\_\_\_

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## **VITA**

Brian Wayne Rook was born in Monroe, Louisiana, on January 20, 1984, the son of Vickie Karen Rook and Jimmy Doy Rook. After completing his work at Midlothian High School, Midlothian, Texas, in 2002, he entered Henderson State University. He received the degree of Bachelor of Arts from Henderson State University in May 2007. During the following years he was a musician in Austin, Texas. In August 2009 he entered the Graduate College of Texas State.

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