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Implementation of Digital Flashcards to Increase Content-Specific Vocabulary Knowledge and Perceptions of Motivation and Self-Efficacy in an Eleventh-Grade U.S. History Course: An Action Research Study

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IMPLEMENTATION OF DIGITAL FLASHCARDS TO INCREASE CONTENT-SPECIFIC VOCABULARY KNOWLEDGE AND PERCEPTIONS OF MOTIVATION AND SELF-EFFICACY IN AN ELEVENTH-GRADE U.S. HISTORY COURSE: AN ACTION RESEARCH STUDY

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DEDICATION

This body of work is dedicated to my family and friends who have been a constant source of support and encouragement during this journey. To my writing partner and friend, I could not have done it without you. To my cohort, Slytherin, thank you all.

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ABSTRACT

Text- and document-dependent courses like high school U.S. History require students to have strong content literacy and vocabulary skills. Traditionally, content-area courses neglect vocabulary skills and those that do address vocabulary often teach words in isolation without context. Students needing more content comprehension skills frequently need more motivation and higher self-efficacy.

Three research questions were used to evaluate the impact of digital flashcards on learning content-specific vocabulary and student perceptions in an eleventh-grade U.S. History course: (a) How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning content-specific vocabulary knowledge?; (b) How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of their motivation to learn content-specific vocabulary?; and (c) How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of their self-efficacy to learn content-specific vocabulary?

Participants were eight students (n = 8) in a small suburban alternative school. This mixed methods study followed an action research model and used quantitative and qualitative data collection. Quantitative data collection included a 70-item pre- and posttest on vocabulary knowledge and Likert-type classroom exit tickets; data were analyzed with descriptive statistics. Qualitative data were collected from semi-structured interviews and analyzed through inductive analysis. Data were analyzed separately and then integrated.

Descriptive findings indicated that using digital flashcards increased vocabulary learning from pre- to posttest for the participants. Exit ticket data examined three subscales (i.e., vocabulary knowledge, motivation, self-efficacy), and all three subscales showed positive student perceptions ($M > 3.00$). Two themes were identified from participant interviews: (a) digital flashcards aided student learning; and (b) digital flashcards supported students' motivation and confidence. From the students' perceptions, there was less emphasis on the grades signaling success and more on learning and confidence. The findings suggest that eleventh-grade U.S. History students can successfully use digital flashcards to learn content-specific vocabulary while positively affecting their motivation and self-efficacy. Limitations of this study include the small sample size and the specific setting for the research, so readers should not generalize these findings beyond the current context. Implications for practice and further research are also presented.

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INTRODUCTION

National Context

Nearly 25 percent of American high school students fail to earn a high school diploma, and substantial academic failure and dropout rates climb to 50 percent in some communities (Casillas et al., 2012). The disparity between successful learners and underachievers is often quantified by the individual learner's degree of motivation. According to a report by the National Research Council, 40 percent of high school students are disengaged from learning, are inattentive, exert little effort in schoolwork, and report being bored at school (Heafner, 2004; Usher & Kober, 2012). This sense of disengagement appears to be the norm in many high schools nationwide, but unfortunately, this trend is inherent in all grade levels.

Gallup Student Poll surveyed nearly 500,000 students in grades five through 12 and found that eight in ten elementary students were engaged, and that number dropped to six out of ten during the middle school years, yet the steepest decline was found during the high school years where only four in ten students stated that they were engaged at school (Busteed, 2013). The message was the same in a 2006 national survey of high school dropouts by the consulting company Civic Enterprises: 69 percent of respondents said their schools failed to motivate them in the classroom (Headden & McKay, 2015). Monitoring and measuring critical psychosocial factors, especially motivation, engagement and self-efficacy can provide public schools the ability to support all

students and identify at-risk students (Headden & McKay, 2015; Usher & Kober, 2012). Research has shown that when unmotivated students feel pressure in the classroom, their response can be avoidance, procrastination, manipulation, or anything else that works to shield them from the pressure they feel (Largey & Timmins, 2018). These students have a fight or flight response that encourages them to act out or become detached from the learning environment (Largey & Timmons, 2018).

Most children begin their school careers with high levels of intrinsic motivation or doing something because it is enjoyable or exciting, yet the levels begin to drop almost immediately, and by the age of 16, most students have tuned out on their education (Fryer & Bovee, 2016; Spinath & Steinmayr, 2012). Research suggests that intrinsic motivation, rather than extrinsic, is central to learning and to creating a lifelong learner (Usher & Kober, 2012). Highly effective teachers always look to different strategies and ideas to engage and motivate their students, but it is apparent that the public education system needs to address student motivation and engagement on a much larger scale than it does (Headden & McKay, 2015; Usher & Kober, 2012).

Engagement and motivation are often grouped and considered interchangeable but are, in fact, separate entities. Research has shown that a student can be motivated yet unengaged (Keller, 2008; Kim, Park, Cozart, & Lee, 2016). Engagement is "cognitive and affective participation in learning and is consistent with academic achievement" (Kim et al., 2016, p. 262). However, engagement often correlates to an individual's self-efficacy or the students' perceptions about their academic abilities and directly to their motivation to learn (Bandura, 1977; Protheroe, 2004; Walker & Greene, 2009). This motivation to learn or self-efficacy is based on psychological factors centered more on

the individual's beliefs that something is obtainable and affects every area of human thought and feeling (Bandura, 1977; Walker & Greene, 2009).

The National Assessment of Educational Progress (NAEP) reported that scores on the 2018 U.S. History assessment showed no significant change in the average score compared to 2014, the previous assessment, yet the scores were 4 points higher than the 1994 inaugural testing year (NAEP, 2018). Even with the 4-point gains from 1994, no students performed at the advanced level, and score decreases were noted in all five selected percentile levels. Therefore, the assessment has remained the same (NAEP, 2018). The funding for implementing technology in education has topped over "$6.5 billion in 2015 for the United States alone." (Niederhauser et al., 2018, p. 507). However, this technology implementation has to find its way into all social studies classrooms even though researchers have advocated for it (Wilson & Wright, 2010). The integration of technology into the social studies classroom can have the ability to be an agent of change for both social studies learning as well as improving psychosocial factors (Fairey, Lee, & Bennetzt, 2000).

Doolittle and Hicks (2003) suggest the use of constructivist strategies to encourage the use of technology as a tool for increasing inquiry and authentic learning, fostering global and local interaction, building on students' prior knowledge, enhancing knowledge and meaningful assessment, and cultivating students' independence and creative thinking in the social studies classroom. In addition, the ability to find real-life applications for social studies using technology to enhance the learning environment can promote student motivation, self-efficacy, engagement, and overall learning.

Local Context

The Alternative Program (TAP) is a small, suburban alternative school in a medium size suburban school district located in South Carolina that teaches 6th through 12th grade. TAP is a Title I school, and although the students attend our school, the funding stays at the student's home school, limiting our operational budget. All our students have faced expulsion from one of the district's six middle schools or one of the three high schools. TAP is the smallest school in the district, with an average of 130 students and nine teachers, an assistant principal, and a principal.

Although TAP is an alternative program, we still hold the students accountable to the exact requirements and expectations found throughout the district. As a result, the student population typically grows after the first semester, and we gain students throughout the year. However, on average, the school loses about 15 members of our student body to yearly expulsions. Once expelled from the program, they can return to TAP or any other school in the district in the following year.

This action research will take place in my eleventh-grade U.S. History classroom. U.S. History is required for graduation and has an End of Course Exam (EOC). Every student at TAP has their own Dell laptop, which they use daily at school and home. Although we have one-to-one (1:1) technology, many students still need to utilize the technology entirely. In addition, most students have serious learning gaps due to suspensions, truancy, or other issues.

Many lack motivation because most have been labeled "troublemakers" and dislike school because they see no value in education. Poor choices resulted in the

student's placement in the alternative program, yet they deserve the opportunity to achieve at their individual best.

TAP has a negative reputation among many within the district, primarily due to our student population. Our students are different and sometimes complex, yet they deserve the best possible educational experience afforded to them. I want to use digital flashcards in my classroom to boost content-area vocabulary knowledge, student motivation, and self-efficacy while supporting social studies content and learning. Most students are reluctant learners and need more tangible value in education. The goal is to improve motivation through what Spinath and Steinmayr (2012) defined as doing something because it is enjoyable or exciting. The desire is to allow U.S. History students to focus on their educational needs and improve their overall outlook on school.

Statement of the Problem

The disparity between successful learners and underachievers is often quantified by the individual learner's degree of motivation and perseverance. Many students find school tedious as a lifestyle and perceptions of the natural world (Chen, 1998). From the educational constructivist perspective, boredom is defined as the student's emotional resistance and rejection of the learning process (Larson, 1990). The perception of boredom will likely result in a lack of attention, slow information processing, and resistance to learning the content and school in general (Damrad-Frye & Laird, 1989).

The advent of technology into the everyday world has changed how students envision the world and their realistic view of what education should provide them. Motivation may be the key to academic achievement, but the 21st-century learner is a different breed than their counterparts, even ten years ago. These learners are used to the

influx of information and entertainment using mobile devices, computers, and tablets. As a result, they are more susceptible to being disengaged and unmotivated in a classroom setting.

Purpose Statement

The purpose of this action research was to explore in what ways and to what degree digital flashcards will affect eleventh-grade U.S. History students' learning content-specific vocabulary, motivation to learn content-specific vocabulary, and self-efficacy to learn content-specific vocabulary.

Research Questions

1. How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning content-specific vocabulary knowledge?
2. How and to what extent do digital flashcards affect eleventh-grade U.S. History students perception of their motivation to learn content-specific vocabulary?
3. How and to what extent do digital flashcards affect eleventh-grade U.S. History students perception of their self-efficacy to learn content-specific vocabulary?

Statement of Research Subjectivities and Positionality

I have taught middle and high school social studies for 18 years in private and public schools and with the Department of Juvenile Justice of South Carolina. Although I have taught several social studies classes throughout my career; I never anticipated that I would become an educator and spent several years in publishing and then in technical writing. I created operational manuals and schematics for paper-handling equipment as a technical writer. My technology skills were very specialized, but technology has progressed exponentially. My technology skills are now more diverse and directed to

classroom applications. I want to integrate more technology applications to facilitate learning and motivate my students and colleagues.

I enjoy technology and have learned much independently through independent training and seminars. The school district has implemented a range of technology training that has expanded the breadth and depth of professional development 6. In addition, the Covid-19 pandemic forced the district to expand its technical training and implementation across all educational levels. The sudden change to virtual learning was difficult at times, but it instilled a better understanding of technology's role in education. In today's educational climate, the social sciences are often deemed less demanding, and STEAM (science, technology, engineering, arts, and math) fields have garnered more support, at least in my local school district. I bring the historical significance of the discipline to life because many of my students characterize social studies as just memorization and regurgitation with no real connection to their lives. The social sciences are often disregarded as a necessity and not even necessary to my students; however, much can be learned about human nature, group dynamics, and a general understanding of cause and effect.

I will conduct my research based on a constructivist worldview. As an educator, most of my students have a concept of reality different from my own which is anticipated under the constructivist worldview. This worldview is partly due to the paradigm's understanding that individuals are more than puppets reacting to external social forces; they have multiple perspectives and seek socially constructed realities based on awareness and interpretation (Creswell & Creswell, 2018; Mertens, 2009). Most of my students have a concept of reality different from my own which is anticipated under the

constructivist view. The constructivist view raises participants' awareness through a balanced representation of views and rapport within the community (Dwyer & Buckle, 2009). I want my students to be individuals with the ability to look at the past through multiple points of view and from different perspectives. I want them to feel empowered to voice their opinions through critical thinking and analysis of the materials.

My research position will be as an outsider in collaboration with students from similar backgrounds. Specifically, I will be studying a group of students of which I am not a member, but not all group members are exactly alike; therefore, "not being a member of a group does not denote complete difference" (Dwyer & Buckle, 2009, p. 60). My students are predominantly African American males from a lower socioeconomic standing (SES) than I am accustomed to as an educated Caucasian female. When my students acknowledge that I am different, I remind them that we are still a community of learners working together. I consciously build relationships with my students to emphasize our commonality yet embrace our differences.

From the constructivist worldview, being an outsider is not necessarily problematic for action research. Since this view considers multiple points of view and interpretation, the differences may be beneficial to a greater understanding of the historical periods we will be examining. As an educator and a researcher, I want my students to excel in finding meaning in the subject area, and I consistently look for ways to motivate them to work smarter and to find relevance in the learning materials. There is always the chance of unintentional biases during the research; however, I will carefully mitigate any perceived bias in my study.

Definition of Terms

Electronic Flashcards. Electronic flashcards are an electronic version of the traditional paper flashcard where a cue or question is posted on one side, and the answer is recorded on the other. The cue can be a question, an image, or just one word that prompts or triggers an anticipated response.

Engagement. Engagement refers to the degree of attention, curiosity, interest, and passion that students show when they are learning or being taught, which extends to the level of motivation that students have learning tasks and activities (Barber, Buehl, & Beck, 2017).

Exit Ticket. Exit tickets are questions the teacher asks at the end of class to check for understanding or gain insight into the student's perceptions. Exit tickets design vary but are often short-answer questions or questions presented as a Likert-scale (Fowler, Windschitl, & Richards, 2019).

Gamification. "Gamification is a game-based mechanics that engage students through action to enhance learning and problem solving" (Kapp, 2012, p. 280).

Information Processing. Information processing is changing or converting information into a meaningful form (Sucharitha, Matta, Dwarakamai, & Tannmayee, 2020).

Motivation. The definition of motivation, as it relates to education, is defined as the choice to engage in a learning task, engaging in the task, and the willingness to complete the task (Palmer, 2015).

Multimedia. Multimedia represents the convergence of text, picture, video, and interactivity "that are used to engage student learning and reinforce skills" (Raja & Kumar, 2010, p. 2).

Perception. "Perception is the processing of external information by the sensory systems, such as visual or auditory information" (Montemayor, C., & Haladjian, H. H., 2017, p. 5).

Pretest-Posttest. Pretest-posttest is a behavioral research design in which the same assessment is given before and after a treatment to measure whether the expected change occurred (Dimitrov & Rumrill, 2003).

Self-efficacy. Self-efficacy refers to an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments and reflects the confidence to exert control over one's motivation, behavior, and social environment (Bandura, 1977).

Socio-economic Status (SES). This term relates to one's social and economic standing within a group, as determined by income, education, occupation, and access to resources and opportunities (Adler et al., 1994).

Student Engagement. Student engagement is the ability of the students to be actively involved in their learning tasks and activities (Barber et al., 2017).

Student perceptions. Student perceptions are the emotional reactions to instructional strategies that are influenced in part by previous learning experiences and instructional strategies (Montemayor, C., & Haladjian, H. H., 2017).

CHAPTER 2

LITERATURE REVIEW

The purpose of this action research was to analyze how digital flashcards affect eleventh-grade U.S. History students' (a) content-specific vocabulary knowledge, (b) motivation to learn content-specific vocabulary, and (c) self-efficacy to learn content-specific vocabulary.

Research Questions

1. How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning of content-specific vocabulary?
2. How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of their motivation to learn content-specific vocabulary?
3. How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of their self-efficacy to learn content-specific vocabulary?

This literature review examines research on implementing digital flashcards into the social studies curriculum through interactive digital flashcards Cards. According to Phythin-Sence and Wagner (2007), "acquiring the vocabulary, we use for thinking and communicating is a linguistic achievement of nearly incomprehensible importance and complexity" (p. 1). In research that examined digital technology, Anwaruddin (2013) documented significant gains in students' learning motivation when technology is implemented and used in the classroom setting. Additional studies into technology

implementation in the social studies classroom found that greater accessibility to technology has produced more significant learning opportunities and innovative instructional approaches. However, access alone does not necessarily translate into student learning (Hartshorne & Waring, 2015). Implementing a learning approach that combines traditional face-to-face and interactive online instruction can effectively enhance student motivation and self-efficacy (Anwaruddin, 2013; Fryer & Bovee, 2016).

Methodology for the Literature Review

The research for the literature review was conducted utilizing the University of South Carolina Thomas Cooper Library. There were five separate databases used for research, Educational Resource Information Center (ERIC), ProQuest, *JSTOR*, *Education Source*, EBESCO. The databases were used to search for peer-reviewed academic journals with a focus on Boolean empirical research between the years 2011-2021. The online searches were conducted periodically between January 2019 and October 2021. Initial searches covered ten years, included broad topics, and used keywords such as *high school learning*, *motivation, self-efficacy, engagement*, *game-based learning, electronic flashcards, confidence vocabulary building, academic literacy, content-specific vocabulary, and perceived learning*. These searches returned articles that focused on the generalities of the terms and provided little useable content. Subsequent searches used more refined vital words to narrow down the research topics. The use of phrases replaced single terms, for example, *implementing gamification into social studies classrooms*; *motivational strategies*; *the role of student motivation and engagement in learning environments*; *information processing theory*, *information processing theory*, *and social studies*. This research cycle returned articles that further delineated the research.

However, the parameters were redefined to include Boolean phrases that combined related terms and phrases, like *student motivation and engagement in high school social studies* and *game-based learning and motivation and engagement*. The parameters were reduced to five years from 2016-2021 and were limited to research conducted in the United States.

Using an action research design, the purpose of this action research is to explore how and to what degree digital flashcards will affect eleventh-grade U.S. History students' perception to learn content-specific vocabulary, motivation to learn content-specific vocabulary, and self-efficacy to learn content-specific vocabulary. The review of the literature is organized into ten main sections: (a) academic literacy, (b) content-specific literacy, (c) content-specific vocabulary, (d) Information processing theory, (e) multimedia, (f) gamification, (g), digital flashcards, (h) motivation, (i) motivation and engagement, and (j) self-efficacy.

Academic Literacy

Armbruster, Lehr, and Osborn (2003) described reading comprehension as the reason for reading, and without comprehension, there is nothing. Torgesen et al. (2007) defines academic literacy as the "reading proficiency required to construct meaning of content-area texts and literature found at in school" (p. 3). Literacy facilitates the collaboration between thoughts and ideas that result in personal language knowledge and supports cognitive development for the learner (Flowerdew, 2018; Moje, 2015; Ullah & Fatema, 2013). Recent research on academic literacy has suggested that literacy is more than just disconnected language skills and is associated with disciplinary epistemology and individual identity (Gee, 2015).

The National Governors Association and Council of Chief School Officers (2010) outlined that students in middle and high school should be able to analyze an author's point of view, determine word meanings, analyze the impact of word choice, evaluate the content, evaluate arguments and claims, and analyze the relationships between primary and secondary sources. This understanding seems straightforward but needs to address the differences in content area text structures and how content-specific vocabulary is used (Carnegie Council, 2010; Heller & Greenleaf, 2007). According to Shanahan and Shanahan (20), when students are equipped with strategies that allow them to read, write, and solve problems effectively, they develop the disciplinary literacy skills necessary to address the demands of a standards-based curriculum. Social studies courses, especially U. S. History, are often perceived as monotonous and irrelevant, yet they provide an understanding and a proper grasp of how the world works (Heafner, 2004; Schug, Todd, & Beery, 1982; Sterns & Lewis , 1998).

High school students typically participate in four different core content area classes in which content-area text is used with varying structures and purposes. Lee and Spratley (2010) reviewed text materials across core content areas and identified English language arts (ELA) and social studies as the content areas directly linked to literacy. Nevertheless, literacy instruction remains difficult, if almost impossible, to implement into the daily routines of content area teachers (Hall, 2005; Swanson et al., 2015).

Academic literacy continues to be a high priority in education across all content areas (Swanson et al., 2015). Many students need help reading grade-level texts proficiently (Swanson et al., 2015). Social studies coursework is primarily text-based, and "successful comprehension of text by adolescents can be predicted by their

vocabulary, background knowledge, inference ability, word reading and comprehension strategy use" (Cromley & Azevedo, 2007, p. 315). A majority of students lack the necessary skills to comprehend the required social studies text-based materials entirely and are, therefore, unable to employ the skills of a historian, as outlined in the South Carolina Social Studies College-and-Career-Ready Standards (SCCCRS) course description of U. S. History and the Constitution (2020). This deficiency presents challenges to classroom teachers who are required to deliver social studies content-based primary and secondary sources as an essential component of the U.S. History curriculum.

Content-Specific Literacy

Each content area has its nuances and themes regarding academic literacy (Brophy, 1996; Timmins, Vernon, & Kinealy, 2005). Social studies content is unique in that despite the prevalence of written texts in the classroom, additional artifacts like photographs, maps, graphs, and music are also part of the content area (Brophy, 1996). Social studies coursework is often organized around central themes that are distinctive to the discipline. The discipline's context-specific texts require students to corroborate source materials, periods, and perspectives from various sources (Shanahan & Shanahan, 2008; Wilson, 2011). Therefore, social studies texts are inundated with contextualizing the historical era and source materials (Shanahan & Shanahan, 2008; Timmins et al., 2005). This contextualization, paired with different themes and often subjective authors, makes it necessary for more content-specific understanding and analysis by the student (Shanahan & Shanahan, 2008; Wilson, 2011).

The SCCCRS (2020) Table 2.1 shows that the U.S. History Alignment Guide shows themes and deconstructed skills that all U.S. History students should know and how

these skills can be expressed. These deconstructed skills are: (a) comparison, (b) causation, (c) periodization, (d) context, (e) continuities and changes, and (e) evidence, and they are interwoven throughout the course.

Table 2.1 *Deconstructed Skills for U.S. History and the Constitution (* South Carolina Social Studies College- and Career-Ready Standards, 2019)

Disciplinary Skill	Expression
CO: Comparison- Utilize similarities and differences among multiple historical developments over culture, time, and place to create a comparative analysis.	To demonstrate their ability to use the skill of **comparison**, students should: • Identify the characteristics of historical events over time, place, and culture. • Categorize historical events according to similarities and differences. • Construct conclusions about historical events. • Analyze the reasons for similarities and differences.
CE: Causation- Evaluate significant turning points, including related causes and effects that affect historical continuity and change.	To demonstrate their ability to use the skill of **causation**, students should: • First, justify the long-term and short-term causes of significant events. • Second, justify the long-term and short-term consequences of significant events. • Third, categorize the causes and consequences of various historical events. • Fourth, differentiate causation from correlation or context.
P: **Periodization-** Summarize, analyze, and assess the methods historians use to categorize historical developments to create historical periodization.	To demonstrate their ability to think in terms of **periodization**, students should: • First, identify significant turning points in American history. • Second, define and understand the characteristics of an era. • Third, describe the methods by which historians categorize events into eras. • Finally, summarize significant events and developments according to historical eras.
CX: Context- Justify how the relationship between various historical themes	To demonstrate their ability to use **context**, students should: • First, distinguish events based on time and place.

Disciplinary Skill	Expression
and multiple historical developments creates a multi-faceted context when analyzing significant events.	• Second, establish connections between relative historical topics. • Third, connect specific events to broad historical themes and developments.
CC: Continuities and Changes- Evaluate significant turning points and theme-based patterns of continuities and changes within a period, including catalysts for those changes.	To demonstrate their ability to understand **continuities and changes**, students should: • Define continuity and change. • Identify patterns of continuity and change chronologically and thematically. • Cite continuities that transcend periods and changes within a period.
E: Evidence- Identity, interpret, and utilize different forms of evidence, including primary and secondary sources, used in an inquiry-based history study.	To demonstrate their ability to use **evidence** in the study of history, students should: • First, understand the difference between primary and secondary sources. • Use historical thinking skills to weigh primary sources; identify the point of view: the effect of the author's position, group affiliation, or specific beliefs. • Utilize multiple points of view to construct a historical argument.

Although the deconstructed skills provide a framework for the desired competency, content-specific literacy requires clear comprehension and vocabulary strategies to provide a foundation for critical thinking and advanced reading (Beck 2015; Kamil et al et al., 2008; Shanahan & Shanahan, 2008).

Content-Specific Vocabulary

"Reading comprehension is a cognitive process that integrates complex skills and cannot be understood without examining the critical role of vocabulary learning and instruction" (National Reading Panel, 2000, p. 41). Several studies have determined that vocabulary development is essential to academic and content-specific literacy (Harmon &

Hedrick, 2000; Kamil et al., 2008). A student's ability to comprehend text and construct meaning directly correlates to their vocabulary knowledge (Foil & Abner, 2002; Yildirim, Yildiz, & Ates, 2011). Aaron, Joshi, & Quatroche (2008) described the relationship between vocabulary and retention as a reciprocal process and noted that repetition promotes retention.

Traditional Vocabulary Learning

Traditional vocabulary acquisition is often regulated to teaching from a word list using a dictionary (Mediha & Enisa, 2014). Word lists do not promote contextual knowledge and are often used to memorize definitions (Mediha & Enisa, 2014). Learners generally only remember words taught in isolation with contextual applications (Nation, 2009). Textbooks are an essential instructional tool in many content area classrooms, and their use generally increases by grade level (Hedrick, Harmon, & Linerode, 2004). Textbooks highlight necessary words, yet researchers found that teachers often disagreed with the importance of the words that the publishers "highlighted" (Hedrick et al., 2004; Wolsey, Smetana, & Grisham, 2015). Research has shown that copying definitions or writing sentences with unfamiliar terms does not result in authentic vocabulary learning (Castek, Dalton, & Grisham, 2012). Previous research has demonstrated that reading strategies and teaching concepts like vocabulary skills in social studies classrooms do not attract teachers' attention and are often ignored (Harmon & Hedrick, 2000; Harmon, Wood, & Hedrick, 2004).

The importance of combining vocabulary instruction with text-based resources in social studies has been demonstrated in numerous studies (Harmon, Antuna, Juarez, Wood, & Vintinner, 2018). They are integrating historical inquiry with primary sources

and text-based questioning with specific-vocabulary instruction as necessary for "activating prior knowledge, making connections between and among concepts, comparing and contrasting terms, and lastly helping students generate their ideas about terms" (Harmon et al., 2018, p. 276).

Beck, McKeown, & Kucan (2013) developed the Three-Tiered Model of vocabulary development to differentiate communicative language from academic language. Figure 2.1 illustrates how vocabulary attainment can be broken down into three primary tiers: (a) Tier 1 high-frequency vocabulary, (b) Tier 2 – academic and cross-curricular, and (c) Tier 3 – Content specific-low frequency vocabulary.

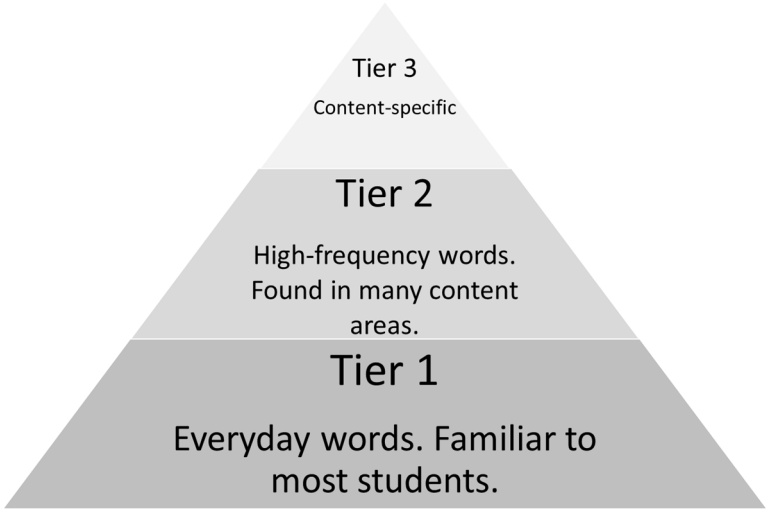

Figure 2.1. Three-Tiered Model of Vocabulary Development

The complexity of the vocabulary words progresses through the tiers; therefore, tiers two and three require more explicit instruction and academic literacy supports. Explicit vocabulary instruction is recommended for content-specific vocabulary attainment, specifically in terms of the (a) meaning of words, (b) opportunities to use the words in practice, (c) repeated exposure, and (d) guided practice through context (Swanson et al., 2015). The use of multisensory activities is beneficial to teaching

language skills. However, students must connect meaning to the words they recognize to fully comprehend their readings (Beck, McKeown, & Kucan, 2008). Strategies that utilize repeated vocabulary exposure through different contexts and practices promote retention and support content-specific comprehension (Aaron et al., 2008; Beck et al., 2008; Swanson et al., 2005).

