Uses of Blended Learning and its Impact in a High School Social Studies Classroom

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Article Info	Abstract
	As society becomes more technologically advanced, digital instructional strategies continue to emerge. Students are becoming more involved with technology, and schools must supply students with more tools to succeed in an increasingly technology-based world. This study examined the impact of technology-based strategies in a high school social studies classroom. It focused on blended learning pedagogy in addition to the flexibility of digital strategies and their impact on student achievement and perceptions. The sample comprised 88 students from three 9th grade geography courses. No differences in achievement were found, and there was no correlation between time spent on the digital modules and student learning. However, students reported positive perceptions regarding blended learning, including high confidence in their ability to access information and confidence in interactions regarding collaborations with peers and the teacher. They also most often believed that they were learning more in the blended learning environment and reported high enjoyment.

Introduction

There are many definitions for blended learning pedagogy, also known as hybrid learning. According to Melton, Graf, and Chopak-Foss (2009), blended learning is mixture of traditional classroom instruction and online learning. The online portion should become an extension of the traditional classroom. Kenney and Newcombe (2011) contend that blended learning is a technology-enhanced class where students go to a physical classroom. Blended learning is approximately 60-70% face to face and about 30-40% online (Karam, et al., 2017). Students have the ability to access materials online and turn in projects and activities in a virtual classroom (Kenney & Newcombe, 2011).

Blended learning has been increasing in schools all across the United States (Whiteside, Garrett-Dikkers & Lewis, 2016). It gives students the ability to regulate and control their learning experiences. If teachers expect students to complete rigorous, critical thinking content, the teachers must relate to their students' digital literacy (Rafool, Sullivan & Al-Bataineh, 2012). Blended learning positions the student at the center of the learning process (Parks, Oliver, & Carson, 2016). Blended learning succeeds in this because teachers can still use traditional methods of face-to-face instruction while using technology to supplement (Rafool et al., 2012). Researchers have been exploring ways that teachers may implement such technological tools (Cuevas et al., 2012; Russell & Cuevas,

2014) as well as the effects they may have on student learning and disposition (Doster & Cuevas, 2021; Hannel & Cuevas, 2018; Miller & Cuevas, 2017; Moore & Cuevas, 2021).

Digital Strategies

Digital strategies can be flexible. Online classes can work with a student's schedule or at a student's own pace (Whiteside et al., 2016). According to a 2007 study by Barrow, Markman and Rouse, students enjoyed that they had the ability to move on after they mastered the content. Students can feel like it is preparing them for college, especially taking higher level blended or online classes (Whiteside et al., 2016). Students also use online classes to either make up failed credits or take AP classes not offered at their school (Picciano & Seaman, 2007). That suggests that lower level and higher level students can both benefit from the flexibility of online classes.

Social media is another digital tool that teachers can use to reach a generation of technologically-savvy students. Haygood and Bull (2012) incorporated Facebook as the primary digital learning tool in a learning segment. The students perceived that correctly done, Facebook can be used effectively as an academic tool. In a similar study, Bull and Adams (2012) researched the integration of Twitter as the technology tool in a blended learning classroom. The students in that study felt that they saw the benefits of using social media in the classroom like increasing collaboration and appealing to the age group of students. However, students emphasized that using social media can be a doubled edge sword because students can oftentimes become distracted using social media in class. Therefore, the teacher must use careful and meticulous planning (Haygood & Bull, 2012).

One digital strategy that can be used is the flipped classroom. This is when teachers create a more student-centered active environment in the classroom (Cukurbasi & Kiyici, 2018). According to Chen (2016), "essentially the flipped classroom means the flip of the time and location for homework and lectures" (p. 415). This digital strategy is based on Problem Based Learning (PBL) (Cukurbasi & Kiyici, 2018). This idea is becoming increasingly popular with the rapid innovations and implementations for technology. The teacher will upload video lectures to a class website or learning management system. The students will watch these as homework, and the following class, the teacher will lead a class activity practicing the lecture from the homework (Chen, 2016).

Some benefits of the flipped classroom include self-paced learning and increased student-teacher interaction (Chen, 2016). Teachers are able to plan months or years in advance by videoing their lectures before the class begins. This also gives the students the ability to move ahead with content when they have successfully mastered a standard. The students also have access to information they need to review for remediation (Stanley-Clarke, English & Yeung, 2018).

Blended Learning's Impact on Student Achievement

Blended learning can have an impact on student achievement. In a 2017 study by Luna and Winters that compared blended learning classrooms with lecture classes, the blended learning classes had a significantly greater improvement overall from pretest to posttest. A similar 2018 study compared pretest and posttest scores of

traditional blended classrooms and flipped classrooms This study found that the traditional blended learning classrooms had higher means on their growth scores (Clark, Kaw, Lou, Scott, & Besterfield-Sacre, 2018). A 2013 study compared a control group with limited technology and an experimental group that included blended learning (Termos, 2013). The experimental group scored higher on the posttest. Termos added that the quality of the instructor, he believes, had an impact on the results of the study, however.

Hegedus, Tapper and Dalton (2016) examined, in a study collecting data from 606 students, how student achievement was impacted between classes using blended learning pedagogy and classes using traditional, minimal-technology instruction. Gains occurred in the posttest scores for both groups. However, the gains were larger and more frequent for the blended learning group meaning blended learning pedagogy led to higher student achievement in this situation. Another 2009 study, Glassett and Schrum (2009) found similar results. They determined that students using blended learning pedagogy outperformed students being taught using minimal-technology.

In another 2017 study, Mayer, Lingle and Usselman (2017), found no statistical difference in student achievement between blended learning and online learning platforms. The study did come to the conclusion that over time, the blended learning platform with more collaboration created a cohesive group of students. The students reported they were more motivated because they felt they were in a group, not just an individual working independently. In a 2016 study, Corry found almost identical results between blended learning schools and online learning schools. There was no significant difference concerning graduation rates between different delivery methods.

