

The Impact of Using Computers and Technology on Engagement and Achievement in an 8<sup>th</sup> grade Social Studies  
Unit

By

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## **Abstract**

The purpose of this quasi-experimental study was to determine whether instruction delivered via technology and computers as opposed to traditional methods affected student engagement and achievement in an eighth grade history class. Students initially completed a survey regarding their interest and access to technology then were divided into groups, one of which received instruction and completed assessments using technology and one of which did not while completing a ten days long social studies unit on Slavery in the Americas. Engagement in the unit was measured by scoring student analyses of primary source materials throughout the unit. Achievement was assessed with a unit test, which was administered at the completion of the unit. No significant difference was found between the control and treatment groups' mean scores on the survey assessing the students' interest in technology before the intervention, suggesting the groups were similar in that regard. No statistically significant differences were found between scores reflecting the groups' mean engagement in the unit materials/content or their unit test scores. Therefore, all three null hypotheses were retained. Suggestions for future studies regarding using technology for instruction and assessment include examining the impact of using more varied methods of technology and studying its impact across topics and age levels.

# **CHAPTER I**

## **INTRODUCTION**

### **Overview**

Given its profound effect on society, technology increasingly is being used within the educational setting at all levels. As a teacher at the middle school level, this researcher has experienced increased focus at professional development events on how to integrate technology into classrooms. In terms of technology use by students, during the 2016-2017 school year, Baltimore County Public Schools, Maryland integrated 1:1 devices for use by all students in every grade level. During the 2017-2018 school year, 1:1 devices were introduced into the eighth grade in Harford County Public Schools, Maryland, where this researcher currently teaches. The prevalence and rapid implementation of technology into the classroom heightened this researcher's interest in learning more about how the use of such devices and similar technology affect student engagement and achievement in the classroom.

### **Statement of Problem**

The purpose of this study was to explore whether integrating computers and technology into social studies classroom instruction and assessment affected student engagement and achievement.

### **Hypotheses**

The following hypotheses were tested to assess whether the treatment and control groups involved in the study were initially similar in terms of their interest in technology and whether students in an eighth grade classroom who were taught and assessed using 1:1 computer and digital technology-based lessons and tests demonstrated more engagement or achievement than those in a similar class who were taught and assessed without using computers or digital

technology. The null hypotheses tested follow.

*ho1: mean interest in technology for treatment group=mean interest in technology for control group*

*ho2: mean engagement for treatment group=mean engagement for control group*

*ho3: mean unit test scores for treatment group= mean unit test score for control group*

### **Operational Definitions**

#### *Achievement*

To measure achievement in the classroom, the investigator designed a unit test to assess mastery of the unit objectives for which students received instruction. Both the control group and the treatment group were given the same unit test. However, the treatment group received their test on a digital platform while the control group completed their assessment via a pencil and paper format. A copy of the Unit Test is located in Appendix D.

#### *Engagement*

For purposes of this study, engagement was defined as the students' investment into what they were experiencing in class on a daily basis. To quantify engagement, students completed standard Harford County resource sheets daily to assess what they learned and, presumably, whether they were attentive during instruction. The control group completed their resource sheets on paper and the treatment group completed theirs on a digital platform. Students' scores on the completed resource sheets were determined using a scoring rubric that rated their responses in terms of their level of analysis and comprehension of the source material. In order to successfully complete a resource sheet, students needed to have been engaged with the source materials thoroughly; hence, higher scores were inferred to reflect deeper engagement. A copy

of one of the resource sheets is included in Appendix B. Scores on the daily sheets were averaged for all of the days each student attended class during the unit to yield a total mean engagement rating for each participant.

### *It's Learning Platform*

*It's Learning* is a digital platform that Harford County Public Schools adopted in 2015 for presenting lessons. Professional development for Harford County teachers focuses heavily on how to use *It's Learning* to design and deliver instruction effectively. *It's Learning* allows teachers to integrate more technology into teaching and learning by using tools such as discussion boards, blogs, wikis, and videos as part of instruction and review. All of the treatment group's lessons used the *It's Learning* platform to convey the same concepts and materials that the control group received by means of traditional (non-technological) methods.

### *Dell Latitude 3189*

The *Dell Latitude 3189* is a 1:1 device that Harford County purchased for all the eighth graders to use. These were the devices on which the treatment group received all their instruction for the targeted unit through *It's Learning* during the intervention period for this study. The treatment group also completed worksheets, tests, and accessed digital sources on their Dell devices in the classroom. Students in the control group had access to their devices during the study but did not use them when working on the targeted unit. The students in the control group were asked to turn off the devices in class during the targeted unit and used traditional discussion and paper and pencil/chalk board methods to share information.



### *Harford County One Drive*

The Harford County *One Drive* is a digital platform on which students can access shared files and submit work to their teachers. Only the treatment group used One Drive as part of the targeted unit.

### *Interest in Technology*

The Interest in Technology survey was a survey designed by the researcher to assess students' interest in technology in a school setting. Questions ranged from interest in using technology to whether they thought technology was useful for learning. The survey concluded by asking the students whether they had internet access and what technological devices they utilized at home. The results of the survey were compared between the two groups to determine whether they were similar with regard to interest in technology before the study.

### *Independent Variable*

The independent variable was the treatment group's use (or the control group's non-use) of computers and technology for instruction and assessment during the targeted lessons.

### *Dependent Variables*

The dependent variables were the students' engagement in the unit and their achievement of unit objectives. These variables were assessed using data from resource sheets and a unit test, which were completed by both groups during and after the unit, respectively. These assessments are described in the Instruments section in Chapter III.

## **Chapter II**

### **Review of the Literature**

This literature review examines whether student engagement within the classroom is related to computer and technology usage. The first section considers the current educational practices regarding technology in the classroom and how it is challenging to assess the effects of using technology in the classroom setting. The second section explores whether using computers and technology improves engagement/motivation within the classroom. The third section examines overall computer and technology use and what is being done to integrate these digital tools into classroom settings. The final section discusses how to build a classroom in which the usage of computers and technology is designed to promote engagement and learning.

### **Educational Theory and Technology**

Technology is a relatively new phenomenon in the classroom, the benefits and drawbacks of which need more study. Technology is evolving continually; therefore, obtaining reliable data regarding its use in a classroom setting is challenging because the digital tools constantly change.

Much remains to be learned about how technology is helpful for students, to whom it is helpful and how these factors relate to demographic and personal characteristics, including gender and age. Turman and Schrod (2005) examined technology-based course designs and their effect on males and females. The researchers found that female participants responded slightly more positively to classrooms in which instructors used more technology than did the male participants. Although there was a slightly higher rate of response among female participants, the difference was not statistically significant. Implications for this study were that all students, regardless of gender, consider technology as an important and necessary tool for instruction.

Turman and Schrodt (2005) suggest that email and computer use might help to motivate students to participate and engage in classroom activities and therefore contribute to increased achievement. These conclusions were based upon results from their research that revealed an increase in achievement among both male and female students. The researchers caution educators to use technology wisely and understand that technology never should replace face-to-face instruction.

### **Improving Engagement/Motivation in the Classroom**

When considering motivation in the classroom, it is important to examine what factors motivate students in school, especially in the middle school. According to Davis and Guthrie (2003), motivation is defined as either intrinsic or extrinsic. Intrinsic motivation refers to being motivated by feelings from within, or self-motivation, while extrinsic motivation involves being motivated by external factors. The researchers found that in middle school, students were motivated by extrinsic/external factors such as competition among students for better grades. Additionally, the researchers determined that when middle school students lose intrinsic/internal motivation due to complacency, academic performance suffers. If such motivation can be maintained, performance improves.