Information Processing Theory

Information processing theory (IFT) is premised on the idea that humans do not simply respond to environmental stimuli; they process the information received. IFT is an approach to cognitive development that explains how information or memory is captured, stored, and retrieved from the brain (Calicos, Erisen, & Sahin, 2019; Hann, Hui, Lee, & Png, 2007).

The cognitive perspective maintains that the mental state's complexity affects learning and behavior (Sucharitha et al., 2020). Therefore, cognitive neuroscience research supports the relevance of IFP in multiple educational contexts (Schunk, 2016; Wolfe, 2010). Therefore, taking information and converting it into meaning can facilitate thinking and learning (Sucharitha et al., 2020).

Learning is a complex and active process (Celikoz, Erisen, & Sahin, 2019). Learning has many different definitions and theories, but for information processing theorists learning is how human beings receive, think, modify, and remember information (McDevitt & Ormrod, 2020). The constructivist view of learning is partly based on information processing (Mayer, 2019). Learning requires making meaning, finding relevance, organizing material into a coherent structure, and integrating prior knowledge from long-term memory (Mayer, 2019). Understanding how one learns, acquires new

information, and retains previous information has educational implications for both the learner and the educator (Kandarakis & Poulos, 2008; Lutz & Huitt, 2018).

IPT suggests that the brain, much like a computer, continually analyzes stimuli from the environment and manipulates the sensory memory information into short-term or long-term memory (Rao, 2016; Sucharitha et al., 2020). Learning with understanding generates associations between stimuli and stored information (Mayer, 2019).

Models of Information Processing

George Armitage Miller, one of the founders of cognition studies in psychology, was the first to advance the information processing theory (Miller, 1956). Miller's studies were based on Edward C. Tolman's sign and latent learning theories, which propose that learning is an internal and complex process (Celikoz et al., 2019; Miller, 1956). Miller's premise of the theory is that the brain, much like a computer, continually analyzes stimuli from the environment and manipulates the sensory memory information into short-term or long-term memory (Rao, 2016). In addition, Miller (1956) presented the theoretical idea of "chunking," which is the capacity of short-term memory and is fundamental to the theory. "Chunking" suggests that short-term memory could only hold 5-9 chunks of information, and this became the fundamental element in all subsequent theories of memory (Celikoz et al., 2019; Miller, 1956; Rao, 2016).

Atkinson and Shiffrin Model

Atkinson and Shiffrin proposed the most influential model of information processing in 1968 (Kandarakis & Poulos, 2008; Lutz & Huitt, 2018). This model viewed learning and memory as being “discontinuous and multi-staged” and recognized three

stages of memory: sensory register, short-term or working memory, and long-term memory (Lutz & Huitt, 2018, p.27). See figure 2.2.

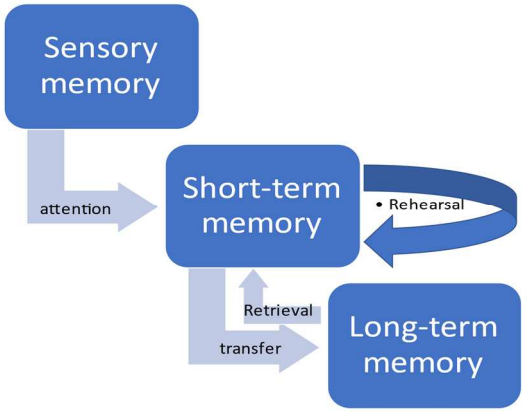

Figure 2.2 Multi-Store Model of Memory. Adapted from Shiffrin and Atkinson (1969)

The implications of the information processing theory in the academic setting suggest that learning strategies are defined as steps taken by learners to "facilitate acquisition, storage, retrieval, and use of information" (Nyikos & Oxford, 1993, p.11). In turn, the student's beliefs about their learning are crucial as they directly affect motivation and their self-efficacy (Nyikos & Oxford, 1993; Rao, 2016).

Multimedia

Principles of Multimedia Learning

Mayer (2005) established the well-known "multimedia principle," which suggests that deeper learning comes from combining words and pictures. Mayer's cognitive theory of multimedia learning makes three assumptions about how humans process information: (a) the dual channel assumption, (b) the limited capacity assumption, and (c) the active-processing assumption (Ayers, 2015). The dual-channel assumption dictates that humans

possess a channel for processing visual images as seen through the eyes and a separate channel for processing auditory or verbal information (Mayer, 2009). The limited capacity assumption suggests that humans can only process five to seven "chunks" of information in the working memory and is premised on Miller's theory of information processing (Miller, 1956; Mayer, 2009). Finally, the active processing assumption suggests that learning requires engagement and active cognitive processes through identifying and selecting relevant material, organizing the material through visual and verbal channels, and integrating added information with prior knowledge (Mayer, 2009).

The cognitive theory of multimedia learning is comprised of 12 principles and guides effective multimedia presentations for learning (Mayer, 2009). See Table 2.2.

Table 2.2 *The 12 Principles of Multimedia Learning*

Principles	**Summary**
Coherence Principle	Exclude information that will not be assessed.
Signaling Principle	Use highlights to draw attention to essential information and include advanced organizers.
Redundancy Principle	Minimize the use of text on narrated presentations and use either text or graphics but not both.
Spatial Contiguity Principle	The text should be close to the graphics to which it refers. Directions to an activity should be on the same screen as the activity.
Temporal Contiguity Principle	Narration and animation should be delivered concurrently.
Segmenting Principle	Break material into small sections and allow users to control the pace of the lesson.
Pre-Training Principle	Define key terms before starting a lesson and ensure students know how to use the tool or program before engaging in the lesson.

Principles	Summary
Modality Principle	Avoid on-screen text during narrated presentations with graphics.
Multimedia Principle	Include static images to clarify meaning and illustrate key points.
Personalization Principle	Use first and second person with relaxed and polite speech.
Voice Principle	Use human narration.
Image Principle	Avoid including instructors' videos of themselves during asynchronous multimedia presentations that contain words or pictures.

Multimedia represents the convergence of text, picture, video, and interactivity content forms "used to engage student learning and reinforce skills" (Raja & Kumar, 2010, p. 2). The multimedia approach to teaching utilizes different instructional techniques that present learners with visual, auditory, and kinesthetic experiences that empower students to adopt their own learning strategies and supports skills necessary for the 21st century (Mayer, 2005; 2015; Raja & Kumar, 2010). This multimedia approach is like paired-associate vocabulary learning on traditional and electronic word cards (Altinar, 2019; McLean, Hogg, & Rush, 2013). Shabiralyani, Hasan, Hamad, & Iqbal (2015) state that individuals remember “10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they hear and see, 70% of what they say, and 90% they say and do” (p. 227).

A systematic review of 22 publications from 2008 to 2019 indexed through Scopus, Eric, and Web of Science confirms that gamified English learning has been associated with enjoyable, engaging, motivating, and fun learning experiences” (Waluyo & Bucol, 2021, p. 158). This understanding coincides with the fact that gamifying or

utilizing multimedia approaches can transform rote vocabulary learning and repetition into a more interactive learning experience (Kapp, 2012; Waluyo & Bucol, 2021). In addition, research studies have established that gamified vocabulary learning can significantly enhance student learning and produce better learning outcomes (Waluyo & Bucol, 2021).

This research aligns with an earlier study conducted in 2009 with a more a primitive version of gamification and multimedia literacy supports that used the Merriam-Webster Online (MWO) and the Visual Thesaurus (VT) (Anderson-Inman, 2009). The Education Development Center (EDC) series of studies investigated as part of the National Center for Supported Electronic Text (NCSeT) at the University of Oregon (Anderson-Inman, 2009). The study was explicitly designed to examine ways to support student understanding of social studies by focusing on vocabulary development using online vocabulary support tools. (Clay, Zorfass, Brann, Kotula, & Smolkowski, 2009). The data analysis revealed significant post-test gains. As technology has progressed, so has the available multimedia, game-based learning, and gamified vocabulary learning platforms and websites.

Gamification

In this technological era, technology has influenced all areas of our lives, including how we communicate, talk, and even our social dynamics, but most importantly, education has been transformed (Yuliyatno, Mustaji, & Sitompul, 2019). Gamification is based on using gaming techniques, aspects, and design within an educational environment to encourage participation and increase motivation and learning

(Bunchball, 2016; Deterding, Sicart, Nacke, O'Hara, & Dixon, 2011; Lee & Hammer, 2011).

Gamification applies game elements or frameworks to existing learning activities and should not be confused with game-based learning (Kingsley & Grabner-Hagen, 2017). Instead, gamification uses game-based components to motivate and create interest in educational content that normally would not involve gameplay (Bunchball, 2016; Deterding et al., 2011). All games have four defining characteristics: a goal, rules, feedback, and voluntary participation (McGonigal, 2011b). The goal is always the specific outcome that that player works to achieve and provides focus and attention; rules place limits on how the goal is achieved; feedback provides information on how close players are to achieving their goal; and voluntary participation ensures that all playing the game accepts the goals, rules, and feedback (McGonigal, 2011b).

Prensky (2001) defines today's students as "digital natives" as they have spent their entire lives surrounded by and using the tools of the digital age. Therefore, today's students are well-versed in gaming and interactive multimedia, so they find game-based activities fun, enjoyable, and engaging (Hanus & Fox, 2015; Kapp, 2012). Gamification is more than just adding games to the curriculum. Gamification helps to minimize teacher lectures and increase students' active learning. Classroom-based time can be directed to activities that support student engagement and active learning (Aidinopoulou & Sampson, 2017; Kapp, 2012). Research shows that educators can use gamification to create compelling learning scenarios that promote student learning (Hakulinen, Auvinen, & Korhonen, 2015). Gamification has changed how teachers interact with students and how students learn. Numerous software programs and applications encourage problem-

solving, critical thinking, and performance assessments (Aidinopoulou & Sampson, 2017; Saritepeci & Çakir, 2015).

Several studies illustrate the positive outcomes of using technology for education in social studies courses (Heafner, 2004). With technology advancing faster than ever, the K12 educational community must respond to the changing landscape through all levels of teacher training and professional development to help develop teacher knowledge (Callahan, Saye, Brush, 2013). The integration of technology through gamification should support the teachers' pedagogy and curriculum in a way that enhances the content and supports learning (Kapp, 2012). Additionally, digital technology and gamification also shift the educational paradigm from a teacher-centered approach to a more learner-centered approach (Kapp, 2012; Lim, Morris, & Kupritz, 2019; Shifflet & Weilbacher, 2015).

Vocabulary Through Gamification

Educational gamification or gaming mechanisms for nongame settings have created an outlet for vocabulary instruction and language acquisition (Kingsley & Grabner-Hagen, 2017). Gamified vocabulary learning has the potential to transform the learning experience. Often failure is problematic within the classroom setting, but in gamification, failure can become an opportunity (McGonigal, 2011b). Studies have shown that "gamers can spend 80% of their time failing in game worlds, yet the more they fail, the more eager they are to return to the game" (McGonigal, 2011a, p. 4). Waluyo & Bucol (2021) state that gamified vocabulary learning has the potential to transform the once tedious activity into a fun and enjoyable experience.

Vocabulary learning through flashcards has been a staple of educational practice (Kornell & Bjork, 2008; Waluyo & Bucol, 2021). Several researchers have compared paper flashcards (PFs) to digital flashcards (DFs) and have concluded that DFs offer a better range of features that support vocabulary acquisition (Azabdaftari & Mazaheb, 2012; Kilickaya & Krajka, 2010). Research suggests that DFs support short-term vocabulary memory and future recall better than PFs (Dizon & Tang, 2017; Beaton, Gruneberg, Hyde, Shufflebottm, & Sykes, 2005; Wyra, Lawson, & Hungi, 2007). Flashcards can be more effective. Several studies have emphasized the importance of utilizing visual and verbal aids in vocabulary learning strategies (Beaton et al., 2005) and functional when multimedia is comprised of comprehensive audio and visual inputs in vocabulary building (Nakata, 2011).

Digital Flashcards Cards

Digital flashcards utilize the multimedia approach to learning. Digital flashcard design implements cognitive learning concepts from education and neuroscience research (Boom Learning, 2022). Digital flashcards prioritize (a) self-regulation or executive function that is an essential skill necessary for student mastery, (b) data that highlights areas of potential concern and allows for intervention and differentiation, and (c) practice makes perfect mentality to encourage not only mastery but retention (Boom Learning, 2022).

Research into digital flashcards cards or computer-based flashcards shows benefits in facilitating learning through implicit and explicit vocabulary learning by encouraging independent interactive learning activities (Kirstavridou, Kousaris, Zafeiriou, & Tzafilkou, 2020; Waluyo & Bucol, 2021). Tier three social studies

vocabulary comprises more than word association or definitions. The terms are often contextualized and require a more in-depth understanding and are often framed in the deconstructed skills of (a) CO - comparison, (b) CE - causation, (c) P - periodization, (d) CX – context, (e) CC - continuities and changes, and (e) E - evidence.

Digital flashcards utilize several different learning strategies that align with the deconstructed skills necessary for content-area vocabulary. For example, digital flashcards utilize learning strategies such as multiple choice, fill-in-the-blank, digital puzzles, and listening skills. This allows for the application of deconstructed skills to facilitate learning through interaction and engagement. See Table 2.3.

Table 2.3 *Capabilities and Application of Deconstructed Skills*

Digital Flashcard Capabilities	**Application of Deconstructed Skills**
Multiple Choice	CO, CE, P, CX, CC, & E
Multiple Choice with Pictures	CO, CE, P, CX, CC, & E
Fill in the Bank	CO, CX, & E
Digital Puzzles	CO, CC, & E
Listening	CO, CE, P, CX, CC, & E
Sequencing	CO, CE, & CC

Digital flashcards provide a multimedia approach for converging visual, auditory, and kinesthetic experiences that support learning. Raja & Kumar (2010) found that innovative use of technology, such as digital flashcards, encourages active learning through diverse multimedia instructional approaches. For example, including tier-three words, domain, or content-specific vocabulary often require explicit instruction and guided practice. Using digital flashcards offers additional opportunities or practice to see,

hear, and use the words that will benefit not only content-area academic literacy (Heller & Greenleaf, 2007; Swanson et al., 2015).

Digital flashcards provide an outlet to promote content-area literacy in a user-friendly format. In Figure 2.3, the card asks for the depicted colonial region and primary economic source, which helps to build context. The visual map, context, and video work together to provide a complete analysis of the locale. In Figure 2.4, the card seeks the vocabulary word for the first example of representative democracy in America. Including the historical artwork and video help to capture the significance of the document and adds another element to elicit understanding. In Figure 2.5, the card presents a political cartoon that helps to relate the concept of mercantilism to the picture and the definition. The addition of the political cartoon strengthens historical understanding as analyzing political cartoons is an essential social studies skill.

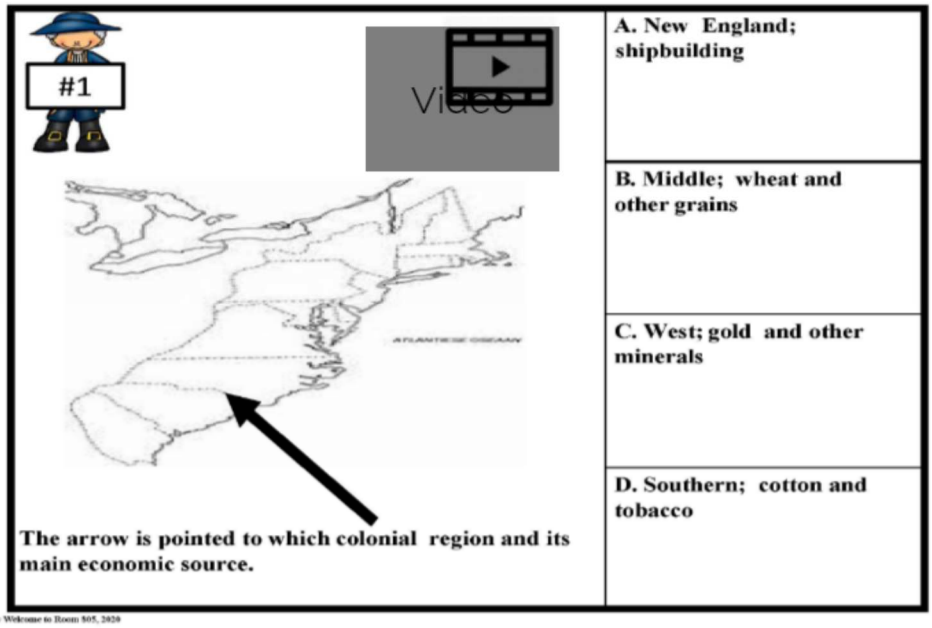

Figure 2.3. Colonial Regions Illustrated.

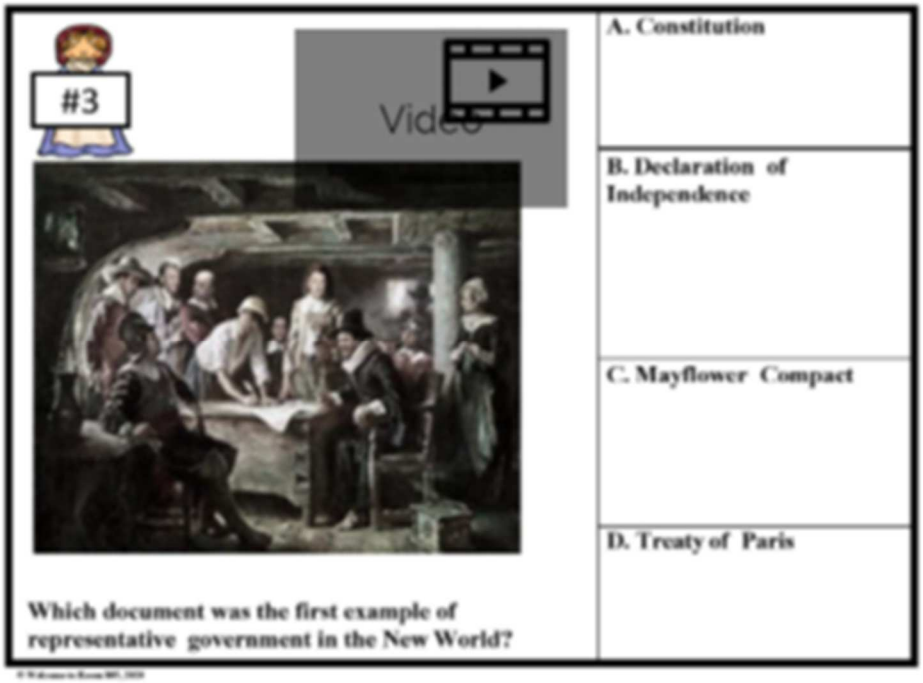

Figure 2.4. Representative Democracy Illustrated.

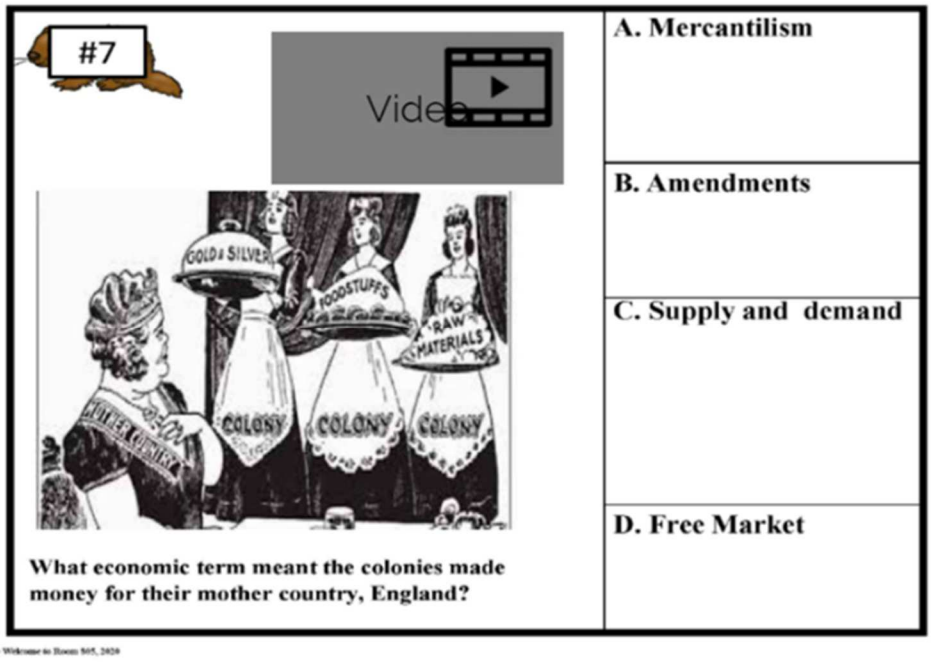

Figure 2.5. Political Cartoon Illustrating Mercantilism

The digital flashcards operate on the same basic premise that Quizizz, Quizlet, and Kahoot, and most students are familiar with these game-based learning platforms. Therefore, all digital flashcards have similar attributes. See Table 2.4.

Table 2.4 *Comparing Digital Flashcards*

Website	**Multiple Choice**	**Short Answer**	**Listening Options**	**Individual Activities**	**Whole Class Instruction**
Boom Cards	**X**	**X**	**X**	**X**	**X**
Quizizz	**X**	**X**	**X $**	**X**	**X**
Quizlet	**X**	**X**	**X**	**X**	**X**
Kahoot	**X**	**X**	**X**	**X**	**X**

Empirical evidence has shown that Quizlet enables lower intermediate students to improve their vocabulary and raise their comprehension scores and has shown significant improvement in pre- and post-test vocabulary scores (Lander, 2016; Waluyo & Bucol, 2021). Additional studies show that Quizizz was more effective than Kahoot in fostering enthusiasm for learning, yet Kahoot still records "positive effects on student learning performance, classroom dynamics, attitudes, and anxiety" (Basuki, Y., & Hidayati, Y., 2019; Wang & Tahir, 2020, p. 1).

Motivation

Being motivated means being moved to do something (Ryan & Deci, 1999). Motivation is defined as the general desire or willingness of someone to do something and, in a general sense, influences all human behavior (Gopalan, Bakar, Zulkifli, Alwi, & Mat, 2017; Largey & Timmons, 2018). The definition of motivation, as it relates to education, is defined as the choice to engage in a learning task, engaging in the task, and

the willingness to complete the task (Palmer, 2015). In the school setting, research has suggested that motivation can be the impetus that drives students' purpose and action (Oqvist & Malmstrom, 2012). Motivation is an essential component of student learning, and the role it plays in education cannot be overstated, as it is generally understood that unmotivated students will have difficulty achieving the best possible educational outcomes (Archambault, Janosz, Marizot, & Pagani, 2009; Usher & Kober, 2012). The motivation to learn is often quantified between the disparity between underachievers and successful learners; however, many motivational factors determine individual behaviors, and many of these factors are not necessarily controlled in everyday life (Kiliçoğlu, 2018).

In the educational setting, it is necessary to "control and effectively use the factors that cause the individual to gain and maintain the behavior" (Kiliçoğlu, 2018, p. 1743). In learning environments that have fewer teacher regulations, motivation is critical to student success but is poorly understood; however, we do know that student motivation for school decreases with age, and by the age of 16, many students tune out (Fryer & Bovee, 2016; Skaalvik & Skaalvik, 2009; 2011; Spinath & Steinmayr, 2012). Motivation is of utmost importance within the constructs of academic behavior because it plays the dominant role in students' achievement, engagement, and, ultimately, their choices in school (Jiang, Rosenzweig, & Gaspard, 2018). There are multiple types and qualities of motivation, and the various constructs and frameworks have resulted in the extensive research literature (Brophy, 2004; Perry, Turner, & Meyer, 2006; Schunk, Pintrich, & Meece, 2008). The most common forms of motivation are intrinsic or extrinsic, and research suggests that intrinsic motivation is more substantial and has a more significant

impact on learning than extrinsic motivation (Cherry, 2016; Ryan & Deci, 2020; Torshalis & Nakkula, 2012).

Intrinsic Motivation

Intrinsic motivation originated in the 1950s with William James, who used the term "instincts of constructiveness" to explain the differences in human behavior (Shroff, Vogel, Coombes, & Lee, 2007, p. 242). Intrinsic motivation can be best understood as a curiosity or doing something for the sake of doing it and is a more personal response to an activity or task (Borhaug & Borgund, 2018; Schunk et al., 2008). Ryan & Deci (2020) suggests that intrinsic motivation is associated with creativity, higher self-esteem, and increased learning and is likely responsible for lifelong learning and is an essential component of human achievement.

Intrinsic motivation can be inherent when learners connect personally to the topic and can benefit from positive relationships within the learning environment (Deci, Koester, & Ryan, 2001). Lepper (1988) concluded that intrinsic motivation was positively influenced when the components of curiosity, control, and challenge were included in a task. Additionally, Lepper and Hodell (1989) identified four factors that can impact a student's intrinsic motivation:

(a) **Challenge**: Tasks are of the appropriate difficulty level and provide students with a sense of accomplishment when successful.

(b) **Curiosity:** Learning tasks engage the students and make them want to learn more.

(c) **Fantasies:** Learning scenarios that are convincing, challenging, and realistic. They allow the students to compare real-world experiences to those imagined, building creativity and imagination.

(d) **Control:** The learning environment encourages autonomy, allows students to feel that they oversee their learning, and promotes student choice and personalization.

Extrinsic Motivation

Extrinsic motivation refers to external rewards intended to motivate or reinforce desired behavior (Deci et al., 2001). For external rewards to have value, they must be attractive, and there must be a clearly understood method to obtaining the rewards that are students controlled (Borhaug & Borgund, 2018). Many schools use reward-focused incentives to motivate student achievement or reinforce learning (Deci et al., 2001).

Tangible rewards, like gold stars, have been a mainstay in the educational community and have been advocated by many educators to motivate student learning (Deci et al., 2001). Tangible rewards are often used to promote a behavior that might not otherwise be performed (Deci et al., 2001). Ryan, Mims, & Koestner (1983) specified three reward contingencies: (a) task-noncontingent rewards that only require participation, (b) task-contingent rewards that require completion of a task, and (c) performance-contingent rewards that require performing or mastering an activity.