Student Engagement

Digital strategies can help influence student engagement. According to Rafool et al. (2012), digital strategies increase student engagement in secondary education. They concluded that students should be exposed to more technological-based projects. The flipped classroom engages students because it reduces lecture time in classrooms and students become more engaged with activities and problem based learning (Chen, 2016). In a 2007 study by Boon, Fore and Rasheed, students were surveyed about their perceptions toward the use of an instructional software program in a secondary social studies class.

This study found that over 80% of students surveyed found that the software program helped them with organization. Hoffman and Ramirez (2018) found that over 87% of students they surveyed said they feel more engaged when using smartphones for classroom activities. A 2018 study confirms that student participation in learning activities has a positive influence on both academic achievement and students' levels of perceived engagement (Northey et al., 2018). Importantly, the influence of student participation on perceived engagement is positively influenced when students have the opportunity for mobile collaboration in the blended learning ecosystem.

Even in a fully online class, a teacher must be accessible and flexible (Stanley-Clarke et al., 2018). The best online teacher is one who gives personal feedback. One of the greatest challenges in creating an online class is creating

a sense of community with critical feedback and personal room to grow and learn. In a 2016 study, Auster found that screencasts were a useful tool to keep students engaged. Students mentioned in a survey that it helped them to go back and review notes and lectures through the screencasts.

Student and Parental Perceptions

Students feel like they have more control of their learning in a blended learning class (Whiteside et al., 2016). Hoffman and Ramirez (2018) surveyed students who were very confident in using technology and their confidence helped the students succeed using blended learning pedagogy. According to Cukurbasi and Kivici (2018), students enjoyed a blended learning strategy learning segment. Before the learning segment, the students were apprehensive to try a new digital instructional method. However, after the learning segment, students found numerous educational and communication benefits including the exchange of ideas and watch-again review of the subject. Students found it specifically helpful to be able to go back and review old lectures and notes especially if they missed a class (Whiteside et al., 2016). Some students see credit recovery online classes as an easy way to get out of the classroom (de la Varre, Keane, & Irvin, 2011). However, online AP classes have a heavy workload, and students would rather learn and participate in a traditional classroom with face-to-face instruction.

There are mixed reactions from parents. Most parents think that blended learning classes help the students and prepare them for postsecondary education (Whiteside et al., 2016). However, some parents do not like the large workload outside of school that some blended classes have. Not all students have time to go home, watch, and take notes on long lectures (Stanley-Clarke et al., 2018).

Teacher and Administrator Concerns

Some teachers feel uncomfortable with new instructional strategies that involve integrating technology in the classroom. This might become a challenge for them. Administrators want teachers to become learning teachers. This means always trying to change and improve their pedagogy by learning new strategies. It emphasizes teachers getting away from a "I know it all, listen to me" mentality (Whiteside et al., 2016). One struggle that might make teachers uncomfortable in a true blended learning environment is that it can be difficult to find or create videos for each lesson. It can also be time consuming for teachers to create their own videos to supplement each lesson (Chen, 2016). Another common concern for many teachers is that creating these lessons is time consuming (Vaughn, 2007). In a 2016 study, Parks, Oliver and Carson surveyed 366 teachers. Through this process, they found that 73% of the teachers who identified as using blended learning pedagogy more closely aligned with traditional pedagogy.

More experienced teachers will also have an impact on students when implementing blended learning pedagogy. According to a 2016 study, teacher background characteristics like specific certifications and degree level have significant positive correlation with student achievement when examining the effectiveness of blended learning pedagogy (Hegedus, et al., 2016). Irving, et al. found parallel information (2016). Years of teaching experience was a consistently significant covariate in the study with an impact of scores from one additional posttest point

for every five to ten years of teaching experience.

There are more concerns that teachers have about digital learning. According to a 2007 article, Li highlights two major reasons for teacher skepticism about integrating technology: one is students' limited experience with technology and the other is the high cost of technology. Technology has become more affordable in the last thirteen years, and students have become more technologically-savvy. However, teachers are simply concerned that buying the latest technology is not the best way to integrate technology.

Summary

We have examined how student achievement may be affected by flexibility of digital strategies, blended learning pedagogy, and student, parent and teacher perspectives. According to one study, there was no significant academic difference in graduation rates in students taking online, blended or traditional classes (Corry, 2016), while two other studies found that blended learning pedagogy increased student achievement compared with other instructional strategies (Clark et al., 2018; Luna & Winters, 2017). There are numerous online and digital strategies used in classrooms, and the strategies can be implemented for lower level or higher-level students (Picciano & Seaman, 2007). The strategy this study focused on was blended learning pedagogy. Blended learning is, "the thoughtful integration of classroom face-to-face learning experiences and online experiences" (Larsen, 2012). Throughout the research literature, most of the student perspectives were positive; the teachers' main concern was that planning was time consuming for many digital strategies (Vaughn, 2007).

Research Questions

As society moves further into the 21st Century, digital learning and teaching using technology continues to increase. Students are becoming digitally literate and technologically-savvy. There are numerous types of digital learning strategies. The purpose of this study was to examine the effectiveness of blended learning on student achievement in a high school social studies class. Specifically, this study tested the use of the learning management system Canvas as the main tool in blended learning. In addition, the study investigated whether student time spent on Canvas correlated with students' post test scores, and it surveyed student attitudes toward using technology in the classroom. The research questions are as follows: 1. Does the use of blended learning in the classroom have an impact on student achievement as opposed to using minimal technology? 2. Does time spent and module views correlate with the student's gain score? 3. What are the students' attitudes concerning technology use in the classroom?