Martin and Furr (2010) conducted a study that involved promoting classroom engagement by having teachers take a less direct role in instruction and assuming more of a facilitator-type position. Martin and Furr examined several key concepts they considered to be related to engagement, including students' attentiveness, classroom management, teachers as learners, cooperative learning, and presentation strategies. The researchers also examined the influence of classroom affect in achieving a high level of student engagement. They defined classroom affect as encompassing environment, positive feedback, locus of control, student

input, student self-efficacy, and checking for fun, any one of which they advised could promote positive engagement. They noted that it was important to make certain every task has a purpose and is not simply a “placeholder” in a lesson plan as unnecessary items in a lesson are associated with loss of engagement within the classroom.

Zakszeski, Hojnoski, and Wood (2017) conducted a study that used time sampling and assessed the duration of student engagement within the classroom in relation to intervals between activities. Their data revealed that students who experienced shorter intervals between activities had a higher level of engagement than students who experienced longer intervals between activities. Teachers who progressed more quickly from one activity to another had increased engagement from students; therefore, the researchers concluded that if technology is introduced, there must be shorter intervals between activities to promote increased student engagement. As stated by the researchers, “continued efforts to systematically examine interval durations as well as their implications may lead to improved identification, assessment and intervention evaluation practices, and this improves student outcome” (p. 52).

### **Computers and Technology in the Classroom**

Recent trends in educational practice reveal a movement from traditional schooling to greater use of computer and technological based instruction. Lei and Zhao in 2007 examined use of computers and technology in the classroom, but instead of focusing on student motivation or engagement, their study considered the frequency of usage of these tools. Results from their study suggested that a balance must be achieved between quality and frequency of technology use. They found that it was not the amount of time the technology was being used but the way in which it was used that affected students’ achievement. They also discovered that overuse of

technology was associated with decreased achievement and ultimately, decreased motivation in the classroom.

Middleton and Murray (1999) examined the relationship between levels of technology implementation in the classroom and standardized test scores of students in grades four and five in reading and mathematics. Ultimately, the researchers wanted to answer the question of whether investment in the technology could lead to increased test scores. Results revealed increased academic achievement among fifth graders but little improvement among the students in fourth grade. Johnson and Johnson (1996) stated that technology must be taken seriously when it relates to student achievement and teachers need to accept technology as a legitimate tool in the learning process.

Similar to Middleton and Murray (1999), Wenglinsky (2005) advises that technology integration help to improve student achievement as students progress through the grades. He suggests that teachers not plan entire lessons based on technology but use technology as an extension of learning tasks. He also suggests that technology can be used to extend instruction for those students who seek enrichment by allowing students who plan on studying science and mathematics after high school to enhance their computer skills.

### **Using Computers and Technology Effectively in the Classroom**

One of the most challenging barriers to promoting use of technology in the classroom is motivating teachers to integrate it into their instruction. Glazer, Hannafin and Song (2005) conducted a study that examined a process called collaborative apprenticeship, in which teachers teach one another ways to use the technology effectively and thereby hold one another accountable for learning and how to use it. They found that collaborative apprenticeships were effective but for the apprenticeships to be successful, certain guidelines needed to be followed.

The guidelines were “shared time together, teacher commitment, teacher experience, structure of lessons, and teacher learning and development” (p. 65).

Rosenfeld and Martinez-Pons (2005) state that teachers who know and/or are trained on how to use technology effectively in the classroom are likely to have the best outcomes regarding student achievement and engagement in the classroom. When the teacher is knowledgeable about the use of technology, he or she is going to be able to use it effectively with students, thereby helping them attain a higher level of achievement in the classroom.

A key to building a classroom with technology as a part of its regular repertoire has to do with placement of the technological devices within the classroom. Most current classrooms are designed in the traditional sense with a blackboard, desks, and chairs. Most are not equipped to deal with the integration of technology in a way that is convenient. Although increasing numbers of classrooms are designed to facilitate the use of instructional technology, progress in doing so is not rapid. Tondeur, De Bruyne, Van Den Driessche, Mc Kenny and Zandvliet (2015) examined how the physical placement of technology influences educational practices. The results of their study suggest that there must be intentional planning when determining where technology should be placed in the classroom. Such placement may vary depending on the activity or technology that is being used. They also found that having too many screens appear in front of students within a classroom is distracting for students. For example, students may look at screens on each desk, on desktops along the walls, and often an Interactive Whiteboard at the front of the classroom.

Gwo-Dong, Chi Kuo, Nurkhamid, and Liu (2012) described building an elaborate classroom called a Digital Learning Playground (DLP) to enhance the value of technology in the classroom. A DLP tries to simulate real life scenarios using robots, touchscreens, and multiple

other interactive devices. Researchers built a mixed reality environment with game-based-learning and tested these classrooms against traditionally designed classrooms. The researchers concluded that DLPs are effective but also acknowledged that they often are cost-prohibitive.

### **Summary**

This literature review examined studies related to using computers and technology in the classroom and the effects of these tools on students' classroom engagement and achievement. Most of the research reviewed considered how to implement computer and technology tools within a classroom setting versus the specific benefits or detriments of doing so. While recent emphasis has been placed on using computers and technology as instructional tools, little attention has been paid to whether the time and effort invested in using them translates into increased engagement and/or achievement in the classroom. Therefore, it is timely and important to conduct research regarding use of technology-based instruction as compared with non-technology, or traditional instruction to determine if there is a significant change in engagement and achievement.

## **CHAPTER III**

### **METHODS**

#### **Design**

This study used a quasi-experimental design to compare the level of engagement and achievement of two similar groups of eighth grade students who completed a United States History class unit on Slavery in the Americas. The treatment group received instruction and assessment using methods that included computers and technology during the unit whereas the control group used traditional paper and pencil type instructional and assessment methods during the same unit.

#### **Participants**

Participants were a sample of the researcher's eighth grade students who attended a suburban school system near Baltimore, MD. The control group, representing a full class, included 23 students, 13 of whom were boys and 10 of whom were girls. The treatment group, representing a full class, included 26 students of whom 11 were boys and 15 were girls. While this was a convenience sample, the classes were judged similar in terms of their achievement in history as they performed similarly on past class and state mandated testing. Socioeconomically, most of the students in each group were upper middle class.

#### **Instruments**

Three instruments were used in the study. These included a teacher-created "Interest in Technology" survey, a Harford County Public Schools Resource Sheet called "Middle Passage" which was completed in three sessions, and a teacher-created unit test. These instruments are described below.



### **Assessment of Interest in Technology**

The first instrument used in the study was a teacher-created “Interest in Technology” survey, located in Appendix A. This survey was given to all participants prior to initiating the unit. Data were collected to assess students’ interest in technology and determine if the two groups differed in their interest levels prior to the unit. Items on the survey asked students to provide response to nine items to determine their interest in technology with ratings from one to five. Quantified scores used for statistical comparison of the groups were determined by totaling the students’ ratings on items one through nine, for a maximum of 45 possible points. Students were also asked to respond to a short answer question, and provide a “yes or no response” to one question in order to determine what technology students have at home and their helpfulness.

### **Assessment of Engagement**

Instructional materials and a modified Harford County Public Schools Resource Sheet were used to assess student engagement three times during the intervention period. Descriptions of both follow.