In game design, the typical reward structure used to motivate players to do their best is based on extrinsic rewards like points or badges (Kapp, 2012). Students may also have difficulty in determining if grades are intrinsic or extrinsic due in part to the overlap between learning and gaining knowledge, which is intrinsic, and the praise or reward of

receiving a good grade, which is extrinsic (Kapp, 2012). This duality of the reward structure is evident in all disciplines and everyday activities (Ryan & Desi, 1999). Research has proven that higher learning motivation is linked to better academic performance but to "greater conceptual understanding, satisfaction with school, self-esteem, social adjustment, and school completion rates" (Usher & Kober, 2012, p. 2). Several models seek to offer solutions for understanding and enhancing student motivation. For this study, the ARCS-V model was examined.

ARCS-V Model

Theories, like the cognitive load theory (CLT), work on the basis that all students are highly motivated and engaged in their learning, yet not all students are motivated, and many find schooling, especially social studies, boring (Heafner, 2004; Law, Geng, & Li, 2019). To determine motivational factors, Keller's ARCS-V model was developed in response to a desire to find more effective ways of understanding the significant influences on the motivation to learn and for systematic ways of identifying and solving problems with learning (Casillas et al., 2012; Keller, 2016; Kim & Frick, 2011). The ARCS-V model is grounded in the expectancy-value theory developed in the 1930s by Tolman and Lewin (Keller, 1987a). The expectancy-value theory assumes that people will be motivated and engaged in activities if it "perceived to be linked to the satisfaction of personal needs (the value aspect), and if there is a positive expectancy for success (the expectancy aspect)" (Keller, 1987a, p. 2-3).

The ARCS-V (attention, relevance, confidence, satisfaction, and volition) model is used to predict student motivation and is an approach to problem-solving that

instructional designers can utilize to develop engaging lessons and activities. The ARCS-V model utilizes an acronym that is both memorable and valid. ARCS-V stands for:

(A) The **attention** category incorporates research on curiosity and arousal, interest, boredom, and other related areas such as sensation seeking.

(R)The second category, **relevance**, refers to learners' perceptions that the instructional requirements are consistent with their goals, compatible with their learning styles, and connected to their past experiences.

(C) The third category, **confidence**, refers to the effects of positive expectancies for success, experiences of success, and attributions of successes to one's abilities and efforts rather than luck or task challenge levels that are too easy or difficult.

(S) The fourth condition of motivation required is called **satisfaction.** It includes the appropriate mix of intrinsically and extrinsically rewarding outcomes that sustain desirable learning behaviors and discourage undesirable ones.

(V) A fifth category was added to explain differences among these learners and provide a basis for motivational support activities (Keller, 2008). It was called **volition,** which was like self-regulation and incorporated variables and strategies related to persistence. (Keller, 2016, p. 4).

The ARCS-V model is a problem-solving approach to the motivational design of learning environments that stimulate and sustain students' learning motivation (Keller, 2016; Kim & Frick, 2011). Motivation is an essential concept in student learning that has the potential to help or hinder the student. As a result, students learn differently, partly

due to their individual levels of motivation (Li & Keller, 2018). Technology has changed the learning environment. Some challenges relate directly to the organization, navigation, and implementation of a new learning platform that can hinder student motivation, yet clear and concise instruction and expectations can instill confidence (Karabatak & Polat, 2019; Keller, 2016).

The ARCS-V Model looks to various methods that, when employed, can grab and hold the learners' attention (Keller, 2016). The correlation between the student's motivation to learn and the teacher's motivation to provide stimulating instruction is a necessary factor that may sometimes be missed (Keller, 2016).

Motivation, volition, and performance (MVP) theory added information processing components and cognitive and emotional components to derive the relationships among motivation, learning, and performance (Keller, 2017). "In summary, the four ARCS components of the MVP model provide a basis for understanding the various aspects of human motivation" (Keller, 2017, p. 16).

Motivation and Engagement

Motivation is similar but not the same; however, motivation can be transformed into engagement with the proper constructs and support, or one could be motivated without engagement (Kim et al., 2016; Pintrich et al., 1993). Engagement is often used as a synonym for motivation, but engagement comprises several components through emotional, behavioral, and cognitive elements unique to the individual (Barber et al., 2017; Del Seigel, McCoach, & Roberts, 2017). Engagement refers to the extent of a student's active involvement in a learning activity. It is a multidimensional construct that can be narrowed down into a short or long-term task-specific domain (Christenson,

Reschly, & Wylie, (Eds.), 2012). The lack of motivation within the social studies classroom is more readily apparent than the lack of engagement, yet the two are so entrenched that one would not expect one without the other (Heafner, 2004; Sarıtepeci & Çakır, 2015; Wanzek, Kent, & Spisak, 2015).

Technology can positively affect student engagement using online collaboration (Graham, 2013; Lim et al., 2007; López-Pérez, Pérez-López, & Rodríguez-Ariza, 2011). Research shows that a high-level use of technology in the classroom can facilitate learning and garner interest and motivation in students by providing engagement with a purpose (Hilton, 2016; Voet & Weaver, 2017). Engagement is the combination of cognitive and affective participation in learning activities. Engagement is the precursor to achievement when students put effort into the process or control their effort expenditure (Heckenhausen & Heckenhausen, 2008). Engaging students using technology is essential; however, teachers must find ways to implement higher order thinking and reasoning skills using technology. Research suggests that high-level use of technology can support inquiry-based learning and facilitate historical thinking in a social studies classroom environment (Hew & Brush, 2007; Voet & De Weaver, 2017).

Self-Efficacy

Self-efficacy is a student's perception of their ability to learn, accomplish meaningful tasks, or manage circumstances directly correlated to their motivation to learn (Bandura, 1977; Walker & Greene, 2009). Although, like self-esteem, self-esteem is focused more on "being" and the overall feeling of value or worthiness, and self-efficacy is more focused on "doing" and the overall feeling of success (Neill, 2005). Self-efficacy is formed through the belief or perceived understanding that a person can perform a task

successfully and is often used as a predictor of motivation (Bandura, 1977; Multon, Brown, & Lent, 1991; Versland & Erickson, 2017). Self-efficacy is built upon personal experiences, vicarious experiences, social persuasions, and psychological factors and can be influenced by outside stimuli and mindset; however, a growth mindset is almost always necessary for high achievement and performance in school and life (Bandura, 1977; 1986; Ericcson, Prietula, & Cokely, 2007; Del Siegel, McCoach, & Roberts, 2017). Individuals develop self-efficacy beliefs in different areas and degrees, and this helps to explain how students with similar skills may perform differently (Driscoll, 2005).

According to Bandura (1994), there are four primary sources of self-efficacy:

1. Mastery experiences
2. Vicarious experiences
3. Verbal persuasion
4. Physiological and emotional states

Mastery experiences are personal experiences of success and pertain to the ability and confidence of the learner (Yeh, Chen, Rega, & Lin, 2019). Therefore, mastery experiences yield the most authentic and influential source of self-efficacy (Driscoll, 2005). The development of mastery experiences is built on the premise that new and challenging experiences must be attempted and mastered (Bandura, 1997; Jackson, 2010). Therefore, easy, and repetitive challenges do not provide mastery; they promote complacency (Bandura, 1997).

Vicarious experiences are built on modeling, observing the success and failures of peers with similar qualities to the observer (Bandura, 1997). This process can be demonstrated in the classroom, the home, or the athletic arena (Jackson, 2010). Bandura

(1986) proposed four subprocesses that govern observational learning: (a) attentional processing; (b) retention processes; (c) production processes; and (d) motivational processes. In addition, the vicarious experience provides information that influences self-efficacy beliefs through demonstrating, transferring, and providing a reference for social comparison (Pfitzner-Eden, 2016).

Verbal persuasion is the most familiar form of self-efficacy. This form refers to others telling or persuading a learner that they can successfully complete a task (Driscoll. 2018). However, Graham & Barker (1990) found that providing praise for succeeding at a relatively easy task may unknowingly create a sense of low self-efficacy, especially for students that are sensitive or have failed previously. Therefore, feedback must communicate to the learner that they were successful and explain how their work demonstrates that noted success (Bandura, 1997). In addition, individuals respond to sensations differently and may label individual feelings differently.

The physiological state of the individual can influence feelings of self-efficacy. What may be nervous anticipation to one student may be outright fear to another (Badura, 1986; Pfitzner-Eden, 2016). Although there is little that one can do to alleviate or alter a student's physiological state, some students may thrive on the sensations while others may regress (Bandura, 1986; Driscoll, 2005; Pfitzner-Eden, 2016). Self-efficacy is synonymous with confidence and is predicated on an individual's conception of how well they can perform a task (Bandura, 1977). Children's perceived efficacy, rather than their actual academic achievement, is the critical determinant of their perceived occupational self-efficacy (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001).

Chapter Summary

This literature review addresses several topics and provides the background for this action research project. First, this study aims to explore how using digital flashcards will affect eleventh-grade U.S. History students' learning content-specific vocabulary, motivation to learn content-specific vocabulary, and self-efficacy to learn content-specific vocabulary. Student motivation and self-efficacy are crucial components necessary for student success.

Information processing theory suggests that memorization is the foundation for learning. Information processing is an approach to cognitive development that explains how the learner processes information. Learning is achieved when a student can successfully acquire, store, and retrieve information from long-term memory. In addition, a multimedia approach to learning has benefits that support student motivation and self-efficacy.

CHAPTER 3

METHOD

The purpose of this action research is to explore in what ways and to what degree digital flashcards will affect eleventh-grade U.S. History students' learning content-specific vocabulary, motivation to learn content-specific vocabulary, and self-efficacy to learn content-specific vocabulary. The purpose aligned with the following three research questions:

1. How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning of content-specific vocabulary knowledge?
2. How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of motivation to learn content-specific vocabulary?
3. How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of self-efficacy to learn content-specific vocabulary?

Research Design

Traditional research methods seek generalizable answers, and action research seeks to connect theory to practice improving education (Mertler, 2017). Action research embraces the understanding that a classroom is not a traditional laboratory and that teacher researchers "are committed to taking action and effecting positive change in their classrooms and schools based on their findings" (Mills, 2011, p. 3). Action research

allows for active participation and guidance because it is research done by educators for educators (Creswell & Creswell, 2018; Mills, 2011). Action research was the most appropriate method for my study. I applied the action research process to explore how digital flashcards would affect my eleventh-grade U.S. history student's perceptions of motivation and self-efficacy to learn content area vocabulary.

A concurrent mixed-methods research design was used for my action research. The concurrent mixed-method design involves a single study containing quantitative and qualitative data collection which is conducted at the same time (Mills, 2011). This design more accurately define relationships among variables (Castro, Kellison, Boyd & Kopak, 2011). First, quantitative1 and qualitative data were evaluated independently from my eight students through a pretest-posttest, exit tickets, and student interviews over six weeks. Then, data triangulation was applied to merge the quantitative and qualitative findings and to allow equal emphasis (Mertler, 2017).

Setting

This action research occurred in the researcher's U.S. History course at The Alternative Program (TAP). TAP is a small, suburban alternative school in a suburban school district in South Carolina. As a teacher at TAP, I recognized that content-specific vocabulary was a problem that affected many students and was a problem worth examining. Moreover, students' motivation and self-efficacy toward social studies content were overwhelmingly negative. As a result, my students needed to prepare for the rigors of document-based questions and text-based analysis necessary for successful proficiency in U.S. History.

Our district currently had six middle and three high schools that feed into TAP. The student population varied yearly, but we witnessed a significant drop due to Covid-19 virtual protocols. Whereas we usually numbered around 115 to 160 students, the 2021-2022 school year started with twenty-two students. These numbers represented the lowest initial enrollment data in TAP's recent history.

TAP is a Title I school, and though the students attended our school, the Title I funds stayed with the student's home school, limiting our operational budget. Our students were offered core coursework similar to the traditional area high schools, but we needed more electives found throughout other high schools within the district. TAP had eleven classroom teachers with me as the sole social studies teacher. Due to our limited number of faculty members, many students used electronic coursework, like APEX or Edmentum, to complete electives or additional coursework. However, TAP's limited number of students allowed for a more personalized learning experience, and many preferred TAP due to the lower student-to-teacher ratio to their home schools.

The school's physical size was relatively small with most classes housed in mobile classrooms and cottages. The cottages were designed to accommodate approximately 20 students, but with Covid-19 protocols, student interaction and collaboration were limited. Therefore, the typical groupings of desks were replaced with 15 desks strategically placed six feet apart. In addition, extra chairs, tables, and manipulatives were removed, leaving a more sterile and less friendly environment than usual.

South Carolina required three units in social studies as part of the 24 units required for high school graduation. In addition, the state dictated that the three units, or

credits, in social studies must include a half credit in both government and economics, an elective credit, and a credit in U.S. History (SC College and Career Ready Standards, 2019).

Typically, U.S. History was taught on a four-by-four schedule or block schedule, meaning the class was semester-long and met for 96 minutes five days per week. This class was a comprehensive overview of U.S. History from the 1400s to the present day and included much reading, writing, and analyzing. The new 2019 S.C. Social Studies College and Career Ready Standards incorporated a more skills-based curriculum than previously utilized. This change presented unique challenges to my students across all courses, especially U.S. History. Additionally, U.S. History was the only social studies course that required an End of Course Exam (EOC). The EOC was a statewide cumulative final exam given to all S.C. Public Schools students for courses and included Algebra I, Biology I, English II, and U.S. History (SC Department of Education, 2023). The EOC test items were aligned to S.C. Academic Standards, and the exam scores counted for 20 percent of the student's final grade calculation.

Students in U.S. History were expected to use the skills of a historian and build on the progression of historical thinking skills from previous grade-level coursework. Although the students had a generalized knowledge of American history from previous elementary and middle school classes, this course went into much greater detail. Many students readily admitted they disliked the content because it required so much reading and analysis.

Classroom Procedures

The learning procedure in my U.S. History course involved a daily agenda that followed a similar timeline, and the students were well-versed in the day-to-day classroom procedures. The students came in, and there was a posted agenda on the flat screen monitor. Each lesson began with an overarching inquiry question correlating with the state standards and the course alignment guide. Questions like, "How did a uniquely American identity emerge from a well-established British Empire?" helped to not only guide the lesson but provide an opportunity to elicit prior knowledge from the students (South Carolina College & Career Ready Standards, 2019). Most initial lessons involved a slideshow and guided notes. The guided notes were typical definitions of essential terms or critical points relating to the content. The expectation was for student to follow the slideshow and was teacher-directed. Upon completion of the guided notes, my role was to explain the content more in-depth and to answer any questions. We usually had a quick group discussion on the topic at hand, and I spend this time evaluating what additional supports were necessary. We often watched a short instructional video relating to an event, person, or era accompanied by a few questions examined. Class time was usually followed with document-based questions or content-specific readings and additional content enrichment using Kahoots! or Quizlet flashcards.

Understanding content-specific vocabulary was imperative in U.S. History. Many of my students could not correctly comprehend primary source documents or document-based questions because they needed to learn vocabulary. The SC Department of Education Social Studies Inquiry Alignment Guide (2019) offered a content list that narrowed the overarching terms and themes but needed to address the terminology

necessary for comprehension. Although vocabulary acquisition was not a content standard, it was necessary for reading comprehension and content-specific understanding. Furthermore, research reports on adolescent literacy strongly recommended using vocabulary instruction and comprehension in content-area instruction (Biancarosa & Snow, 2006).

The process was monotonous, and much of the coursework was teacher-led. While this approach has yielded positive learning outcomes and satisfactory EOC scores, it supported an environment that yielded low motivation and self-efficacy because the students were bored and relied on me to guide them through the process. As a result, students were concerned more with their course grades and less with their actual learning.

Participants

Students needed more student motivation and engagement in all schools within the district. This problem becomes even more pronounced at TAP, partly due to our student population. They were unique in that they have been assigned to the alternative setting due to behavioral issues that remanded them to our setting instead of expulsion or removal from our district schools. My students represented an incredibly diverse group with individual strengths and needs. Many admitted they had no use for school and only attended due to attendance contracts or court orders that their probation officers monitored. TAP students could be challenging to teach, but I encouraged their participation and constantly looked for ideas that may change their outlook on school. The Covid-19 pandemic furthered the disservice to my students by requiring the protective measures of masks and social distancing that, although necessary, continued to discourage my students.

Most of my students needed more support in their academic knowledge. These gaps may be attributed to excessive absenteeism or lengthy suspensions; however, most students readily admitted that school was boring to them. Many shared their outlook and beliefs while interacting with faculty members during lunch or after school voicing their complaints.

U. S. History was taught as an eleventh-grade required course for graduation. My Fall 2022 U. S. History class was comprised of eight students: one African American female, two African American males, one Caucasian female, and four Caucasian males. In addition, I had one student with an Individualized Education Plan (IEP) that required a preferential setting and extended time for quizzes and tests. All eight students agreed to participate and returned consent forms. Table 3.1 provides pseudonyms and demographic information on the participants for this action research study.

Table 3.1 *Student Pseudonyms and Demographics*

Name	**Age**	**Gender**	**Race**
Cameron	18	Male	Caucasian
Logan	16	Male	Caucasian
Blake	16	Female	Caucasian
Jared	18	Male	African American
Shawn	18	Male	African American
Grayson	16	Male	Caucasian
Zane	17	Female	African American
Hunter	16	Male	Caucasian

Intervention

In this action research study, I explored how digital flashcards would affect the students' motivation and self-efficacy to learn content-specific vocabulary knowledge.

For the intervention, I used digital flashcards to help the students use and practice the vocabulary terms that were aligned to the USHC standards 1 and 2 as mandated by the S.C. Department of Education.

In the following sections, a brief review of information processing theory provides information on how and why learning can be enhanced through memorization. A description of what digital flashcards were and how they were used is followed by an explanation of the ARCS model of motivation. This model provided information on the significant influences on the motivation to learn and for systematic ways of identifying and solving problems with learning (Casillas et al., 2012; Keller, 2016; Kim & Frick, 2011).

Intervention Design

Information processing theory seeks to explain how sensory information is collected and stored by the human brain (Celikoz et al., 2019). Table 3.2 provides an overview of the components of information processing, the definitions, and the connections to the intervention. Iconic or visual memory, echoic or auditory memory, and haptic or tactile memory are sensory memories that the brain uses to build short- and long-term memories (Necka, 2011). Memory is an essential component of learning because it allows for information to be stored and retrieved; therefore, learning also depends on memory because the knowledge stored in the memory provides the foundation to link new information through association (Celikoz et al., 2019; Necka, 2011).

Table 3.2 *Components of Information Processing Theory*

Components of Information Processing Theory	**Definition**	**Connection to Intervention**
Sensory Memory	Iconic or visual memory, Echoic or auditory memory, and Haptic or tactile memory are sensory memories that the brain uses to build short- and long-term memories (Necka, 2011).	The foundation of learning is through registering vast amounts of sensory data that are combined to create a foundation to new information (Celikoz et al., 2019; Necka, 2011).
Short-Term Memory	STM contributes to learning new information (Badddeley, 2010).	Short-term memory is in constant use and provides storage and encoding of information.
Long-Term Memory	LTM stores information indefinitely (Badddeley, 2010).	Background knowledge and vocabulary stored in long-term memory provide a foundation for reading and writing.

Digital Flashcards

Boom Cards were digital flashcards assessed through the Boom Learning website or platform, as shown in Figure 3.1. Like Kahoot!, Quizlet, and Quizizz, they provided listening as a free enhancement. Digital flashcards offered more opportunities to add sensory elements to enhance memory by including multimedia that incorporated video, sounds, and imagery into the digital flashcards. The digital flashcards could be purchased

through vendors like Teachers Pay Teachers or created on the Boom Creator Studio located on the Boom Learning site (Boom Learning, 2021).

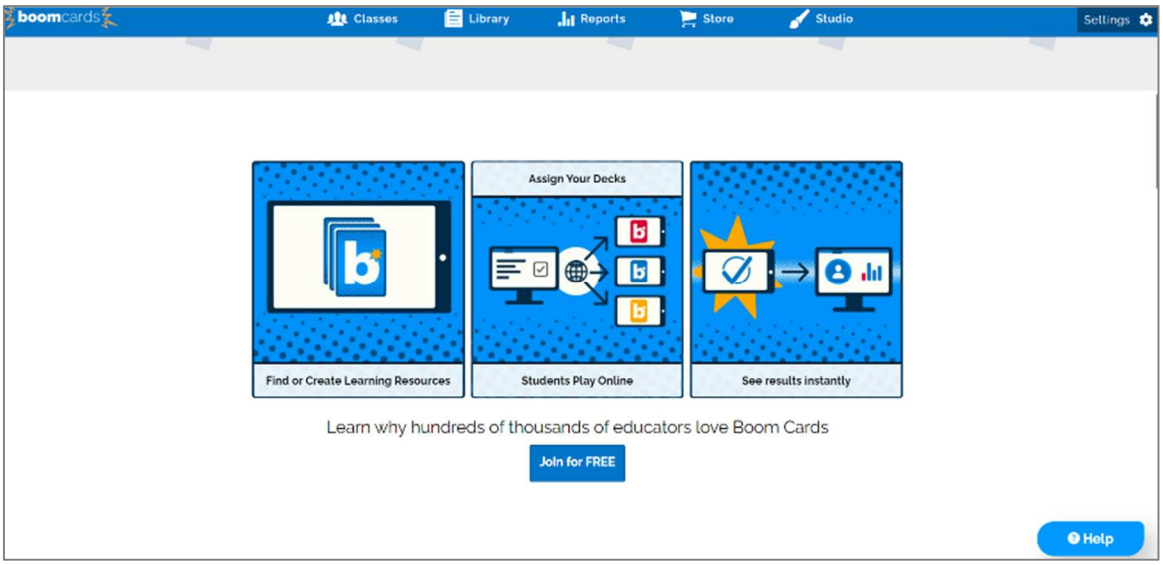

Figure 3.1. Boom Learning Website

Various flashcard templates could be populated and chosen based on the design and information to be presented. As shown in Figure 3.2, the template allowed for customization and desired information to be presented. Multiple choice questions, multiple images, or videos could be used to create digital flashcards. The digital flashcards used in this intervention were differentiated to ask the same questions in different formats. Some cards provided the definition and ask for the word, while others may be reversed. Additionally, the images or videos used on the cards were modified to ask the same questions. The differentiation ensured that the students learned rather than memorized the material.

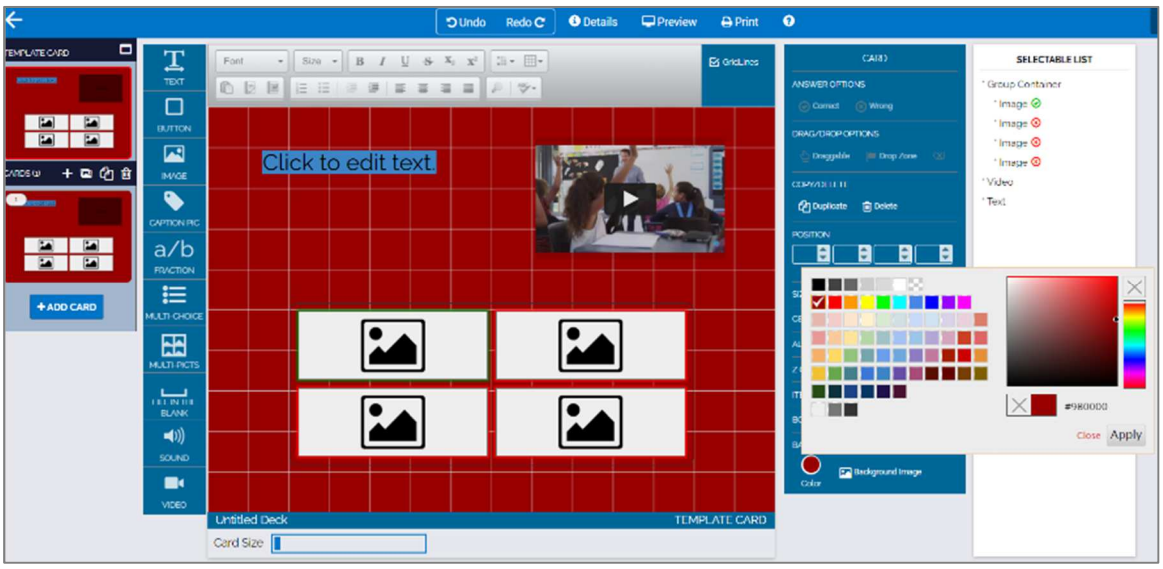

Figure 3.2. *Boom Card Template*

The completed cards (see Figure 3.3) were arranged in decks. I planned to use the decks to support the deconstructed skills in Table 2.2. In addition, the digital flashcard's multimedia capabilities were used to stimulate memory and enhance learning (Dzulkifi & Mustafar, 2013).

Figure 3.3. *Completed Digital Flashcard*

The Boom Learning platform allowed the creation of classes that can be uploaded through the Clever app and pulled the class roster from Power School. The Boom Learning site provided self-grading of the digital flashcard activities and allowed for differentiation based on the individual student's responses. Daily and weekly reports were available that recorded not only proficiency but the number of attempts and time on task. Although I monitored the daily and weekly reports, I did not use that data in this action research project. I wanted the students to use the digital flashcards as an intervention without any grading constructs that may affect their perceptions or interests in using the cards.

Digital flashcards offered rewards for answering questions correctly, and digital reward charts were available, although these were primarily designed for younger students. Students could earn coins for logging in and for correctly answering questions. Coins could be earned for correctly answering questions with no wrong answers. Coins could be used, or spent, by students to purchase new avatars that were different from the free avatars. Gems could also be earned for correctly answering questions. The student mastered the deck when the number of gems equaled the number of cards. Pulses, or lightning bolts, were rewarded for mastery and answering questions correctly. The gems and pulses were used as rewards only and were designed to stimulate extrinsic motivation in the multimedia game design.

ARCS Model

Motivation and self-efficacy to learn content-area vocabulary was the primary focus of this action research study. The ARCS (attention, relevance, confidence, and satisfaction) model was used to encourage student motivation and was an approach to

problem-solving that instructional designers could use to develop engaging lessons and activities. The ARCS model is grounded in the expectancy-value theory developed in the 1930s by Tolman and Lewin (Keller, 1987a). The expectancy-value theory assumes that individuals will be motivated and engaged in activities if they are "perceived to be linked to the satisfaction of personal needs (the value aspect), and if there is a positive expectancy for success (the expectancy aspect)" (Keller, 1987a, p. 2-3). Table 3.3 displays the alignment between the ARCS model, variables, and digital flashcard components.

Table 3.3 *Operationalized Variables*

Categories	**Variables**	**Digital Flashcard Components**
Attention	Activates participants and interest	• Active learning through a diverse multimedia approach. • User-friendly format.
Relevance	Perceived worth	• The teacher will model using digital flashcards. • Differentiation to ensure understanding.
Confidence	Builds self-efficacy	• Instant feedback. • Progress monitoring and proficiency level notification. • Rewards for proficiency.
Satisfaction	Immediate application	• Interactive, game-like design. • Reinforces learning. • Promotes engagement.

Intervention Implementation

The intervention implementation was organized into 4 phases: (1) preparation phase, (2) practice, (3) data collection, and (4) data analysis. The following sections describe the phases in detail.

Preparation Phase. Students in my eleventh-grade U.S. History class were invited to participate in the action research study. In addition, the participating students' parents received an invitation for their children to participate in the action research study. The invitation described the study and requested parental consent for participation. The students and parents could sign and return a printed copy or sign electronically via email.

Practice. Students that returned a signed consent form participated in the vocabulary pretest administered through Microsoft Forms. The participants were instructed that the pretest was not a graded assignment and would be used to determine their present U.S. History vocabulary knowledge level. They were reminded to do their best and that they could view the pretest results after submission. The scores on pretest scores were recorded on my computer using pseudonyms.

