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The effects of Google Classroom on teaching social studies for students with learning disabilities

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THE EFFECTS OF GOOGLE CLASSROOM ON TEACHING SOCIAL STUDIES FOR STUDENTS WITH LEARNING DISABILITIES

by

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Abstract

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THE EFFECTS OF GOOGLE CLASSROOM ON TEACHING SOCIAL STUDIES FOR STUDENTS WITH LEARNING DISABILITIES
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The purpose of this study is to examine the effects of Google Classroom on teaching social studies for student with learning disabilities. Six 7th graders with learning disabilities, attending a resource classroom participated in the study. A single subject design with ABC phases was used to evaluate their learning outcomes in both areas of knowledge of content and vocabulary words. During the baseline, students were taught with the traditional way of using textbooks. During the intervention, students were required to complete various assignments using Google Classroom daily for 9 weeks and were assessed by unit tests and vocabulary quizzes using the Google Classroom. A survey was given to the students and teachers to evaluate their perspectives about the integration of Google Classroom into social studies instruction. The results showed that all students increased their vocabulary quiz scores but limited in their content knowledge.

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Chapter 1

Introduction

Statement of Problem

Reading, writing and arithmetic (3 Rs) are considered the key subjects in elementary curriculum (Hinde, 2005). These academic areas are critical for students, especially for those with learning disabilities (LD) (Ciullo, Falcomata, and Vaughn 2015). According to the Peter D. Hart Association (1994), reading is considered the most important skill, math ranks second, and writing comes in third. A subject such as social studies is often placed at an ambiguous stage in the elementary curriculum (Zhao & Hoge, 2005). For example, in social studies class, students with LD are often pulled out for their remedial learning in 3Rs, because they need to meet the state and national standards in these key subject areas. Since No Child Left Behind (NCLB), the law enacted in 2001, student academic achievement in the 3 Rs has been focused on in the state-wide assessment, which makes those subject areas the priority, and others such as history and social studies into a marginal position (Manzo, 2005). Teachers don't seem to mind if their student performance in social studies lags behind (Zhao & Hoge, 2005). As a result, many students do not take social studies until entering middle school because their class time in elementary school was replaced with remediation for the 3Rs, if they struggled with these basic skills. Thus, the limited time in elementary school for social studies has made weak background knowledge for students with LD when they enter into middle school or high school.

The National Council for Social studies (NCSS, 2014) has categorized ten content standards for social studies. These include: 1) culture and cultural diversity, 2) time continuity and change; 3) people, places and environments; 4) individual development and identity; 5) individuals, groups and institutions; 6) power, authority and governance; 7) production, distribution and consumption; 8) science, technology and society; 9) global connections, and 10) civic ideals and practices. All standards are themes designed to help students make informed decisions about the world (NCSS, 2002). Within the school program, social studies provides coordinated, systematic study drawing upon such disciplines as anthropology, archeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology, as well as appropriate content from the humanities, mathematics, and natural science (NCSS, 2014). These skills are critical for understanding the world and becoming active citizens. In learning social studies, students are required to apply critical thinking and problem-solving skills to help them make informed decisions.

The requirement of social studies includes the reading of text material and comprehension, while most students with LD lack these reading skills. They are often poor readers spending most of their time decoding words, without comprehending their reading (Therrien, 2004). It is found that these students experience pervasive difficulties with reading for understanding, and their challenge in reading has intensified after the primary grades due to the increased difficulty level (Ciullo, Falcomata, & Vaughn, 2014). For example, they often struggle with fact recall, summarization, locating information, sequencing and responding to inferential questions (National Joint Committee for LD, 2008). In social studies, students are required to complete assignments based on their

text reading. If they struggle with basal reading, they will have difficulty in learning the content.

The instructional strategies in social studies include direct and indirect teaching format. Direct instruction (DI) refers to lecturing, questioning, guided practice and independent practice (Watson, 1998). It is structured in a step-by-step fashion that benefits students with disabilities (Fontana, 2004). DI is teacher-centered instruction during which teachers deliver lectures and lead class discussions to cover all the materials and deliberate questions and answers. Indirect or Inquiry instruction (II) focuses on decision-making, investigating, problem solving, inquiry, questioning, and reflection such as inquiry-based instruction (Scharp, 1992). In II, students are encouraged to become active learners by observations, problem solving and debates. It allows students to have a choice in their learning and the teacher guides students to learn the appropriate material while students decide how they complete the assignment. Both DI and II are provided in teaching social studies.

Technology-based instruction provides another opportunity for students in learning social studies (Wright, 2009). Technology serves as an available tool for students to explore their learning experience with their fingertips touching on the computer screen, or moving a mouse to click. It helps students build a bridge to connect their reading text to the simulated real world situation presented visually by the computer programs. It engages learners in various activities and helps their learning beyond the basic information (Gil-Garcia & Cinton, 2002). Technology can help students who learn differently, reach their goals. It has become an important part of the current students' lives, thus integrating technology into social studies instruction will encourage their

learning in a way they are motivated (Fredricks, Blumenfeld & Paris, 2004). Various computer programs are available in school such as Google Classroom, a program for teachers and students to create, distribute and grade assignments paperlessly (Mersand, S. 2014); Brain pop, another program with animated movies, quizzes and related materials; Inspiration software, a program to help students organize their ideas; PowerPoint, popular for electronic presentations; Web quests, a search tool for students to find information on topics; You-tube, presenting videos online to share images with others; online encyclopedia serving as a dictionary for many subjects; Kahoot, an authorized program for teachers to create games by asking questions on any topic and sharing with students to play on a computer and Quizlet, a free website providing tools for students such as flashcards and games to help students study.

Google Classroom is a program for teachers to create a digital classroom for students to communicate with their teachers and peers (Phan, 2015). It is a free application that integrates e-mails and documents to save into storages. Teachers can upload files, videos, links, announcements and assignments for students to retrieve and view. Document files can be edited in class and shared with peers to learn collaborative skills. When students complete an assignment, they can submit by posting on the teacher's board or on the classroom board. This program can be accessed using any device at any place, which is convenient for both teacher and students. Google platform allows learners to chat and discuss topics learned in class, and teachers to view student discussion, and post comments. Different assignments can be posted such as video segments, PowerPoint presentations, documents and webquests.

In reviewing research articles, few studies have been found regarding technology-based instruction in social studies, especially the particular program, Google Classroom. This study attempts to evaluate Google Classroom in teaching social studies for students with learning disabilities.

Significance of the Study

The use of technology has changed our daily lives. To update ourselves to follow these changes, educators have to learn new technology and programs available to support students and encourage their learning in different ways. Technology-based instruction provides an opportunity for students to learn and practice in a visual and virtual environment (Bonk, 2009; Davidson & Goldberg, 2009).

With technology available in the classroom, more schools are integrating technology into their curriculum. How does technology benefit students with LD? And, what are the teacher's and student's perspectives on technology in teaching and learning social studies? These questions need to be answered. This study is designed to evaluate technology-based instruction using Google Classroom for student with LD in learning social studies. The goal is to investigate the effectiveness of Google Classroom as a computer program in teaching and learning social studies.

Statement of Purpose

The purpose of this study is to examine the effects of Google Classroom on teaching social studies for students with learning disabilities. The specific objectives include: 1) to evaluate student learning outcomes in learning social studies, 2) to evaluate students' satisfaction with the use of the Google Classroom program, 3) to evaluate

teachers' satisfaction in designing and implementing the Google Classroom program in teaching social studies.

Research Questions

1. To what extent will students with LD increase their test scores when Google Classroom is used?
2. Are students with LD satisfied with the use of Google Classroom?
3. What are the teachers' opinions about the integration of Google Classroom into the instruction of social studies?

Chapter 2

Review of the Literature

According to the US Department of Education (2014), 66.2 % of students with disabilities are placed in general education classrooms for 80% of a school day. Of these, most students are diagnosed with learning disabilities (LD). These students take content area subjects such as social studies and sciences together with their non-disabled peers, but struggle in learning these subjects because of the level of reading required and vocabulary development. Commonly, the content areas, social studies in particular, require students to read the textbook and to take notes, then prepare for testing, which make these students overwhelmed. Integrating technology in social studies is a new pathway for instruction, especially for those with LD who are struggling in reading and testing, because visual images in computer programs can provide supplemental resources as concrete examples to support their learning.

This chapter reviews research articles on direct instruction, indirect inquiry, and technology-based teaching in social studies for students with LD.

Direct Instruction in Social Studies for Students with LD

The instructional methods in social studies have changed over the past years. Some practices were centered on Direct Instruction (DI), which is teacher-led, using specific material with reinforcements, modeling, providing immediate feedback to correct mistakes and assessing student's performance. It emphasizes drilling and practice and fact memorization. Direct Instruction is found to be successful for students with LD (e.g., Gujjar, 2007; Berkeley, Marshak, Mastripieri & Scrugg, 2011; Swanson, Wanzek, Vaughn, Roberts & Fall, 2015).

In Gujjar's study (2007), 30 students with LD between the ages of 9-12 participated in learning social studies. These students were pre-tested based on their textbook, then randomly assigned into two groups with 15 each, for experimental and control groups. The experimental group was given a three weeks intensive Direct Instruction while the control learned the textbook on their own in a separate room. At the end of three weeks, both groups were given a test to evaluate their performance. The results showed that students in the experimental group performed significantly higher than those in the control group with an average of 7 to 9 points higher on the post-test. Direct Instruction seems effective for students with LD in learning social studies.

