A Case Study Exploring Student Engagement With Technology As Measured by the ARCS and SAMR Models

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A CASE STUDY EXPLORING STUDENT ENGAGEMENT WITH TECHNOLOGY AS MEASURED BY THE ARCS AND SAMR MODELS

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ABSTRACT

This action research case study describes how varying the levels and format of technology integration into high school social studies classroom lessons impact students’ motivation to learn and how the teacher’s effort to support student motivation through the integration of technology supports student achievement. This research study was grounded in the conceptual framework that motivating and engaging students in the classroom (with the introduction of technology) can be very difficult. This study seeks to determine the relationship between student engagement and motivation as classroom lessons are moved along the different levels of the SAMR model, which stands for substitution, augmentation, modification, and redefinition. Student engagement was measured along the ARCS model which stands for attention, relevance, confidence, and satisfaction. Student achievement with the use of technology in the classroom was also explored, however, it was a secondary measurement and further studies will need to be performed to fully understand how the correct implementation of technology in the classroom will truly impact student achievement. The participants for this study came from a rural high school and was made up of 14 students from the 9th and 10th grades. The data collection methods included a triangulation of data from student exit tickets, Likert Scale surveys, and direct observation/journaling. Student interview were also used to augment the constant comparative method of data collection. The findings found that as lessons were moved to higher levels of SAMR (modification and redefinition levels) student engagement and motivation were positively impacted along the ARCS model.
The study further seeks to help teachers implement sound pedagogy when it comes to introducing technology into the classroom.
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CHAPTER 1
INTRODUCTION

After another eventful year of school filled with professional development and with the excitement and anticipation growing; the first day of school has arrived and all of the students (and teachers) have one-to-one devices at their disposal and are ready to take learning to new heights only imaginable in fiction. Working in their planned learning communities (PLCs), teachers have created lesson plans throughout the previous year and the current summer, and been through countless hours of professional development in mastering the new applications which have been "guaranteed" to close achievement gaps and elevate student learning. All of the systems and infrastructure are in place and now it is up to the teacher and students to integrate technology into the classroom seamlessly.

Administrators dream of the day when they can walk into the classroom and view rigorous and challenging student guided lessons being facilitated by the teacher and walk away knowing: all the standards have been met, the students are motivated, and the pedagogical world is in harmony. The day has finally come, and I am extremely satisfied in knowing that my preparation (and that of the district) will change these students’ lives forever. Students will come into my classroom today with their very own Chromebooks and together we will create, hypothesize, critique and solve problems of such magnitude that they could never be solved without technology. All of the higher-level questions of Bloom’s taxonomy can now be asked and answered and all of this will take place in a fun and engaging classroom. Then the real problem arises as I notice students beginning to
work around the filters and blocks and to my horror; they are on social media, and/or Craigslist looking for girlfriends/boyfriends and big trucks or car parts. Some students are watching full length movies, others have found a way around the filters and are playing video games. I am a high school teacher with ten years of teaching experience; the last seven at the AP level. Recently, tablets (or iPADS) and/or Chromebooks have been introduced into the curriculum within the school district. All teachers within the district have been asked to integrate the new technology into their individual classrooms. During the initial rollout of the Chromebooks many issues were discovered including student motivation, proper instructional practices, and students accessing applications which were not conducive to learning. I recently heard another teacher in an administrator's office next door complain about his students abuse of the Chromebooks. He stated that they are simply not motivated to listen to his lectures when the distraction of the Chromebook is sitting right in front of them. I witnessed these issues and began to formulate the question of the relationship of student learning and the introduction of technology into the classroom after several observations of misuse and intentional student misbehaviors. I want to know how educators can monitor student motivation while keeping up with 21st century teaching trends by utilizing the technology in the classroom. I believe student centered and focused learning can be the outcome if the teacher simply models the desired technological behavior. One of the first concerns my students have is that teachers simply use the technology for note taking or research application and direct students to use the technology in ways they consider “boring.” It is my hope that through sound pedagogical practices and effective integration of technology we can achieve the goals of both the district and the students.
The goals of the district are to integrate technology using the Substitution, Augmentation, Modification, Substitution model (SAMR) and to begin a seamless integration from the substitution level to the redefinition level. The district understands that the technology does not need to be used in the classroom each day; however, they expect teachers to begin this seamless integration and to become familiar with pedagogy that helps students reach their outcomes. These desired outcomes include having students that are motivated, confident, and satisfied with their learning experience. The district has implemented the following goals for the students: a) become more familiar with the use of technology in the classroom, b) use the technology to work more collaboratively, and c) use the technology for educational purposes.