#### *Primary Source Resource*

The instructional materials used in the study included primary source documents/resources grouped into three sections reflecting the following topics: Topic One, (Enslavement in Africa), Topic Two, (Voyage Across the Atlantic), and Topic Three (Arrival in the Americas). Thirteen primary resources were included on the worksheet, a copy of which is found in Appendix B. Students did not have to write on this sheet and it was not scored. Students were required to analyze the primary sources in order to complete the “Middle Passage Resource Sheet” which is included in Appendix C.

### *Middle Passage Resource Sheet*

Students were required to record their analyses of the resources in Appendix B on the tool found in Appendix C. Responses regarding each source cited each were scored according to a three-point scale to yield a total of 39 possible points over the course of the unit per student. The unit took approximately ten school days to complete and was divided into three different sections or topics, each of which is described in Appendix C. Throughout the course of the unit, three topics were covered, Enslavement, Voyage, and Arrival. When each section was covered in class, the resource sheet was collected and graded using the rubric found on the worksheet of which students were aware before their analyses began. Credit given for each source reflected the instructor's rating of the degree to which the student's analyses reflected understanding of the lesson. Scores were totaled for the number of sources used for each section or topic. For example, Topic One (*Enslavement in Africa*) had four sources for students to analyze, Topic Two, (*Voyage Across the Atlantic*) had five, and Topic Three (*Arrival in the Americas*) had four. Ratings could range from zero to three points per analysis of each source, so, to continue the example, students could earn a maximum score of 12 points on Topic One as it contained four sources, etc. At the end of the unit, all three topic scores were summed to yield a total score with a maximum of 39 points possible. The instructor inferred that students with higher scores had understood and engaged with the material more than those with lower scores. Students spent a total of three days completing the Resource Sheets and spent one day on each.

### **Assessment of Achievement**

The final instrument administered was the unit test. A copy is found in Appendix D. The unit test was administered after the lessons were taught to assess student achievement on the unit for both groups. Scores were calculated by totaling the points earned on each item, with a

maximum possible score of 50.

As the assessment tools were teacher-created, no reliability or validity studies available.

### **Procedure**

This study began for the control and treatment class on the same day. On day one, the survey regarding Interest in Technology (Appendix A) was administered to both classes using the paper and pencil version of the survey.

Throughout the next 10 days, instruction for the control group was given through worksheets, lectures, and cooperative learning in groups. The treatment group received their instruction for the same content almost exclusively on a digital platform using their 1:1 Devices and resources including It's Learning, digital worksheets, Kahoot and Harford County Public Schools' One Drive. Students in the control class were given a pencil and paper version of each assessment to complete, whereas students in the treatment class were given a digital version of each tool, except the initial interest in technology survey, which students in both groups completed using a paper and pencil version of the survey prior to the unit.

The period of instruction reflected in this study encompassed one unit, which was administered to two classes over a period of 10 school days. All materials and assessments were administered to all students in both the control and experimental classes. The only variable that differed was the way in which instruction and assessment were administered.

On the final day of the unit, a unit test, a copy of which is found in Appendix D, was administered to assess students' achievement on the unit.

## **Analysis**

The control and treatment groups' mean responses to the Interest in Technology Survey were compared to determine if the two groups were similar in this regard before the unit. Then, the groups' mean engagement and achievement scores were compared using t-tests for independent samples. Results are presented in Chapter IV and discussion follows in Chapter V.

## **CHAPTER IV**

### **RESULTS**

The purpose of this study was to determine whether students' engagement and test performance in a social studies unit differed significantly depending on whether or not they used technology in the instruction and assessment phases of the unit. The intervention involved offering instruction and assessments to the treatment group which used technology and offering the same content and assessments to the control group without use of technology. The tables and narrative descriptions below summarize descriptions and comparisons of the treatment and control group's scores on the Interest in Technology Survey Resource Sheet responses and Unit test scores.

Forty-nine students initially were involved in the study. Seven of them were not included in the analyses as one did not complete the interest in technology survey and six others did not complete one or more of the engagement assessments due to absences from school. One of those six students who did not complete one or more of the engagement assessments due to absences from school also exhibited minimal effort on the assignments and earned no credit on the unit test. Since their participation in the study was incomplete, the seven students cited above were eliminated from the analyses, so the final sample included a total of 42 students, 22 of whom were assigned to the treatment group, which used technology to complete the unit and test, and 20 of whom were assigned to a control group, which did not use technology to complete the unit or test.

## Descriptive Statistics

Interest in Technology, Engagement and Achievement scores were calculated for each student in both the treatment and control group. Descriptive statistics of these data for each group and results of the T-tests comparing the mean scores for each group follow in Tables 1 and 2, respectively.

Table 1

*Descriptive Statistics Regarding Interest in Technology, Engagement and Unit Test Scores.*

Score	Group	N	Mean	Std. Deviation	Range
<i>Interest in Technology</i> (Maximum=39)	Treatment	22	31.77	5.706	20-42
	Control	20	32.85	6.869	21-44
<i>Engagement</i> (maximum=45)	Treatment	22	33.82	4.757	24-59
	Control	20	34.85	3.801	27-39
Unit Test Scores (maximum=50)	Treatment	22	46.14	4.497	34-50
	Control	20	46.35	3.856	34-50

As seen in Table 1, the means for the treatment group were slightly lower than those for the control group on all three measures. These means were compared using t-tests for independent samples. The results of these tests follow in Table 2

Table 2

*Results of t-test for Independent Samples Comparing Mean Interest in Technology, Engagement and Unit Test Total Scores for the Treatment and Control Groups*

Mean Total (Items 1-3)	t	df	Sig. (2-tailed)	Mean Difference	Std. Error of difference	95% Confidence Interval of the Difference	
						Lower	Upper
Interest in Technology	-.555	40	.582	-1.077	1.942	-5.00	2.85
Engagement	-.771	40	.445	-1.032	1.338	-3.74	1.67
Unit Test score	-.164	40	.870	-.214	1.299	-2.84	2.41

*Equal variances assumed*

The t-test results in Table 2 indicated that the probability values for all three mean differences between the treatment and control groups exceeded the .05 criterion for statistical significance. Therefore, null hypotheses one, two, and three all were retained, suggesting that there was not a statistically significant difference between participants in the treatment and control groups in terms of their levels of interest in technology before the study, engagement during the unit or their achievement in the unit as reflected in their unit test scores.

## **CHAPTER V**

### **DISCUSSION**

The purpose of this study was to assess and compare the interest in technology of two eighth grade classes similar in social studies achievement before an intervention took place and then to compare the groups' engagement and unit test performance after offering instruction and assessment to the treatment group using technology and teaching and assessing the same content to the control group without using technology. Results suggest that the treatment and control group students' interest in technology, as well as their engagement with instruction offered and achievement on the unit test did not differ significantly.

One surprising result from the study was that, according to the pre-intervention survey, even though a majority of students indicated they believed that technology was helpful with their schooling, most students indicated they would rather read a book than receive information on a screen. This observation is most evident when considering students' responses to Survey Question 8, in which thirty out of forty-seven students indicated that they either strongly or somewhat disagreed that they would rather read off a screen. It was also interesting, in light of the researcher's experience and hypotheses, to note that student participant responses to Question 1 on the survey suggested that they believed technology fosters connections between teachers and students.

These data suggest that educators should examine whether the introduction of technology into lessons actually creates distance between students and teachers, limiting effective communication. However, the results of the survey counter this claim by indicating



that technology actually may serve (or be perceived to serve) to foster connections between teachers and students.