In Berkeley, Marshak, Mastripieri, and Scrugg's study (2011), 57 students, 15 with LD and 23 English to Speakers of Other Languages (ESOL) participated to examine the effects on Direct Instruction in middle school social studies. These students were randomly assigned into two groups, one control and the other experimental. Both groups used the same textbook and chapter that had not been covered in class before, to avoid student's awareness of background knowledge on the content. Different measurements were provided to assess the student performance including Scholastic Reading Inventory (SRI), a state test and their grades in social studies to make sure that there was no significant difference between the two groups. Students in the control group just used their textbook while those in the experimental group had scripted lessons with modeling and graphic organizers designed to learn strategy steps. Examples were given and turned into questions for students to practice. Maps, pictures or graphs were provided for students to reread the section or write down a question to ask the teacher. Strategy monitoring sheets were also developed for students to write down questions and to reflect

if the strategy helped them learn the content. Several measurements were used including a test with multiple choices and another with open-ended questions to target main ideas, and a student survey. The results showed that students in the experimental group scored significantly higher in the posttest than those in the control, with an average of 10.3 compared to 7.70 for the control and 7.03 compared to 2.98 for the open ended. In response to the survey, 63% of the students reported that the strategies helped them remember the text they learned and would like to use it again. This study indicates that Direct Instruction is helpful to assist students with generalized reading comprehension strategies in learning social studies at the middle school level.

Swanson, Wanzek, Vaughn, Roberts and Fall's study (2015) evaluated Direct Instruction using Promoting Acceleration of Comprehension and Content through Text (PACT) in 8th grade social studies for students with LD. A total of 130 students participated for two consecutive years. The students were chosen randomly and assigned into two groups, one control and the other experimental. The study lasted 10 weeks with both groups receiving the same social studies content except that the experimental group received the PACT intervention. This intervention includes organizing of content for comprehension, direct teaching of vocabulary and specific concepts, scaffolding reading text and pulling out content, frequent checking for student understanding, student engagement in class discussions and applying the knowledge learned to a new situation. Teachers in the experimental group received scripted lessons and daily schedules for the content and tasks. Students received materials including word logs and reading passages with specific stopping points for notetaking and discussion. Different measurements were taken including: ten classroom observations, the Social Studies Knowledge Test

ASK, and the Gates-MacGinitie Reading Comprehension subtest. At the end of the study, all participating students were given the tests. The results showed that student in the experimental group with LD demonstrated a higher level of learned content knowledge than those in the control group. Those in the experimental group improved their overall scores on the tests including reading comprehension in the social studies. Again, Direct Instruction provides clear steps and guided practice to lead these students in a structured learning process, thus, to improve their performance.

It seems that Direct Instruction is an effective method for teaching social studies to students with LD, because of modeling, scaffolding and cueing the students in learning and memorizing the material to be recalled (Berkeley, et al. 2011).

Inquiry Instruction in Social Studies for Students with LD

Another instructional strategy in social studies is Inquiry, which is different from Direct Instruction. Inquiry Instruction starts by posing questions, problems or scenarios and encourages students to develop their own knowledge or solutions. By learning to address social studies as an inquirer, students learn to make decisions, problem-solve, question and reflect on the topic or information.

McCormick (2008) evaluated inquiry-based lessons and activities in 5th grade social studies classes with 119 students, and 23 with LD to learn the unit on the American Revolution. These students were divided into two groups, the control group using the school text book, teacher lecturing and worksheets, and the experimental group using the textbook to develop their own questions related to the topic, and to research the historical events for answers. Different measurements were provided to assess the student's performance including a pre and post-test and a student survey. The results showed that

students who were involved in the inquiry-based instruction performed better because they initiated their own learning. Also, students noted on the survey that they felt more motivated to learn history and prompted them to find information outside the classroom. Inquiry instruction seems to be effective for students with LD in learning social studies by encouraging them to develop a higher level of thinking, and learn themselves through in-class and out of class activities.

In Ilter's study (2014), 58 students with LD participated to evaluate the efficacy of a project-based learning approach on social studies. Students were pre-tested on content and then randomly divided into two 4th grade groups for 6 weeks, one was control, and the other was experimental. The control group had typical instruction on the "The Place We Live" using the textbook, whole class lecturing and practicing on worksheets. The experimental group studied the same textbook with class lectures, but broke into teams to research a specific geographical region to present in class. A pre and post-test was used to evaluate students' performance. The results showed that students in project-based learning had significant higher post-test scores than those in the control group. The study indicates that project-based learning is an effective approach for students in learning content knowledge. Inquiry learning seems to be effective to help students develop communication skills, self-managed problem solving, teamwork skills, and promote social interactions with peers.

In Kent, Wanzek, Swanson and Vaughn's study (2015), 24 students with high-incidence disabilities participated in a team-based learning (TBL) in high school social studies. These students were divided into two groups, 16 in the experimental and 8 in the control for learning three units. The control group had typical instruction while the

experimental had TBL to engage students in communication with others, using critical-thinking skills to solve problems, and to understand content knowledge. At the end of each unit, the experimental group had a team-based activity where graphic organizers were used for key information and evidence. A pre and posttest including multiple choices and open-ended questions was used to evaluate students' learning. The results showed that there was no significant difference between the two study groups on content knowledge but the students in the experimental group using TBL showed great achievement in content area vocabulary. Again, Inquiry Instruction provided a more active, engaging activity to motivate students' learning.

It seems that Inquiry instruction engages students in higher levels of thinking to learn content knowledge and problem solving skills that are important to those with LD (e.g., McCormick, 2008; Ilter, 2014; Kent, Wazek, Swanson & Vaughn 2014).

Using Technology in Social Studies for Students with LD

Technology is influencing our lives, and the learning process in schools. According to the National Center of Education Statistics (NCES, 2009), the Internet is available to 93% of the computers located in the classroom and the ratio of students to computers in the classroom is 5 to 1. Different types of technology are available in school, such as whiteboards, projectors, multimedia devices, and desktop computers and tablets. With technology in the classroom, there are many advantages for both the teacher and student in teaching and learning social studies.

Twyman and Tindal (2006) evaluated computer-adapted history text for students with LD in learning comprehension and problem-solving skills. A total of 24 students participated and were randomly assigned into two groups of 12, one control and one

experimental for three weeks. The control group was taught with the district approved textbook while the students in the experimental group were taught using a computer-adapted textbook. This textbook contained various links to vocabulary, dates and people, graphic organizers, concepts and simplified text. Students could go to any page to review and the computer would read each section aloud. At the end of three weeks, students were given a vocabulary test, a content knowledge test and an extended response essay to evaluate their learning. The results showed that students in the experimental group improved their vocabulary and content knowledge indicating that the computer-adapted textbooks helped students significantly to improve their problem-solving skills. This study supports the integration of technology into the classroom to help students learn both content and vocabulary.

In Hernandez-Ramos, and DeLa Paz's study (2009), 170 students participated in project based learning using technology for 6 weeks. Of these, 11 were classified with a learning disability. These students were divided into 2 groups, one control and another experimental. The control group learned through lecturing, taking notes and applying skills in simulations. Lectures were also provided to the experimental group but students were broken into groups to study one geographic region and give a group presentation using computers. The experimental group spent four weeks learning content material using primary and secondary sources, note taking and practice with the software called Mpower to develop a project, and the last two weeks they were in the computer lab to work together to complete the project, and present in class. Students were measured by observations, a student survey and a test. The results showed that students in the experimental group with technology-based instruction had a significant increase of test

scores in learning the material, and had a positive view about working with multimedia as reported in their survey. Again, technology in the classroom helps students learn social studies by understanding an event and being able to summarize and reflect, and create projects.

Curcic (2011) examined students' interaction with the Web. In this study, 20 7th graders with LD were divided into 2 groups, 10 in each group. The students were responsible to create posters using information through a web-based Google account. The hyperlinks to the selected web pages were uploaded by the teacher and students were required to create a poster with one or two pages. Their topics could include three branches of the government and the US Constitution. All students were modeled how to search the web, but the experimental group used the Big6 Skills approach including: 1) defining task, 2) seeking strategies –skimming, scanning, and reviewing additional links, 3) locating and accessing 4) using web information 5) synthesizing and 6) evaluating information. A rubric for poster writing and a pre and posttest were used to evaluate student learning. The results showed that students in the experimental group developed longer written text than those in the control. The web record showed that the control group opened more links during their search at the pretest than the experimental group, but the experimental group doubled the number of links opened at the posttest, and scored higher. This means that technology can be very helpful if students develop strategies guided by specific instruction while using the web.

Another study on technology was evaluated by Kennedy, Newman, Meyer, Alves, and Lloyd (2014). A total of 141 students, 32 with LD and 109 general education participated in a Universal Design for Learning (UDL) using evidence-based multimedia

to learn vocabulary words in a 10th grade World History Class for the unit on Renaissance and Revolutions (RR), and Exploration and Expansion (EE). The control group learned vocabulary through text based transparencies and PowerPoint slides. Students would write the words into their notebooks and review in class. In the experimental group, a Content Acquisition Podcasts (CAPs) were provided, a 1-3 minute video for vocabulary review with vivid pictures together with the text. Students were required to watch a CAP video 2 times a day to reinforce the vocabulary learning. A pre and post-test contained multiple choices, short questions, and an essay report was given to evaluate student's performance. The results showed that students with LD had a significant increase in their post-test score with an average of 7.6 points higher, and general education students showed an increase in vocabulary development using the computer program. It seems that multimedia provides an opportunity for students with and without disabilities as another means in learning history.

The research (e.g., Twyman & Tindal, 2006; Hernandez-Ramos & DeLa Paz, 2009; Curic, 2010; Kennedy, Newman, Meyer, Alves, & Lloyd, 2014) showed that using technology to teach social studies supported student learning and increased their test scores and overall understanding of the content knowledge. Technology serves as a new tool for teachers to integrate into their lessons to meet the needs of diverse students.