The introduction to the intervention began with a researcher-created slideshow lesson to introduce participants to the digital flashcards and the skills needed to interact with the intervention. Figure 3.4 shows the title slide of the slideshow. The participants were reminded that vocabulary knowledge was essential for proficiency in U.S. History content. The participants were taught how to locate the digital flashcard app through their online Clever page and access their digital flashcard library. The library included decks created to correlate to vocabulary aligned to South Carolina USHC Standards 1 and 2. Explicit instructions to use the digital flashcards were given and modeled. After I

modeled the process, the class and I played several rounds together as practice on the Smart Board. The class then logged into their digital flashcard account and worked on their assigned practice decks, and I assisted with any problems. Upon completion of practice rounds, the students had a basis for understanding how digital flashcards worked. I continued to work with individual students to remedy any problems or concerns. The participants accessed and played several rounds using digital flashcards during the week. After the initial practice week, the participants utilized six weeks of the digital flashcard intervention.

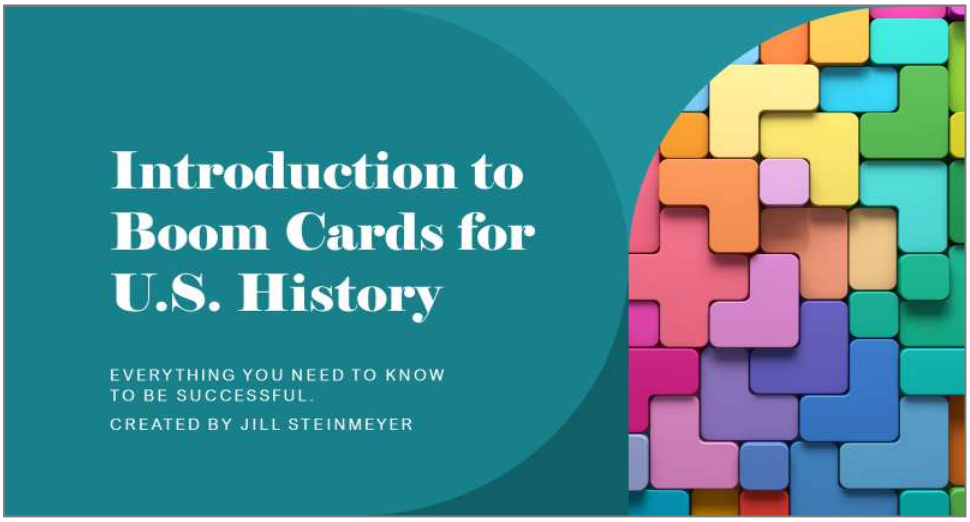

Figure 3.4. Title Slide of Digital Flashcard PowerPoint.

Week One. Week One included classroom activities such as slideshows with guided notes, mini-lessons, cloze readings, video clips, document-based questions, and map work. In addition, digital flashcards were utilized during the last 30 minutes of class. I monitored the digital flashcard use via Go Guardian, our district's classroom monitoring tool that allowed access to every student's Chromebook screen. Additionally, the students were given two Likert-type exit tickets per week. Table 3.7 provides the exit ticket

questions and alignment guide. The exit tickets were completed on Microsoft Forms and were used to gauge students' thoughts and feelings about using digital flashcards.

Weeks Two and Three. The students continued with routine classroom procedures during Weeks Two and Three. In both weeks, the last 30 minutes of class were used for digital flashcard activities. At this stage, differentiated vocabulary strategies were incorporated and were based on the individual student reports provided through the digital flashcard app. The decks were differentiated to ensure that the repetition of missed words was incorporated along with new words. Two Likert-type exit tickets per week were given and recorded.

I initiated the first interview session with each student during week three. The open-ended interview sessions lasted approximately 40-45 minutes before class or during individualized learning time (ILT) in the conference room with the school guidance counselor in attendance. Accommodations were made for students who were unable to complete the interviews during the allotted time.

Week Four and Five. The students continued with routine classroom procedures during Weeks Four and Five. In both weeks, the last 30 minutes of class were used for digital flashcard activities. Continued differentiated vocabulary strategies were used. Two Likert-type exit tickets per week were given each week and recorded.

Week Six. The students continued with routine classroom procedures. The students completed the final two exit tickets. The second interview session was conducted with individual students. The open-ended interview sessions lasted 45-60 minutes, were conducted during homeroom and individual learning time, and held in the

conference room with the guidance counselor in attendance. Accommodations were made for students who were unable to complete the interviews during the allotted time.

Additionally, the students were given the final two Likert-type exit tickets. Finally, the students were given a 70-item posttest at the end of Week Six. Again, the students were reminded to do their best and that the test was not a graded assignment. The 70-item posttest comprised the same terms used on the pretest and was auto-graded and recorded.

Data Collection

Three data sources were used to address the research questions of this study: (a) Pretest-posttest, (b) exit tickets, and (c) semi-structured student interviews (Creswell & Creswell, 2018; Mertler, 2017)

Bloomberg and Volpe (2005) state that multiple forms of data collection enhance the validity and depth of understanding of research studies. During the data collection process, pseudonyms were used to protect the confidentiality of all participants. Table 3.4 depicts the alignment of the research questions and data sources. Quantitative data were collected from administering a content-specific vocabulary pretest and posttest and 12 Likert-type exit tickets. In addition, qualitative data were collected from student interviews. For this action research, each instrument was designed to measure interrelated but separate attributes.

Table 3.4 *Research Questions and Data Sources*

Research Questions	**Data Sources**
RQ1: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning content-specific vocabulary knowledge?	1. Pretest-Posttest 2. Exit Tickets 3. Student Interviews

Research Questions	Data Sources
RQ2: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of motivation to learn content-specific vocabulary?	1. Exit Tickets 2. Student Interviews
RQ3: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of self-efficacy to learn content-specific vocabulary?	1. Exit Tickets 2. Student Interviews

Quantitative Data Collection

Quantitative data were used to quantify a problem that could be counted or compared on a numeric scale. For example, pretest-posttest designs are widely used to quantify the amount of change experienced by a group across two-time points when an intervention is applied and to determine if the observable change can be attributed to the intervention (Dimitrov & Rumrill, 2003; Estrada, Ferrer, & Pardo, 2019). The quantitative findings were based on the results of a 70-item vocabulary pretest and posttest and 12 exit tickets completed by the eight eleventh-grade U.S. History students at TAP.

Pretest-Posttest. The pretest-posttest design provided multiple data points as a measure of participant knowledge, allowing for comparison from start to finish, and was designed to assess progress (Ary, Jacobs, Razavieh, Sorenson, 2006; Sanders, 2019). Additionally, the pretest-posttest design addressed the skill level of the participants, aligned with the content being measured, and was delivered in a format that was desirable for the participants (Sanders, 2019).

The content-specific vocabulary from the United States History and the Constitution (USHC) alignment Guide was used to conduct the research. In addition, a district-made pretest-posttest comprised of 70 items was created from three separate vocabulary common assessments and combined to create an assessment that would represent the totality of the content-specific vocabulary utilized for this research (see Appendix A for complete test). The common assessments used to create the pretest and posttest were deemed valid and reliable by the school district. Additionally, the collaboratively created multiple-choice vocabulary assessment was based primarily on the SC USHC Standard One and a few questions were used from Standard Two. The content-specific vocabulary pretest and posttest was aligned with the state standards and district learning objectives (see Appendix B for alignment of the SC standards to the individual content-specific vocabulary questions). Table 3.5 gives the USHC standards one and two.

Table 3.5 *U.S. History and the Constitution Standards. (*South Carolina Social Studies College-and Career-Ready Standards, 2019, p. 114–115).

United States History and the Constitution Standards
Standard 1: Demonstrate an understanding of the influence of the Atlantic World on the regional and national development of republicanism and federalism from 1607–1815.
Standard 2: Demonstrate an understanding of the relationship between economic and continental expansion and the evolving disagreements over natural rights and federalism from 1803–1877.

The pretest was given during standard classroom time prior to the start of the intervention via Microsoft Forms. Both the pretest and posttest were electronically scored

and recorded. Summative scoring was used as there was only one correct answer per question and the raw score was used. The highest possible score was 70 and the lowest possible score was 0. The posttest was given upon conclusion of the six-week intervention was automatically graded on Microsoft Forms . Table 3.6 provides the pretest-posttest alignment guide.

Table 3.6 *Pretest-Posttest Alignment Guide*

Research Question	Pretest-Posttest Sample Questions
RQ1: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning content-specific vocabulary knowledge?	1. Natural rights cannot be taken away by the government. A. unalienable rights B. alienable rights C. constitutional rights D. personal rights 2. The right to vote A. suffrage B. universal voting C. prohibition D. allowance 3. To free from restraint, control, or the power of another. A. suspends B. abolishes C. emancipates D. outlaws

Exit tickets. Exit tickets are simply a question or questions posed to students prior to the end of class and may be implemented in several ways (Kirzner, Alter, & Hughes, 2021). As a tool for student-centered teaching, exit tickets allow students to

evaluate their learning and provide information for the teacher to assess how well students understand the learning materials (Allen, 2012; Amaro-Jimenez, Hungerford-Kresser, & Pole, 2016). As a formative assessment, exit tickets provide a unique understanding. They can also be used to facilitate learning strategies and clarify understanding, and the results may be used to adjust the lessons and teaching strategies (Black & William, 2010; Fowler et al., 2019). A five-point Likert-type scale is often used to measure attitudes and opinions and is a reliable way to measure opinions, attitudes, and behaviors (Fowler et al., 2019; Kirzner et al., 2021).

Exit tickets were used to understand how the students felt about using digital flashcards regarding content-specific vocabulary, motivation, and self-efficacy. The exit tickets were created in collaboration with the districts' high school U.S. History teachers and instructional coaches. The desire was to ask pertinent questions that would give insight into the participants understandings. They were created to correlate to the three research questions and were designed to gain insight into the participants' attitudes and opinion of the intervention. Table 3.7 shows the alignment guide. (See Appendix C for list of exit tickets).

Table 3. 7 *Exit Ticket and Alignment Table*

Research Question	**Exit Ticket Items**
RQ1: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning content-specific vocabulary knowledge?	1. After using the digital flashcards, I am confident I know the vocabulary terms I need to learn in U.S. History. 7. The digital flashcards help me to remember and learn vocabulary relevant to the history lesson. 10. Learning content-area vocabulary has made learning history easier for me.

Research Question	Exit Ticket Items
	11. Digital flashcards have made learning vocabulary easier.
R.Q. 2: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of motivation to learn content-specific vocabulary?	2. Learning interesting information motivates me to learn more about U.S. History. 4. I feel motivated to work harder when I am successful in class. 5. How the information is presented on the digital flashcards helps to keep me motivated to learn the vocabulary. 6. I feel motivated to work harder when I make good grades.
RQ3: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of self-efficacy to learn content-specific vocabulary?	3. Using digital flashcards makes it easier for me to pick out the necessary information to feel successful on quizzes and tests. 8. Being successful in school empowers me to work harder. 9. I feel more confident in understanding U.S. History than I thought. 12. I enjoyed using the digital flashcards to help build my U.S. History vocabulary confidence.

Qualitative Data Collection

Qualitative research focuses on phenomena that occur in a natural setting by "capturing and studying the complexity of those phenomena" (Leedy & Ormrod, 2013, p. 139). Qualitative research provides (a) description or the nature of a situation; (b) interpretation through the new insights, perspectives, or problems; (c) verification of certain assumptions or generalizations; and (d) evaluation or effectiveness of an innovation (Peshkin, 1993). Although qualitative research was once frowned upon due to

its subjective nature and has only recently gained acceptance as legitimate research, it provides valuable content for practical applications (Leedy & Ormrod, 2013; Mertler, 2017).

Interviews. Student interviews were used to explore the effect of digital flashcards on students' (a) learning content-specific vocabulary, (b) motivation to learn content-specific vocabulary, and (c) self-efficacy to learn content-specific vocabulary. Interviewing participants is a qualitative data collection method used to examine an individual's attitudes, thoughts, and behaviors and enables the researcher to delve deeper into what the participants say (Seidman, 2019). "At the root of in-depth interviewing is an interest in understanding the lived experience of other people and the meaning they make from that experience" (Seidman, 2019, p. 9). The words people use in relating their experiences are a "microcosm of their consciousness" (Vygotsky, 1987, p. 236-237), and this consciousness yields insights into the individual's social and educational issues (Seidman. 2019). Semi-structured interview is flexible and allows the researcher to clarify responses by asking additional questions and helps develop meaning and understanding (Seidman, 2019).

For the qualitative portion of this study, eight participants were interviewed (See Appendix D for interview protocol). Interview questions were aligned to the three research questions, and the participants were each interviewed mid-intervention during Week Three and again post-intervention during Week Six of the intervention. The interview questions were compiled through collaboration with my professional learning community of social studies teachers and the district social studies instructional coach. The original interview prompts came from a doctoral dissertation written by Wingard

(2017) located through the University of South Carolina Library database (see Appendix E). The interview prompts were modified from the original to align with the three research questions. Each research question was examined, and the group considered what questions they thought would be beneficial and provide the best overall picture of the student's understanding of the overarching question. The teachers agreed that the number needed to be concise to engage the students yet provide a thorough examination of the digital flashcard intervention process with considerations given to the student population. After careful consideration and analysis, the research prompts were agreed upon and recorded. The mid-interview vocabulary prompts are illustrated in Table 3.8. The post-interview vocabulary prompts are illustrated in Table 3.9.

Table 3.8 *Modified Mid-Intervention Prompts*

Interview Prompts
1. I was hoping you could share how the digital flashcards affected your U.S. History vocabulary skills.
2. Tell me what you liked or disliked about using digital flashcards to learn vocabulary.
3. Describe the differences between using digital flashcards and other ways you learned vocabulary.
4. Please share with me your definition of motivation.
5. Describe how the digital flashcards influenced your motivation to learn content-specific vocabulary.
6. Did the instant feedback on the digital flashcards affect your motivation to learn content-specific vocabulary?
7. Describe how the digital flashcards made you feel about your academic abilities in U.S. history.
8. How did participating in the digital flashcards activities affect your perceptions of learning content-specific vocabulary?

Interview Prompts
9. Did the use of digital flashcards help to increase your vocabulary confidence? How?

Table 3.9 *Modified Post-Intervention Prompts*

Interview Prompts
1. Did the digital flashcards activities help you focus more on the vocabulary you were learning?
2. Will you share some of the vocabulary terms you learned using digital flashcards?
3. Would you recommend digital flashcards to your classmates as a learning tool? Why or why not?
4. Would you say you were more motivated at the start of using digital flashcards, in the end, or anywhere between?
5. Do you feel like you need a reward to be motivated to learn content-specific vocabulary?
6. Did the digital flashcards help to motivate you to learn content-specific vocabulary better than the traditional ways?
7. Were you comfortable using digital flashcards? Did using them make you more confident in your learning?
8. How confident are you that you will succeed at a similar vocabulary assignment or test in the future? Why?
9. Do you want to share about your self-efficacy or confidence to learn content-specific vocabulary since using digital flashcards?

The interviews were audio recorded using the mobile Apple application Voice Record. They were then transcribed using Google Docs and were reviewed for accuracy. The participants reviewed the transcripts to ensure clarity and accuracy.

Content-specific Interview Prompts. The interview prompts were aligned with the research questions and comprised subscales. The first interview protocol addressed

how digital flashcards affected eleventh-grade U.S. History students' content-specific vocabulary knowledge. The interview questions were designed to examine the students' attitudes toward the intervention and their development of content-specific vocabulary knowledge. In addition, questions sought to determine how students perceived their learning and felt about the process. The researcher conducted the researcher interviews, one mid-intervention, and one post-intervention (see Appendix F for mid-intervention script and Appendix G for post-interview script).

The first round of face-to-face interviews was conducted mid-intervention during Week Three of the intervention. They included content-specific interview prompts, motivation interview prompts, and self-efficacy prompts. The 40- to 45-minute individual interviews were recorded on an iPhone recorder and transcribed by hand to ensure that all information was captured and recorded. The recordings were uploaded to Google Docs for transcription as part of data analysis. The transcription was compared to the handwritten transcription to ensure all information was correct. See Table 3.10 for content-specific mid-intervention interview prompts and the alignment guide.

Table 3.10 *Content-Specific Modified Mid-Intervention Prompts and Alignment Guide.*

Research Question	Interview Prompts
RQ1: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning content-specific vocabulary knowledge?	• Share with me how digital flashcards affected your U.S. History vocabulary skills. • Tell me what you liked or disliked about using digital flashcards or learning vocabulary. • Describe the differences between using digital flashcards and other ways you learned vocabulary.

The second round of face-to-face interviews was conducted post-intervention during week six of the intervention and followed the same protocols as the mid-intervention interviews. This round of interviews included a slightly longer interview time of 45 to 60 minutes. See table 3.11 for content-specific mid-intervention interview prompts.

Table 3.11 *Content-Specific Modified Post-Intervention Interview Prompts.*

Research Question	Interview Prompts
RQ1: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning content-specific vocabulary knowledge?	• Did the digital flashcards activities help you focus more on the vocabulary you were learning? • Will you share some of the vocabulary terms you learned using digital flashcards? • Would you recommend digital flashcards to your classmates as a learning tool? Why or why not?

Motivation Interview Prompts. The second group of interview questions sought to determine whether the participant enjoyed the intervention and if the intervention helped to motivate the participants to learn social studies. Usher & Kober (2012) found that higher motivation to learn has been linked to better academic performance and greater understanding and satisfaction with school. See Table 3.12 for motivation mid-intervention interview prompts and alignment guide. See Table 3.13 for motivation post-intervention interview prompts.

Table 3.12 *Modified Motivation Mid-Intervention Interview Prompts.*

Research Question	Interview Prompts
R.Q. 2: How and to what extent do digital flashcards affect eleventh-	• Please share with me your definition of motivation.

Research Question	Interview Prompts
grade U.S. History students' perception of motivation to learn content-specific vocabulary?	• Describe how the digital flashcards influenced your motivation to learn content-specific vocabulary. • Did the instant feedback on the digital flashcards affect your motivation to learn content-specific vocabulary?

Table 3.13 *Modified Motivation Post-Intervention Interview Prompts.*

Research Question	Interview Prompts
R.Q. 2: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of motivation to learn content-specific vocabulary?	• Were you more motivated at the start of using digital flashcards, in the end, or anywhere between? • Do you feel like you need a reward to be motivated to learn content-specific vocabulary? • Did digital flashcards help motivate you to learn content-specific vocabulary better than traditional ways

Self-Efficacy Interview Prompts. The third interview prompts addressed whether the intervention encouraged self-efficacy in the participants. This interview protocol was designed to question how the intervention of digital flashcards affected the participant's self-efficacy or confidence in their learning. Bandura (1977, 1986, 1997) suggests that self-efficacy is formed through the belief that a student can perform a task successfully and exert control over one's motivation, behavior, and social environment.

The interconnected attributes of self-efficacy and motivation are well-known and hallmarks of achievement in school and life (Bandura, 1977; 1986; Ericcson et al., 2007; Del Siegel, McCoach, & Roberts, 2017). See Table 3.14 for self-efficacy-specific mid-intervention interview prompts and table 3.15 for self-efficacy post-intervention interview prompts.

Table 3.14 *Modified Self-Efficacy Mid-Intervention Interview Prompts*

Research Question	Interview Prompts
RQ3: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of self-efficacy to learn content-specific vocabulary?	• Describe how the digital flashcards made you feel about your academic abilities. • How did participating in the digital flashcards activities affect your perceptions of learning content-specific vocabulary? • Did using digital flashcards help to increase your vocabulary confidence? How?

Table 3.15 *Modified Self-Efficacy Post-Intervention Interview Prompts.*

Research Question	Interview Prompts
RQ3: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of self-efficacy to learn content-specific vocabulary?	• Were you comfortable using digital flashcards? Did using them make you more confident in your learning? • How confident are you that you will succeed at a similar vocabulary assignment or test in the future? Why? • Do you want to share anything about your confidence in learning content-specific vocabulary since using digital flashcards?

Data Analysis

In this action research project, three data instruments were used to explore the research questions through quantitative and qualitative methods. First, data were gathered in this research study using a pretest-posttest, exit tickets, and student interviews. Second, quantitative data were analyzed with descriptive statistics and measures of central tendency. Third, qualitative data were analyzed with inductive analysis. Finally, quantitative, and qualitative data were analyzed and compared for similarities and differences. A full description of all analyses is included in Chapter 4. Table 3.16 illustrates the alignment of the research questions, data sources, and data analysis.

Table 3.16 *Data Analysis Alignment*

Research Question	**Data Source**	**Data Analysis**
RQ1: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning content-specific vocabulary knowledge?	• Pretest-Posttest • Exit Tickets • Student Interviews	• Descriptive Statistics • Descriptive Statistics • Inductive Analysis
RQ2: How and to what extent do digital flashcards affect eleventh-grade U.S. students' perception of motivation to learn?	• Pretest-Posttest • Exit Tickets • Student Interviews	• Descriptive Statistics • Descriptive Statistics • Inductive Analysis
RQ3: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of	• Pretest-Posttest • Exit Tickets • Student Interviews	• Descriptive Statistics • Descriptive Statistics

Research Question	Data Source	Data Analysis
self-efficacy to learn content-specific vocabulary?		• Inductive Analysis

Procedures and Timeline

The procedure for this action research study will be divided into phases. The timeline for the procedures for this research is as follows: Phase 1: Preparation, Phase 2: Practice, Phase 3: Data Collection, and Phase 4: Data Analysis. Table 3.17 summarizes the data collection procedures for this study.

Table 3.17 *Procedure and Timeline*

Phase I: Preparation		
	Activities	*Timeframe*
Researcher's Role	• Distribute Consent and asset letters • Obtain signed parental consent letters. • Set up digital flashcards.	One Week
Participant's Role	• Return consent or assent letters. • Return signed parent consent forms	
Phase II: Practice		
	Activities	*Timeframe*
Researcher's Role	• Administer pretests. • Instruct students on digital flashcards.	One Week
Participant's Role	• Complete pretest • Complete digital flashcard practice	
Phase III: Data Collection		
	Activities	*Timeframe*
Researcher's Role	• Assign digital flashcards for Units 1 & 2. • Assign Exit tickets (2 per week). • Interview participants (Week 3 & Week 6).	Six Weeks

	• Transcribe interviews • Administer Posttest (Week 6).	
Participant's Role	• Complete digital flashcards for Units 1 & 2. • Complete 2 Exit tickets per week. • Participate in semi-structured interviews (Week 3 & Week 6). • Complete posttest (Week 6)	
Phase IV: Data Analysis		
	Activities	*Timeframe*
Researcher's Role	• Conduct inductive analysis • Code student interviews • Conduct descriptive statistics	Six Weeks

Phase 1: Preparation

Students in my eleventh-grade U.S. History class were asked to participate in the action research study. The participating students' parents received an invitation for their children to participate in the action research study. The invitation described the study and requested parental consent for participation. The students and parents could sign and return a printed copy or sign electronically via email. (Appendix I).

Phase 2: Practice

At the beginning of Phase 2, all participants completed the 70-question vocabulary pretest on Microsoft Forms. The participants were taught how to locate the digital flashcard app through their Clever page and how to access their digital flashcard library. Explicit instructions for using digital flashcards were given and modeled to the participants. The participants understood that the digital flashcards were created to provide them with additional content-area vocabulary instruction and practice. The participants accessed and played several rounds using digital flashcards during the week.

After the initial training week, the participants utilized six weeks of the digital flashcard intervention.

Phase 3: Data Collection

Participants in the action research study were expected to complete six weeks of digital flashcard activity that utilized a multimedia and gamified approach to content-area vocabulary instruction. The vocabulary correlated with USHC standards 1 and 2 taught during the intervention. In addition, participants completed two Likert-type exit tickets per week during the intervention for a total of twelve. Participants also completed two rounds of semi-structured interviews, one mid-intervention during week three and one post-intervention during week six. The interviews were recorded and transcribed. At the end of phase 3, a 70-item posttest was administered through Microsoft Forms.

Phase 4: Data Analysis

During Phase 4, data were analyzed from three instruments: (a) pretest and posttest, (b) Likert-type exit ticket responses, and (c) semi-structured interviews. First, quantitative data from the pretest/posttest were analyzed using descriptive statistics to determine if an observable change could be attributed to the intervention. In addition, liker-type exit tickets were examined to determine the measure of central tendency.

Qualitative data from the semi-structured interviews were analyzed using inductive analysis. The interviews were recorded, transcribed, and coded. The process utilized In Vivo, Descriptive, and pattern coding to develop themes and assertions from the participants' own words.

Rigor and Trustworthiness

Rigor and trustworthiness are often questioned concerning qualitative research. Credibility is considered an essential component of trustworthiness and is the superior standard for all research (Lincoln & Guba, 1985). Several qualitative methods ensured that both rigor and trustworthiness were used to enhance the validity of the research: triangulation, member checking, and peer debriefing. Each of these strategies is described below.

Triangulation

Triangulation is one method for establishing trustworthiness. Triangulation is the use of various instruments, different methods, and sources to collect data that enhance the validity of findings (Mertler, 2017). Themes can be established by converging data sources or perspectives that can add to the study's validity (Creswell & Creswell, 2018). This action research study analyzed data from 70-item pretest-posttest, Likert-type scaled exit tickets, and mid- and post-intervention semi-structured participant interviews.

The 70-item pretest-posttest objectively measured students' knowledge growth. Semi-structured interviews asked open-ended questions to allow individuals to elaborate their thoughts and responses without the researcher's influence. In addition to the interview, exit tickets were used to further gain data into the research questions about content-specific vocabulary knowledge, motivation, and self-efficacy. Finally, I accomplished triangulation by analyzing and comparing the data sources for corroboration.

Member Checking

Member checking was used to serve as a means for the interviewee to examine the data being presented in the study. Varpio, Ajjawi, Monrouxe, O'Brien, and Rees (2017) explain that member checking is conducted separately during the analysis process. In my research study, I requested that the interviewees proofread the transcribed interview to ensure that their words were represented correctly. After the data analysis, I solicited the interviewees' viewpoints to ensure their responses were interpreted as they intended.

Peer Debriefing

Peer debriefing was implemented to include the opinions of other educational professionals. Peer debriefing improved my research because it made me think beyond my own data analysis and consider all angles of the research results. Requesting colleagues to review the research and findings assisted me with evaluating the data on a deeper level (Nowell, Norris, White, & Moules, 2017). I collaborated with members of the Slytherin cohort, namely my writing partner, and with district high school social studies teachers, both male and female, to obtain third-party perspectives of my research study. As teachers in the same district, they have experienced the same student motivational issues that I have experienced. They can use that experience to evaluate the data and offer constructive criticism and professional insight. I discussed and interrogated my qualitative findings with my dissertation advisor. Based on these discussions, I condensed some categories and combined two themes. I used peer debriefing to expand my thinking to verify the accuracy of data analysis.

Audit Trail

As a final method to ensure rigor and trustworthiness, an audit trail was created through journaling throughout the research process. Photos recorded the process of coding and analysis of data (Mertler, 2017), which are depicted in Chapter 4. The audit trail provided documentation for analyzing and reporting the findings, which supported the rigor and trustworthiness of this research to readers.