Method
Contextual Factors

This study was conducted in a public high school in northeast Georgia. The county demographics were as follows: 60.8% "White alone non-Hispanic," 28.6% "Hispanic or Latino," 8% "Black or African American," and 2% "Asian alone." (US Census Bureau, 2018). The median income for the county was $55,622. However, 13.3% of

the county's population were considered below the poverty line. There are 52 public schools in the county, which serve 44,823 students (Top Hall County Schools, 2019). The 10 high schools serve 10,171 students with a student to teacher ratio of approximately 17 to 1.

The public high school that was the focus of the study is located in a rapidly growing suburban area. According to data from *West Hall High School in Oakwood, GA Enrollment & Demographics*, the school had an enrollment of 1,176 students with 63 full time teachers. This creates a student to teacher ratio of approximately 17 to 1, equivalent to the county average. This school serves grades 9-12, and its population demographics were as follows: 49.7% White, 39.5% Hispanic/Latino, 5.3% Black or African American, 3.4% Asian and 2.4% two or more ethnicities.

The participants of this study were in three different 9th grade World Geography classes. The students ranged from 14-16 years old. There were 88 students total. In the comparison group $n = 25$. In the experimental group $n = 63$. The aggregate of the participants was 53 % female and 47 % male. The classes were on general education level. There were no gifted students and no SPED students.

The demographics of the classroom were roughly similar to that of the school. The students were randomly assigned to these classes through the counseling office's scheduling program. One class was randomly assigned as the control group receiving the traditional teaching style of minimal-technology, and the other two classes were assigned as the experimental group receiving instruction using blended learning strategy with the Learning Management System Canvas as the main blended learning resource.

Materials and Measures

The comparison group used minimal technology in their instruction. Their main instructional tools were teacher lecture and the textbook. The textbook that was used in 9th grade World Geography was *World Geography Today* by Sager and Helgren. The experimental group had access to a digital copy of the exact same book. For map activities, the comparison group used the *World Geography Today* textbook's maps and questions to complete the map activity handouts.

The independent variable was the blended learning pedagogy. Canvas Learning Management System was the online platform that was used to create the blended learning environment. Canvas was chosen because it was the learning management system provided by the school district. According to Canvas' website, it is "a way to simplify teaching and learning by connecting all the digital tools teachers use in one easy place." Details of the blended learning environment will be explained in the procedures section.

The pretest and posttest measured student achievement throughout these learning segments. The pretest and posttest for the study covered content from the Georgia World Geography and United States History standards for the two units taught (North America and South America). The pretest was administered before the first unit. The posttest was given seven weeks later after the second unit had been taught. The test was comprised of 40 multiple-

choice questions, 20 questions from the North America Unit and 20 questions from the South America Unit. This test was created using questions from the county benchmark exam. A copy of the test can be found in Appendix A.

The experimental group completed a 57 question student survey at the completion of the learning segment. This survey measured the students' attitudes toward using technology in the classroom. The survey was a five-point Likert scale and has five different sections: access, interaction, response, results and facilitation (Larsen, 2012). The Cronbach alpha reliability for each section ranged between 0.74 and 0.91. The original survey that was altered was called the web-based learning environment inventory (WEBLEI). Chang and Fisher created WEBLEI in 1999 during a pilot study. The actual survey being administered is based on the WEBLEI. It was altered during a study 2012 study by Larsen. The only change was that the wording was altered to focus on blended learning pedagogy. A copy of the survey is located in Appendix B.

A Pearson correlation examined the relationship between student time on Canvas and student gain score. The correlation used data from the experimental group. Canvas tracked how long each student spent in the course. The gain score was calculated by subtracting the pre-test score from the post-test score. Another Pearson correlation tested at the relationship between student views on Canvas modules and student gain score. The correlation used data from the experimental group. Canvas tracked how many times a student viewed specific modules.

Procedures

The research was conducted for an eight week period during one semester. The three World Geography classes completed learning segments covering North America and South America. The North America learning segment took five weeks, with the South America learning segment spanning three weeks. The classes met three days a week, one day for forty-five minutes and two days for one-hundred minutes. The intervention was implemented with the experimental groups throughout the entire eight weeks. Both the comparison group and the experimental group completed the pretest and posttest measures for student achievement. This provided a baseline to measure student achievement. The pretest was administered the first day of the semester, and the posttest was administered eight weeks later after the South America unit was completed.

Each lesson plan, for both groups, used five parts: Learning Target, Warm-up, Mini-Lesson, Work Session and Closing. Both the comparison group and experimental group used the same learning targets throughout the eight weeks. The comparison group had lessons that were mostly PowerPoint notes with teacher lecture. The experimental group only had PowerPoint notes with teacher lecture one day each week. The blended learning pedagogy intervention was implemented to the experimental group during every lesson plan each day.

Comparison Group

The comparison group was exposed to minimal technology strategies to supplement teacher instruction. The warmup was a question either reviewing or previewing content material. The comparison group wrote down on a

sheet of paper the question and answer for their warmup. These warmups were turned in at the end of each week for the teacher to provide feedback.

The mini-lesson part of the lesson plan consisted of students taking notes on paper while following along with a PowerPoint presentation with teacher lecture. This occurred during each lesson plan. The work session part of each lesson plan used the *World Geography Today* textbook for a reading with guiding questions or a map assignment. The work sessions were completed using paper-pencil activities and no technology.

The closings used the daily video from CNN10.com which is a current event website geared toward students. Each day, the students watched the ten-minute news video, analyzed the information and connected the news to something about their life or the class. The comparison group had a CNN10 Analysis handout that they fill out each day. The CNN10 Analysis Handout was turned in each week for the teacher to provide feedback.