Summary

In social studies, students are taught in various ways including Direct Instruction and Inquiry-based Instruction, while the effectiveness of these methods is contradictory. Results on DI have shown improved learning of students with LD (e.g., Gujjar, et. al., 2007), because they are taught through class lectures with teacher-led explanations,

examples, and guided practice. Research (e.g., McCormick, et. al., 2008) also has shown Inquiry instruction, such as project-based or team-based learning, is effective for students with LD. In such instruction, students have a choice to learn the content, and the teacher's role is to facilitate and guide students to reach their goal. And yet, a new technique of inquiry learning is to integrate technology in teaching social studies. Research has shown that there are many ways to enhance learning using various technology programs including websites, computer textbooks, videos and other programs (e.g., Twyman & Tindal, et. al., 2006). Integrating technology may be a new pathway to engage students with LD in learning social studies.

Chapter 3

Methodology

Setting

The study was conducted in a middle school located in southern New Jersey. The school was labeled as a Title I school, because 52% of students were receiving free and reduced lunch. According to the NJ Schools Performance Report in 2013-2014, the students' academic performance in this school lagged behind in comparison to other schools in the state, and 22% of students were categorized as having a disability. This location was chosen because I was currently employed as a special education teacher at the school. The study took place in a classroom for social studies but was shared with another teacher for math instruction during another period of the day.

Participants

Students. Six, male, 7th graders participated in this study. These students were classified as having a learning disability by the school's Child Study Team according to the state's administration code. All the students had an IEP with objectives in the social studies within the subject area of reading. Table 1 presents their general information.

Table 1

General Information of Participating Students

Student	Age	Ethnicity	Classification	*STAR Reading **Grade Equivalent	*STAR **Instructional Reading Level
A	12	Caucasian	SLD	4.5	4.2
B	13	Caucasian	SLD	2.4	2.2
C	13	African American	SLD	1.0	Pre-Primer
D	12	Caucasian	SLD	4.5	4.1
E	13	Hispanic	CI	3.1	3.1
F	13	African American	CI	2.4	2.1

SLD: Specific Learning Disabled; CI: Communication Impaired
*STAR: computer-adaptive assessment by Renaissance Learning to evaluate school and students performance in math, reading, and writing.
**Grade Equivalent: A score between pre-primer to 12.9+ to show a students performance compared with others nationally.
***The instructional Reading Level: A grade level at least 80% of proficiency in word recognition and reading comprehension.

Student A was placed in a resource center for all academic subjects because of his low achievement and difficulty in learning. He was in the Read 180 program, which provided technology-based blended instruction to include whole-group and small-group instruction, serving as a reading intervention. He was able to identify literary elements, understand the social studies text and make logical predictions but had difficulties in

finding relevant information in the text and responding to questions. His goal for the social studies was to quote accurately from a text when explaining the text and drawing inferences.

Student B was in the resource center for learning all academic subjects. He received counseling because of some social skills problems that were negatively impacting his school performance, and at times caused him to negatively seek the attention of his peers. His strength was his ability to find main ideas of the text and to actively participate in class discussion. He lacked of basic reading skills and fluency, which impacted his learning in social studies. He was diagnosed as ADD and was taking medicines to reduce his symptoms. His goal for the social studies was to understand the text, and quote accurately from the text to explain the meaning with minimal assistance.

Student C received instruction in the resource center for language arts, science, and social studies except math in an inclusive classroom. He was able to participate in class discussions and provide good ideas. He had difficulties in finding text evidence to answer questions, especially for open-ended questions with clear ideas. He demonstrated a significant discrepancy between his intellectual ability and academic achievement in the area of reading comprehension and oral fluency. His goal for the social studies was to understand the text and quote accurately from the text to explain the meaning with minimal assistance.

Student D was placed in the resource center for all academic subjects because of his poor achievement and difficulty with learning. He was able to use grade level vocabulary with appropriate decoding skills to understand social studies. His main area

of difficulty was in the area of writing. His goal for the social studies was to analyze the text and write summaries with text evidence with minimal assistance.

Student E received instruction in the resource center for language arts, science, and social studies except math in an inclusive classroom. He received speech remediation to improve his expressive and receptive language and articulation skills. He was able to participate in class discussions with good ideas, but had difficulties with reading especially making inferences and drawing conclusions. His goal for the social studies was to explain the text read, and quote accurately with minimal assistance.

Student F learned language arts, science, and social studies in the resource center while receiving math instruction in an inclusive setting. He also received speech remediation because of his difficulty with expressive language, specifically in semantic language skills. He was able to work well with peers to complete class projects but had difficulties in recalling short stories, decoding, oral reading fluency, and comprehension. His goal was to understand the text and quote accurately from the text to explain the meaning with minimal assistance.

Teacher. The teacher taught social studies for eight years at various grade levels, and 7th grade in resource settings for the last six years. In this study, only the teacher provided instruction.

Materials

Instructional Materials

Chromebook. A Chromebook is a personal laptop computer to search Internet resources and use applications stored in the cloud. The Chromebook was distributed to each student at the beginning of the study to log into a teacher created Google Classroom.

Google Classroom. It is a free paperless application including Google programs such as G-mail, Google Docs, Google Forms, and Google Presentations. Google Classroom can produce, collect and grade assignments for the teacher, and provide immediate feedback to students. Teachers and students can get into the Google Classroom from anywhere and utilize the application at home to complete assignments. A sample of Google Classroom is attached in Appendix A.

Handouts. Various printed handouts were given during the instruction including: cloze notes, maps, graphical organizers, reading passages, and open-ended questions. Electronic handouts from the Google Classroom, such as Unit Rubric self-rating sheet, vocabulary reviews, CNN Student News forms, and PowerPoint presentations were also used.

Measurement Materials

To measure student's performance, several types of assessment were used. These include a unit test, vocabulary quiz and survey.

Unit test. This was an online test for three units: Renaissance, Mesoamerican Cultures and Exploration. It contained 20 multiple-choice questions related to the various topics learned in the unit. Each question had 3 or 4 multiple-choice options that were worth 5 points each with a total of 100. A sample test is attached in Appendix B.

Vocabulary quiz. The Renaissance Unit had 2 vocabulary quizzes to serve as pre and posttest to evaluate students' understanding of vocabulary words. The first quiz had 12 multiple-choice questions worth 8 points each with a total of 98 and the second had 10 with each question worth 10 points with a total of 100. Each unit on Mesoamerican

Cultures and Exploration had one quiz, 10 multiple-choice questions with a total of 100 each. All quizzes were on Google Forms. A sample quiz is attached in Appendix C.

Student survey. The survey included 17 questions based on using Google Classroom, and students' opinions about the technology usage. All questions were developed in a linear scale of 1 to 5 with 1-strongly disagree, 2-disagree, 3-neutral, 4-agree and 5 strongly agree. A sample is attached in Appendix D.

Teacher survey. This survey had 12 questions with a linear scale to evaluate teacher's perspectives about the integration of Google Classroom into social studies instruction. The same linear scale as the student survey was developed on a 1 to 5 rating with 1 being the lowest and 5 being the highest. A sample survey is attached in Appendix E.

Procedures

Instructional Procedures

The teacher used Google Classroom to post questions, links, PowerPoints, videos, documents, games, study guides and tests. Students were working at the computer daily to complete various assignments using Google Classroom, such as the daily question, videos, Powerpoints, web quests, Google Docs, games, etc. Table 2 presents the nine week instruction.

Table 2

Instructional procedures in 9 Weeks

Week	Unit and Goal	Google Classroom Activities
1	Renaissance Unit Goal: Explain how the Renaissance became a time of great change (people, religion, inventions, science & art)	• Introduce Google Classroom • Introduce Daily Do Now Questions and how to respond • Review Unit Goal and Rubric • Teach Vocabulary 1 (first 3 of 12 Words) • Students take Clozed Class Notes • Teach Italy Map Skills • Student research on computers and Writing Activity of creating a Newspaper on information on the Black Death • Watch CNN Student News and fill out Google Doc (3 times a week)
2	Renaissance Unit Goal: Explain how the Renaissance became a time of great Change (People, religion, inventions, science & art)	• Daily Do Now Questions • Review Unit Goal and use scale to rate themselves • Teach Vocabulary 1 (words 4-9) • Student Writing Activity on the Guilds during the Renaissance • Watch CNN Student News and fill out Google Doc (3 times a week)
3	Renaissance Unit Goal: Explain how the Renaissance became a time of great Change (People, religion, inventions, science & art)	• Daily Do Now Question • Review Unit Goal and use scale to rate themselves • Teach Vocabulary 1 (words 10-12) • Vocab 1 review by playing Vocabulary Kahoot • Renaissance Vocabulary 1 Google Form Quiz • Clozed Notes on Renaissance Art and Davinci • Students take vision test and learn about Trompe L'oeil (Renaissance Art technique) • Davinci Lab (Researching Davinci's accomplishments such as writing, botany, Anatomy and drawling)

Table 2 (continued)