### **Implications of Results**

The results from the study revealed minimal differences between grade eight students' engagement and achievement when those were compared for groups who were taught and assessed using technology or not. This was counter to the researcher's expectations, based on his review of literature, that indicated that students taught with technology would fare better academically than their peers who had not been instructed in that way. The survey results indicated students clearly demonstrated an interest in technology and had the ability to utilize it. This observation is apparent from the majority of students' replies, which suggested that they thought technology was helpful in the classroom (item 9). All students stated that they had access to the internet as well as multiple devices at home in addition to their school-issued ones (items 10-11). They reported that the devices at home not only were used for entertainment but for school enhancement (item 11). However, despite their access, familiarity and use of technological devices, the results of the study suggested that mean Interest in Technology, Engagement, and Unit Test Scores did not differ significantly between the control and treatment group.

### **Theoretical Consequences**

Turman and Schrodt (2005), theorized that computers and email could help to motivate students to participate and engage, therefore leading to increased achievement. The results of this study partially call into question this theory, due to the results. This study showed that

technology did not make a statistical difference in achievement. More studies need to be conducted to make a definitive determination about this theory.

### **Threats to Validity**

There were several threats to the validity of this study. One threat was that the students in the treatment group appeared to be distracted by their devices during the course of instruction. For example, one student in the treatment group spent most of his time on the engagement portion of the instructional time using his device for personal entertainment. This student's scores on engagement were low, but on the unit test portion of the study, his scores were high. Perhaps the student was able to learn the unit content without completing the Resource Sheet tasks provided throughout the intervention. Alternatively, he may have studied before the test in order to do well.

Another threat to the validity of the study could have been the method of instruction used prior to the intervention. The primary instructional methods used before the study did not emphasize technology and used it only occasionally. Therefore, the control group may have done as well as the treatment group during the study because they received a familiar instructional method, as there was no change in procedures for them. The treatment group may have outperformed the control group on the Slavery in the Americas unit if the students had been more familiar with the technological instructional methods and devices employed and if the treatment group had used technology more frequently prior to the study.

This study was conducted over a ten-day period. This may not have been enough time to allow significant improvement in student achievement or differences caused by the method of instruction to be accurately manifested. More time spent with the material and instructional tools

may have yielded different results. Additionally, the content of the unit may have affected the effectiveness of using technology for instruction. Perhaps other units would lend themselves more or less to the instructional methods used with the tools available.

Finally, the technology used in the intervention may not have been sufficiently researched to yield measurably different results. The technology used during this study was the basic technology that students use in their other classes on a daily basis and it may not have engaged them sufficiently to affect their learning of the unit content. Integrating use of newer technology which students are less familiar or which can perform more functions may have been of more interest to them and may have yielded different results regarding their achievement.

### **Connections to Previous Studies / Existing Literature**

Technology and its effect on students in the classroom is a relatively new and rapidly evolving area of educational practice and research. As technology is developing and changing rapidly ways to use it effectively warrant study. Rosenfeld and Martinez-Pons (2005) conducted a study that examined pre and posttest score differences for a group taught using instructional technology. Their study was conducted over a period of two semesters with 55 students. In this study, they taught the same group of students and only used technology-based instruction. Rosenfeld and Martinez-Pons found greater unit score gains using technology to deliver instruction. The only difference in their study then this one was that they only used technology-based instruction. They conducted their study without looking at the effects of non-technology instruction.

Tondeur et al. (2015) looked at an aspect of including technology in instruction that could be overlooked. They conducted a study that examined whether or not the physical layout of

technology in the classroom affected student achievement when instruction was offered through the use of technology. Their study was conducted with over 115 classrooms in over 12 schools, making this a much larger sample than the current study. Their results suggested that the layout of technology in the classroom did impact the ability of technology to positively impact instructional effectiveness. They noted that in designing the layout of technology in the classroom, it is important to limit the amount of screens in the classroom that students see in order to better focus their attention. Their findings suggest that future studies might benefit from attending to and controlling the layout of technology to learn more about how location and access to various types of technology influence student engagement and learning outcomes. This variable was not controlled for in the current study, so replication accounting for it might yield information about how the layout of technology affects learning in social studies classes.

Martin and Furr (2010) suggest, without offering specific prescriptions, that variation in techniques appears to make a difference in student enjoyment of the material being presented. Their findings suggest that varying instructional strategies on a class-by-class basis or even during the course of a lesson can improve student engagement with the material. These strategies may relate to the case of the aforementioned student of the current study who decided to play games versus complete his resource sheet in the current study. Perhaps removing his device and requiring him to both sit and do nothing or to continue the assignment without the device would have yielded better outcomes for him. The device could potentially have been added later if the student demonstrated ability to work without the device. Additionally, rather than assignments being strictly computer-based, the instructor might have offered a mix of traditional written and technology based work, therefore adding variety to the classroom experience and possibly increasing students' interest and consequent engagement in learning.

Finally, a study conducted by Middleton and Murray (1999) examined the relationship between levels of technology implementation in the classroom and fourth and fifth grade students' standardized test scores in reading and mathematics. Students in this study were characterized as low-level users of technology, determined by a survey taken before the study began. Technology was introduced to these students and findings indicated that there were significant increases in test scores for fifth grade students who used technology, but not for fourth grade students. Given the different results for the two grade levels, (fourth and fifth) future studies might be implemented to determine whether students respond differently to using technology depending on their ages.

### **Implications for Future Research**

The conclusions of previous studies suggest that technology can be a part of effective and positive instruction in the classroom if utilized correctly and appropriately for students at various grade levels. Future research might examine the impact of technology use on students in varied grade levels to determine what types and applications of technology are most helpful at specific ages. Findings might reveal that students in younger grade levels may achieve more successfully without technology in the classroom, or, that different training is needed for these students to be successful since they may be less familiar with using technology.

Ideally, future studies would employ larger samples and possibly include students of varying academic levels to determine whether using technology in instruction influences them differently. Most of the students in this study were of relatively high academic ability and were familiar with the use of technology. Including students with varied levels of familiarity with technology in future, studies could shed light on how familiarity with technology influences the results of using technology in teaching and assessment. These results could inform educators

about what technology skills students need and how to ensure that students acquire them so that technology-infused instruction actually benefits them.

Research included in Chapter 2 suggests that use of a variety of instructional techniques is beneficial for students, whether instruction is offered through technology or traditional means. When instruction involves use of technology, placement of technology in the environment is important. Additionally, there also need to be reasonable limits on access to technology. What determines what are reasonable limits warrants further research and clarification and may change as technology evolves.

It also would be beneficial for future researchers to examine the impact of controlling access to entertaining but academically irrelevant sites in school settings. The easy access to free/game sites during this study was a hindrance to at least one student, thus access to these sites needs to be controlled for in future studies.

In addition, future studies could examine the impact of using multiple teaching strategies to increase student engagement and ultimately, student achievement. As well as varying the types of technology used for the treatment group, the control group also would need to have a variety of strategies offered to clarify whether using multiple instructional techniques, technology, or both make a difference in engagement and/or student achievement.

This current study used only basic technology. If the types of technology and unit content were varied and more engaging, and controls were in place regarding the frequency, type of use, and physical access to technology, the results may have shown more specific effects on engagement and achievement.

## **Conclusion**

This study attempted to determine whether using technology for classroom instruction would improve engagement and achievement of eighth grade students studying a history unit regarding slavery. The results suggested that the engagement and achievement of the students who received technology-based instruction did not differ significantly from those of students who used only traditional paper and pencil type instructional and testing methods.