Plan for Sharing and Communicating Findings

This action research aimed to explore how and to what degree digital flashcards affected the content-specific vocabulary knowledge, motivation, and self-efficacy of eleventh-grade U.S. History students to learn content-area vocabulary. The findings of my action research will be shared with stakeholders involved in all areas of the research study. Throughout the analysis and presentation of findings, all information about the identity of the participants remained anonymous, and all data remained encrypted and stored on my laptop.

The research findings plan to be shared with my colleagues at TAP during our weekly faculty meeting. The information will be presented in PowerPoint, handouts, and Excel charts to provide a complete understanding of the results and analysis. The research will provide an opportunity to delve into the results and help to direct change in our curriculum and instruction to benefit all parties. The findings will also be presented to the district-level officials for social studies, curriculum and instruction, and other interested officials to discuss the findings and the impact of these findings on future instructional practices. Finally, the results will be shared with the school district board members. The

integrity of this research project will ensure that all information about the participants will remain confidential throughout the dissemination of the research findings.

CHAPTER 4

ANALYSIS AND FINDINGS

The purpose of this action research was to analyze how digital flashcards affect eleventh-grade U.S. History students' (a) content-specific vocabulary knowledge, (b) perceptions of motivation to learn content-specific vocabulary, and (c) self-efficacy to learn content-specific vocabulary. This chapter presents the findings of the action research study. It describes the quantitative findings related to the 70-item vocabulary pretest and posttest completed by eight eleventh-grade U.S. History students and 12 exit tickets that examined the students' perceptions on a Likert-type scale. Qualitative findings are derived from six teacher semi-structured interviews. All analysis of the findings is used to address this study's research questions:

1. How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning of content-specific vocabulary knowledge?
2. How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of their motivation to learn content-specific vocabulary?
3. How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of their self-efficacy to learn content-specific vocabulary?

Quantitative Analysis and Findings

This study used descriptive statistics to analyze quantitative data. Adams and Lawrence (2016) defined descriptive statistics as the analysis of numerical data used to summarize the sample characteristics. This study used descriptive statistics to summarize the knowledge gains and perceptions of digital flashcards of eight eleventh-grade U.S. History students. The quantitative findings were based on the results of a one-group multiple choice vocabulary knowledge pretest and posttest and 12 separate exit tickets that used a 5-point Likert-type scale. Each of these is further described below.

Vocabulary Knowledge Pretest-Posttest

Pretest-posttest designs are widely used to quantify the amount of change experienced by a group across two-time points when an intervention is applied and to determine if the observable change can be attributed to the intervention (Dimitrov & Rumrill. 2003; Estrada et al., 2019). The quantitative findings are based partly on the results of a 70-item vocabulary pretest and posttest completed by eight eleventh-grade U.S. History students at TAP.

Each item asked the students to identify the correct term for a definition. Each question had four possible answers, and I graded the 70-item multiple-choice vocabulary test using the summative scoring process, as there was only one correct answer for each test item. Therefore, the highest possible score was 70, and the lowest was zero. The pretest-posttest was constructed from three separate common assessments that were combined to create the 70-item vocabulary test.

This action research study was conducted in an eleventh-grade U.S. History class with eight participants ($n = 8$). On the 70-item pretest, the class had a mean score of

43.25 and a standard deviation of 8.70 (see Table 4.1). The highest score was 55, and the lowest was 29 (see Table 4.2). At the end of the six-week intervention, the 70-item posttest was given to the same eight participants (n = 8). On the 70-item posttest, the class had a mean score of 50.75 with a standard deviation of 12.67 (see Table 4.1). The highest grade was 66, and the lowest was 27 (see Table 4.2). All participants showed gains except for one which scored 2 points lower on the posttest.

Table 4.1 *Descriptive Statistics for Content Knowledge Pretest-Posttest*

	M	***SD***
Pretest	43.25	8.70
Posttest	50.75	12.67

Table 4.2 *Raw Pretest and Posttest Scores*

Participants	**Pretest**	**Posttest**	**Gain**
Cameron	55	61	6
Logan	46	56	10
Blake	35	43	8
Jared	42	53	11
Shawn	39	42	3
Grayson	49	58	9
Zane	51	66	15
Hunter	29	27	-2

Exit Tickets

Exit tickets were given to all students in the eleventh-grade U.S. History class with eight participants (n = 8) and utilized a Likert-type scale. The Likert-type exit tickets used a 5-point scale that asked students to answer each of the twelve questions with one

of the following: 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree. The exit tickets included items for three subscales. The three subscales were: vocabulary knowledge, motivation, and self-efficacy. Each of the three subscales had four corresponding items that helped to gain insight into the participants' perception of the intervention. The exit tickets were given twice a week for twelve separate exit tickets for six weeks. Table 4.3 shows the subscales and exit ticket alignment.

Table 4.3 *Subscales and Exit Ticket Alignment*

Subscales	**Exit Ticket Questions**
Vocabulary	1. After using digital flashcards, I feel confident I know the vocabulary terms I need to learn in U.S. History.
	7. The digital flashcards help me to remember and learn vocabulary relevant to the history lesson.
	10. Learning content-area vocabulary has made learning history easier for me.
	11. Digital flashcards have made learning vocabulary easier.
Motivation	2. Learning interesting information motivates me to learn more about U.S. History.
	4. I feel motivated to work harder when I am successful in class
	5. How the information is presented on the digital flashcards helps keep me motivated to learn the vocabulary.
	6. I feel motivated to work harder when I make good grades
Self-Efficacy	3. Using Boom Cards has made it easier for me to pick out necessary information that allows me to be successful on quizzes and tests.
	8. Being successful in school empowers me work harder.
	9. I feel more confident in my understanding of U.S. History than I thought I would.

Subscales	Exit Ticket Questions
	12. I enjoyed using Boom Cards to help build my U.S. History vocabulary

Descriptive statistics is a type of quantitative analysis used by researchers to describe, summarize, and organize the characteristics of a sample (Adams & Lawrence, 2019; Mertler, 2017). The measure of central tendency was used to examine the data from the exit tickets and find the average. The mean was positive (M >3) in all items but Item 2, which stated, "Learning interesting information motivates me to learn more about U.S. History," and had a mean of 2.50. This low mean score appears to be an outlier and may indicate the participant's motivational outlook when learning U.S. History. All the other motivational questions were geared toward the digital flashcards. Only this one addressed U.S. History. Table 4.4 shows the descriptive statistics for the exit tickets.

Table 4.4 *Descriptive Statistics for Exit Tickets*

Exit Ticket Items	*M*	*SD*
1. After using Boom Cards, I feel confident that I know the vocabulary terms that I need to learn in U.S. History.	3.38	2.13
2. Learning interesting information motivates to me learn more about U.S. History.	2.50	2.07
3. Using Boom Cards has made it easier for me to pick out necessary information that allows me to be successful on quizzes and tests.	3.75	1.58
4. I feel motivated to work harder when I am successful in class.	4.13	0.35
5. The way that the information is presented on Boom Cards helps to keep me motivated to learn the vocabulary.	3.63	1.51
6. I feel motivated to work harder when I make good grades.	4.00	1.69

7. The Boom Cards help me to remember and learn vocabulary relevant to the history lesson.	4.13	0.35
8. Being successful in school empowers me work harder.	4.00	1.69
9. I feel more confident in my understanding of U.S. History than I thought I would.	4.50	0.54
10. Learning content-area vocabulary has made learning history easier for me.	4.88	0.35
11. Boom Cards have made learning vocabulary easier.	4.88	0.35
12. I enjoyed using Boom Cards to help build my U.S. History vocabulary	4.50	0.54

Vocabulary Subscale. The exit tickets were four items (i.e., Items 1, 7, 10, 11) were aligned with participants' use of digital flashcards to gain U.S. history vocabulary knowledge. All four items referenced *learning, learning, and learn* regarding vocabulary

Item 1, which stated, "After using digital flashcards, I feel confident that I know the vocabulary terms that I need to learn in U.S. History," returned a mean of 3.38 (*SD* = 2.13). This question scored the lowest in this category of vocabulary learning.

Item 7, learning relevant vocabulary, stated that "The digital flashcards help me to remember and learn vocabulary relevant to the history lesson" had a mean of 4.0 (*SD* = 0.35).

Items 10 and 11 dealt with vocabulary learning easier and had a mean of 4.88 (*SD* = 0.35). These two statements garnered the highest mean for the category and the highest mean for all statements given on the exit tickets. The means and standard deviation for the vocabulary subscales are illustrated in Table 4.5

Table 4.5 *Descriptive Statistics for Vocabulary Subscale*

	Item 1	**Item 7**	**Item 10**	**Item 11**
M	3.38	4.13	4.88	4.88
SD	2.13	0.35	0.35	0.35

Motivation Subscale. Four items were concerned with how digital flashcards affected eleventh-grade U.S. History students' perception of their motivation to learn content-specific vocabulary. Two items (i.e., items 4 and 6) looked at whether the students' motivation was driven by success in class or good grades, both extrinsic motivations. Items 2 and 5 looked at intrinsic motivation through interesting information or presentation of the learning materials.

For example, Item 2, "Learning interesting information motivates me to learn more about U.S. History," returned a mean of 2.50 (*SD* =2.07).

Item 4, which stated, “I feel motivated to work harder when I am successful in class,” had a mean of 4.1 (*SD*= 0.35). This question had the highest mean in this category, with seven respondents selecting 4=Agree and one selecting 5=Strongly Agree. The students all agreed that success in class motivated them to work harder.

Item 5, "The way that the information is presented on the digital flashcards helps to keep me motivated to learn the vocabulary,” returned a mean of 3.63 (*SD* = 1.51).

Item 6, which stated, “I feel motivated to work harder when I make good grades,” returned a mean of 4.0 (*SD*= 1.69). The descriptive statistics for the responses related to the motivation subscale are illustrated in Table 4.6.

Table 4.6 *Descriptive Statistics for Motivation*

	Item 2	**Item 4**	**Item 5**	**Item 6**
M	2.5	4.13	3.63	4.00
SD	2.07	0.35	1.50	1.69

Self-Efficacy Subscale. Four items addressed how and to what extent digital flashcards affected eleventh-grade U.S. History students' perception of their self-efficacy to learn content-specific vocabulary. These four items were geared toward the participants' beliefs in their abilities and confidence. For example, items 3 and 8 looked at success as a catalyst for self-efficacy, whereas items 9 and 12 targeted the participant's confidence in their abilities.

For example, item 3, which stated, "Using digital flashcards has made it easier for me to pick out the necessary information that allows me to feel successful on quizzes and tests," returned a mean of 3.75 (*SD* = 1.58) and was the lowest in this section.

Item 8, "Being successful in school empowers me to work hard." returned a mean of 4.0 (*SD = 1.69)*. Item 9, which stated, “I feel more confident in my understanding of U.S. History than I thought I would,” returned a mean of 4.5 (*S*.D. = .54). Item 12, which stated, “I enjoyed using the digital flashcards to help build my U.S. History vocabulary confidence,” returned a mean of 4.5 (*SD* =0.54). Both items 9 and 12, based on U.S. History vocabulary confidence, garnered the same mean of 4.5 and standard deviation of 0.54. The mean and standard deviation for the responses related to the self-efficacy subscale are illustrated in table 4.7.

Table 4.7 *Descriptive Statistics for Self-Efficacy Subscale*

	Item 3	**Item 8**	**Item 9**	**Item 12**
M	3.75	4.00	4.50	4.00
SD	1.58	1.69	0.54	0.54

Qualitative Analysis and Findings

For this research study, qualitative data were collected from semi-structured participant interviews. The eight study participant interviews were conducted mid-intervention, during Week Three, and the final week of the action research, Week Six. Mertler (2017) defined inductive analysis as identifying and organizing qualitative data into important patterns to present the key findings. In this study, inductive analysis was used to identify themes from participant interviews and gain insight into their perceptions of digital flashcards on eleventh-grade U.S. History students' (a) content-specific vocabulary knowledge, (b) perceptions of motivation to learn content-specific vocabulary, and (c) self-efficacy to learn content-specific vocabulary. The qualitative findings were based on the results of mid-intervention and post-intervention interviews aligned with the three research questions.

The inductive analysis process started with transcription in Google of the recorded participant interviews utilizing pseudonyms for anonymity. The transcriptions were compared to the audio recordings, and modifications were made as necessary. Member checking was used to ensure the participants' words were represented correctly. The initial cycle of qualitative data analysis began with eclectic coding as an open coding method to explore both data by reading through the transcripts multiple times (Saldana, 2021). Once the accuracy of the transcripts was verified, the transcripts were uploaded

into Delve online software. The qualitative analysis process included (a) first-cycle coding, (b) second-cycle coding, and (c) developing themes.

In Vivo Coding

The first round of coding consisted of In Vivo coding. In Vivo coding uses words or short phrases from the participant's words to generate codes (Saldana, 2021). In Vivo coding was employed to ensure that the participants' exact wording from the interviews was used to generate codes. In Vivo coding captures the participants' insights and reactions to the intervention in their own words and understandings. A total of 125 In Vivo codes were created in the first round. Table 4.8 provides an overview of the number of codes generated. Table 4.9 provides the emerging categories from the In Vivo codes. After consulting with the dissertation chair about the codes generated, the second coding round was started.

Table 4.8 *Codes Generated*

Qualitative Data Source	Number of Participants	Total Number of Codes
Interview transcripts	8	125

Table 4.9 *Emerging Categories and In Vivo codes*

Emerging Categories for Student Interviews	In Vivo codes
Recommend Digital flashcards	• Liked digital flashcards • Digital flashcards helped • Digital flashcards are okay • Digital flashcards are pretty good • Digital flashcards motivate • Digital flashcards helped to focus • Interesting • Better than traditional ways • Test yourself • Used Cards in different ways • Recommend Digital flashcards

Emerging Categories for Student Interviews	In Vivo codes
	• Test myself • Interactive • Better than sitting • Hints • Not Memorizing • Practicing with terms • Learning tool • Instant feedback • Better than writing • Flipcharts • Better than Kahoots! or Quizlet
More like a game	• Competing • Games are fun • Liked the game • It was not an academic feeling • Learning without knowing • Not like work • Studies without studying • Playing a game • Did more • More practice • More like playing • Play and learn • Played • Fun and easy • Fun • Not boring easy to use • Didn't have to work hard • Learning easier • Easier because it was fun • Easier • See what I knew • Not hard
Academic better	• Vocabulary got better • Vocabulary learned • Learned • Used words more frequently • Words learned • Vocabulary makes better sense • Vocabulary easier • Terms we are studying • Teaches you while you learn

Emerging Categories for Student Interviews	In Vivo codes
	• Words that I know now
Did better in U.S. History	• Good scores • Good grades • Scores were good • Better grades • Helped focus • Keeps you thinking • Learning is better • Reinforced what I knew • Know more • Knew what you were doing • Knew what I knew • Knowing what I was doing
Self-efficacy	• Perception of learning • Not stressed • I could see a difference • Comfortable • Comfortable doing work • Pay attention • Determination • More involved • Determined to do my work • Confidence the same • Always confident • More confident • Confidence • Confident in learning • More understandable • Everything made better sense • Understand things • Pretty good • Not bad • Continue to be good
Definition of Motivation	• Intrinsic Motivation • Wanted to win • Just did it • More than memorization • Felt good • Knew the terms • Felt smarter • Not motivated in school

Emerging Categories for Student Interviews	In Vivo codes
	• Work smarter • Motivated myself • Successful • Extrinsic rewards • Ding, ding • Win stuff • Either right or wrong • Win rewards • Win the game • Something to look at • Green checkmark

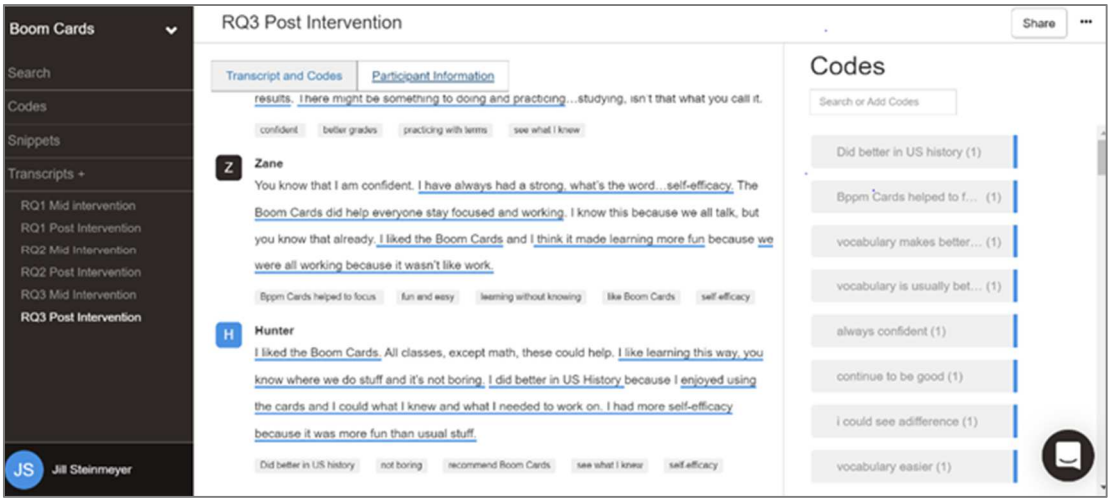

Figure 4.1. *Sample of In Vivo Coding in Delve.*

Descriptive Coding

Next, I used descriptive coding as a transitional technique to further winnow the data (Saldana, 2021). Descriptive, or topic, coding is a method that uses analytic memo writing to purposefully combine or summarize first-cycle coding methods to create a variety of codes that are summarized into a word or short phrases (Saldana, 2021). Analytic memos were created from the transcribed interviews to gather thoughts and to reflect on the collected data. Analytic memos were created from the transcribed student

interviews. Saldana (2021) refers to analytic memos as a place to gather thoughts and reflect.

Additionally, these written thoughts would be beneficial in remembering my initial outlook on the process and how these thoughts changed over the course. Descriptive or topic coding is a method that uses analytic memo writing to purposefully combine or summarize first-cycle coding methods to create a variety of codes that are summarized into a word or short phrases (Saldana, 2021). Figure 4.2 is an example of an analytical memo composed during the initial coding phase.

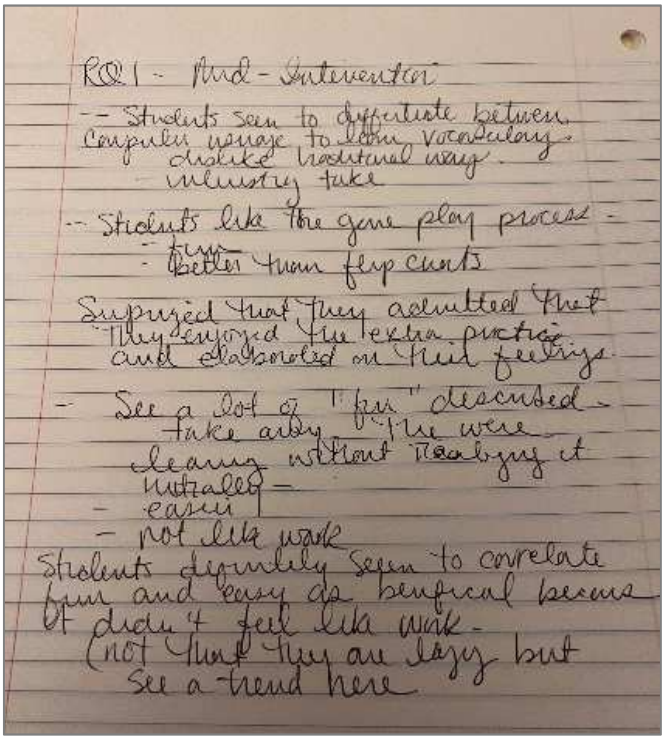

Figure 4.2. *Sample of an Analytical Memo*

Descriptive coding was conducted in Delve. First, I read each transcript line by line and highlighted words that relayed the participants meaning in short phrases or words. Then, in Delve, I added descriptions to the codes based on the analytical memo

and helped to put the codes into perspective. As a result, 42 codes were generated through descriptive coding. Figure 4.3 displays descriptive codes in Delve.

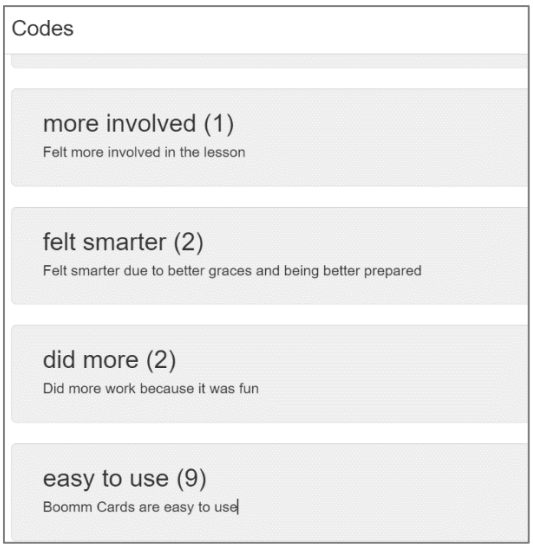

Figure 4.3. *Descriptive Codes in Delve.*

Pattern Coding

Pattern coding is a second-cycle coding method that condenses codes into smaller categories (Creswell & Creswell, 2018; Saldana, 2021). Pattern coding was used to create fewer and more meaningful codes. In order to visualize the codes and categories more clearly, the codes were printed, cut out, and manipulated by hand until categories emerged. Figure 4.4 shows the manual categorizing of codes before merging.

Developing Themes and Assertations

After much contemplation and help from my dissertation chair, the six categories and 125 in vivo codes were modified and adjusted. The codes were merged and refined into cohesive categories. After consulting with the dissertation chair about my ideas' direction, we interrogated my themes and categories. After several rounds of peer debriefing, the categories were aligned to the research questions, and the themes emerged

from the three research questions and the refinement of the categories. Table 4.10 shows the two identified themes and associated categories.

Figure 4.4. *Manual Categorizing of Codes*

Table 4.10 *Themes and Categories*

Themes	**Categories**
Digital flashcards aided student learning.	• Digital flashcards enhanced students' vocabulary learning. • Students' perceptions towards learning vocabulary changed. • Digital flashcards game-like design encouraged vocabulary learning in U.S. History.
Digital flashcards supported students' motivation and confidence.	• Digital flashcards supported the students' intrinsic motivation. Students felt motivated to be successful.

Themes	Categories
	• The game-like design of the digital flashcards enhanced the students' extrinsic motivation. In addition, the interactivity of digital flashcards was motivating. • Students gained confidence using digital flashcards. • Students' perception to work changed.

The themes were supported with thick, rich descriptions (Mertler, 2017). Specifically, the themes, categories, and codes were supported by the participants' quotes taken verbatim from their interview responses. Two themes and assertations emerged from the student interviews. Table 4.11 shows the themes, assertations, and categories.

Table 4.11 *Themes, Assertations, and Categories*

Themes	Assertations	Categories
Digital flashcards aided student learning.	• Students indicated that the digital flashcards aided in their learning and focus. • The students were able to see evidence of their learning. • Students indicated that there was a noticeable change in the perceptions that were related to the intervention.	• Digital flashcards enhanced students' vocabulary learning. • Students' perceptions towards learning vocabulary changed. • Digital flashcards' game-like design encouraged vocabulary learning in U.S. History.
Digital flashcards supported students'	• Students were willing to utilize the intervention because they felt they could be successful.	• Digital flashcards supported the students' intrinsic motivation.

Themes	Assertations	Categories
motivation and confidence.	• The students felt the intervention instilled a sense of control and challenge. That led to a sense of achievement. • The inclusion of game-like incentivized motivation and achievement. • Students' perceptions increased as their ability to accomplish tasks increased. • Students' emotional reactions to schoolwork improved.	Students felt motivated to be successful. • The game-like design of the digital flashcards enhanced the students' extrinsic motivation. • Students gained confidence using Digital flashcards. • Students' perception to work changed.

Theme 1: Digital flashcards aided student learning.

This study defined student learning as the ability to use digital flashcards to develop U.S. History content-specific vocabulary knowledge. The students in this study were all self-identified reluctant learners and readily dismissed most educational pursuits. Additionally, they struggled with literacy strategies and skills necessary for the demands of the U.S. History standards-based curriculum. Therefore, for this study, it was important for the students to establish how they could see that the intervention aided and enhanced their learning. In the interviews, participants shared how the digital flashcards affected their U.S. History vocabulary skills and how the intervention helped them focus on their learning.

According to existing research, vocabulary development is crucial in building student text-based comprehension and retention (Aaron et al., 2008; Harmon & Hedrick, 2000). Self-testing while using flashcards allows immediate feedback and supports a

student-centered learning environment (Karpike, Butler, & Roediger, 2009; Kornell, 2009). In addition, research supports that a multimedia approach to vocabulary learning allows for a more interactive learning experience (Waluyo & Bucol, 2021).

The findings for this theme were developed from three categories (a) digital flashcards enhanced students' vocabulary learning, (b) Students' perceptions towards learning vocabulary changed, and (c) the digital flashcard's game-like design encouraged vocabulary learning in U.S. History.

Digital flashcards enhanced students' vocabulary learning. *Enhanced students' vocabulary learning* was defined as the ability of the participants to see evidence of their learning using digital flashcards. In addition, research has supported that repeated vocabulary exposure through different contexts and practices promotes retention and supports content-specific comprehension (Aaron et al., 2008; Beck et al., 2008; Swanson et al., 2005).

The student participants were accustomed to writing definitions in their notebooks or making traditional paper flashcards. However, they had some experience using digital flashcards using web-based apps, like kahoot.com, which provided little more than a question on the front side of the digital card and the answer on the back. As a result, the students would often just click through the cards without much thought. Digital flashcards supported vocabulary learning through the addition of multiple-choice questions, multiple images, and the inclusion of videos to support learning. Additionally, the digital flashcards were modified to ask the same questions in different formats, which supported student learning.

Participant responses gave insights into how the intervention provided a better understanding of the vocabulary and how it related to their overall learning. For example, Blake relayed that his grades were better because he "knew more vocabulary [and] the terms fit into different things that we were studying, so it made everything easier because it all fits together, and everything made better sense." He stated, "a lot of things that just didn't make sense made better sense ."Several participants commented on achieving better grades and a better understanding of the terminology. Yet, the goal of enhanced vocabulary learning was best summed up by Hunter, who stated, "There are several words that I didn't know that I now know."

The participants could see the interaction between content-specific vocabulary learning and content-specific U.S. History learning. They understood that they could apply their vocabulary knowledge, which benefited their learning. They could identify the correlation between content-specific vocabulary learning and academic literacy in their own words. To them, the accurate indication of learning was better understanding, which resulted in better grades.

Students' perceptions towards learning vocabulary changed. *Students' perceptions towards learning vocabulary* were defined as a noticeable change that the participants could relate to the intervention. The participants relayed that they enjoyed using the digital flashcards because it was more interactive and engaging. They were able to see their progress and mastery of U.S. History vocabulary immediately. Traditional explicit vocabulary instruction was often deemed to be boring, and as Zane relayed that using digital flashcards was "not as boring as looking up stuff."