Week	Unit and Goal	Google Classroom Activities
4	Renaissance Unit Goal: Explain how the Renaissance became a time of great Change (People, religion, inventions, science & art)	• Daily Do Now Question • Review Unit Goal and use scale to rate themselves • Quiz on Google Forms on Vocabulary 1 words • Teach Vocabulary 2 (words 1-5) • Clozed Notes on Michael Angelo • Play Vocabulary Kahoot to Review Vocabulary • Reading on Women in Renaissance • Watch CNN Student News and fill out Google Doc (3 times a week) • Research Inventions in the Renaissance
5	Renaissance Unit Goal: Explain how the Renaissance became a time of great Change (People, religion, inventions, science & art)	• Daily Do Now Questions • Review Unit Goal and use scale to rate themselves • Teach Vocabulary 2 (words 6-10) • Play Vocabulary Kahoot to Review Vocabulary • Listen to Renaissance Music on computer and read about instruments • Renaissance Vocabulary 2 Google Form • School mandated Assessment/Benchmark • TEST on Google Forms • Watch CNN Student News and fill out Google Doc (3 times a week)
6	Exploration Explain the effects of European Exploration on the World including competitive forces, obstacles, accomplishments and interactions.	• (Native American Mini Unit) • Daily Do Now Questions • Review Unit Goal and use scale to rate themselves • Teach Mayan/Inca/Aztec Vocabulary (words 1-5) • Play Vocabulary Kahoot to review Vocabulary words • Teach Map Skills of Mesoamerica • Native American Scavenger Hunt • Watch CNN Student News and fill out Google Doc (3 times a week)

Table 2 (continued)

Week	Unit and Goal	Google Classroom Activities
7	Exploration Explain the effects of European Exploration on the World including competitive forces, obstacles, accomplishments and interactions.	• Daily Do Now Questions • Review Unit Goal and use scale to rate themselves • Teach Mayan/Inca/Aztec Vocabulary (words 6-10) • Play Vocabulary Kahoot to review Vocabulary words • Teach Map Skills of Mesoamerica • Watch CNN Student News and fill out Google Doc (3 times a week) • Native American Test on Google Forms
8	Exploration Explain the effects of European Exploration on the World including competitive forces, obstacles, accomplishments and interactions.	• Daily Do Now Questions • Review Unit Goal and use scale to rate themselves • Teach World Map and review for test • Teach Explorers Vocabulary (words 1-5) • Review Christopher Columbus voyage • Learn about Dias and DaGama voyage and what was the significance • Review Magellan's Voyage and why this was a major accomplishment • Play Vocabulary Kahoot to review Vocabulary words • Watch CNN Student News and fill out Google Doc (3 times a week)
9	Exploration Explain the effects of European Exploration on the World including competitive forces, obstacles, accomplishments and interactions.	• Daily Do Now Questions • Review Unit Goal and use scale to rate themselves • World Map online review game • Teach Explorers Vocabulary (words 6-10) • Review Ponce Deleon voyage • Play Vocabulary Kahoot to review Vocabulary words • Student Research Explorer online and create a Poster to teach class • Explorer Vocabulary Google Form Quiz • TEST on Google Forms • Watch CNN Student News and fill out Google Doc (3 times a week)

The study started in January and ended in April for a total of 9 weeks to cover the topics on the Renaissance, Mesoamerican Cultures and Exploration.

Measurement Procedures

Unit tests. This test was given at the beginning and end of each unit serving as a pre and post-test. Each test covered key concepts of the social studies content in the unit, and was given on Google Forms. Students were required to read each question and select the appropriate answer by moving the mouse to the appropriate bubble and clicking. They were allowed to raise their hand, if they needed a question to be read aloud. The teacher walked around the classroom to manage the testing process. A spreadsheet of responses was automatically generated by Google Forms.

Vocabulary quiz. This quiz was given at the end of each unit. Students would review words in class and play games to practice. A Google form of multiple-choices was given to students to select the correct answer by scrolling down a drop box and clicking the correct answer. During testing, the teacher circulated around the classroom and would read aloud any question when needed. A spreadsheet of responses was automatically generated by Google Forms.

Student survey. A survey was given after the intervention to compare student's opinions about using Google Classroom. The survey was taken on the computer in the Google Classroom page in a Google Form. The responses were automatically imported into a spreadsheet to generate results. Students were required to take the survey independently but allowed to raise their hand to ask for clarification.

Teacher survey. A survey was given after the intervention to four teachers to evaluate their perspectives about the integration of Google Classroom into social studies

instruction. Teachers were e-mailed the survey over G-mail, and they could open their G-mail to respond to the questions. Their responses were generated into a Google Form.

Research Design

A single subject design with ABC phases was used in this study. During phase A, the baseline, the students learned two units without using Google Classroom or Chromebooks. In Phase B, the intervention, these students were taught two more units using Google Classroom, and Chromebooks to reinforce their learning. In phase C, maintenance, students were tested to evaluate their learning one-week after the intervention.

Means and standard deviations were calculated and presented in a table. A visual graph was presented to compare student performance across phases.

Chapter 4

Results

Students' performance in learning social studies are evaluated based on their vocabulary quizzes and unit tests.

Vocabulary Quizzes

During the baseline, 3 vocabulary quizzes were provided. During the intervention, Renaissance and Native Americans were taught using Google Classroom, and three vocabulary quizzes were given to evaluate student performance. During the maintenance, two vocabulary quizzes on Exploration were provided to evaluate their retention. Table 3 presents student scores.

Table 3

Means and Standard Deviations of Vocabulary Quiz Scores across Phases

Student	M	SD	M	SD
Student A				
Baseline	21.67	2.89	91.67	7.64
Intervention	34.33	15.04	100.00	0.00
Maintenance	12.50	17.68	92.00	11.31
Student B				
Baseline	29.33	4.04	71.67	7.64
Intervention	15.00	13.22	81.53	10.87
Maintenance	52.50	16.26	88.86	4.45

Table 3 (continued)

Student	M	SD	M	SD
Student C				
Baseline	31.00	1.73	93.34	5.77
Intervention	22.67	11.68	90.53	10.04
Maintenance	31.00	2.83	92.86	10.10
Student D				
Baseline	28.33	10.41	85.33	5.03
Intervention	15.11	6.06	90.67	10.06
Maintenance	19.50	7.78	96.00	5.66
Student E				
Baseline	25.66	16.01	90.00	10.00
Intervention	37.89	6.83	87.78	10.72
Maintenance	40.30	33.51	88.86	4.45
Student F				
Baseline	21.67	2.89	80.00	3.00
Intervention	19.44	17.34	86.43	12.30
Maintenance	3.50	4.95	92.00	11.31
Whole Class				
Baseline	26.28	6.32	85.34	6.51
Intervention	24.07	11.70	89.49	9.00
Maintenance	33.27	13.83	91.76	9.77

Figure 1 through 6 presents student scores across phases.