Given the emphasis on technology in education and the importance of judiciously using resources to purchase and implement technology that improves student achievement outcomes, further research is warranted to investigate the effects of technology on teaching and learning. These studies should control for the types and amounts of technology used and employ larger and more diverse samples. The studies also should be conducted over a longer periods of time and across subject matter and age levels to yield more conclusive findings about the benefits and caveats of using technology in instruction and assessment.

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## Appendix A

Name: \_\_\_\_\_

Period Number: \_\_\_\_\_

Directions: Please fill this out the chart by selecting the rating that best describes how you feel for each item.

### Student Technology Survey

Questions: Select the Rating that Reflects your Feelings	Strongly Disagree	Somewhat Disagree	Neither disagree nor agree	Somewhat Agree	Strongly Agree
1. Technology fosters connections between students and teachers					
2. Technology helps students reach their full potential in learning.					
3. I am more engaged in a lesson while using technology.					
4. Computers and technology enhance my daily life.					
5. I would rather complete classwork using my 1:1 Device.					
6. I am comfortable using my 1:1 Device, instead of paper and pencil.					
7. I learn better this year than previous years because we have 1:1 devices.					
8. I would rather read off a screen than a book.					
9. Technology is important to me in the classroom.					

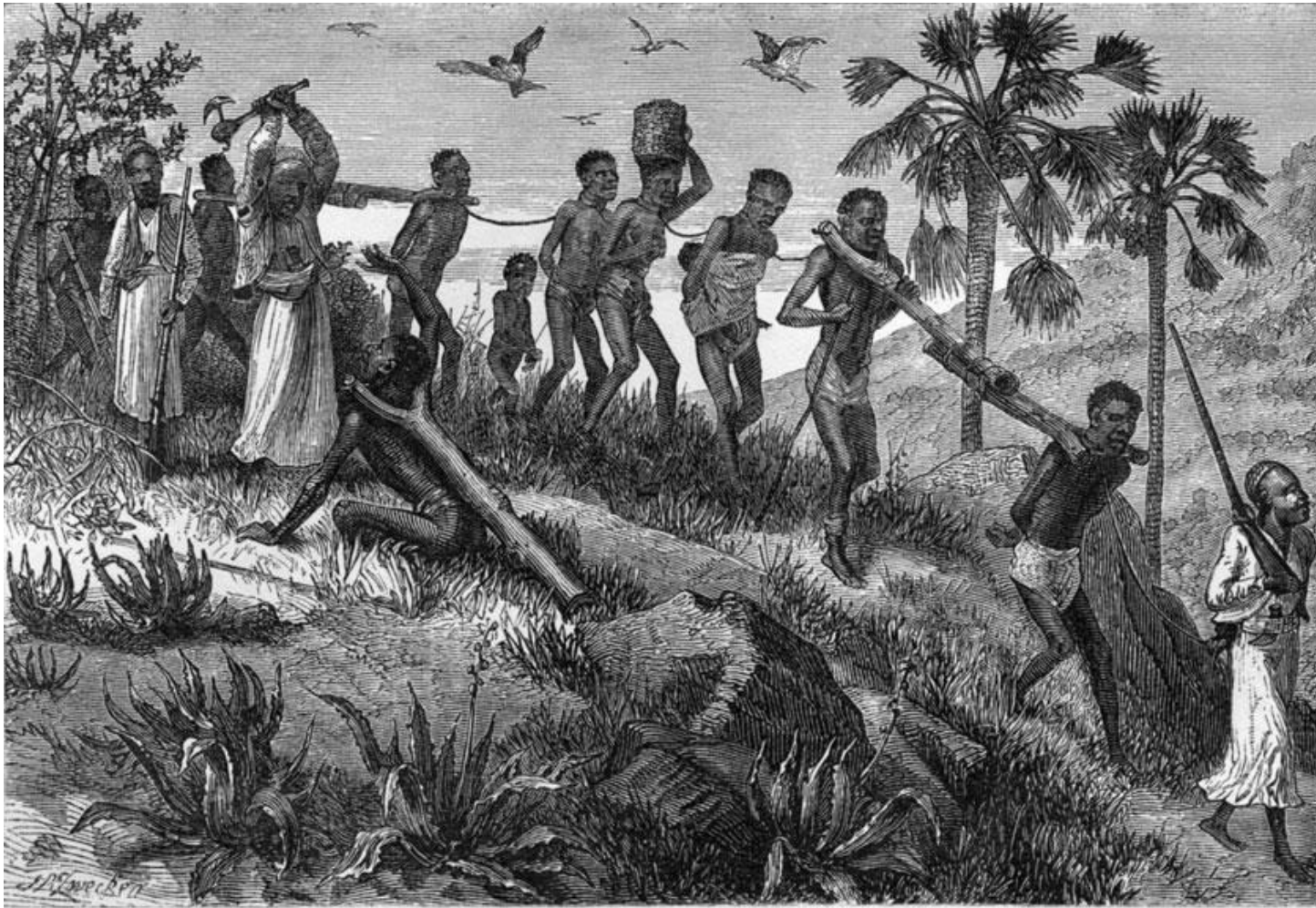
10. Do you have internet access at home?    Yes    or    N

11. Please list in the table below the technology devices you use besides your School issued device, what you use them for and if you find them fun or helpful.

Devices I Use	Used for	Rate how FUN you find using this from  1=not at all to 10= extremely fun	Rate how USEFUL you find using this from  1=not at all to 10= extremely useful
<b>1.</b>			
<b>2.</b>			
<b>3.</b>			
<b>4.</b>			
<b>5.</b>			

## Appendix B

### Slave Coffle, Central Africa



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## Wooden Yokes Used in Slave Coffles, Senegal



Illustration from *Letters on the slave-trade, and the state of the natives in those parts of Africa, . . . contiguous to Fort St. Louis and Goree* by Thomas Clarkson (London, 1791), plate 2, facing p. 36, figures 1-5.

From "The Atlantic Slave Trade and Slave Life in the Americas: A Visual Record," by Jerome S. Handler and Michael L. Tuite Jr., an online exhibition available at <http://hitchcok.itc.virginia.edu/Savery/>.