A consensus among the student participants was that digital flashcards helped focus their attention and reinforced their understanding of the U.S. vocabulary. Research has shown that repeated vocabulary exposure through different contexts and practices has promoted retention and created a more student-centered learning environment (Aaron et al., 2008; Beck et al., 2008; Swanson et al., 2015). The participants reiterated that they could practice using the vocabulary more interactively and interestingly. For example, Shawn expressed that his vocabulary skills were better using digital flashcards because "we could practice looking [at vocabulary] from a different kind of way, and it [digital flashcards] made it [U.S. History] more understandable." Similarly, Logan stated, "Digital flashcards showed me that I already knew the vocabulary, and it reinforced what I learned." The participants found that using digital flashcards supported their learning. They perceived using digital flashcards to be a better learning experience than the more traditional learning procedures they were accustomed to using.

Digital flashcard's game-like design encouraged vocabulary learning in U.S. History. The game-like design of the digital flashcards encouraged content-specific vocabulary learning and supported a multimedia approach through several different instructional techniques. The game-like design for this study was defined as the application of gaming mechanisms of design and aesthetics to an activity in which a process of learning and comprehension occurs (Kingsley & Grabner-Hagen, 2017). The vocabulary instruction through digital flashcards implemented several game mechanics.

First, the digital flashcards used simple sounds and feedback for students. For example, in a multiple-choice question prompt, students responded by typing, dragging, and dropping, and then hitting the "submit" button. If the answer was correct, they heard

a bell sound and saw a green check mark or a green circle around the answer. If the answer was incorrect, they heard a *whoop*ing sound, and the incorrect answer was circled in red. See Figure 4.5 for a description of this type of question. The participant could then try again to earn the bell sound and green check mark or circle. Including game mechanics supported learning because the students wanted to win, i.e., earn the green check mark, and would work harder to convert the red circle into the green check mark.

Secondly, the digital flashcards also implemented progress monitoring and levels. For example, when students completed a deck, they could see their progress circle change from light green to dark green. This change of color allowed them to quickly monitor their progress visually and a check mark was added when the level was completed.

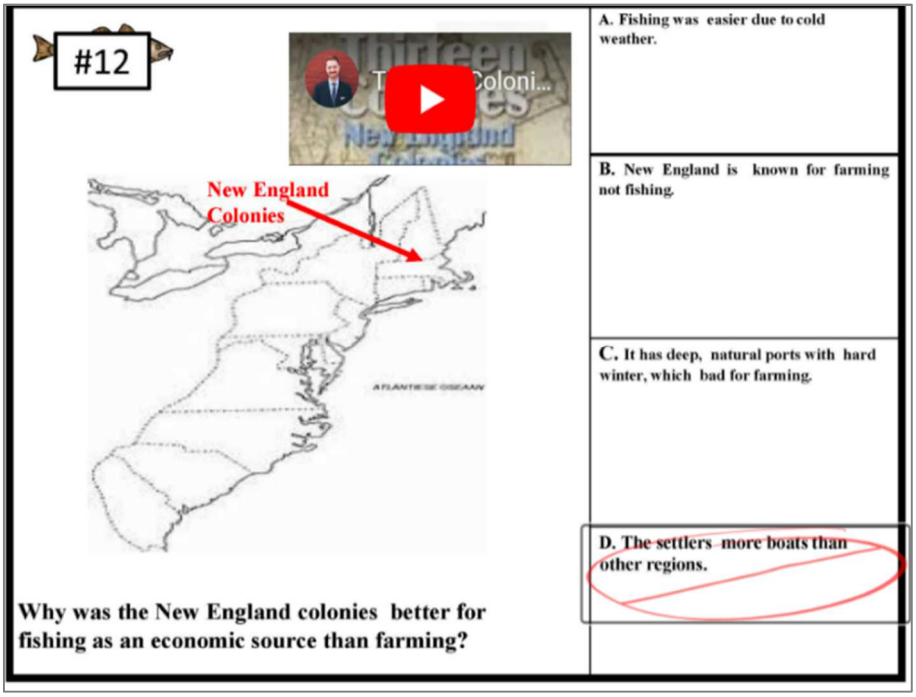

Figure 4.5. *Wrong Answer to a Multiple-Choice Type of Question.*

They were also able to monitor their mastery of content through the gem circle. The circle changed from light blue to dark blue as they mastered content. The center of

the gem circle also provided a visual clue as to how may total cards were needed to achieve mastery.

When the students finished playing a deck they received a "Well Done" message that included the number of correct and incorrect responses and the number of gems and lightning bolts earned. They were also given the option to play again or return to the home page (see Appendix H for permissions to use Boom Learning material). Figure 4.6 illustrates the progress monitoring and mastery level.

Thirdly, the digital flashcards also implemented rewards. While learning the vocabulary, students could also earn coins. The coins were awarded for persistence. More coins were awarded for more challenging questions. Additional coins were awarded for logging in frequently, and extra lives were left at the end of a deck of questions. Fill-in-the-blank questions were worth more coins than multiple-choice questions due to the higher level of difficulty. The coins could be used to buy new avatars. Pulses, or red lightning bolts, were also rewarded for mastery.

The digital flashcards also implemented multimedia and interactivity through a variety of question types. The digital flashcard's game-like design incorporated visual, auditory, and kinesthetic experiences that promoted U.S. History vocabulary learning. The digital flashcards were interactive and incorporated differentiated vocabulary instruction based on different question designs and multiple capabilities. These different types of flashcards included:

- Multiple Choice
- Multiple Choice with Pictures
- Multiple Choice with Video

- Fill in the Blank
- Digital Puzzles
- Listening
- Chronological Order
- Sequencing

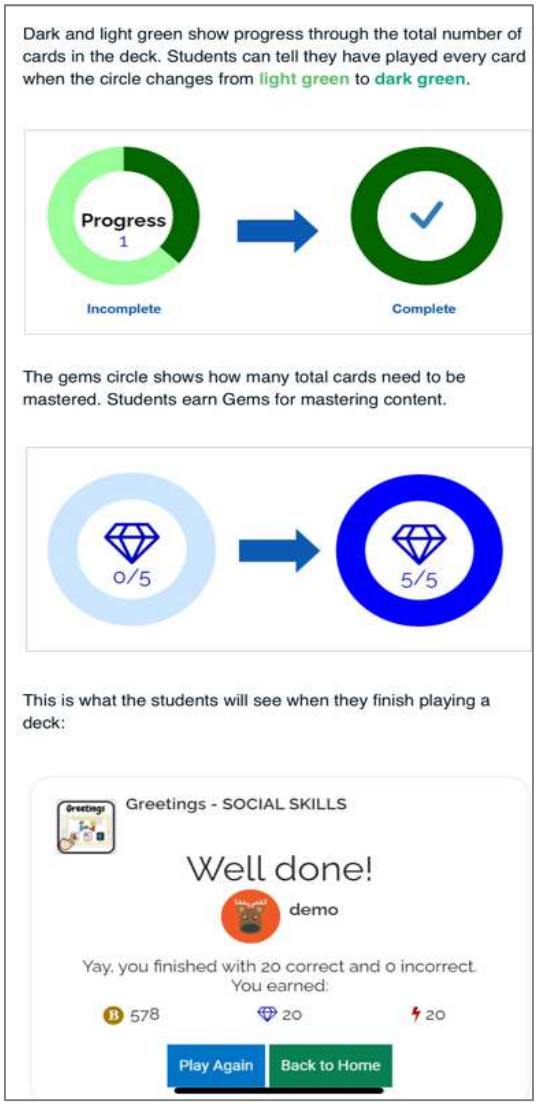

Figure 4.6. *Progress Monitoring and Mastery Level.* Reprinted from Boom Learning. 2022. Retrieved from www.boomlearning.com. Copyright 2022 by Boom Learning. Reprinted with permission.

The different question designs and applications afforded several different forms of multimedia and interactivity that supported the students' vocabulary learning. Research supports the use of differentiated digital flashcard designs and types of questioning to support active learning and retention (Aaron et al., 2008; Beck et al., 2008; Swanson et al., 2015). Figure 4.7 illustrates a two-question design with embedded video; Figure 4.8 depicts a drag-and-drop type question; Figure 4.9 shows a fill-in-the-blank question; and Figure 4.10 displays a matching/sequencing question.

Figure 4.7. *Two-Question Design with Embedded Video*

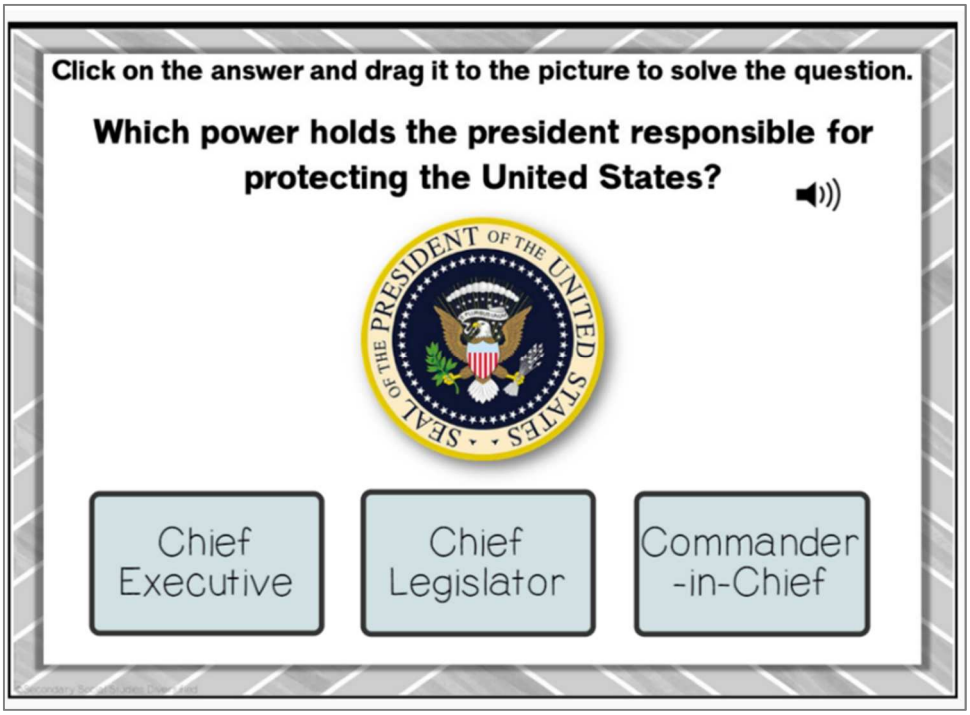

Figure 4.8. *Drag-and-Drop Type Question*

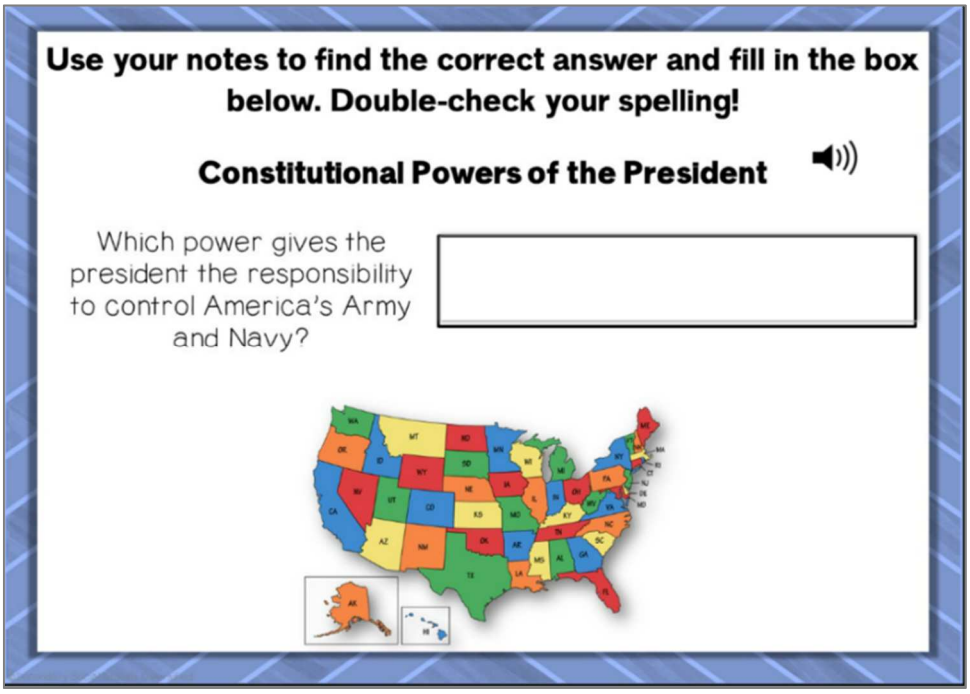

Figure 4.9. *Fill-in-the-Blank Question*

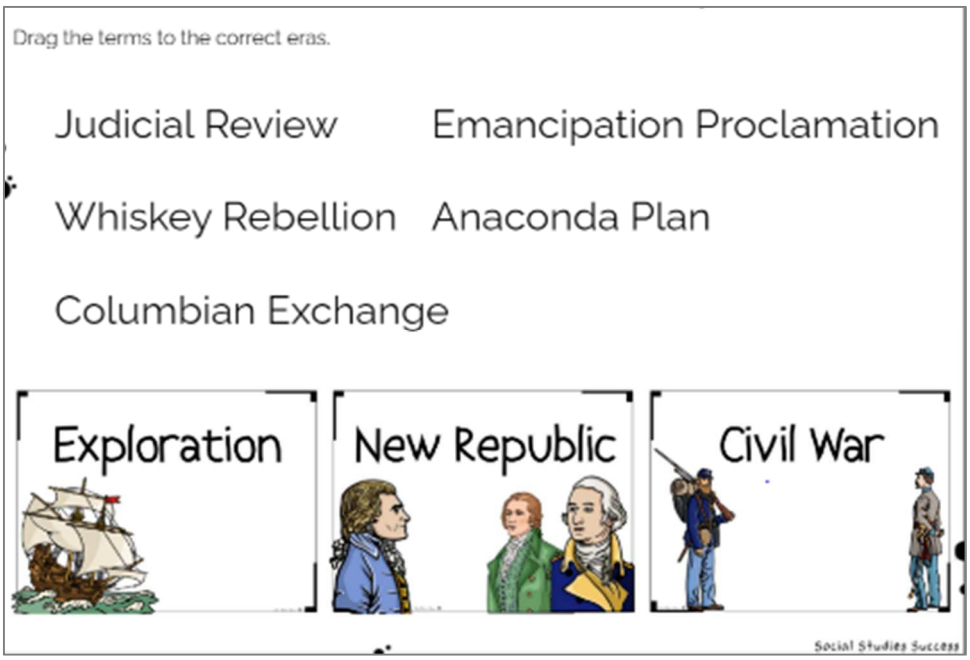

Figure 4.10. *Matching/Sequencing Question*

Participants responded that they liked the interactivity of the game-like design because it made learning more accessible. For example, Logan, Blake, and Hunter commented on the game-like design affecting their learning:

Logan: I'm playing a game, so you were learning without knowing you were. So, it made it a lot easier. So, I like that part.

Blake: I learned a lot without knowing I was learning it because I got better grades, and I could just do the Digital flashcards, and I was able to learn a lot without really trying.

Hunter: [Digital flashcards] was like playing a little game, so I guess my vocabulary got a little bit better. I mean, there are words I did not know that I know now.

The participants' reactions coincide with the understanding that gamifying or utilizing multimedia approaches can transform rote vocabulary learning and repetition into a more interactive learning experience (Kapp, 2012; Waluyo & Bucol. 2021).

Theme 2: Digital flashcards supported students' motivation and confidence

Student motivation and confidence were defined in this study as the participant's willingness to use Digital flashcards to learn U.S. History vocabulary and the belief that they could be successful. The participants in this study struggled to find relevance in our U.S. History coursework and, generally, found little value in education. Several of the students were on attendance contracts, which meant that by law, they had to attend school. As a result, their mindsets were geared toward *being* at school and not necessarily *doing* anything at school. This lack of motivation, I observed, was compounded by their general attitudes that they were incapable of academic success due in part to their lack of self-efficacy and general negativity towards school.

Research has shown that motivation is a critical component of academic success, and it has been understood that unmotivated students have poor educational outcomes (Usher & Kober, 2012). The disparity between underachievers and motivated, successful learners has been well documented. Jiang, Rosenzweig, and Gaspard (2018) found that student motivation was the primary indicator of achievement within academic behavior. Research has also shown that student motivation decreases with age and that by age 16, many students are unreachable to improve their Motivation (Fryer & Bovee, 2016; Skaalvik & Skaalvik, 2009; 2011; Spinath & Steinmayr, 2012).

Motivation can be separated into two forms: extrinsic and intrinsic. Extrinsic motivation refers to external rewards intended to motivate or reinforce desired behaviors

(Deci et al., 2001). For example, schooling often used reward-focused incentives, like gold stars or pizza parties, to motivate student achievement or to reinforce learning. Intrinsic motivation is a more personal response to an activity and has been understood as a curiosity or performing an activity for self-satisfaction (Borhaug & Borgund, 2018; Ryan & Deci, 2000; Schunk et al., 2008). Intrinsic motivation prompts higher self-esteem and increased learning, contributing to life-long learning.

Confidence, or self-efficacy, has been generally defined as an individual's belief in the ability to successfully trigger individual control over motivation, behavior, and social environment (Bandura, 1977). Self-efficacy has been directly influenced by a student's own perceptions of the ability and motivation to learn (Bandura, 1977; Walker & Greene, 2009). Self-efficacy is generally considered a predictor of Motivation (Bandura, 1977; Multon et al., 1991; Versland & Erickson, 2017). Student beliefs about learning have been crucial as they have directly affected Motivation and student self-efficacy (Nyikos & Oxford, 1993; Rao, 2016).

The findings for this theme were developed from four categories (a) Digital flashcards supported the students' intrinsic motivation, and the students felt motivated to be successful, (b) The game-like design of digital flashcards enhanced the students' extrinsic motivation, (c) Students' gained confidence using digital flashcards, and (d) Students' perceptions about work changed.

Digital flashcards supported the students' intrinsic motivation. **In addition, students felt motivated to be successful**. Two subcategories (i.e., patterns) were combined to develop this category. *Supported the students' intrinsic motivation* was defined in this study as the ability of digital flashcards to instill curiosity, control, and

challenge; St*udents' felt motivated to be successful* was defined as the desire to be engaged in the learning task, the willingness to complete the task, and feeling a sense of achievement. These subcategories describe students' intrinsic motivation and are detailed together.

The students in this study could have been more motivated in the academic sense. They needed help grasping the relevance of U.S. History, and many struggled with informational texts that reflected the U.S. History curriculum. Largey and Timmons (2018) found that unmotivated students responded to classroom expectations through avoidance, procrastination, and manipulation and often became detached from the learning environment. Many of the students in this study modeled these negative behaviors.

Participant responses provided insight into their beliefs about motivation and how digital flashcards supported their understanding of intrinsic motivation. For example, Cameron defined motivation as "Wanting to do good and trying to do better for yourself." Jared shared "that motivation is work, and the harder you work, the more you get out of it." He added, "Digital flashcards motivated me not to work harder but to work smarter." Although the students did not explicitly define intrinsic motivation, they identified motivations that originated with themselves and engendered their successes. Shawn said, "Motivation is working hard to reach a goal for yourself, like better grades."

Several of the students defined motivation as determination:

Blake: I feel like motivation is determination.

Grayson: Motivation is determination.

Hunter: [Motivation is] being determined to succeed.

Intrigued by this definition and the fact that three separate students used the term *determined*, I looked up the actual definition to see if there was any connotation to motivation because the term was not one that I had expected. *Determined* was defined as "having reached a decision: firmly resolved" ("determination," n.d.). I looked back through the transcripts, and after some thought about both the definition and the students that used that terminology, I could see the correlation. All three of their understanding was based on their own interpretation of motivation from their perspectives. They viewed motivation more as a desire and personal mindset.

The game-like design of digital flashcards enhanced the students' extrinsic motivation. *The game-like design* was defined as the inclusion of gaming elements into the design of digital flashcards. Kingsley and Grabner-Hagen (2017) stated that game-like design applied gaming design and aesthetics to an activity promoting learning. *Enhanced students' extrinsic motivation* was defined as the ability of the game-like design of digital flashcards to incentivize the participants' motivation and achievement. Digital flashcards provided a reward structure allowing students to gauge their success with tangible awards. Grayson liked the reward options and stated, "I was motivated because I wanted to win the jewels and get the rewards for doing well ."He was determined to do well, and the jewels provided the motivation and reward for his success.

Digital flashcards utilized the performance-contingent reward structure that awarded jewels for mastering an activity. Research supports that rewards can often promote behavior that can motivate student learning (Deci et al., 2001). In the educational setting, motivation has long been understood to dominate student achievement, engagement, and choice (Jiang et al., 2018). Reward-based incentives have

been used in all life facets to motivate and incentivize desired behaviors (Ryan & Deci, 1999).

Participants responded that they liked the game-like elements of digital flashcards, and their extrinsic motivation was strengthened. Jared relayed that he liked the game-like play of digital flashcards and stated, "you wanted to get a good score and win the game, and the game-like play made it easier to be motivated ."Zane said she "liked hearing and seeing that I was right, so it did motivate me to learn ."The digital flashcard's reward structure of simple sounds, green checkmarks for correct answers, and jewels helped to promote the student extrinsic motivation.

Students gained confidence using digital flashcards. *Students gained confidence* was defined in the study as the students' perceptions of the ability to accomplish a meaningful task. The task in this study was their ability to use digital flashcards to learn U.S. History content-area vocabulary. Bandura (1977) described confidence as synonymous with self-efficacy and based on individual perceptions of performance.

Bandura (1997) described the four primary sources of self-efficacy as (a) mastery experiences, (b) vicarious experiences, (c) verbal persuasion, and (d) physiological and emotional states. The participants in this study relied primarily on mastery experiences and verbal persuasion. Mastery experiences yield the most influential source of self-efficacy because it provides the individual with authentic information about their ability to be successful (Driscoll, 2015). Mastery experiences also require challenging experiences or tasks that require the induvial to work and challenge their abilities. Verbal persuasion is the most familiar form of self-efficacy and refers to others persuading

learners that they are capable (Driscoll, 2015). In this study, the design of digital flashcards provided verbal persuasion using rewards, like green checkmarks when the students were correct or jewels for mastering content. The rewards enabled the students to see their accomplishments and strengthened their confidence in the task.

The participants were able to correlate their confidence with their sense of mastery. Blake stated that digital flashcards "made me more confident because I could see what I knew and tell what I needed to do to be successful ."Grayson also identified feeling confident by saying, "when I did good, I felt good ."Cameron stated, "My confidence is better [using digital flashcards] because I could see results, and I did better on tests ." Shawn summed up the experience by stating that he "felt more confident because I actually learned, and I could understand easier." The participants had little difficulty in relaying their understanding of confidence. They could relate their confidence levels primarily to mastery experiences, which were centered on grades in this study.

Students' perceptions about work changed. *Students' perceptions* were defined in this study as the participants' emotional reactions to instructional strategies that were partly influenced by previous learning experiences and instructional strategies (González-Gómez, Jeong, Rodríguez, Cañada- Cañada, 2016). The participants' negative emotional reactions toward learning were instilled from their past interactions in school. They needed an impetus for change, which could change their outlook and interest. They needed to see that they were capable of successful interaction and support in their learning. Self-efficacy is focused on the overall feeling of success and is formed through the belief that a task can be performed successfully and is often used as a predictor of

Motivation (Bandura, 1977; Multon et al., 1991; Neill, 2005; Versland & Erickson, 2017).

According to Bandura (1997) the four sources of self-efficacy, mastery experiences yield the most influential source of self-efficacy because it provides the "most authentic information to learners on their ability to do what it takes to succeed" (Driscoll, 2005, p. 318). The development of mastery experiences is built on the premise that new and challenging experiences must be attempted and mastered (Bandura, 1994; Jackson, 2010). Therefore easy, and repetitive challenges do not provide mastery; they promote complacency (Bandura, 1997). Self-efficacy is synonymous with confidence and is predicated on an individual's conception of how well they can perform a task (Bandura, 1977). Perceived efficacy, rather than actual academic achievement, is the critical determinant of their perceived occupational self-efficacy (Bandura et al., 2001).

Participant responses provided insight into how their perceptions toward learning changed as they mastered the learning content. For example, Cameron, Logan, Blake, and Grayson commented on how digital flashcards changed their perceptions of learning:

Cameron: Learning became easier. I could see results, and I feel better about learning at school. I am more confident in my learning because I can see the results daily and on quizzes and tests. It was great.

Logan: I am probably a little more confident because I know now what I can do when I can do when I work. Learning isn't that hard.

Blake: I felt like I was in control of what I was doing, and I could tell what I needed to do to be successful. Learning was easier. I felt smarter.

Grayson: I could play and learn without stressing over anything. I like things that make work more accessible, so my perception is that digital flashcards make learning more fun and easier.

These students could relate that they felt better about learning and school as they mastered the content. Grayson responded because he said he could "play and learn without stressing ."I found this revelation to be very insightful. Educators must remember that students are stressed over schoolwork, and learning becomes challenging or an obstacle. However, learning is a process that requires the students to believe they have the ability. Once they have the self-efficacy to believe in their abilities, their perceptions can be positively affected.

Chapter Summary

Quantitative and qualitative data were collected and analyzed to answer this study's research questions. The quantitative data included the pretest-posttest and exit tickets responses. Descriptive statistical analysis of the pretest and posttest results indicated a mean score of 43.25 on the pretest and a mean score of 50.75 on the posttest. Cronbach's alpha showed a reliable internal consistency of $\alpha=0.94$. Descriptive statistical analysis on the exit tickets used the measure of central tendency. The mean was positive ($M > 3.00$) in all items except one with a mean of 2.50.

Qualitative data were gathered through semi-structured interviews conducted mid and post-intervention. Two themes emerged from the qualitative data analysis: (a) digital flashcards aided student learning, and (b) digital flashcards supported students' motivation and confidence.

CHAPTER 5

DISCUSSION, IMPLICATIONS, AND LIMITATIONS

This chapter positions the findings with the literature on digital flashcards involving student perceptions of content-specific vocabulary learning. This action research aimed to explore the implementation of digital flashcards to learn content-area vocabulary in an eleventh-grade U.S. History course. Students' perceptions of learning content-area vocabulary and the motivation and self-efficacy to learn content-specific vocabulary were explored. Both quantitative (i.e., pretest-posttest and exit tickets) and qualitative methods (i.e., student interviews) were utilized for data collection and analysis. Quantitative findings indicated a higher mean score and a higher standard deviation on the posttest than the pretest (see Table 4.1). The mean was positive ($M >$ 3.00) on all exit ticket items but one (see Table 4.3). Two themes emerged from the qualitative data analysis: (1) digital flashcards aided student learning, and (2) digital flashcards supported students' motivation and confidence (see Figure 4.9). Integration of the findings of this study points to the conclusion that digital flashcards can have a beneficial impact on learning content-specific vocabulary. In addition to the discussion, recommendations, limitations, and implications will also be discussed.

Discussion

It is important to situate this study's findings within the larger body of literature, particularly those associated with information processing and the ARCS model of motivation. Therefore, quantitative, and qualitative data were collected and analyzed to

answer the three research questions of this study. The discussion portion of this study is broken into three parts to provide a detailed understanding of the findings for each research question: (1) How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning content-specific vocabulary? (2) How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of their motivation to learn content-specific vocabulary? Furthermore, (3) How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of their self-efficacy to learn content-specific vocabulary?

Research Question 1: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' learning content-specific vocabulary knowledge?