There was one in-class project focusing on countries in South America. The students were able to choose a South American country and complete a simple research assignment about that country. During the South American country project, the students used textbooks and encyclopedias from the library for their research. The comparison group used a handout as their guide to color, complete and turn in.

Experimental Group

The experimental group used blended learning pedagogy with Canvas LMS as the primary blended learning tool to supplement teacher instruction. Appendix C shows the North America unit modules. For the warm-ups, the experimental group had the exact same questions as the comparison group; however, they answered the question on an online discussion forum on the class Canvas page. On the discussion forum, where the teacher posted a question, the students individually responded to the question as well as responded to two other students' posts. The students were unable to see other students' responses until after they had answered themselves. The students got a Chromebook, logged-in, and started each class by answering the online discussion for the warmup.

There were two mini-lessons each week when the experimental group used Canvas and did not have a traditional lecture from the teacher. In Appendix D, there is an example of one of these lessons. The students read an online article and took notes over the Columbian Exchange. Then for the work session, they completed the "edpuzzle" on the Columbian Exchange. In Appendix E, there is the example of edpuzzle showing the video along with guiding questions. Edpuzzle is an online platform where teachers can create video-based lessons for students to access at school or at home (edpuzzle.com, 2019).

For the work session, the experimental group used online modules and web quest activities to supplement the teacher lectures. The modules consisted of PowerPoint notes supplemented with video examples. The web quest activities were embedded in the modules. The web quest activities were a series of questions, graphic organizers or map activities. The students used provided web sites, online maps, videos and other digital materials to complete the web quests. Appendix F has an example of the work session for the experimental group. For some

map activities, the experimental group used a digital version of the same maps from the same textbook.

For the closings the experimental group also analyzed the CNN10.com news. Using a CNN10 Analysis Google Form, the experimental group completed the Google Form answering similar questions to the handout. The Google Form was turned in daily using the assignment feature on Canvas for the teacher to provide feedback.

For the one in-class project, the experimental group completed the same research on a South American country with the same questions. The only difference was that the experimental group was required to complete this using Google Documents or Microsoft Word and turned it in digitally through the assignment feature on Canvas. The students used reliable online resources to complete their research. At the end of the eight weeks, the experimental group answered the WEBLEI survey. This survey measured the students' attitudes toward using technology in the classroom.

Results

The first research question examined the use of blended learning's impact on student achievement as opposed to using minimal technology. An ANCOVA was conducted with post score as the dependent variable, condition as the grouping variable, and pre-score as the covariate. There was not a statistically significant difference between the groups in growth in achievement, $F(1, 86) = .171$, $p = .680$.

The second research question investigated whether time spent and module views correlated with the student's gain score. A Pearson correlation was conducted between gain scores and time spent working on the modules. The correlation showed no significant relationship between the variables, $r(59) = -.146$, $p = .263$. A second Pearson correlation was conducted between gain scores and number of views of the modules, which showed no significant relationship between the variables $r = -.092$, $p = .479$.

The third research question examined the students' attitudes concerning technology use in the classroom. The web-based learning environment inventory (WEBLEI) was used as the measuring tool for the third question (see Table 1). Only the experimental group of students ($n = 58$) participated in the inventory. The survey was a five-point Likert scale and has five different sections: access, interaction, response, results and facilitation. The mean obtained for each of the WEBLEI scales was between 3.5 and 4.5 on a Likert scale that includes the following levels, from 1 through 5: (1) Almost Never, (2) Seldom, (3) Sometimes, (4) Often, and (5) Almost Always. A mean of three indicates that students believed that the topic of the question was sometimes the case, while a mean of four suggests that they believed it was often the case (Larsen, 2012). The first section was access (see Table 2). The overall mean for the access section was 3.93 (see Table 1). This shows that the students oftentimes were confident with accessing the online material. The highest rated item was number 22 ($M = 4.31$). This showed how the students almost always enjoyed working at their own pace. The lowest mean of the access section was item 24 ($M = 3.44$). Students during this study were usually given class time to work on and complete assignments. Most of the time, the students did not have many options to choose when to work.

Table 1. WEBLEI Scale 1 and Individual Items

	M	*n*
(1) Access	3.93	58
20. I can access the learning activities at time convenient to me.	4.24	58
21. The online material is available at locations suitable for me.	4.24	58
22. I am allowed to work at my own speed to achieve learning objectives.	4.31	58
23. I decide how much I want to learn in a given period.	3.55	58
24. I decide when I want to learn.	3.45	58
25. Using blended learning allows me to meet my learning goals.	3.83	58
26. Using blended learning allows me to explore my own areas of interest.	3.95	58

Table 2. Questionnaire Items Related to the Access Scale

	M	*n*
2. I can access the learning activities at time convenient to me.	3.79	58
5. The online material is available at locations suitable for me.	4.05	58

Note: Likert scale: (1) Strongly Disagree, (2) Somewhat Disagree, (3) Neither Agree or Disagree, (4) Somewhat Agree, and (5) Strongly Agree.

The second WEBLEI section was interaction. This section evaluates relationships within the class. That includes student-teacher and student-student interactions on the digital platform. The overall mean for the interaction section was 3.74 (see Table 3). This shows how students tended to feel confident about their interactions during blended learning. The item with the highest mean was number 29 ($M = 4.53$). This explains how the students almost always felt confident with asking questions and collaborating with the teacher.