## Slave Barracoon, Congo

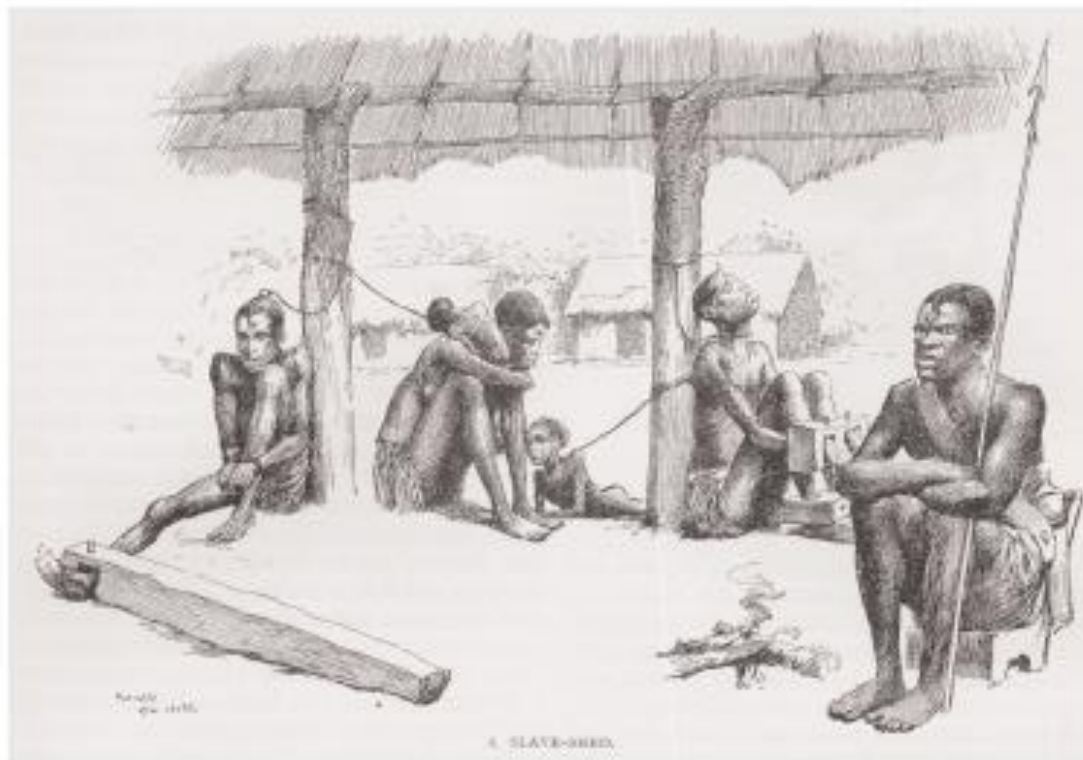


Illustration from *The Slave-Trade in the Congo Basin* by E.J. Glave. Illustrated after sketches from life by the author. [*The Century Illustrated Monthly Magazine*, vol. 39 (1880-1890), p. 824-838.] From “The Atlantic Slave Trade and Slave Life in the Americas: A Visual Record,” by Jerome S. Handler and Michel L. Tuite Jr., an online exhibition available at <http://hitchcock.itc.virginia.edu/Savery/>.

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## Captured!

. . . I was born, in the year 1745, in a charming fruitful vale, named Essaka. . . . \*

My father was one of [the] elders or chiefs . . .

As I was the youngest of the sons, I became, of course, the greatest favourite with my mother, and was always with her; and she used to take particular pains to form my mind. . . . In this way I grew up till I was turned the age of eleven, when an end was put to my happiness in the following manner . . .

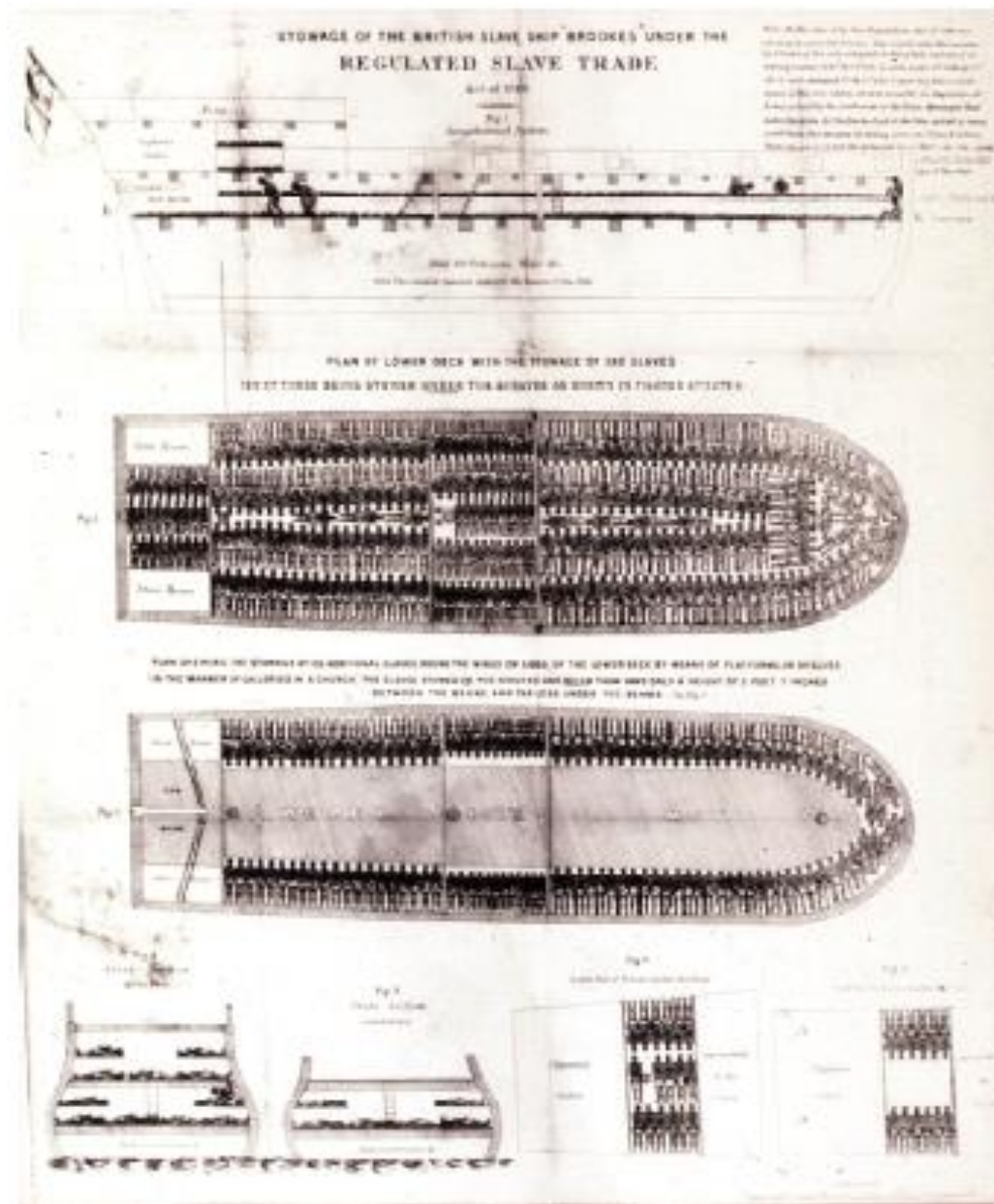
One day, when all our people were gone out to their works as usual, and only I and my dear sister were left to mind the house, two men and a woman got over our walls, and in a moment seized us both, and, without giving us time to cry out, or make resistance, they stopped our mouths, and ran off with us into the nearest wood. Here they tied our hands, and continued to carry us as far as they could, till night came on, when we reached a small house, where the robbers halted for refreshment, and spent the night. We were then unbound, but were unable to take any food . . . The next morning we left the house, and continued traveling all the day. For a long time we had kept the woods, but at last we came into a road which I believed I knew. I had now some hopes of being delivered; for we had advanced but a little way before I discovered some people at a distance, on which I began to cry out for their assistance: but my cries had no other effect than to make them tie me faster and stop my mouth, and then they put me into a large sack.

\* Essaka was a village in the ancient Benin Kingdom, which was a powerful African kingdom located in present-day Nigeria.

From "The Interesting Narrative of the Life of Olaudah Equiano, or Gustavus Vassa, the African, Written by Himself," in *The Norton Anthology of African American Literature*, edited by Henry Louis Gates Jr. and Nellie Y. McKay (New York: W. W. Norton & Company, 1997), p. 141, 142, 151-152.