Numerous studies have determined that vocabulary development is essential to academic and content-specific literacy (Harmon & Hedrick, 2000; Kamil et al., 2008). This research question aimed to determine how digital flashcards affected students' perceptions of learning vocabulary. The results from all three data collection methods were analyzed and combined to determine if digital flashcards impacted participants' vocabulary learning. In addition, data from the pretest and posttest, exit tickets, and participant interviews were examined to accurately depict digital flashcard's impact on student perceptions of learning content-specific vocabulary. The following sections will examine (1) how digital flashcards students improved content-specific vocabulary knowledge, (2) how the instructional strategies positively impacted students' vocabulary knowledge, and (3) how gamification in the digital flashcards promoted student learning.

Digital flashcards improved students' vocabulary knowledge. The findings from this study indicate that digital flashcards positively impacted students' perceptions

of learning content-specific vocabulary. Information processing theorists define learning as how human beings receive, think, modify, and remember information (McDevitt & Ormrod, 2020) and understanding how one learns, acquire new information, and retains previous information has educational implications (Kandarakis & Poulos, 2008; Lutz & Huitt, 2018). Learning is achieved when a student can successfully acquire, store, and retrieve information from long-term memory. Research suggests that strategies that utilize repeated vocabulary exposure through different contexts and practices promote retention and support content-specific comprehension (Aaron et a 2008; Beck et al., 2008; Swanson et al., 2005). Digital flashcards support information processing theory by converting information into a meaningful form to facilitate thinking and learning (Sucharitha et al., 2020). Raja and Kumar (2010) found that innovative use of technology, such as digital flashcards, encourages active learning through diverse multimedia instructional approaches.

In this study, students used digital flashcards three times a week for 30 minutes each time, so students engaged with content-specific vocabulary through repetition and active learning. The impact of digital flashcard use on vocabulary knowledge was evident in the pretest and posttest data, exit tickets, and student interviews. For the pretest-post-object objective assessment, there was a gain in mean scores (i.e., pretest: $M = 43.25$; posttest: $M = 50.75$). This finding is consistent with previous research on digital flashcards for vocabulary acquisition (Dizon & Tang, 2017; Lander, 2016; Rojabi et al., 2022). Studies have shown that digital flashcards are more effective than paper flashcards, as digital flashcards offer a more excellent range of features that support vocabulary development (Dizon & Tang, 2017). A recent systematic review of 22

publications reported that gamified English learning has been associated with enjoyable, engaging, motivating, and fun learning experiences (Dehghanzadeh et al., 2021). Gamifying or utilizing multimedia approaches can transform rote vocabulary learning and repetition into a more interactive learning experience (Kapp, 2012; Waluyo & Bucol, 2021). Additional studies into Kahoot and Quizlet, gamified digital flashcards similar to digital flashcards, have also shown significant gains in vocabulary acquisition and posttest scores (Lander, 2016; Rojabi et al., 2022).

Three items on the exit tickets pertaining to the digital flashcards helping students "to remember and learn vocabulary" (Item 7: $M = 3.38$) and making vocabulary learning "easier" (Items 10 and 11: $M = 4.88$) had positive means. These two statements garnered the highest mean for the category and the highest mean for all statements given on the exit tickets. These findings are consistent with other studies that found digital flashcards and multimedia applications successful in knowledge acquisition, recall, and supporting the learning process (Dizon & Tang, 2017; Kapp, 2012). In addition, digital flashcards support learning by successfully interacting with the student with the content through active participation (Mayer, 2015; Rojabi et al., 2022). Participants have routinely approved research studies (Kapp, 2012; Lander, 2016; Rojabi et al., 2022).

Instructional strategies with digital flashcards positively impacted students' vocabulary knowledge. The importance of combining vocabulary instruction with text-based resources in social studies has been demonstrated in numerous studies (Harmon et al., 2018). Explicit vocabulary instruction is recommended for content-specific vocabulary attainment, specifically regarding the meaning of new words, opportunities to use the words in practice, repeated exposure and use, and guided practice through context

(Swanson et al., 2015). Although flashcards have been a mainstay in vocabulary learning, digital flashcards have allowed for a multimedia approach that presented learners with visual, auditory, and kinesthetic experiences (Mayer, 2009; Raja & Kumar, 2010).

Mayer (2005) established the well-known multimedia principle, suggesting deeper learning comes from combining words and pictures. This multimedia approach is like paired-associate vocabulary learning on traditional word cards and digital flashcards (Altinar, 2019; McLean et al., 2013). Several studies have emphasized the importance of visual and verbal aids in vocabulary learning strategies (Beaton et al., 2005; Wyra et al., 2007). Digital flashcards have been more effective and functional when multimedia comprises comprehensive audio and visual inputs in vocabulary building and have significantly enhanced student learning to produce better learning outcomes (Nakata, 2011; Waluyo & Bucol, 2021).

During the student interviews, the participants reiterated that they could practice using the vocabulary more interactively and interestingly. For example, Blake relayed that his grades were better because he "knew more vocabulary," and he could see the correlation and confidently stated that his learning was better because "it all fits together" and "everything made better sense." In addition, the participants found that using digital flashcards supported their learning. They perceived using digital flashcards to be a better learning experience than the more traditional learning procedures they were accustomed.

The participants' perceptions align with Mayer's theory of multimedia learning (Mayer, 2005; Raja & Kumar, 2010). The digital flashcards facilitated learning that the participants described as "easier" and supported active processing. Mayer (2009) suggests that learning requires engagement and active cognitive processes. Jared pointed

out that he learned the terms with digital flashcards and "could remember them." The participants were immersed and engaged in their learning and could relate that the intervention was a positive learning experience.

Gamification in digital flashcards promoted student learning. Educational gamification, or gaming mechanisms for nongame settings, has created an outlet for vocabulary instruction and language acquisition (Kingsley & Grabner-Hagen, 2017). In this study, the vocabulary instruction through digital flashcards implemented several game mechanics and implemented rewards. If the answer was correct, students heard a bell sound and saw a green check mark or a green circle around the answer. If the answer was incorrect, they heard a *whoop*ing sound, and the incorrect answer was circled in red (see Figure 4.5). Coins were awarded for persistence and correctly answering difficult questions, and coins could be used to buy new avatars. Pulses, or red lightning bolts, were also rewarded for mastery.

Gamification supports active and engaged learning (Aidinopoulou & Sampson, 2017; Kapp, 2012). All games have four defining characteristics: goals, rules, feedback, and voluntary participation (McGonigal, 2011a; 2011b). The inclusion of gaming elements, like rewards, supported student learning by providing feedback. Students knew at once if they were correct or not. The mastery elements, like coins and lighting bolts, supported student persistence and success in mastering the content. Participants responded that they liked the interactivity of the game-like design. Grayson liked the game-like design because it was more like a "game than work." Zane enjoyed hearing the sounds and looked forward to "seeing the green" feedback, meaning she answered correctly. This

research corroborates several researchers who concluded that digital flashcards offer a better range of features that support vocabulary acquisition (Azabdaftari & Mazaheb, 2012; Kilickaya & Krajka, 2010).

Research Question 2: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of their motivation to learn content-specific vocabulary?

The definition of motivation, as it relates to education, is defined as the choice to engage in a learning task, engaging in the task, and the willingness to complete the task (Palmer, 2015). Motivation is essential to student learning, and its role in education cannot be overstated. It is generally understood that unmotivated students need help achieving the best possible educational outcomes (Archambault et al., 2009; Usher & Kober, 2012).

This research question aimed to determine how digital flashcards affected students' motivation to learn vocabulary. The following sections discuss (1) previous experiences with vocabulary learning affected students' perceptions and motivation and (2) using digital flashcards positively impacted students' motivation to learn.

Previous experiences with vocabulary learning affected students' perceptions and motivations. Students' perceptions were defined in this study as the participants' emotional reactions to instructional strategies that were partly influenced by previous learning experiences and instructional strategies (González-Gómez et al., 2016). Most participants' mindsets were geared toward "being*"* at school and not necessarily "doing" anything at school. The students expressed this mindset almost daily because they were on attendance contracts that required attendance but did not explicitly require

participation or engagement in their coursework. Their general attitude compounded this lack of motivation that they were incapable of academic success due partly to their negativity towards school.

Research has shown that traditional vocabulary learning strategies that are taught in isolation without contextual applications are generally not remembered by learners (Castek et al., 2012). Searching and copying definitions or writing sentences with unfamiliar terms does not result in authentic vocabulary learning, and words (Mediha & Enisa, 2014). In addition, students have expressed that school, and especially social studies, to be boring because lessons, especially vocabulary lessons, lack attention or interest for the student, relevance to the student, confidence or experienced success for the student, or satisfaction for the student (Heafner, 2004; Law et al., 2019). The findings in this study are consistent with other researchers' reporting that students had yet to find vocabulary learning meaningful or valuable.

When the students were asked about their previous experiences with vocabulary learning, they were quick to respond with negativity. The participants unanimously deemed traditional vocabulary instruction " boring, " and Zane defined the process as "busy work." The participants described making flip books and copying vocabulary words, and their descriptions included "boring," "a waste of time," and "lame." Research has shown that copying definitions or writing sentences with unfamiliar terms does not result in authentic vocabulary learning (Castek et al., 2012). Blake suggested that teachers used vocabulary instruction as a way for teachers to "not have to teach" and added, "We never learned the words." So based on the student's previous experiences with vocabulary learning, there was no motivation to learn because the lessons needed

more attention or interest and relevance, which are essential components in Keller's ARCS-V model (2016).

The impact of digital flashcard uses on the participants' motivation to learn content-area vocabulary was evident in the exit ticket data and student interviews. In addition, the item exit tickets about the digital flashcards helping to motivate students "to learn the vocabulary" (Item 5: $M = 3.63$) and "get good grades" (Item 6: $M = 4.00$) had a positive mean. In addition, "being successful in class" (Item 4: $M = 4.10$) had the highest mean in this section. These findings are consistent with other studies that found the gamified vocabulary to significantly enhance students' motivation and engagement (Medina & Hurtado, 2017; Waluyo, 2021).

The students were more enthusiastic when asked about the intervention with digital flashcards. Reactions included "fun," "easier," and "more entertaining." The students found the intervention successful because it was more motivating to learn without "think[ing] about it." Perceptions were a fundamental shift in the student's understanding and motivation.

Using digital flashcards positively impacted students' motivation to learn. The student participants were more motivated and engaged using digital flashcards. Today's students are well-versed in gaming and interactive multimedia, so they find game-based activities fun, enjoyable, and engaging (Hanus & Fox, 2015; Kapp, 2012). They enjoyed the interactive practice as Shawn expressed that his vocabulary skills were better using digital flashcards because he could practice using the digital flashcards in a "different kind of way," which made U.S. History more "understandable" and supported

his intrinsic motivation. Intrinsic motivation can be integral to learning when learners connect personally to the topic (Deci et al., 2001).

Additionally, the game-like design of the digital flashcards captured students' enthusiasm and attention. They enjoyed the gamified learning design incorporating game-based components to motivate and create interest (Bunchball, 2016; Deterding et al., 2011). In game design, the typical reward structure motivates players to do their best and is based on extrinsic rewards like points or badges (Kapp, 2012). Jared relayed that he liked the game-like play of digital flashcards and stated, “You wanted to win the game, " which motivated him. Zane stated that she “liked hearing and seeing” she was correct in her responses, motivating her to work harder. The gamification aspect of the digital flashcards supported her extrinsic motivation because, in game design, the typical reward structure used to motivate players to do their best is based on extrinsic rewards like points or badges (Kapp, 2012).

Research shows that educators can use gamification to create practical learning scenarios that promote student learning (Hakulinen et al., 2015). Several studies illustrate the positive outcomes of using technology for education in social studies courses (Heafner, 2004). In addition, studies have emphasized the importance of visual and verbal aids in vocabulary learning strategies (Beaton et al., 2005).

The participants found digital flashcards supported their learning through a positive motivational experience that provided a sense of success and confidence lacking in their earlier educational experiences. However, in game design, the typical reward structure used to motivate players to do their best is based on extrinsic rewards like points or badges (Kapp, 2012).

Research Question 3: How and to what extent do digital flashcards affect eleventh-grade U.S. History students' perception of their self-efficacy to learn content-specific vocabulary?

Self-efficacy is an individual's perception of her ability to learn and is directly correlated to her motivation (Bandura, 1977; Walker & Greene, 2009). Self-efficacy is built upon personal experiences, vicarious experiences, social persuasions, and psychological factors and can be influenced by outside stimuli and mindset; however, a growth mindset is almost always necessary for high achievement and performance in school and life (Bandura, 1977, 1986; Ericcson et al., 2007; Del Siegel, McCoach, & Roberts, 2017). This research question aimed to establish a better understanding of the participants' mindset and their understanding of their abilities. The following sections will examine (1) how using digital flashcards positively impacted the students' self-efficacy to learn and (2) how it changed their perceptions of their self-efficacy.

Using digital flashcards positively impacted the students' self-efficacy in learning content-specific vocabulary. The findings from this study indicate that digital flashcards positively impacted the perception of their self-efficacy in learning content-specific vocabulary. For this study, student perception was defined as the emotional reactions to instructional strategies. The student participants in this study were not accustomed to academic success, which affected their mindsets and resulted in lower self-efficacy. Self-efficacy is built upon several different and diverse experiences, yet the student participants based their perceptions solely on their lack of mastery experiences within the school environment.

The physiological state of the individual influences feelings of self-efficacy. Although little can be done to alter a student's physiological state, their perceived self-efficacy, rather than their actual academic achievement, is the critical determinant of their perceived occupational self-efficacy (Bandura, 1977; Bandura et al., 2001). Therefore, one of the aims of this study was to evaluate how and to what extent digital flashcards affected the students' perceptions of self-efficacy or confidence was accomplished through the use of exit tickets and student interviews.

Two items on the exit tickets on the digital flashcards helping the students "feel more confident" (Item 9: $M = 4.50$) and building "my U.S. History vocabulary confidence" (Item 12: $M = 4.50$) had positive means. These two statements garnered the highest means for the category. These findings are consistent with other studies that found digital flashcards and gamified applications to create an interactive learning experience that yields confidence or self-efficacy (Bunchball, 2016; Waluyo & Bucol, 2021).

According to Bandura (1997), the most authentic source of self-efficacy is mastery experience. Mastery experience is based on attempting and mastering a challenging task (Bandura, 1997). The responses were optimistic when the participants were asked about digital flashcards increasing their vocabulary confidence. Six of the eight participants responded with "I felt confident" learning vocabulary, and two responded with "I feel more confident" learning vocabulary. This significant finding correlated to Bandura's work on mastery experiences and supported the use of digital flashcards to generate confidence. The student participants felt better about learning and

“did better on tests” because they “could see the results." This reaction is related to their confidence levels. These results also correlated to Keller’s ARCS-V model of motivation.

Since self-efficacy supports motivation and motivation supports self-efficacy, it is necessary to have both to be successful (Kiliçoğlu, 2018). Keller (1987a; 2016) suggests that engaging lessons and activities require attention, relevance, confidence, satisfaction, and volition. Regarding self-efficacy, the defining characteristics of confidence or positive expectations, satisfaction to sustain desirable learning behaviors, and volition or persistence is necessary (Keller, 1987a, 1987b, 2016).

The use of digital flashcards changed the students’ perceptions of their self-efficacy. Students’ perceptions were defined in this study as the participants' emotional reactions to instructional strategies that were partly influenced by previous learning experiences and instructional strategies (González-Gómez et al., 2016). The student participants were all self-identified reluctant learners, and their previous experiences in the school setting were primarily negative. This negativity affected their engagement, motivation, and especially their self-efficacy. When asked about their prior learning experiences, they were quick to throw out words like “boring” or “lame” because they had no vested interest in the lessons or the outcome.

Since self-efficacy is premised on the individual students’ perceptions, their overall view of successful learning was purely based on grades. They had no intrinsic desire to learn for the sake of learning, and everything had a number grade attached. The exit ticket self-efficacy subscale that asked about digital flashcards allowing them to “feel successful on quizzes and tests” (Item 3: M=3.75; SD=1.58) returned the lowest mean in the section, but it was still positive.

Researchers have concluded that digital flashcards offer more learning features and support future recall (Azabdaftari & Mazaheb, 2012; Dizon & Tang, 2017: Kilickaya & Krajka, 2010). The ability to affect future recall can be beneficial for successful test grades. When the student participants were asked if using the digital flashcards made them more confident in their learning, their responses were telling. Cameron responded that he could see the results daily "on quizzes and tests." Logan answered that question with, "my grades are better," and Zane responded that [digital flashcards] “reinforced what I knew." Their self-efficacy improved, and they could relate their confidence to digital flashcards. In the post-intervention interview, they were asked if there were anything else they would like to share about their self-efficacy or confidence to learn content-specific vocabulary since using digital flashcards. Here, I began to see a change in their perceptions of their self-efficacy. There was less emphasis on the grades signaling success and more on learning and confidence. Cameron stated that he felt "more confident about learning," Blake responded that the digital flashcards "helped him to know what he needed to learn." Zane stated that the flashcards helped “everyone to stay focused and working."

When asked if they felt confident about being successful on assignments or tests in the future, I saw a change in their perceptions. Cameron confidently said he was “sure” because "I have been successful so far." Blake responded that he "actually learned something," Grayson pointedly stated, “I will be successful." Not only did they gain confidence, but they also equated self-efficacy to future success and learning.

Implications

Educators and administrators continue exploring new and ever-changing vocabulary learning techniques. For this reason, this action research study and its findings have significant implications for high school social studies. In the following section, three categories of implications are discussed in detail: (a) personal implications, (b) implications for high school social studies, and (c) implications for future research.

Personal Implications

Throughout this study, I gained valuable insight into my unique role as an educator. Reflecting on the implementation of digital flashcards in my U.S. History classroom has allowed me to consider ways to improve my educational strategies. This study has also provided me with a greater understanding of the importance of student perceptions in designing instruction. For these reasons, considerations for this section are: (a) changed perceptions of teaching and learning and (b) insights into being a scholarly practitioner.

Change perceptions of teaching and learning. Through conducting this study, I have learned that learning is a process that requires more attention to how the material is presented to facilitate proper understanding. Miller (1956) was the first to suggest that the brain, much like a computer, analyzes stimuli and manipulates sensory information. To fully implement learning, new information must be transferred to the long-term memory, where the "why" and "how" information is stored and retrieved as needed.

As an educator, I previously asked questions to activate prior knowledge but quickly ran through this activity as a springboard to move forward with the new material for the day. I often “chunk” or group information to make information more manageable,

but I was still incorporating much more material than the five to nine chunks of material that the short-term memory could hold. Also, I was too concerned about pushing out new information to ensure that the learners could "facilitate acquisition, storage, retrieval, and use of information" (Nyikos & Oxford, 1993, p.11). After completing this study, I now understand that more time and effort should be directed at reviewing information to ensure it can be implemented into long-term memory.

Insights into being a scholarly practitioner. Conducting research for my literature review gave me a much deeper understanding of information processing and how the interaction of stimuli combined with the transfer and retrieval of information facilitates learning. Before this study, I had some knowledge about the learning process in terms of long-term memory, but I needed to familiarize myself with the necessary stages and components. I now have a deeper understanding of how the brain uses sensory information and how different individuals process the same information differently. This insight will help me differentiate learning that is more student-centered and designed to help the learner's individual needs. My future decisions about instructional design and implementation will be based more on what research shows is beneficial.

This research taught me that test scores and data only tell one side of the student's learning process. Their motivation and self-efficacy are also essential factors often misunderstood or ignored in instruction design and daily lesson planning. As educators, we are often so obsessed with the results that we lose sight of the process. I learned more about my students and their feelings through the interview process. I was taken by their candor during the interviews and will rely more on open discussions with the students. This study provided me with more than just data; it opened my eyes to new and better

ways to hone my teaching skills that incorporate research and hearing more of what my students have to say.

Implications for High School Social Studies

This action research study examined the effect of digital flashcards on content-specific vocabulary learning. It examined how and to what extent digital flashcards affected eleventh-grade U.S. History students' perceptions of their motivation and self-efficacy to learn content-specific vocabulary. Considerations for this section are (a) Digital flashcards as an instructional option for vocabulary learning and (b) the instructional use of multimedia-gamified vocabulary learning.

Digital flashcards as an instructional option for vocabulary learning. The importance of combining vocabulary instruction with text-based resources in social studies has been demonstrated in numerous studies (Harmon et al., 2018). The findings of this action research support using digital flashcards as an instructional tool in the high school social studies classroom. Qualitative findings show that digital flashcards motivated students to learn content-area vocabulary and increased their self-efficacy, which correlates to the understanding that students' ability to comprehend text and construct meaning directly correlates to their vocabulary knowledge (Foil & Abner, 2002; Yildirim et al., 2011). The findings also show that digital flashcards impacted the students' attitudes toward learning by providing a better understanding of the vocabulary. The students could identify the correlation between content-specific vocabulary learning and better U.S. history grades.

Vocabulary learning through flashcards has been a staple of educational practice (Kornell & Bjork, 2008; Waluyo & Bucol, 2021). However, research suggests that

flashcards can be more effective and functional when multimedia comprises comprehensive audio and visual inputs in vocabulary building (Nakata, 2011). In addition, the students responded that they liked the game-like design of digital flashcards because it made learning more straightforward, and they could immediately see their progress and mastery of U.S. History vocabulary. This feedback coincides with research studies that established gamified vocabulary learning can significantly enhance student learning and produce better learning outcomes (Waluyo & Bucol, 2021).

Vocabulary learning requires educator acceptance. For accurate vocabulary learning to occur, educators must embrace the importance of vocabulary acquisition. Research has demonstrated that reading strategies and teaching concepts like vocabulary skills in social studies classrooms do not attract teachers' interest and are often ignored (Harmon & Hedrick, 2000; Harmon, Wood, & Hedrick, 2004). Educators often utilize vocabulary instruction using traditional vocabulary acquisition that is often regulated to teaching from a word list with a dictionary (Mediha & Enisa, 2014).

Multimedia represents the convergence of text, picture, video, and interactivity content forms "used to engage student learning and reinforce skills" (Raja & Kumar, 2010, p. 2). The multimedia approach to teaching vocabulary utilizes several instructional techniques that present learners with visual, auditory, and kinesthetic experiences that empower students to adopt their learning strategies and support skills necessary for the 21st century (Mayer, 2009; Raja & Kumar, 2010). In addition, integrating technology through gamification should support the teachers' pedagogy and curriculum in a way that enhances the content and supports learning (Kapp, 2012).

Vocabulary teaching requires professional support. Academic literacy continues to be a high priority in education across all content areas (Swanson et al., 2015). Explicit vocabulary instruction is recommended for content-specific vocabulary attainment, specifically in terms of the (a) meaning of new words, (b) opportunities to use the words in practice, (c) repeated exposure and use, and (d) guided practice through context (Swanson et al., 2015). Although explicit vocabulary is recommended, research has demonstrated that vocabulary is often ignored in the social studies classroom (Harmon & Hedrick, 2000; Harmon, Wood, & Hedrick, 2004). This lack of vocabulary and literacy support in the social studies classroom demonstrates administrators' need for more professional development and support.

The instructional use of digital flashcards. Research has demonstrated the need for explicit vocabulary instruction in the social studies classroom. Digital flashcards utilize the multimedia approach to learning and support vocabulary instruction and learning. Research into digital task cards or computer-based flashcards shows benefits in facilitating learning through implicit and explicit vocabulary learning by encouraging independent interactive learning activities (Kirstavridou et al., 2020; Waluyo & Bucol, 2021). Self-testing while using flashcards allows immediate feedback and supports a student-centered learning environment (Karpike et al., 2009; Kornell, 2009). Research supports that a multimedia approach to vocabulary learning allows for a more interactive learning experience (Waluyo & Bucol, 2021).

Implications for Future Research

The findings of this study suggest implications for further study**.** This action research was initiated to examine the problem of motivation and self-efficacy in my

social studies classroom. Using digital flashcards was beneficial in content-area vocabulary learning and improved motivation and self-efficacy regarding learning. Future research could continue to examine the benefits of digital flashcards. Findings from this study suggest four implications for future research into (a) implementing digital flashcards in other courses and disciplines, (b) differentiation and learning support for special needs students, and (c) utilizing digital flashcards as learning assessments.

Digital flashcards implemented in other disciplines. Digital flashcards were used in the eleventh-grade social studies class but could easily be modified to align with other content areas and grade levels. The adaptability of digital flashcards allows for personalization and can be utilized for more than vocabulary learning. Specialized decks can be purchased, or teacher created. This allows multiple opportunities to utilize digital flashcards for guided practice, content review, additional learning supports, or formative assessments. The instant feedback supports a student-centered learning environment, and the game-like design was found beneficial by participants in my study. Digital flashcards can motivate students to learn content in all content areas and grade levels. How digital flashcards affect student engagement would be a topic for future research.

Differentiation and learning support for special needs students. The multimedia aspects of digital flashcards can support both visual and auditory impairments. The ability to design digital flashcards to include larger fonts and immersive reading applications can assist students that need extra learning support. The students can still utilize a student-centered approach to learning that can be customized to their needs. Digital flashcards can be used on touchscreen computers and tablets to help students with dexterity or fine motor skill issues navigate and use the applications. The

virtual aspect allows for a small group, independent accessibility, and even home use when connected to the internet.

Differentiating the materials to support learning deficits can benefit all students needing extra practice or remediation. Teachers can determine the learning strategies needed and create or implement premade cards to support student learning individually. Digital flashcards can be modified and adjusted to ensure that the needs of all students can be realized. How digital flashcards support students with visual impairments could be a topic for future research.

Utilizing digital flashcards for learning assessments. The versatility of digital flashcards allows teachers many options to assess student learning. Digital flashcards can be used to check for understanding, quizzes, or formative assessments. The self-grading component makes it easy for teachers to monitor student learning. Participants in my research study liked the immediate feedback that allowed them to see what questions they answered correctly or wrongly in real-time. They knew their grade upon completion and did not have to wait for the teacher to grade the assignment. The teacher can create assessments, purchase decks, or pick and choose cards based on the learning objectives. Teachers can modify the number of questions or cards, determine the type of questions, and include multimedia options. The multimedia application offers immersive reader capability to accommodate the individual learner's needs. Future research could examine the inclusion of multimedia options on assessments and student scores.

Limitations

As with any research study, this study has limitations. Educators use the action research approach to find solutions to problems within their educational setting (Creswell

& Creswell, 2018; Mertler, 2017). Since this research is centered around individual and unique situations, the findings are only sometimes generalizable to other situations or contexts.

A second limitation of this study is the small sample size. This study included 8 participants that were selected as a convenience sample. In action research, a convenience sample is less desirable and does not allow for the generalization of findings beyond the scope of the study (Creswell & Creswell, 2018). Finally, this research study was conducted during the Covid-19 pandemic, so our school population was adversely affected. Therefore, the small sample may only represent some students in eleventh-grade U.S. History.

A third limitation concerns the possibility of researcher bias. My multiple roles in this study as researcher, teacher, and interviewer may have introduced subjectivity and bias into the study. My background and experiences shaped my interpretation of findings (Creswell & Creswell, 2018; Mills, 2011). Additionally, my role as teacher and interviewer influenced the students' responses during the interview process. The students may have sought to align their interview answers to what they thought I wanted to hear rather than what they thought (Creswell & Creswell, 2018).