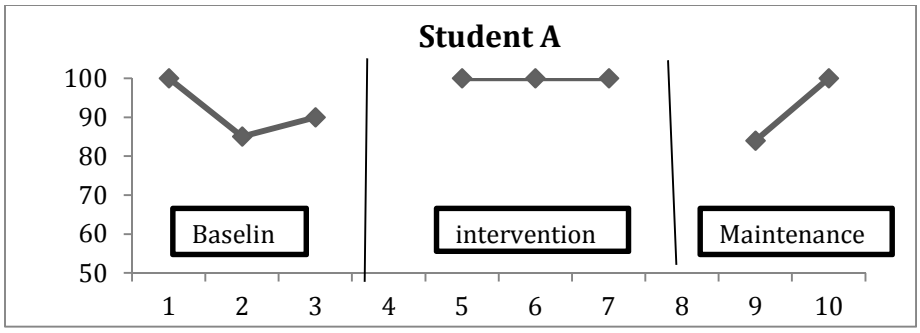

Figure 1. Student A Vocabulary Scores Across Phases

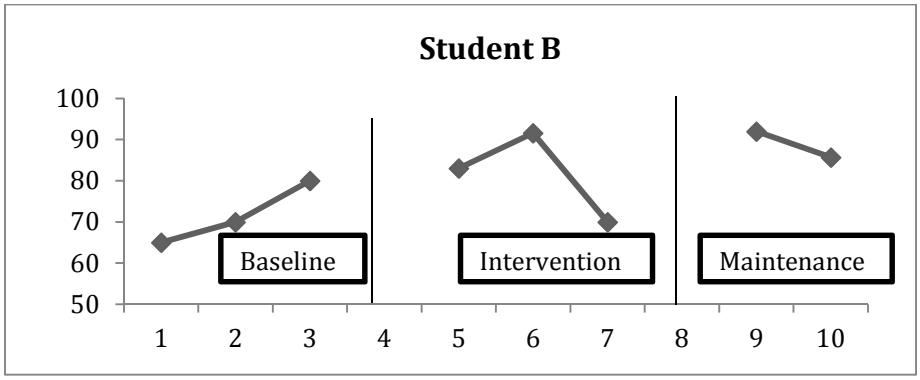

Figure 2. Student B Vocabulary Scores Across Phases

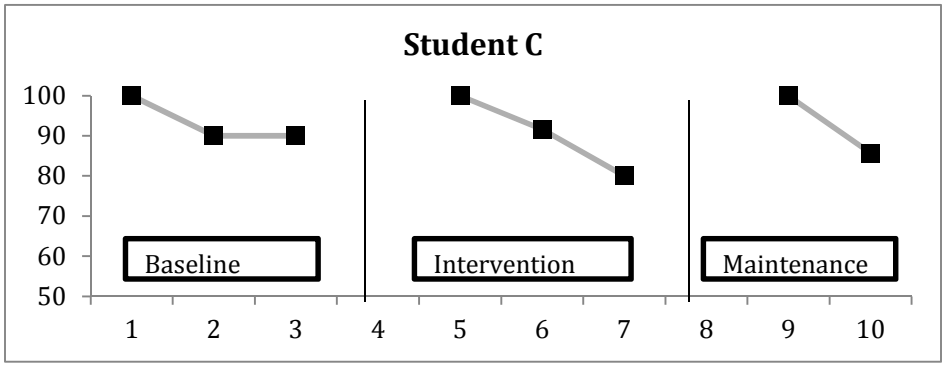

Figure 3. Student C Vocabulary Scores Across Phases

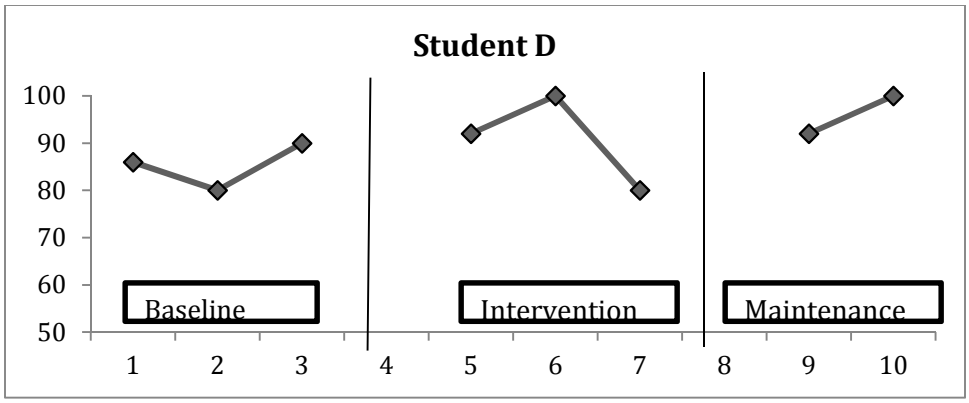

Figure 4. Student D Vocabulary Scores Across Phases

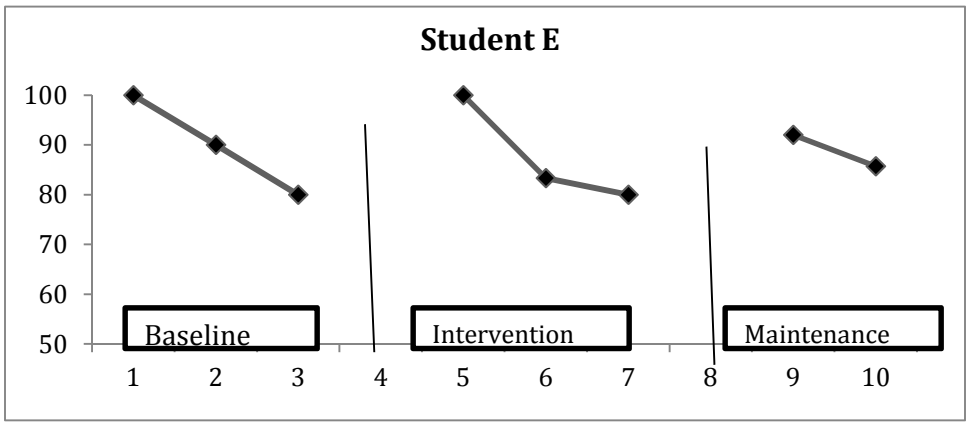

Figure 5. Student E Vocabulary Scores Across Phases

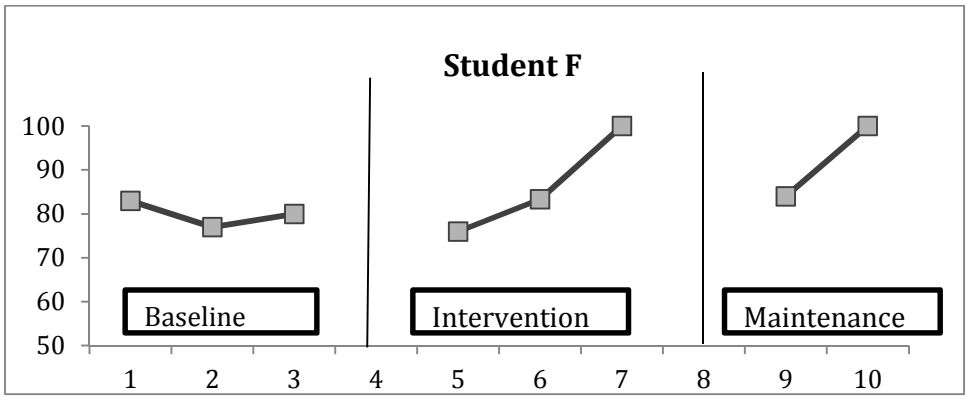

Figure 6. Student F Vocabulary Scores Across Phases

During the baseline, Student A's scores ranged from 85 to 100 with an average of 91.67. During the intervention the student earned 100 on the vocabulary quizzes when using Google Classroom. The average score of 92 was maintained after two weeks without using Google Classroom.

During the baseline, Student B's scores ranged from 65 to 80 with an average of 71.67. During the intervention, the scores ranged from 70 to 91.6 with an average of 81.53 using Google Classroom. The average score of 88.86 was maintained after two weeks without using Google Classroom.

During the baseline, Student C's scores ranged from 90 to 100 with an average of 91.33. During the intervention, the scores ranged from 80 to 100 with an average of 90.53 using Google Classroom. The average score of 92.86 was maintained after two weeks without using Google Classroom.

During the baseline, Student D's scores ranged from 80 to 90 with an average of 85.33. During the intervention, the scores ranged from 80 to 100 with an average of 90.66 using Google Classroom. The average score of 96 was maintained after two weeks without using Google Classroom.

During the baseline, Student E's scores ranged from 80 to 100 with an average of 90. During the intervention, the scores ranged from 80 to 100 with an average of 87.77 using Google Classroom. The average score of 88.86 was maintained after two weeks without using Google Classroom.

During the baseline, Student F's scores ranged from 77 to 83 with an average of 80. During the intervention, the scores ranged from 76 to 100 with an average of 86.43

using Google Classroom. The average score of 92 was maintained after two weeks without using Google Classroom.

Unit Tests

During the baseline, three unit tests were provided. During the intervention, two unit tests on Renaissance and Mesoamerican Cultures were given to students to evaluate their performance when Google Classroom was implemented. During the maintenance, one unit test on Exploration was provided to evaluate their retention. Table 4 presents means and standard deviations of test scores across phases.

Table 4

Means and Standard Deviations of Unit Test Scores across Phases

Student	M	SD	M	SD
Student A				
Baseline	24.67	4.51	87.67	2.52
Intervention	32.90	17.11	86.65	18.87
Maintenance	7.69		81.82	
Student B				
Baseline	14.33	8.14	85.67	4.04
Intervention	40.40	27.72	81.65	11.09
Maintenance	50.00		90.91	
Student C				
Baseline	9.00	7.94	75.67	6.02
Intervention	42.50	3.54	85.80	1.13
Maintenance	30.70		90.91	
Student D				
Baseline	16.00	5.29	87.67	2.52
Intervention	43.30	23.62	85.00	7.07
Maintenance	23.08		81.82	

Table 4 (continued)

Student	M	SD	M	SD
Student E				
Baseline	19.67	12.86	84.33	4.04
Intervention	39.00	8.49	95.00	7.07
Maintenance	61.54		90.91	
Student F				
Baseline	10.33	4.50	75.33	5.03
Intervention	32.50	10.60	85.00	21.21
Maintenance	7.69		60.00	
Whole Class				
Baseline	15.67	7.20	93.77	5.12
Intervention	31.35	13.68	86.51	11.07
Maintenance	39.73		82.72	

Note. There is no SD on maintenance because only one unit test was given.

Figure 7 through 12 presents individual student's performance on unit tests across phases.