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## Plan of the British Slave Ship *Brookes*



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## Africans Forced to Dance on Deck of Slave Ship



Illustration from *La France Maritime*, edited by Amédée Grehan, vol. 3 facing p. 179. From “The Atlantic Slave Trade and Slave Life in the Americas: A Visual Record,” by Jerome S. Handler and Michel L. Tuite Jr., an online exhibition available at <http://hitchcock.etc.virginia.edu/Slavery..>  
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## **The Slave Deck on the Bark *Wildfire***



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## The Voyage

The first object which saluted my eyes when I arrived on the coast was the sea, and a slave ship, which was . . . waiting for its cargo. These filled me with astonishment, which was soon converted into terror when I was carried on board. I was immediately handled and tossed up . . . When I looked round the ship too and saw a large furnace of copper boiling, and a multitude of black people of every description chained together, every one of their countenances expressing dejection and sorrow, I no longer doubted of my fate; and quite overpowered with horror and anguish, I fell motionless to the deck and fainted. . . .

I was not long suffered to indulge my grief; I was soon put down under the decks, and there I received such a salutation in my nostrils as I had never experienced in my life: so that with the loathsomeness of the stench, and crying together, I became so sick and low that I was not able to eat, nor had I the least desire to taste any thing. I now wished for the last friend, death, to relieve me; but soon, to my grief, two of the white men offered me eatables; and on my refusing to eat, one of them held me fast by the hands . . . and tied my feet, while the other flogged me severely. . . .

The stench of the hold . . . was so intolerably loathsome, that it was dangerous to remain there for any time, and some of us had been permitted to stay on the deck for the fresh air; but now that the whole ship's cargo were confined together, it became absolutely pestilential. The closeness of the place, and the heat of the climate, added to the number in the ship, which was so crowded that each had scarcely room to turn himself, almost suffocated us. This produced copious perspirations, so that the air soon became unfit for respiration, from a variety of loathsome smells, and brought on a sickness among the slaves, of which many died . . . This wretched situation was again aggravated by the galling of the chains . . . and the filth of the necessary tubs, into which the children often fell, and were almost suffocated.

From "The Interesting Narrative of the Life of Olaudah Equiano, or Gustavus Vassa, the African, Written by Himself," in *The Norton Anthology of African American Literature*, edited by Henry Louis Gates Jr. and Nellie Y. McKay (New York: W.W. Norton & Company, 1997), p. 157, 159.

## **Africans Thrown Overboard from a Slave Ship, Brazil**



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## Slave Auction, Richmond, Virginia

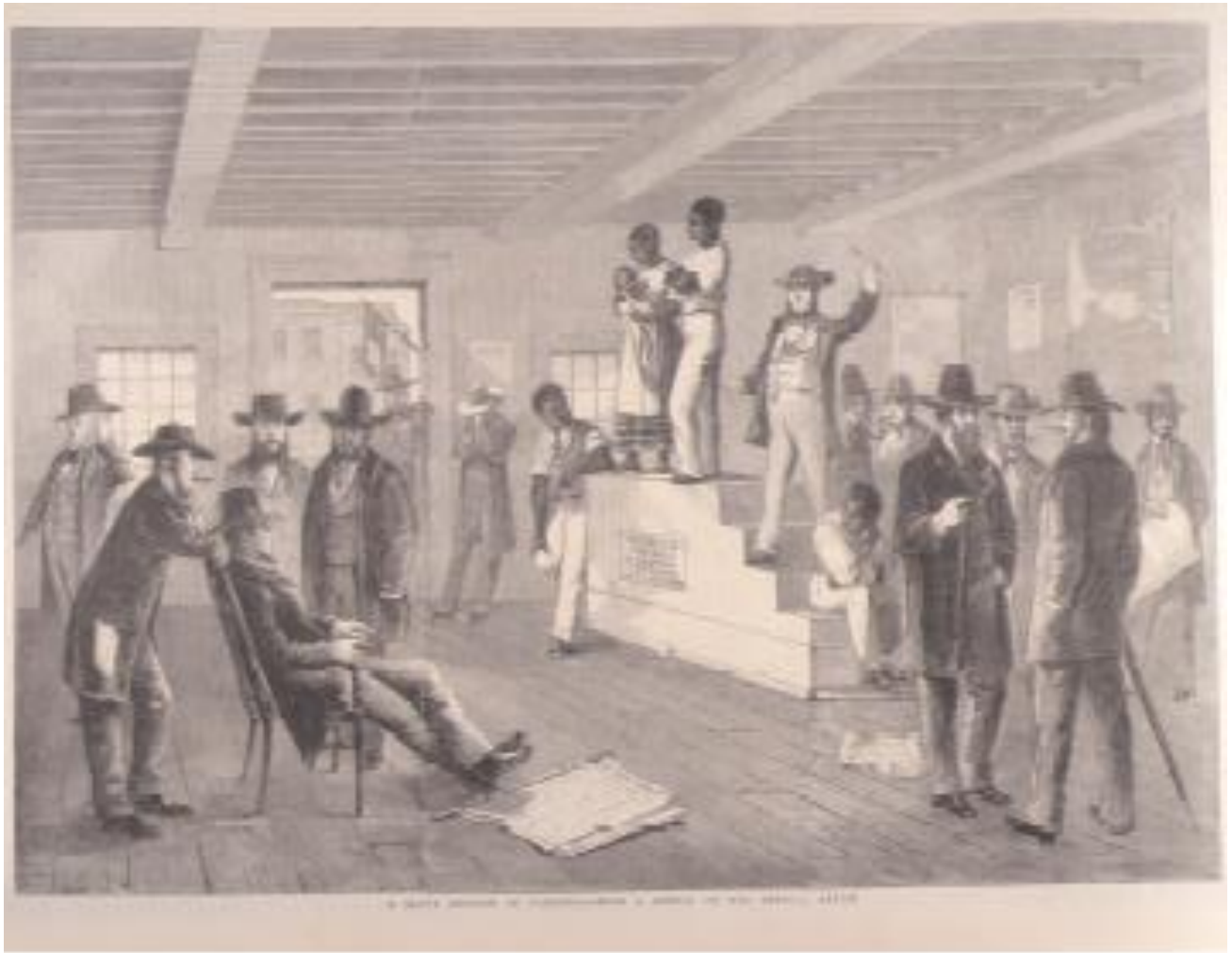



Illustration from *The Illustrated London News*, vol. 38 (Feb. 16, 1861), p. 139. From “The Atlantic Slave Trade and Slave Life in the Americas: A Visual Record,” by Jerome S. Handler and Michael L. Tuite Jr., an online exhibition available at <http://hitchcok.itc.virginia.edu/Slavery/>.

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## Advertisement for Slave Sale, Charleston, South Carolina

**TO BE SOLD**, on board the  
Ship *Bance-Yland*, on tuesday the 6th  
of *May* next, at *Ashley-Ferry*; a choice  
cargo of about 250 fine healthy



**NEGROES,**



just arrived from the  
Windward & Rice Coast.  
—The utmost care has  
already been taken, and  
shall be continued, to keep them free from  
the least danger of being infected with the  
**SMALL-POX**, no boat having been on  
board, and all other communication with  
people from *Charles-Town* prevented.

*Austin, Laurens, & Appleby.*

*N. B.* Full one Half of the above Negroes have had the  
**SMALL-POX** in their own Country..