Table 3. WEBLEI Scale 2 and Individual Items

	M	*n*
(2) Interaction	3.75	58
27. I communicate with other students in the subject electronically (email. Discussion forums)	3.05	58
28. In this blended learning environment, I have to be self-disciplined in order to learn.	3.55	58
29. I have the freedom to ask my teacher what I do not understand.	4.53	58
30. I have the freedom to ask other students what I do not understand.	4.26	58
31. Other students' response promptly to my requests for help.	3.95	58
32. I am regularly asked to evaluate my own work.	3.28	58
33. My classmates and I regularly evaluate each other's work	3.33	58
34. I was supported by a positive attitude by my classmates.	4.02	58

Response is the third WEBLEI section. This measured the students' sense of satisfaction and sense of boredom while using Canvas LMS. The overall mean for the response section was 3.84 (See Table 4). This scale suggests that students rated these items more towards *Often* than *Sometimes*. The item that most negatively influenced this

section was number 42 ($M = 3.07$). This shows that the students in the experimental group were sometimes getting bored at the end of each online module. It also can imply, generally, the students were less engaged while ending each module.

Table 4. WEBLEI Scale 3 and Individual Items

	M	*n*
(3) Response	3.84	58
35. Using blended learning makes me able to interact with other students and the teacher at the same time.	3.97	58
36. I felt a sense of satisfaction and achievement about this blended learning environment.	4	58
37. I enjoy learning in this blended learning environment.	4.03	58
38. I could learn more in this blended learning environment.	3.95	58
39. It is easy to organize a group for a project.	3.93	58
40. It is easy to work together with other students involved in a group project.	3.98	58
41. The blended learning environment held my interest throughout the course.	3.84	58
42. I felt bored with this course when we got to the end of the learning segment.	3.07	58
Response	3.84	58
1. I liked the online activities.	3.88	58
3. I liked learning in the computer lab.	3.62	58
4. I liked the classroom activities.	4.10	58
6. I liked learning in the classroom.	4.12	58
7. This course improved my reading skills.	3.74	58
8. This course improved my writing skills.	3.86	58
9. This course improved my speaking skills.	3.53	58
10. This course improved my listening skills.	3.91	58

Note: Likert scale: (1) Strongly Disagree, (2) Somewhat Disagree, (3) Neither Agree or Disagree, (4) Somewhat Agree, and (5) Strongly Agree.

The next WEBLEI section was results. This scale examined student opinions about what they gained from the blended learning environment. The overall mean for the response section was 4.24 (See Table 5). The highest mean in this section were from item 38 ($M = 4.12$). The students most often believed that they were learning more in the blended learning environment. Item 37 ($M = 4.10$) displays, also, the students were enjoying the blended learning environment.

Facilitation was the final WEBLEI section. This scale measured student opinions about the teachers' practice and behavior in the classroom. The overall mean for the facilitation scale was 4.37 (See Table 6), the highest rated WEBLEI scale. The lowest rated item in this section was number 54 ($M = 3.84$). In contrast, the highest rated was item 56 ($M = 4.62$). This shows how the teacher was able to communicate rigorous expectations; however, the teacher did not give enough quick, timely feedback.

Table 5. WEBLEI Scale 4 and Individual Items

	M	*n*
(4) Results	4.23	58
35. Using blended learning makes me able to interact with other students and the teacher at the same time.	3.88	58
36. I felt a sense of satisfaction and achievement about this blended learning environment.	3.62	58
37. I enjoy learning in this blended learning environment.	4.10	58
38. I could learn more in this blended learning environment.	4.12	58
39. It is easy to organize a group for a project.	3.74	58
40. It is easy to work together with other students involved in a group project.	3.86	58
41. The blended learning environment held my interest throughout the course.	3.53	58
42. I felt bored with this course when we got to the end of the learning segment.	3.91	58
11. There was a good balance between online and classroom activities.	4.10	58
12. The online and classroom activities worked well together.	4.07	58
13. I got the technical support I needed during this course.	4.16	58
14. I understand why this course mixed online and classroom activities.	4	58
15. I would like my other Social Studies courses to be taught like this course.	4.22	58
17. The instructions for the online activities were…	4.45	58
18. Getting technical support was…	4.22	58

Note: Items 11-15 Likert scale: (1) Strongly Disagree, (2) Somewhat Disagree, (3) Neither Agree or Disagree, (4) Somewhat Agree, and (5) Strongly Agree. Items 17-18 Likert Scale: (1) Difficult, (2) Somewhat Difficult, (3) Not Easy or Difficult, (4) Somewhat Easy, and (5) Easy.

Table 6. WEBLEI Scale 5 and Individual Item Ratings

	M	*n*
Facilitation	4.37	58
51. The teacher is prepared and available to answer my questions.	4.48	58
52. The teacher encourages students to work together and help each other.	4.48	58
53. The teacher encourages me to learn in different ways.	4.17	58
54. The teacher gives me quick comments on my work.	3.84	58
55. The teacher is focused on our work during class time.	4.41	58
56. The teacher expects me to do my best.	4.62	58
57. The teacher respects my individual way of learning.	4.57	58

Note: WEBLEI Likert scale: (1) Almost Never, (2) Seldom, (3) Sometimes, (4) Often, and (5) Almost Always.

Discussion

Many recent studies have explored interventions designed to improve elementary and middle grades students' learning across a variety of content areas (Baker & Cuevas, 2018; Dalton & Cuevas, 2019; Jennings & Cuevas,

2021; Liming & Cuevas, 2017; Tankersley & Cuevas, 2019; Zavala & Cuevas, 2019). However, fewer studies have investigated instructional approaches with secondary-level students. The purpose of this study was to examine blended learning's impact in a high school social studies classroom, specifically regarding student achievement. It was also designed to investigate student attitudes toward technology in the classroom. With the extensive literature regarding technology in the classroom, the expected results were that blended learning would stimulate increased student achievement. However, that was not the case. Students in both groups earned similar mean scores on the posttest. This was a surprise considering most of the previous literature. For example Clark et al. (2018), Luna and Winters (2017), and Hegedus, Tapper and Dalton (2016) showed an increase in student achievement in a blended learning group when compared with a minimal technology group.