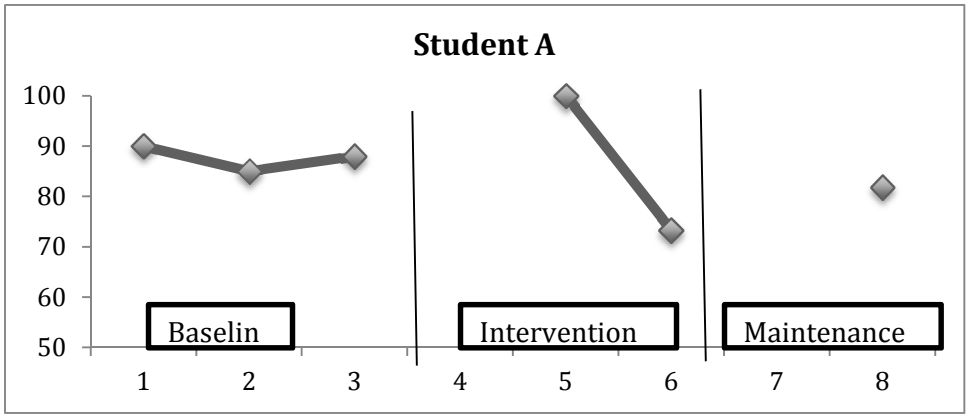

Figure 7. Individual Student A Performance on Unit Tests

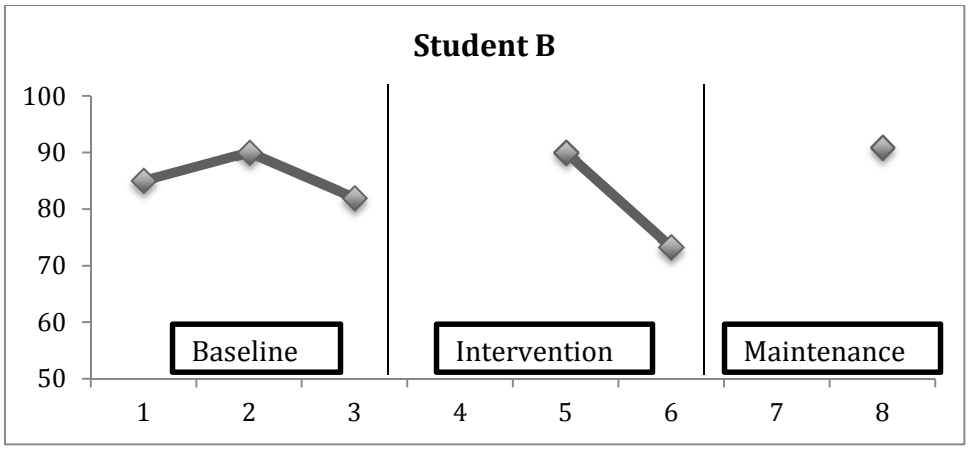

Figure 8. Individual Student B Performance on Unit Tests

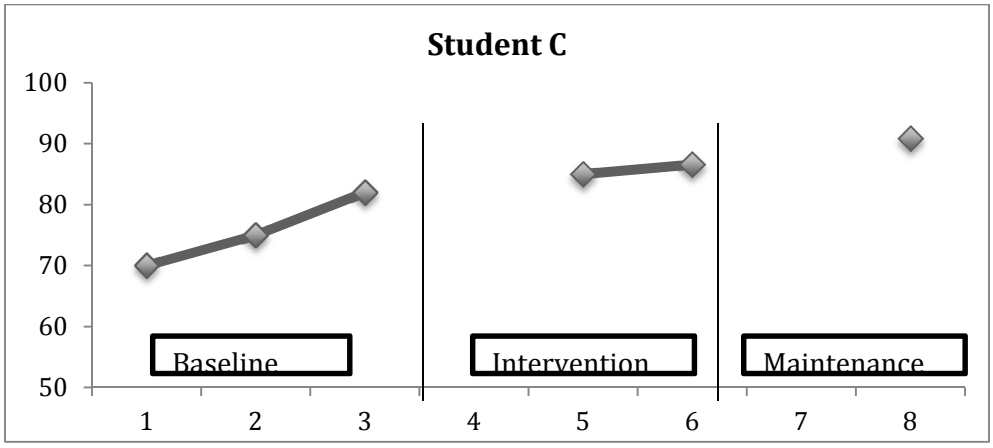

Figure 9. Individual Student C Performance on Unit Tests

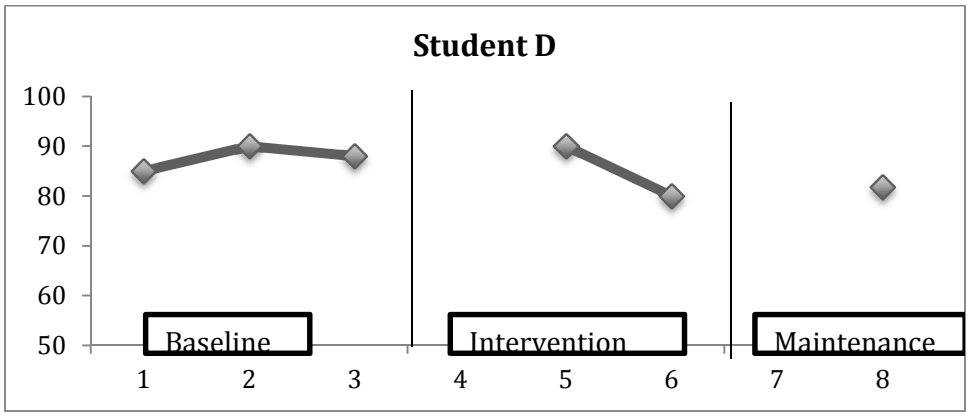

Figure 10. Individual Student D Performance on Unit Tests

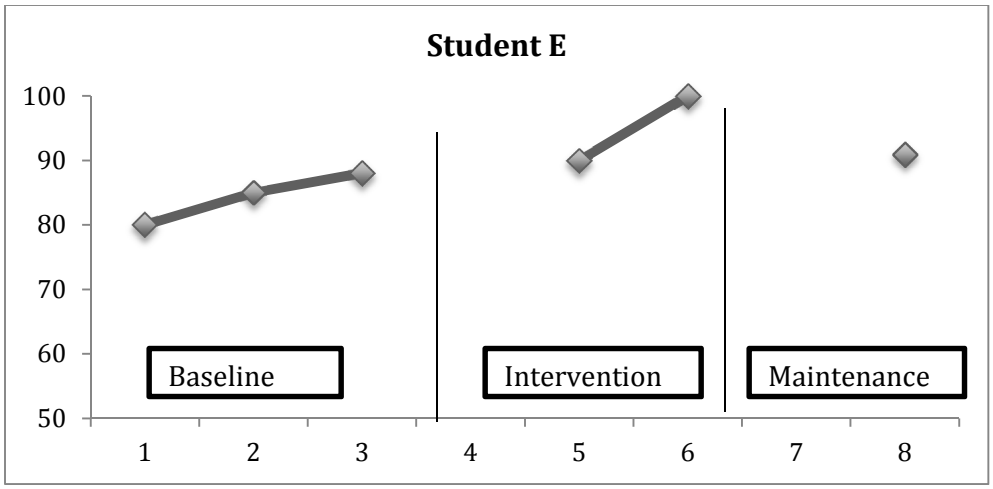

Figure 11. Individual Student E Performance on Unit Tests

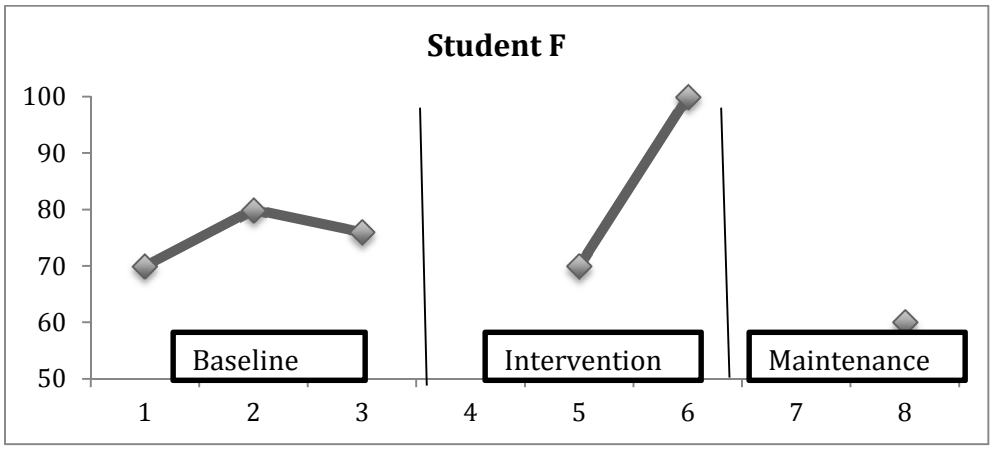

Figure 12. Individual Student F Performance on Unit Tests

During the baseline, Student A's scores ranged from 85 to 90 with an average of 87.67. During the intervention, the student received 100 and 73.3 on the Unit Test when using Google Classroom, with an average of 86.65. The average score of 81.82 was maintained after two weeks without using Google Classroom.

During the baseline, Student B's scores ranged from 85 to 90 with an average of 89. During the intervention, the student received 90 and 73.3 on the Unit Test when using Google Classroom, with an average of 81.65. The average score of 90.91 was maintained after two weeks without using Google Classroom.

During the baseline, Student C's scores ranged from 70 to 82 with an average of 75.67. During the intervention, the student received 85 and 86.6 on the Unit Test when using Google Classroom, with an average of 85.8. The average score of 90.91 was maintained after two weeks without using Google Classroom.

During the baseline, Student D's scores ranged from 85 to 90 with an average of 87.67. During the intervention, the student received 80 and 90 on the Unit Test when using Google Classroom, with an average of 85. The average score of 81.82 was maintained after two weeks without using Google Classroom.

During the baseline, Student E's scores ranged from 80 to 88 with an average of 84.33. During the intervention, the student received 90 and 100 on the Unit Test when using Google Classroom, with an average of 95. The average score of 90.91 was maintained after two weeks without using Google Classroom.

During the baseline, Student F's scores ranged from 70 to 80 with an average of 75.33. During intervention, the student received 70 and 100 on the Unit Test when using Google Classroom, with an average of 85. The average score of 60 was maintained after two weeks without using Google Classroom.

Survey Responses

Both student and teacher surveys were given after the Google Classroom implementation to gather participants' perceptions about their experience in learning and

teaching social studies. Tables 5 and 6 present students' and teachers' responses respectively. Four middle school social studies teachers ranging in 6-8 grades were asked a series of questions posted on a Google Form.

Table 5

Student Responses to the Online Survey

Questions	Means
1. Liked using Google Classroom to learn social studies	4.00
2. Google Classroom helped me practice social studies vocabulary (Kahoot/Quizlet etc.)	4.00
3.Google Classroom was easy to use	4.43
4. I prefer using Google Classroom	4.14
5. I liked doing Unit Rubrics and Daily Rubric Goals on the Classroom board compared to the old way of writing them on paper	4.00
6. I liked doing the CNN Student New's on the Classroom board compared to the old way of writing them on paper	4.14
7. I felt more comfortable in interacting with my classmates and teacher	4.14
8. I liked listening to music while working	4.57
9. Writing on the Google Classroom was better than paper notes	4.71
10. Google Classroom made online research easier	4.43
11. Google Classroom helped me find the appropriate links needed (CNN Student News, Brain pop, Kahoot, etc.)	4.43
12. My grade increased because of Google Classroom	3.28

Table 5 (continued)

Questions	Means
13. Google Classroom helped me become more aware of the social studies content	3.85
14. I liked doing the Do Nows on the Classroom board compared to the old way of writing them on paper	3.86
15. I easily created presentations by using technology or the Chromebook	3.71
16. I create notes, drafts, and maps to complete assignments	3.71
17. Playing games helped me learn	3.86

Of the 17 statements in the student survey, responses to 11 were above 4, which meant their agreement on Google Classroom's overall likability, easy use, practicing vocabulary, their preference, increased student writing and posting, easier online research, increased interaction with classmates and teachers, enjoyed listening to music, and finding appropriate links. The rest of the statements were above 3, which means that some students agreed on becoming more aware of content, creating notes and presentations, and playing online games, while some did not agree. The lowest score was on the responses to the statement about Google Classroom increasing student scores.