Students want to learn and be challenged, they want to feel as if they are completing assignments that are relevant to their lives and their futures and most importantly they want to have a sense of accomplishment and satisfaction at the end of the lesson. Technology can enhance this sense of satisfaction by allowing the students to work in the 21st century environment to which they are accustomed. Many students have internet connected devices they use on a daily basis for social networking and communication. Educators can provide these same types of technology uses for instruction, thereby allowing them to feel the satisfaction they discover in their everyday use of technological advancements using internet access.

The Problem of Practice

The effective implementation of a one-to-one student to computer technology program is a challenge at both the school and classroom levels. When students who have had little previous access to the internet during school hours are provided with their own
computer, they often use the device to access social media or other entertainment-based
internet websites. A study by Fried, 2008 showed results that not only paralleled this
problem; but, also concluded that students were not only distracting themselves, but, their
fellow students as well. Given the potential educative value of these devices and the
prominence of off-task behaviors among students, effectively managing and integrating
these devices into classroom instruction can be challenging for teachers. These
interrelated challenges associated with effective technology integration are the key
aspects of the problem of practice on which this study will be focused.

There are many common pitfalls of one-to-one computer initiatives that
discourage the effective use of technological advancements with internet use in school
settings. As indicated by Frey and Donehue (2002), inadequately trained faculty is one
fundamental reason why many learning institutions have failed to integrate technology
instruction effectively. Many educators lack the knowledge to employ technologies
specific to their given discipline. Another systemic issue found during the integration of
technologies into the classroom is student misuse of internet at school. When given
access to the internet via a personal computer, students are often found to be highly
engaged by using technology but relatively unengaged in the instructional activities.
When students are using these devices for classroom related activities, they often struggle
to develop an intrinsic interest in learning, use the tool for educational purposes, or both.
Another common pitfall is ineffective technology integration as a whole. Teachers
charged with integrating these devices into their teaching are often unprepared to do this
effectively. Therefore, “...understanding the principles of motivation and how they apply
to instruction is important for instructional designers” (Means, Jonassan, Dwyer, p. 5).
Most of the members of the faculty never received formal training in instructional technology in their educational programs during their earlier education years. Thus, it is the responsibility of the school and district to offer the required professional development and proper training in obtaining the necessary skills and competencies involved with an initial rollout.

As stated by Hyllegard and Burke (2002), the integration of instructional technologies based on computers do not simply offer the same instruction using a totally different medium, but instead encourage a change of the learning and teaching process, where faculties are compelled to make changes in their pedagogy from that which is teacher-centered, primarily didactic lecture format, called traditional instruction, to that which is more centered on students and based on learning strategies which are active. The researchers further contended that the traditional method of course instruction (also referred to as face-to-face classroom instruction), entails minimal to no use of technology. The technology enhanced classroom uses a different pedagogical view compared to the traditional classroom. Finally, there is a lack of motivation for learning if students perceive the task as uninteresting or too difficult, they will avoid the task. Students will approach tasks they believe are fun, require a moderate amount of effort, and are reasonably challenging. Thus, the nature of the task and student perceptions of the importance of the task become key factors influencing student motivation for approaching or avoiding the task (Blumenfeld, Mergendoller, & Swarthout, 1987; Eccles et al., 1983). The problem we face as educators is how to motivate these students while integrating technology into the classroom and at the same time accomplishing the goals of both the student and the district.
Conceptual Framework

Effectively motivating students to achieve expected learning objectives in the classroom can be a challenge for many if not all teachers. Complicating this work with mandated technology integration leads to a complex problem of practice for teachers. For this study, I have integrated Keller’s ARCS model of motivation (Song & Keller, 1999) and the SAMR model for technology integration (Puente, 2014) into a conceptual framework that guided the development, implementation and subsequent study of a research-based intervention intended to address this complex challenge.