Another goal of this study was to determine if there was a correlation between module views and time spent on modules with the gain score. There was also no significant relationship found between module views and time spent on modules with the gain score. The students in the experimental group who spent more time on the modules or who had more module views did not have a higher gain score than the students who did not spend as much time on the modules. This was an interesting finding because it displayed that just because a student spent more time on the online modules, it did not necessarily translate to higher gain in achievement.

Results regarding the students' dispositional traits provided more promising outcomes. Overall, the students in the experimental group reacted mostly positively toward using technology in the classroom. Students generally reported being confident with accessing the online material. They also tended to feel confident about their interactions during blended learning and in asking questions and collaborating with the teacher. Facilitation was the most positive of the WEBLEI scales. The facilitation scale specifically asked students about the teacher's role in the classroom. Importantly, the students most often believed that they were learning more in the blended learning environment and enjoyed the blended learning environment. But while the teacher was able to communicate rigorous expectations, students reported they did not receive enough quick, timely feedback.

Many previous studies, for example Clark et al. (2018), Luna and Winters (2017), and Hegedus, Tapper and Dalton (2016), showed greater improvement among the blended learning group compared with a minimal-technology group. These three studies had a greater time length as well as a higher number of participants. Clark et al. (2018) used eight different classes over a period of two years. They found balancing inquiry-based instruction with traditional instruction seems to be a promising feature of effective math interventions. Luna and Winters (2017) used 200 participants, and the study lasted one semester. Lastly, Hegedus, Tapper and Dalton (2016) was a strong study using over 600 participants. This study also used a specific technology-based curriculum. Therefore, they were able to control the quality of instruction. They found that gains occurred in the posttest scores for both groups. However, the gains were larger and more frequent for the treatment group using blended learning.

Mayer, Lingle, and Usselman (2017) found similar results to this current study. The 2017 study used only 20 participants but lasted two consecutive semesters with the same students. After both semesters, the students in the treatment and comparison groups earned similar grades showing no statistical difference. The 2017 study is similar to this current study in results, and it is possibly due to the small participant size.

Limitations

There are several limitations of these findings. The sample size was a limitation when compared to previous studies. Another limitation was student familiarity with the technology. The entire county school system uses Canvas LMS; however, different teachers use this tool at different rates. Some teachers use it all the time, while other teachers never use it. Therefore, some students were familiar and had extensive knowledge of Canvas LMS. Other students were still learning about Canvas and only had a limited knowledge from how their previous teachers had used it. Also, any student who had moved in from a different school system had to learn as they went. The teacher was available, in class, for support.

A second weakness would be length of the study. This study lasted eight weeks. Similar studies have gone one semester and even two or more school years. Another weakness to the design was the teacher-created modules. It would bring consistency if before the study, the teachers were given professional development on creating effective blended learning lessons. Lastly, the sample population of this study might have been too homogenous. It would be stronger to do this type of study with multiple schools or school districts with participants in a more diverse population.

Implications

This study did not produce significant results; however, it did show that blended learning did not have negative effects on student achievement. More research is needed to determine blended learning's impact on student achievement. Future studies should include a larger, more diverse sample size. This sample size for the experimental group was relatively small ($n = 58$). An ideal sample size would be hundreds of students in a more diverse population. Future studies should also be conducted over a longer period. This study only lasted for eight weeks and two units. An ideal length would be at least one semester long.

Blended learning should definitely be something examined more closely with the rising use of accessibility to technology in the classroom. It would also help if there were a specific curriculum that was used. If a researcher decides to use teacher-created lessons, there needs to be professional development to show teachers what effective blended learning entails. An important part of increasing student achievement, in any curriculum, is making sure it is effective. For this to be achieved, future researchers will need to make sure teachers and students are familiar with the technology in the classroom.

Conclusion

Technology is continuously becoming more affordable and available. Therefore, teachers and schools need to prepare to begin implementing it, effectively. The use of technology is becoming the basis of many occupations, particularly in the wake of the global pandemic. Blended learning can be a bridge that connects core content such as social studies, math, science, and language arts with students learning about and using technology.

In this study, blended learning as well as face-to-face instruction produced similar results in regard to increasing student achievement. However, students who experienced blended instruction reported a variety of positive perceptions and dispositional traits in response to the experience. Continuing research is vital for the development and effectiveness in the future of blended learning. The methods tested in this study could be researched further, more effectively on a larger scale, in numerous academic subjects, not only social studies. By researching blended learning with multiple populations will help educate teachers and assess effective technology-based curriculum in order for blended learning pedagogy to succeed.

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Appendix A

North America and South America Pre/Post Test   Name: _____

Multiple Choice: Identify the letter of the choice that best completes the statement or answers the question.

____   **1. Which of the following states are outside of the contiguous United States?**

a.   Alaska and New York   c.   Alaska and Hawaii

b.   Hawaii and California   d.   Honolulu and Hawaii

____   **2. Which of the following is a direct result of Spanish colonization of Latin America?**

a.   Hinduism   c.   Roman Catholicism

b.   Panama Canal   d.   Voodoo

____   **3. The crest that divides North America's major river systems into those flowing eastward and those flowing westward is known as the**

a.   Fall Line   c.   Ring of Fire

b.   Piedmont   d.   Continental Divide

____   **4. Why did the indigenous population of Latin Americans decline with the arrival of Europeans?**

a.   They died fighting the French   c.   European diseases killed a large portion of the population