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## **Sold!**

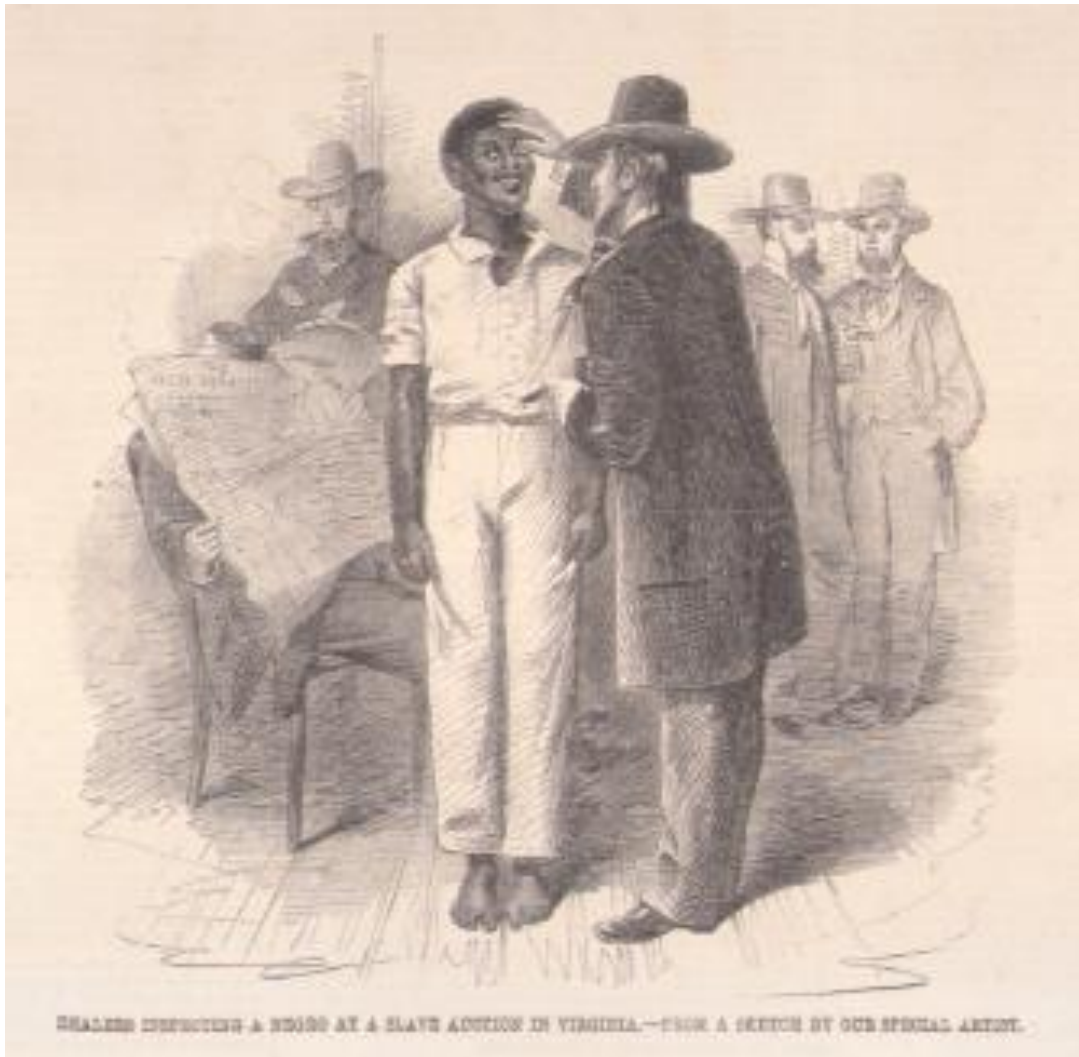
We were conducted immediately to the merchant's yard, where we were all pent up together like so many sheep in a fold, without regard to sex or age. . . .

We were not many days in the merchant's custody before we were sold after their usual manner, which is this: —On a signal given, (as the beat of a drum) the buyers rush at once into the yard where the slaves are confined, and make choice of that parcel they like best. The noise and clamour with which this is attended, and the eagerness visible in the countenances of the buyers, serve not a little to increase the apprehensions of the terrified Africans. . . . In this manner, without scruple, are relations and friends separated, most of them never to see each other again.

From "The Interesting Narrative of the Life of Olaudah Equiano, or Gustavus Vassa, the African, Written by Himself," in *The Norton Anthology of African American Literature*, edited by Henry Louis Gates Jr. and Nellie Y. McKay (New York: W.W. Norton & Company, 1997), p. 160-161.

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## Slave Sale, Richmond, Virginia





## Appendix C

### The Middle Passage

**Directions:** For each source...list the source and describe the conditions faced, make sure to account for all sources.

Enslavement in Africa		Voyage Across the Atlantic		Arrival in the Americas	
Source	Condition	Source	Conditions	Source	Conditions

**Scoring Rubric: Per Source**

<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
<ul style="list-style-type: none"><li>• Thorough Understanding of the Source</li><li>• Multiple Details from Source</li><li>• Full Understanding of Source</li></ul>	<ul style="list-style-type: none"><li>• Basic Understanding of the Source</li><li>• Some Details from Source</li></ul>	<ul style="list-style-type: none"><li>• Minimal Understanding of the Source</li><li>• No Details from Source</li></ul>	<ul style="list-style-type: none"><li>• Answer Left Blank</li><li>• No Answer Given</li></ul>

Total Points Possible

Enslavement in Africa: \_\_\_\_\_ 4 sources 12 Points.

Voyage Across the Atlantic: \_\_\_\_\_ 5 sources 15 points

Arrival in the Americas: \_\_\_\_\_ 4 Sources 12 Points.

Total Points: \_\_\_\_\_ 39 Total.

## Appendix D

Name : \_\_\_\_\_

Period: \_\_\_\_\_

# Unit 5 Experience 2 Quiz

**Directions: Multiple Choice (worth 2pts each)**

1. What is the name of the route traveled by slaves attempting to escape to freedom?
  - a. Trail of Tears
  - b. Underground Railroad
  - c. Middle Passage
  - d. The National Road
2. On what ship did slaves successfully revolt and take control of the ship?
  - a. *Constellation*
  - b. *Amistad*
  - c. *Olive Branch*
  - d. *Ark*
3. What was the book that attempted to educate Northerners about the evils of slavery?
  - a. *Uncle Tom's Cabin*
  - b. *The North Star*
  - c. *The Liberator*
  - d. *Common Sense*

**Identify what the following people are best known (worth 2 pts each) by putting the correct letter by the correct description of the person.**

- |                           |                |                   |
|---------------------------|----------------|-------------------|
| a. William Lloyd Garrison | b. Eli Whitney | c. Harriet Tubman |
| d. Frederick Douglass     | e. Nat Turner  |                   |
- 
4. \_\_\_\_\_ Inventor of the Cotton Gin
  5. \_\_\_\_\_ Led 60 slaves in a revolt that killed 55 whites, was caught and executed.
  6. \_\_\_\_\_ Born into slavery in Maryland then escaped to freedom and spoke out against slavery all over the North.
  7. \_\_\_\_\_ Started the newspaper The Liberator to spread abolitionist ideas
  8. \_\_\_\_\_ Originally from Maryland led slaves to freedom on the Underground Railroad

**Vocabulary (questions 9-11): Place the correct letter of the vocabulary word next to its definition (worth 2 pts each)**

- |  |
|--|
| a. Regionalism<br>b. Sectionalism<br>c. Middle Passage<br>d. Triangular Trade<br>e. Abolitionist |
|--|

9. Citizens who advocated for the ending of slavery during the 1800s

---

10. Trading network in which goods and slaves were moved across the Atlantic Ocean

---

11. Voyage that brought slaves across the Atlantic Ocean

---

12. List the five Paths to Freedom (worth 10 pts)

---

---

---

---

---

[illegible]

Total Score = \_\_\_\_\_/50 pts