A fourth limitation is the design of the exit tickets. Rather than utilizing the same question for each exit ticket, this research used 12 individual question that were aligned to the three research questions. This multi-question design hindered the ability to measure change in student perception of the intervention over the six-week period.

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APPENDIX A

VOCABULARY PRETEST-POSTTEST

1. A military unit of 200 to 400 soldiers that was comprised of up to five companies.
    A. Regiment
    B. Battalion
    C. Company
    D. Dragoon
2. Another name for Patriots, or supporters of the U.S.
    A. Loyalist
    B. Torrie
    C. Ally
    D. Continental
3. The first governing body of the U.S. made up of delegates from each colony
    A. Continental Congress
    B. House of Representatives
    C. Senate
    D. Congress
4. Name for professional soldiers from Germany and hired by the British.
    A. Dragoons
    B. Hessians
    C. Tories
    D. Guerillas
5. Taking men into military or naval force by compulsion to fill ranks.
    A. Imprisonment
    B. Suffrage
    C. Impressment
    D. Kidnapping
6. Contemporary used word for a British Redcoat.
    A. Bloody back
    B. Lobster back
    C. Red Dead
    D. Red Redemption
7. A fortified location where gun powder and supplies were stored.
    A. Tabloid
    B. Magazine
    C. Powder Horn
    D. Store House
8. Males 16-60 years old who were citizen soldiers and despised by the British.
    A. Continental Army
    B. Minute Men

C. Citizen Soldiers
D. Militia

9. A fence or defensive wall made with wooden stakes or tree trunks.
   A. Fort
   B. Trench
   C. Palisade
   D. Garrison
10. Who was the American officer who switched sides during the war?
   A. Alexander Hamilton
   B. Aaron Burr
   C. Benedict Arnold
   D. Ethan Allen
11. What was the original reason for King's taxes in the colonies?
   A. Pay for the Napoleonic Wars
   B. Pay for the Civil War
   C. Pay for the French and Indian War
   D. Pay for the Wars of Succession
12. In what event was Crispus Attucks killed after a snowball fight?
   A. Boston Tea Party
   B. Boston Massacre
   C. Valley Forge
   D. Lexington & Concord
13. What Act banned colonists from settling west of the Appalachian Mountains?
   A. Stamp Act
   B. Colonist Act
   C. Appalachian Act
   D. Proclamation Act
14. Who asked for a repeal of the Stamp Act?
   A. Sons of Liberty
   B. Stamp Act Congress
   C. Continental Congress
   D. Continental Army
15. American colonist who rejected British rule during the American Revolution.
   A. Patriot
   B. Partisan
   C. Parolee
   D. Picket
16. Term for professional British soldiers sent from England to fight in America.
   A. Regiment
   B. Regulars
   C. Militia
   D. Hessians

17. A military strategy with the objective of blocking supply lines and escape routes.
   A. Siege
   B. Skirmish

C. Stockade
D. Shilling

18. Someone who is the property of another person and must work for that person
A. indentured servant
B. apprentice
C. slave
D. journeyman

19. A tax on sugar, silk, wine, indigo, and pimento.
A. Stamp Act
B. Sugar Act
C. Tea Act
D. Townshend Acts

20. What was the set of laws designed to punish Boston after the Tea Party?
A. Coercive Acts
B. Quartering Act
C. Tea Act
D. Massachusetts Act

21. Who drafted the Declaration of Rights and Grievances?
A. First Continental Congress
B. Second Continental Congress
C. Thomas Paine
D. Thomas Jefferson

22. The ending of legal slavery.
A. abolition
B. suffrage
C. de facto segregation
D. genocide

23. The establishment of settlements by a mother country.
A. imperialism
B. colonization
C. mercantilism
D. debt patronage

24. A crop grown for sale rather than personal use.
A. subsistence crop
B. food stuff
C. cash crop
D. rationing

25. A fee charged on goods brought into one place from another.
A. tariff
B. penalty
C. surcharge
D. barter

26. Banned the use of paper money in the colonies.
A. Stamp Act
B. Currency Act
C. Quartering Act

D. Tea Act

27. Act that required the colonists to pay for British soldiers lodging.
    A. Hotel Act
    B. Housing Act
    C. Quartering Act
    D. Coercive Acts
28. Battle that ended with the British surrender and thus ended the war.
    A. Cowpens
    B. Kings Mountain
    C. Yorktown
    D. Charleston
29. What required stamps to be placed on all written materials?
    A. Post Office Act
    B. Paper Act
    C. Stamp Act
    D. Tax Act
30. What South Carolinian was called the Swamp Fox?
    A. Thomas Sumter
    B. Francis Marion
    C. Isaac Haynes
    D. Charles Lee
31. England's legislative body
    A. Parliament
    B. Congress
    C. Duma
    D. House
32. English policy of relaxed enforcement of laws in return for continued loyalty.
    A. mercantilism
    B. nullification
    C. prohibition
    D. salutary neglect
33. Natural rights which cannot be taken away by government.
    A. unalienable rights
    B. alienable rights
    C. constitutional rights
    D. personal rights
34. The right to vote.
    A. suffrage
    B. universal voting
    C. prohibition
    D. allowance
35. A large farm where a single crop is grown by slaves for profits.
    A. Encomienda
    B. plantation
    C. cooperative
    D. subsistence farm

36. To formally put an end to.
    A. end
    B. suspends
    C. abolishes
    D. emancipates
37. A written document from a ruler that grants certain rights to land or to start a colony.
    A. charter
    B. lease
    C. agreement
    D. rent
38. The people and institutions with authority to make and enforce laws and manage disputes about laws.
    A. legislature
    B. government
    C. executors
    D. governors
39. The practice of carrying on formal relationships with governments of other countries.
    A. diplomacy
    B. trade
    C. dispatches
    D. treaties
40. The political leaders of the thirteen colonies and key figures in the establishment of the U.S.
    A. Royal Governors
    B. Lord Proprietors
    C. Founding Fathers
    D. Legislators
41. Self-rule; not ruled by another country.
    A. independence
    B. tyranny
    C. monarch
    D. democracy
42. Easy for anyone to see; obvious.
    A. clouded
    B. self-evident
    C. oblivious
    D. unremarkable
43. Lottery winner and former slave who attempted a slave insurrection in Charleston, SC, but was found out and hanged.
    A. Crispus Attacks
    B. Frederick Douglass
    C. Denmark Vessey
    D. Chicken George

44. The rebellion that provided the founders evidence that the Articles of Confederation was too weak to be continued.
    A. Shay's Rebellion
    B. Boston Massacre
    C. Nat Turner's Rebellion
    D. Bunker Hill Rebellion
45. Thomas Jefferson bought land from Napoleon that doubled the size of the US and is known as
    A. Seward's Folly
    B. Gadsden Purchase
    C. Louisiana Purchase
    D. Missouri Compromise
46. The first ten amendments to the US Constitution is known as
    A. the Big Ten
    B. Bill of Understanding
    C. Bill of Rights
    D. Bill of Destiny
47. The "Necessary and Proper Clause" in the US Constitution is also known as the
    A. elastic clause
    B. transparent clause
    C. bank clause
    D. Hamilton clause
48. The Missouri Compromise (1820) admitted Missouri as a slave state and Maine as a
    A. slave state
    B. slave territory
    C. free state
    D. free territory
49. The oldest English settlement in the American colonies
    A. St. Augustine
    B. Charlestown
    C. Jamestown
    D. Plymouth
50. The Federalist Papers were written to support the ratification of the
    A. US Bank
    B. US Census
    C. US Constitution
    D. US Congress
51. Thomas Paine wrote *Common Sense* in 1775-1776 to advocate for
    A. war
    B. independence
    C. freedom
    D. slavery
52. The term *democracy* means government by the
    A. wealthy
    B. political
    C. strong

D. people

53. The Southern colonies main economic source was
    A. shipbuilding
    B. gold and other minerals
    C. wheat and other grains
    D. cotton and tobacco
54. Which document was the first example of representative government in the New World?
    A. Constitution
    B. Declaration of Independence
    C. Mayflower Compact
    D. Treaty of Paris
55. What economic term meant colonies made money for their mother country, England.
    A. Mercantilism
    B. Amendments
    C. Supply and demand
    D. Free Market
56. Established as an attempt to solve labor shortages, the Virginia Company awarded fifty acres for people who paid their own passage the passage of another settler.
    A. Headright System
    B. Indentured Servitude
    C. Slavery
    D. Impressment
57. Global transfer of foods, plants, and animals during the colonization of the Americas. Important foods: potato, corn, tomato, sugar cane. Spread of diseases: Syphilis, Typhus, Flu, Measles, Smallpox, and Malaria.
    A. Triangle Trade
    B. Stock exchange
    C. Joint Stock Company
    D. Columbian Exchange
58. Cash crop that made Virginia very wealthy and a colony.
    A. Cotton
    B. Rice
    C. Tobacco
    D. Indigo
59. According to the theory of mercantilism, the principal purpose of the thirteen original colonies was to provide Great Britain with
    A. naval bases
    B. raw materials and markets
    C. workers and manufactured good
    D. military recruits
60. The Virginia House of Burgesses was important to the development of democracy in the thirteen colonies because it
    A. provided an example of a representative form of government
    B. created the first written constitution in America
    C. provided for direct election of senators

D. began the practice of legislative override of executive vetoes

61. The major purpose of the Declaration of Independence was to
    A. describe a strategy for the defeat of the British in the Revolutionary War
    B. justify the actions of people seeking to overthrow British colonial rule
    C. provide for the establishment of new state governments
    D. provide a plan of organization for a new government
62. Which aspect of the American political system was most influenced by the ideas of John Locke and Baron de Montesquieu?
    A. executive control of foreign policy
    B. limitations on the power of government
    C. government regulation of the economy
    D. creation of the electoral college
63. The Preamble of the United States Constitution states the purposes of government and is based on the belief that
    A. the states have ultimate authority
    B. members of Congress should be appointed
    C. Supreme Court Justices should be elected
    D. the people are sovereign
64. At the Constitutional Convention of 1787, the Great Compromise was concerned with
    A. Representation in Congress
    B. the powers of the president
    C. the question of slavery
    D. control of the Atlantic
65. The Three-fifths Compromise was included in the Constitution to resolve a conflict over the
    A. counting of slaves for representation
    B. reimbursement for runaway slaves
    C. number of states needed to ratify an amendment
    D. number of votes needed to approve a treaty
66. One major reason that Alexander Hamilton proposed a national bank was to
    A. improve the economic position of the US government
    B. help state governments collect taxes
    C. make loans available to owners of small farms
    D. reduce foreign investment in the US
67. Marbury v Madison established the precedent of
    A. judicial review
    B. jury of one's peers
    C. liberty
    D. absentee ballot
68. What was the *Virginia Dynasty*?
    A. The importance of Virginia in trade
    B. The legacy of Jamestown
    C. Majority of the first presidents were from Virginia
    D. The importance of tobacco in the economy
69. The term bicameral means
    A. two viewpoints

B. two houses
C. two elections
D. two votes

70. Independence Day is celebrated as
A. July 2, 1776
B. July 14, 1789
C. July 4, 1776
D. July 3, 1770

APPENDIX B

VOCABULARY PRETEST-POSTTEST ALIGNMENT TO USCH STANDARDS

USCH Standard	Pretest Posttest Questions
2	1. A military unit of 200 to 400 soldiers that was comprised of up to five companies
1	2. Another name for Patriots, or supporters of the U.S.
1	3. The first governing body of the U.S. made up of delegates from each colony.
1	4. Name for professional soldiers from Germany and hired by the British.
2	5. Taking men into military or naval force by compulsion to fill ranks.
1	6. Contemporary used word for a British Redcoat
2	7. A fortified location where gun powder and supplies were stored.
1	8. Males 16-60 years old who were citizen soldiers and despised by the British.
1	9. A fence or defensive wall made with wooden stakes or tree trunks
1	10. Who was the American officer who switched sides during the war?
1	11. What was the original reason for King's taxes in the colonies?
1	12. In what event was Crispus Attucks killed after a snowball fight?
1	13. What Act banned colonists from settling west of the Appalachian Mountains?
1	14. Who asked for a repeal of the Stamp Act?
1	15. American colonist who rejected British rule during the American Revolution.
1 & 2	16. Term for professional British soldiers sent from England to fight in America.
2	17. A military strategy with the objective of blocking supply lines and escape routes
2	18. Someone who is the property of another person and must work for that person
1	19. A tax on sugar, silk, wine, indigo, and pimento.

1	20. What was the set of laws designed to punish Boston after the Tea Party?
1	21. Who drafted the Declaration of Rights and Grievances?
2	22. The ending of legal slavery
1	23. The establishment of settlements by a mother country.
1	24. A crop grown for sale rather than personal use.
1 & 2	25. A fee charged on goods brought into one place from another
1	26. Banned the use of paper money in the colonies
1	27. Act that required the colonists to pay for British soldiers lodging
1	28. Battle that ended with the British surrender and thus ended the war
1	29. What required stamps to be placed on all written materials?
1	30. What South Carolinian was called the Swamp Fox?
1 & 2	31. England's legislative body.
1	32. English policy of relaxed enforcement of laws in return for continued loyalty.
1	33. Natural rights which cannot be taken away by government.
1 & 2	34. The right to vote
	35. A large farm where a single crop is grown by slaves for profits.
2	36. To formally put an end to.
1	37. A written document from a ruler that grants certain rights to land or to start a colony.
1 & 2	38. The people and institutions with authority to make and enforce laws and manage disputes about laws.
2	39. The practice of carrying on formal relationships with governments of other countries.
1	40. The political leaders of the thirteen colonies and key figures in the establishment of the U.S.
1	41. Self-rule; not ruled by another country.
1 & 2	42. Easy for anyone to see; obvious.
2	43. Lottery winner and former slave who attempted a slave insurrection in Charleston, SC, but was found out and hanged.
1	44. The rebellion that provided the founders evidence that the Articles of Confederation was too weak to be continued.
2	45. Thomas Jefferson bought land from Napoleon that doubled the size of the US and is known as
1	46. The first ten amendments to the US Constitution is known as
1	47. The "Necessary and Proper Clause" in the US Constitution is also known as the
2	48. The Missouri Compromise (1820) admitted Missouri as a slave state and Maine as a
1	49. The oldest English settlement in the American colonies
1	50. The Federalist Papers were written to support the ratification of the
1	51. The Federalist Papers were written to support the ratification of the

1 & 2	52. The term *democracy* means government by the
1 & 2	53. The Southern colonies main economic source was
1	54. Which document was the first example of representative government in the New World?
1	55. What economic term meant colonies made money for their mother country, England.
1	56. Established as an attempt to solve labor shortages, the Virginia Company awarded fifty acres for people who paid their own passage the passage of another settler.
1	57. Global transfer of foods, plants, and animals during the colonization of the Americas. Important foods: potato, corn, tomato, sugar cane. Spread of diseases: Syphilis, Typhus, Flu, Measles, Smallpox, and Malaria.
1 & 2	58. Cash crop that made Virginia very wealthy and a colony.
1	59. According to the theory of mercantilism, the principal purpose of the thirteen original colonies was to provide Great Britain with
1	60. The Virginia House of Burgesses was important to the development of democracy in the thirteen colonies because it
1	61. The major purpose of the Declaration of Independence was to
1	62. Which aspect of the American political system was most influenced by the ideas of John Locke and Baron de Montesquieu?
1	63. The Preamble of the United States Constitution states the purposes of government and is based on the belief that
1	64. At the Constitutional Convention of 1787, the Great Compromise was concerned with
1 & 2	65. The Three-fifths Compromise was included in the Constitution to resolve a conflict over the
1	66. One major reason that Alexander Hamilton proposed a national bank was to
1	67. Marbury v Madison established the precedent of
2	68. What was the *Virginia Dynasty*?
1	69. The term bicameral means
1	70. Independence Day is celebrated as

APPENDIX C

EXIT TICKETS

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Week One					
1. After using the digital flashcards, I am confident I know the vocabulary terms I need to learn in U.S. History	1	2	3	4	5
2. Learning interesting information motivates me to learn more about U.S. History.	1	2	3	4	5
Week Two					
3. Using digital flashcards makes it easier for me to pick out the necessary information to feel successful on quizzes and tests.	1	2	3	4	5
4. I feel motivated to work harder when I am successful in class.	1	2	3	4	5
Week Three					
5. How the information is presented on the digital flashcards helps to keep me motivated to learn the vocabulary.	1	2	3	4	5
6. I feel motivated to work harder when I make good grades.	1	2	3	4	5
Week Four					
7. The digital flashcards help me to remember and	1	2	3	4	5

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
learn vocabulary relevant to the history.					
8. Being successful in school empowers me to work harder.	1	2	3	4	5
Week Five					
9. I feel more confident in understanding U.S. History than I thought.	1	2	3	4	5
10. Learning content-area vocabulary has made learning history easier for me	1	2	3	4	5
Week Six					
11. Digital flashcards have made learning vocabulary easier for me.	1	2	3	4	5
12. I enjoyed using digital flashcards to help build my U.S. History vocabulary confidence.	1	2	3	4	5

APPENDIX: D

INTERVIEW PROTOCOL

Date:

Participant:

Thank you for agreeing to participate in this action research study and interview. The purpose of this study is to evaluate the impact of digital flashcards on content-specific vocabulary learning and student perceptions in a U.S. History course.
The interview is not timed but is expected to take approximately 40 to 45 minutes. Your participation is voluntary, and you may choose not to participate. You will not be penalized in any way if you choose to opt out. The decision to participate is yours to make.
Any and all information obtained from the interview process will be for research purposes only. Your identity will be protected through the use of a pseudonym. All responses will remain confidential, and I thank you again for your participation.
Interview guidelines:

1. The interviews will be conducted in person and will be audio recorded and transcribed by hand.
2. Your identity will be protected through the use of a pseudonym and care will be given to preserve the confidentiality of your identity.
3. All recordings and transcriptions will be preserved on my personal password-protected computer.
4. You will receive an interview transcript to review for accuracy and to correct if necessary.
5. The information received from the interview process will be used for research purposes only.
6. Please feel free to answer the interview questions honestly and as completely as possible. I want to hear what YOU think.
7. Feel free to ask me any about any questions or concerns that you may have now or in the future. Thank you.

APPENDIX E

STUDENT INTERVIEW MODIFICATIONS

Original Interview Protocol	Modified Student Interview Protocol
Did participating in cooperative learning groups improve your feelings about math?	• Describe how the digital flashcards made you feel about your academic abilities in U.S history? • Did the instant feedback on the digital flashcards affect your motivation to learn content-specific vocabulary?
How did cooperative learning improve your understanding of the lesson?	• How did participating in the digital flashcards activities effect your perceptions of learning content-specific vocabulary? • Did using the digital flashcards help to increase your vocabulary confidence? How?
Were you comfortable with the members of your group? If not, how could that be improved?	• Were you comfortable using digital flashcards? Did using them make you more confident in your learning? • Is there anything else that you would like share about your self-efficacy or confidence to learn content-specific vocabulary since using digital flashcards? • Would you say that the digital flashcards helped to motivate you to learn content-specific vocabulary better than the traditional ways.
How did students in your group help each other learn? How is it set up?	• Will you share with me some of the vocabulary terms that you

Original Interview Protocol	Modified Student Interview Protocol
	learned using the digital flashcards? • Share with me what you liked or disliked about using digital flashcards for learning vocabulary.
Why did cooperative learning groups help you understand concepts you did not know during each lesson?	• Describe for me the differences between using the digital flashcards and other ways you learned vocabulary. • Would you recommend digital flashcards to your classmates as a learning tool? Why or why not?
How did cooperative learning groups encourage you to work hard during each lesson?	• Describe how the digital flashcards influenced your motivation to learn content-specific vocabulary? • Please share with me your definition of motivation. • How confident are you that you will succeed at a similar vocabulary assignment or test in the future? Why?
Did the CL activities help you focus more while you were learning?	• Did the digital flashcards activities help you focus more on the vocabulary that you were learning? • Would you say that you were more motivated at the start of using digital flashcards, the end, or anywhere in between?
Do you feel the CL activities/Interactive Math Review Program helped you struggle less to learn difficult concepts?	• Share with me how the digital flashcards affected your U.S. History vocabulary skills • Do you feel like you need a reward to be motivated to learn content-specific vocabulary?

Wingard, C. B. (2017) *Secondary students' perceptions of an interactive mathematics review program: An action research study* (Doctoral dissertation). Retrieved from https://scholarcommons.sc.edu/etd/4301

APPENDIX: F

MID-INTERVENTION INTERVIEW SCRIPT

Good morning/afternoon,
Once again, thank you for participating in the interview process. Please be aware that your participation is voluntary, and you will not be penalized in any way if you choose not to participate
The interview should last approximately 40 to 45 minutes and is not timed. Your responses will be recorded to ensure accuracy. During the interview, I will also be taking notes throughout the interview process. Please be honest and answer the questions to the best of your ability and remember there are no right or wrong answers.
All of the questions are related to your perceptions of the use of the digital flashcards intervention.
Modified Mid-Intervention Interview Prompts:

1. Share with me how the digital flashcards affected your U.S. History vocabulary skills
2. Share with me what you liked or disliked about using digital flashcards for learning vocabulary.
3. Describe for me the differences between using the digital flashcards and other ways you learned vocabulary.
4. Please share with me your definition of motivation.
5. Describe how the digital flashcards influenced your motivation to learn content-specific vocabulary?
6. Did the instant feedback on the digital flashcards affect your motivation to learn content-specific vocabulary?
7. Describe how the digital flashcards made you feel about your academic abilities in U.S history?
8. How did participating in the digital flashcards activities effect your perceptions of learning content-specific vocabulary?
9. Did using the digital flashcards help to increase your vocabulary confidence? How?

APPENDIX: G

POST-INTERVENTION INTERVIEW SCRIPT

Good morning/afternoon,

Once again, thank you for participating in the interview process. Please be aware that your participation is voluntary, and you will not be penalized in any way if you choose not to participate. This process will be just like the earlier interview process, just a little longer.

The interview should last approximately 45 to 60 minutes and is not timed. Your responses will be recorded to ensure accuracy. During the interview, I will also be taking notes throughout the interview process. Please be honest and answer the questions to the best of your ability and remember here are no right or wrong answers.

All of the questions are related to your perceptions of the of digital flashcards intervention

Modified Post-Intervention Prompts

1. Did the digital flashcards activities help you focus more on the vocabulary that you were learning?
2. Will you share with me some of the vocabulary terms that you learned using the digital flashcards?
3. Would you recommend digital flashcards to your classmates as a learning tool? Why or why not?
4. Would you say that you were more motivated at the start of using digital flashcards, the end, or anywhere in between?
5. Do you feel like you need a reward to be motivated to learn content-specific vocabulary?
6. Would you say that the digital flashcards helped to motivate you to learn content-specific vocabulary better than the traditional ways.
7. Were you comfortable using digital flashcards? Did using them make you more confident in your learning?
8. How confident are you that you will succeed at a similar vocabulary assignment or test in the future? Why?
9. Is there anything else that you would like share about your self-efficacy or confidence to learn content-specific vocabulary since using digital flashcards?

APPENDIX: H

PERMISSION TO USE BOOM LEARNING MATERIAL

From: Mary Oemig <legal@boomlearning.com>
Sent: Friday, October 28, 2022, 12:08:15 PM
To: Steinmeyer, Jill
Subject: Re: Using material in dissertation

Hi Jill,

Permission granted. Best of luck!

Cheers,

Mary Oemig, CEO and General Counsel
Boom Learning (a dba of Omega Labs Inc.)

For fastest service contact:
legal@boomlearning.com (agreements, legal and privacy)
Estimate Builder or sales@boomlearning.com (for estimates and purchase orders)
Help Center or help@boomlearning.com (customer support)

Never send a password in a help request to Boom Learning. We do not require your password to assist you.

On Thu, 27 Oct at 12:22 AM , Steinmeyer, Jill wrote:
Good morning,
I am currently completing my dissertation on Boom Cards for the University of South Carolina. My dissertation is examining how Boom Cards affect social studies vocabulary learning and student motivation and self-efficacy. I would like to use images from your web page to illustrate the game-like design of Boom Cards. I therefore would like to request permission to use images with source documentation to illustrate the capabilities and usefulness of Boom Cards on vocabulary learning.

Regards,
Jill Steinmeyer

APPENDIX: I

IRB APPROVAL FROM THE UNIVERSITY OF SOUTH CAROLINA

OFFICE OF RESEARCH COMPLIANCE

INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH
DECLARATION of NOT RESEARCH

Jill Pate
115 Devon Rd.
Summerville, SC 29483

Re: **Pro00118673**

Dear Ms. Jill Pate:

This is to certify that research study entitled ***THE EFFECTS OF BOOM CARDS ON ELEVENTH-GRADE U.S. HISTORY STUDENTS' PERCEPTIONS OF MOTIVATION AND SELF-EFFICACY TO LEARN CONTENT AREA VOCABULARY*** was reviewed on **2/3/2022** by the Office of Research Compliance, which is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). The Office of Research Compliance, on behalf of the Institutional Review Board, has determined that the referenced research study is not subject to the Protection of Human Subject Regulations in accordance with the Code of Federal Regulations
45 CFR 46 et. seq.

No further oversight by the USC IRB is required. However, the investigator should inform the Office of Research Compliance prior to making any substantive changes in the research methods, as this may alter the status of the project and require another review.

If you have questions, contact Lisa M. Johnson at lisaj@mailbox.sc.edu or (803) 777-6670.

Sincerely,

Lisa M. Johnson
ORC Associate Director and IRB Manager

APPENDIX: J

IRB APPROVAL FROM SCHOOL DISTRICT

Dear Ms. Steinmeyer,

I am happy to report the Research Review Committee reviewed the research proposal you submitted, and you are granted approval to conduct your research as delineated. For your files, a hard copy of this approval letter is also being sent to the address listed above.
Since your research is being conducted in _____,
we anticipate receipt of a report of your findings when your research concludes.

If you have any further questions for the committee, please feel free to contact

me.
We wish you success in your research and in completing your dissertation.

Sincerely,

Director of Staff Development/Teacher Evaluation

APPENDIX K

PARENTAL CONSENT FOR PARTICIPATION

Parent/Guardian Research Consent Form. To be completed by the parent/legal guardian of a school-aged participant.

Project Name: Implementation of Digital Flashcards to Increase Content-Specific Vocabulary Knowledge and Perceptions of Motivation and Self-Efficacy in an Eleventh-Grade U.S. History Course: An Action Research.

Principal Researcher: Jill Steinmeyer

Project Location: T A P

Participants/Parental rights and Assurances:

I have received a copy of the approved application form for the aforementioned research project. having read the application, I am familiar with the purpose, methods, scope, and intent of the research project.

_____ I am willing for my child to participate in this research project.

_____ I am not willing for my child to participate in this research project.

I am willing for my child to participate in this research, I understand that during the course of this project, my child's responses will be kept strictly confidential and that none of the data released in this study will identify my child by name or any other identifiable data, descriptions, or characterizations. Furthermore, I understand that my child may discontinue their participation in this project at any time or refuse to respond to any questions to which he/she choose not to answer. My child is a voluntary participant and no liability or responsibility for the implementation, methodology, claims, substance, or outcomes results this research project. I am also aware that my child's decision not to participate will not result in any adverse consequences or disparate treatment due to that decision. I fully understand that this research is being conducted for constructive educational purposes and that my signature gives consent for my child to voluntarily participate in this project.

Parent's Signature _____ Date _____

Student's Signature _____ Date _____