b.   They emigrated to Europe   d.   They emigrated to North America

____   **5. What is the largest river in North America in terms of volume and drainage area?**

a.   Colorado River   c.   Mississippi River

b.   St Lawrence River   d.   Hudson River

____   **6. What 2 European countries did the line of demarcation effect?**

a.   France and England   c.   Spain and Portugal

b.   Brazil and Spain   d.   Brazil and Portugal

____   **7. Which of the following is NOT one of the Great Lakes?**

a.   Lake Superior   c.   Lake Ontario

b.   Great Bear Lake   d.   Lake Michigan

____   **8. What is El Niño?**

a.   the highest falls in the world

b.   ocean and weather patterns that occur when Pacific waters are warmer than normal

c.   ocean and weather patterns that occur when Pacific waters are cooler than normal

d.   the rain shadow created by the Andes

____   **9. The United States is primarily located in the _____ climates.**

a.   mid-latitude   c.   polar

b.   tropical   d.   arid

____   **10. The Inca were known for**

a.   skill in mathematics   c.   skill in building on a mountainside

b.   skill in agriculture   d.   skill in astronomy

____ **11. Which of the following physical features is shared by both Canada and the U.S.?**

    a.   Gulf of Mexico   c.   Hudson Bay

    b.   Rio Grande   d.   Great Lakes

____ **12. Canada is divided into government districts known as**

    a.   states   c.   colonies

    b.   provinces   d.   emirates

____ **13. What European nation had the greatest influence on the early history of the United States?**

    a.   Spain   c.   France

    b.   Great Britain   d.   Portugal

____ **14. The colonists unhappiness with British control over their economies, especially over the issue of taxation without representation, eventually led to a rebellion known as the**

    a.   American Revolution   c.   Cold War

    b.   Civil War   d.   War of 1812

____ **15. How did the exchange of food products between the Old and New Worlds change life in both places?**

    a.   The exchange of food products made the indigenous people rely too heavily on the New World

    b.   The exchange of food products inhibited the creation of businesses

    c.   The exchange of food products changed agricultural practices and land use, expanded food choices, and improved nutrition

    d.   The exchange of food products increased agricultural techniques but limited food choices

____ **16. The role of the legislative branch of the U.S. Congress is to**

    a.   enforce the laws.   c.   veto the laws.

    b.   determine the fairness of laws   d.   make the laws.

____ **17. Most of the cities in Latin America were founded in the 1500s and 1600s by the**

    a.   French   c.   Spanish

    b.   English   d.   Dutch

____ **18. Which of the following events did NOT contribute to settlers moving west?**

    a.   The Louisiana Purchase   c.   The Discovery of Gold

    b.   The Revolutionary War   d.   Completion of the Transcontinental Railroad

____ **19. The heart of French culture in Canada is**

    a.   Alberta   c.   Manitoba

    b.   Nunavut   d.   Quebec

____ **20. Canada is governed by a prime minister and an elected legislature called**

    a.   Congress   c.   Senate

    b.   Parliament   d.   Provinces

____ **21. Lake Titicaca is**

    a.   really a sea   c.   home to the most important oil fields in Venezuela

    b.   the region's largest lake   d.   the world's highest navigable lake

____ **22. The court with the highest authority in the United States is the**

a. Federal Court   c. Juvenile Court

b. Supreme Court   d. Superior Court

____ **23. What physical feature is located along the west coast of South America**

a. Amazon River   c. Amazon Basin

b. Andes Mountains   d. Atacama Desert

____ **24. Where were most early colonial settlements located?**

a. in the South   c. west of the Appalachians

b. on natural harbors or navigable rivers   d. far from Indian territory

____ **25. The first people to come to what is now the United States and Canada migrated over a land bridge from**

a. Africa   c. Asia

b. Europe   d. Australia

____ **26. North America's highest peak, Mt. McKinley, is found in**

a. Mexico   c. Canada

b. The United States   d. Central America

____ **27. Where is the driest region in South America?**

a. Guiana Highlands   c. Atacama Desert

b. the tree line   d. Andes mountains

____ **28. Which of the following is shared between the United States and Mexico?**

a. Great Lakes   c. Panama Canal

b. Niagara Falls   d. Rio Grande

____ **29. Which of the following is NOT one of the three branches of government in the U.S.?**

a. Parliament   c. Judicial

b. Executive   d. Legislative

____ **30. Which country has the largest Portuguese-speaking population?**

a. Suriname   c. Brazil

b. Colombia   d. Ecuador

____ **31. Which of the following factors is NOT a challenge for South American countries?**

a. lack of natural resources   c. unstable government

b. Poverty   d. concern for environment

____ **32. A major concern about deforestation in the Amazon Rainforest is that it may cause**

a. many unknown species of plants and animals to become extinct

b. furniture manufacturers to look at new materials

c. the oxygen balance in the world to become better

d. highway construction to slow down

____   **33. The _____ was drawn by the Pope to settle land disputes between Spain and Portugal.**

       a.   Treaty of Versailles   c.   Line of Demarcation

       b.   Demilitarized Zone   d.   International Date Line

__   **34. A _____ is a Spanish conqueror of foreign lands during the colonial era**

       a.   Creole   c.   Mestizo

       b.   Mulatto   d.   Conquistador

____   **35. Which statement BEST describes a result of the encounter between Europeans and Native Populations in Latin America?**

       a.   Native societies experienced rapid population growth

       c.   Large numbers of natives migrated to Europe

       b.   European nations were forced to leave the newly discovered land

       d.   The native populations decreased as they were exposed to European conquest, forced labor, and diseases