Table 6

Teacher Responses to the Online Survey

Questions	Means
1. Google Classroom was easy to use	4.50
2. I prefer using Google Classroom to teach	4.25
3. Interaction between teacher/students increased because of Google Classroom	4.50
4. I liked students writing the Do Nows on the Classroom board compared to the old way of writing them on paper	4.50
5. I liked doing the CNN Student News on the Classroom board compared to the old way of writing them on paper	4.50
6. I create notes, drafts, and maps for students to use and posted them on Google Classroom	4.50
7. Google Classroom made online research easier for students	4.50
8. Playing games on the Google Classroom helped students learn	4.00
9. Google Classroom helped students find the appropriate links needed (CNN Student News, Brain pop, Kahoot, etc.)	4.25
10. Checking on correct classroom sites	3.50
11. I let students listen to music while working	3.50
12. Student grade increased because of Google Classroom	3.25

Of the 12 statements in the teacher survey, responses to 9 were above 4, which mean their agreement on Google Classroom's easy use, their preference, increased interaction between teacher and students, increased student writing and posting, and online playing games, and finding appropriate links. The rest of the statements were above 3, which mean some teachers agreed on checking on correct classroom sites, and having students listen to music while some did not agree. The lowest score on the responses to the statement was about Google Classroom increasing student scores.

Chapter 5

Discussion

Overview

The purpose of the study was to examine the effects of Google Classroom on teaching social studies for students with learning disabilities. The results show that participating students increased their scores in vocabulary quizzes but there was limited increase in learning content of social studies compared to using textbook and printed materials. Results also show that both teachers and students had positive responses to the survey regarding their teaching and learning of social studies using Google Classroom.

Summary of Findings

The first research question asked if student with LD would increase their test scores when using Google Classroom. There were two kinds of test, one was vocabulary and the other was a unit test on content knowledge.

Results show that students increased their vocabulary scores when using Google Classroom. For example, the entire class's scores rose from 85.34 in the baseline to 89.49 in the intervention, and maintained 91.76 after two weeks. This finding is consistent with Twyman and Tindal's study (2006), indicating that technology in the classroom helps students learn vocabulary words. The Google Classroom program allows students to play games including Quizlet and Kahoot during which they could compete with each other to earn the best score of vocabulary words. This game-based competition may motivate students in learning words during the entertainment. Such a game play activity may allow students with LD to build self-confidence and motivation in their learning process. Similar findings in McCormick's study (2008) were found to

further support engaging activities to promote student motivation in learning, especially computer-based activities.

Results show that using Google Classroom to learn unit content was inconclusive. Of the six participants, three gained scores while the others decreased during the intervention and maintenance. For example, their scores varied from 85.77, 87.67 and 93.77 in the baseline, to 81.65, 85.00 and 86.51 in the intervention, to 90.91, 81.82, and 82.72 in the maintenance after two weeks. This finding is consistent with Kent, Wanzek, Swanson and Vaughn's study (2015), indicating that students had limited improvement in content knowledge using technology such as watching online videos. Many websites are available, such as Brain Pop or Discovery Education, offering students content enriched videos to learn social studies based on their own interests and pace. For example, if they complete their assignment early in class they are allowed to search for a game site to further review the content. Using technology in teaching social studies is a new way to enrich the content but it should be noted that some students may be distracted from technology presentations, therefore, teacher's supervision is important to monitor students and to select appropriate websites for class.

The second research question asked if students with LD are satisfied with the use of Google Classroom to learn social studies. Results show that all students liked using Google Classroom and enjoyed playing games such as Kahoot, and watching CNN Student News, and posting their writings on the Google Classroom. They also liked interacting with their peers and being able to listen to music. This finding is consistent with Hernandez-Ramos, and DeLa Paz's study (2009), indicating that students taught with technology had a positive view about working with multimedia.

The third research question was targeted on teachers' satisfaction with developing and implementing the Google Classroom program in their instruction. Results show that teachers were satisfied with using Google Classroom in class because of its easy learning and adaptation to meet student needs. They also liked to assign students writing such as Do Nows and CNN Students News. However, teachers have concerns about student's performance and they are not sure if technology increases student unit test scores. This could be because students come in with different background knowledge and skills, and teacher should know their student learning levels to start instruction. Technology can serve as a useful tool in instruction, but teachers need to know how to integrate technology into their teaching, and how to meet their student needs, especially those with learning disabilities.

Limitations

There are some limitations in the study. First, the sample size was small with only six students in one school. Therefore, the findings are limited and difficult to generalize to other classrooms and schools. Future studies should be conducted with various students using Google Classroom. Second, students had different background knowledge of the content material that might affect their performance in learning the content. Lastly, the study only lasted for nine weeks with a short time span, which might impact student learning outcomes, especially understanding the content knowledge. A longer time period of instruction and practice might benefit students in learning content and improve their unit test scores.

Implications

To plan for the future, teachers need more support on integrating Google Classroom into the social studies content. For example, in this study, many of the sites had to be created by searching the Web resources. It seems that students enjoy playing games in learning social studies, and more game-based learning activities should be developed to enhance content understanding in order to improve their content knowledge. Schools may need to provide in-service training to teachers on using technology, so that more teachers could be involved in technology based instruction to support students, especially those with LD.

Conclusion and Recommendations

This study showed that integrating Google Classroom into social studies instruction resulted in an increase of student vocabulary scores except students' understanding of the content knowledge. Google Classroom may be considered as a program for resources in the classroom for teachers and students. Although the results demonstrated students' positive learning outcomes in vocabulary words, their understanding of content knowledge had limited improvement. Further research is needed to validate the finding, especially to expand the sample size across different settings with different student populations. Technology provides a way to support content instruction, as well as an opportunity for teachers to be creative in developing class activities to engage students. More studies are needed to verify the use of technology and its benefit to students with special needs especially those with learning disabilities.