____   **36. The most practiced religion in the United States and Canada is**

       a.   Christianity   c.   Buddhism

       b.   Judaism   d.   Islam

____   **37. Which Latin American country is a member of OPEC?**

       a.   Venezuela   c.   Colombia

       b.   Mexico   d.   Argentina

____   **38. Which Spanish explorer was responsible for the downfall of the Inca empire?**

       a.   Pizarro   c.   De Leon

       b.   Cortes   d.   Columbus

____   **39. All of the following are challenges of the barrios residents <u>EXCEPT</u>:**

       a.   Widespread poverty   c.   Terrorist attacks

       b.   Violence from drug gangs   d.   Severe Overcrowding

____   **40. What 2 European countries did the line of demarcation effect?**

       a.   France and England   c.   Spain and Portugal

       b.   Brazil and Spain   d.   Brazil and Portugal

Appendix B

Sections 1 & 2

Strongly Disagree/Somewhat Disagree/Neither Agree or Disagree/Somewhat Agree/Strongly Agree

1. I liked the online activities.
2. The online activities helped me learn.
3. I liked learning in the computer lab.
4. I liked the classroom activities.
5. The classroom activities helped me learn.
6. I liked learning in the classroom.
7. This course improved my reading skills.
8. This course improved my writing skills.
9. This course improved my speaking skills.
10. This course improved my listening skills.
11. There was a good balance between online and classroom activities.
12. The online and classroom activities worked well together.
13. I got the technical support I needed during this course.
14. I understand why this course mixed online and classroom activities.
15. I would like my other Social Studies courses to be taught like this course.
16. My teacher seemed like he liked to teach this class.

Difficult/Somewhat difficult/Not easy or difficult/Somewhat easy/Easy

17. The instructions for the online activities were…
18. Getting technical support was…
19. Understand my teacher's directions in the classroom was…

Almost Never/Seldom/Sometimes/Often/Almost Always

20. I can access the learning activities at time convenient to me.
21. The online material is available at locations suitable for me.
22. I am allowed to work at my won speed to achieve learning objectives.
23. I decide how much I want to learn in a given period.
24. I decide when I want to learn.
25. Using blended learning allows me to meet my learning goals.
26. Using blended learning allows me to explore my own areas of interest.
27. I communicate with other students in the subject electronically (email. Discussion forums)
28. In this blended learning environment, I have to be self-disciplined in order to learn.
29. I have the freedom to ask my teacher what I do not understand.
30. I have the freedom to ask other students what I do not understand.
31. Other students' response promptly to my requests for help.
32. I am regularly asked to evaluate my own work.

33. My classmates and I regularly evaluate each other's work

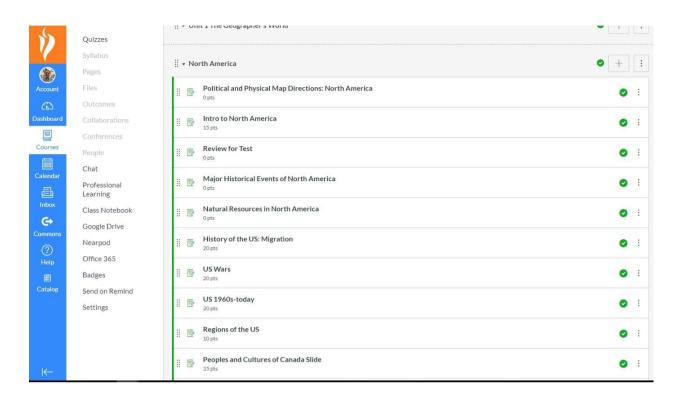34. I was supported by a positive attitude by my classmates.

Sections 3 & 4

35. Using blended learning makes me able to interact with other students and the teacher at the same time.

36. I felt a sense of satisfaction and achievement about this blended learning environment.

37. I enjoy learning in this blended learning environment.

38. I could learn more in this blended learning environment.

39. It is easy to organize a group for a project.

40. It is easy to work together with other students involved in a group project.

41. The blended learning environment held my interest throughout the course.

42. I felt bored with this course when we got to the end of the learning segment.

43. The learning objectives are clearly stated in each lesson.

44. The organization of each lesson is easy to follow.

45. The structure of the blended learning environment keeps me focused on what is to be learned.

46. Expectations of assignments are clearly stated.

47. Activities are planned carefully.

48. The content of my World Geography course worked well in a blended learning environment.

49. The presentation of the World Geography course was clear.

50. The quizzes enhance my learning process.

Section 5

51. The teacher is prepared and available to answer my questions.

52. The teacher encourages students to work together and help each other.

53. The teacher encourages me to learn in different ways.

54. The teacher gives me quick comments on my work.

55. The teacher is focused on our work during class time.

56. The teacher expects me to do my best.
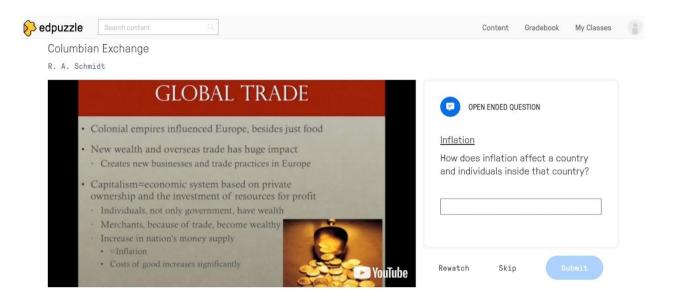
57. The teacher respects my individual way of learning.

Appendix C

Appendix D

Geography > Assignments > Columbian Exchange

Columbian Exchange

Published Edit ⋮

1. Complete notes on this reading ↗

2. Go to edpuzzle.

Do the edpuzzle on the Columbian Exchange.

If you finish early, for extra credit, use a blank sheet of paper to create a comic about early civilizations, colonization, and the effects of colonialism.

You will need to have 1 panel for each topic (early civilizations, colonization, effects of colonialism) and a 3-5 sentence explanation of how your image/how it relates.

Make your comic neat and use color.

Points   20
Submitting   a website url or a file upload

Due	For	Available from	Until
-	Everyone	-	-

+ Rubric

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Appendix E

Appendix F