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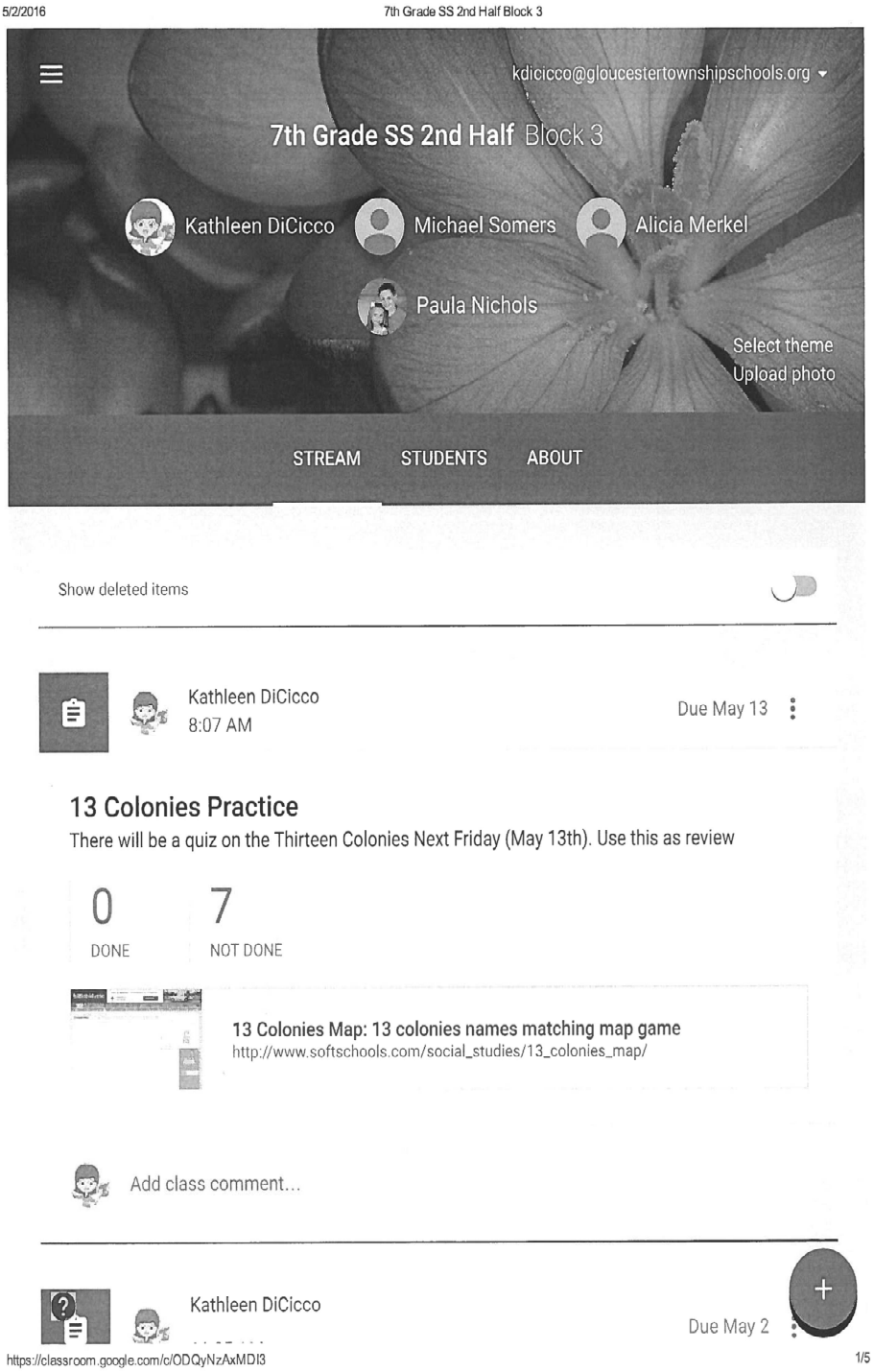
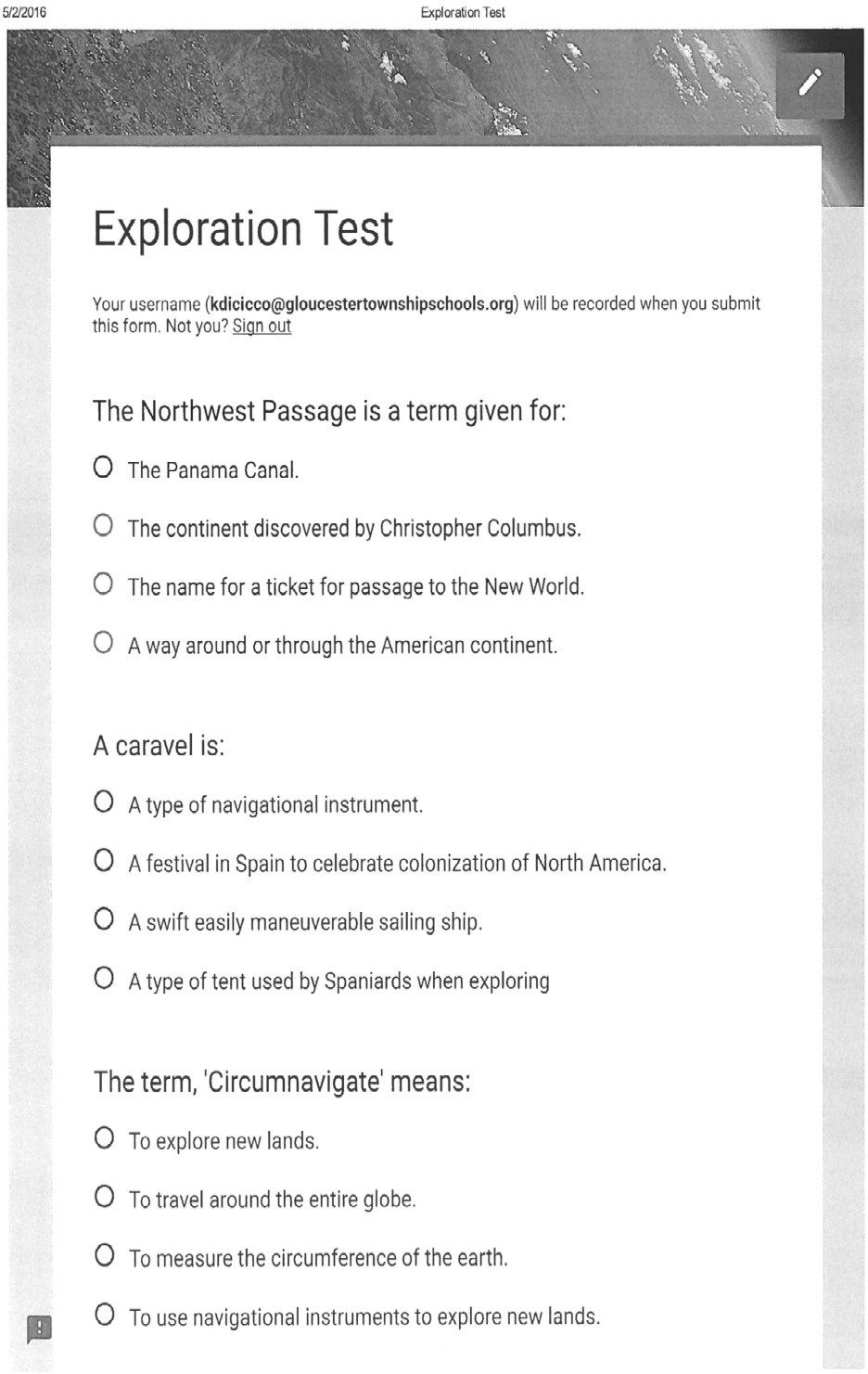
Appendix A

Sample Google Classroom



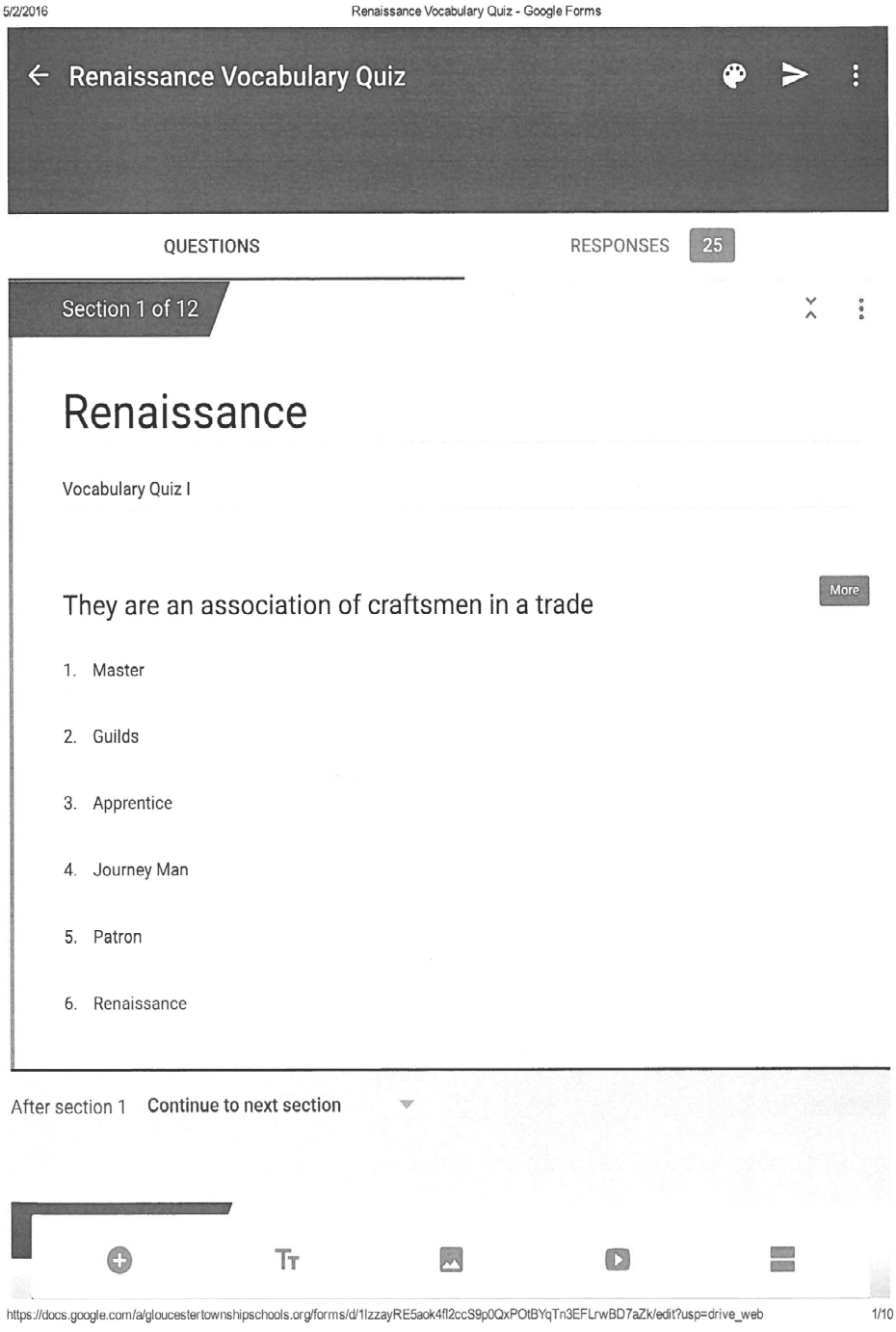
Appendix B

Exploration Test



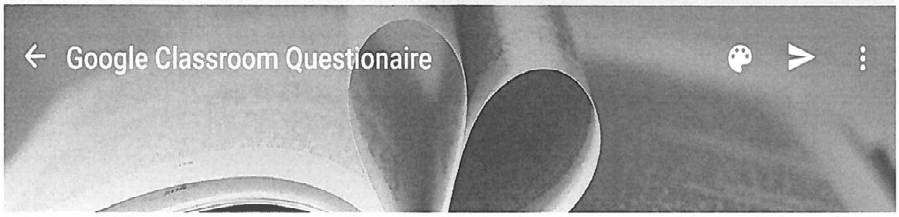
Appendix C

Renaissance Vocabulary Quiz



Appendix D

Student Google Classroom Questionnaire



QUESTIONS RESPONSES 7

Please take the Google Survey and answer honestly. The Levels are 1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree and 5 Strongly agree. Also if you have any thoughts about Google Classroom please fill them in text box at the bottom. Thanks again for your time and input.

Liked using Google Chrome to Learn Social Studies

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Google Classroom helped me practice social studies vocabulary (Kahoot/Quizlet etc)

Add title and description

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Google Classroom was easy to use

	1	2	3	4	5	
Strongly	○	○	○	○	○	Strongly Agree

Appendix E

Teacher Google Classroom Questionnaire