Motivation for learning has been shown to be an important factor in what and how well content is learned by students. The ARCS model of motivation is an instructional design approach that emphasizes the motivational aspects of the learning environment (Song & Keller, 1999). ARCS, is an acronym for attention (A), relevance (R), confidence (C), and satisfaction (S), and these variables depict the essential conditions for an individual’s full motivation. The first category emphasizes that class sessions have to gain the **Attention** of learners. In order to achieve this, educators can use a wide variety of techniques ranging from simple unexpected events (such as loud whistles) to mentally provocative tasks which grab curiosity levels more deeply, particularly when dispensed at the start of lessons. Variation is another factor that is important in ensuring attention. Even if the teacher’s teaching strategies are good but are not changing or completely predictable, students would likely lose interest in the lesson. Building **Relevance** is the second requirement in the ARCS model. Despite arousing curiosity, motivation in learners will not be effective when they perceive the content to be of no value to them. With relevance, however, teachers can connect the instruction’s content to learners’ most
fundamental goals, their learning styles, and their past interests. Traditionally, instructors can achieve this by relating instructional content to their students’ academic requirements or future job. Relevance also plays an integral role in culturally responsive teaching.

Confidence is the third motivation requirement in the ARCS model. Teachers can attain this through assisting learners to build positive expectations to be successful. Since students usually have apprehension of what is expected from them, they develop low confidence. However, through setting clear goals and offering acceptable accomplishments and examples, building confidence becomes an easier task. However, to ensure this is sustained, the fourth condition, Satisfaction, is also a requisite. According to Song and Keller (1999), satisfaction is defined as the positive feelings regarding the learning experiences and accomplishments of an individual. It implies that learners obtain success evidence and acknowledgment that underpin intrinsic satisfaction feelings. Moreover, learners have the belief they have been fairly treated. According to Song and Keller (1999) keeping students motivated is a key factor in the integration of technology in the classroom and the ARCS model provides a useful framework for doing this.

The SAMR model for the effective integration of technology provides guidance for teachers as they integrate technology into their instruction in order to attain higher levels of student academic achievement (Puentedura, 2014). SAMR stands for: Substitution, Augmentation, Modification, and Redefinition. During the substitution level, technology simply allows us to substitute for other learning activities; without functional change. Augmentation allows the same substitution factors; however, activities have functional improvements. Modification allows learning to be redesigned
and redefinition allows the technology to act as a vehicle for creation which could not be accomplished without the technology (Romrell, Kidder, & Wood, 2001).

Effective use of technology in the classroom is often accomplished when the instructor is promoting active learning. Active learning, “…assists students with developing critical and deep-thinking skills; motivating students’ interests in exploration, inquiry, and investigation” (Powell, Cleveland, et.al, 2012, pg. 42). It becomes essential for the instructor to help facilitate engagement by allowing the students to participate in inquiry-based lessons and explore their own hypothesis and methods of determining outputs.

According to Larry Ferlazzo (2017), students who have more autonomy in the determination of assignments and how they are assessed have a higher level of motivation to be engaged in the assignment. Ferlazzo (2017) also discussed the idea of “relevance” in an assignment noting personalized learning as an essential element in keeping students engaged while performing tasks on an internet connected device. The term relevance is again used as an avenue for culturally responsive teaching. According to Hammond (2015), “One of the biggest misconceptions about culturally responsive teaching is thinking you have to tie the lesson content to African American or Latino students’ racial background. The common belief is if you mention Africa, Mexico, or famous black and brown high achievers, it will spark students’ attention…In reality, culturally responsive teaching is less about using racial pride as a motivator and more about mimicking students’ cultural learning styles and tools” (p.2). Technology provides a platform for developing intercultural awareness. According to Ribeiro (2017), digital storytelling increases the overall engagement of students from diverse backgrounds.
Digital storytelling is certainly a form of personalized and active learning and through the use of technology we can help develop intercultural awareness and help our students from different backgrounds and ethnicities stay motivated as well. This is especially true while using the technology and internet for our ESOL students, who will now be able to access many forms of translation and dictation software while in the classroom. Callow and Orlando (2015) noted

“The learning opportunities for diverse students provided around literacy and technology by teachers will only enhance student engagement and motivation when contextualized within classrooms that consistently send engaging messages about the importance of learning, shared community and a valuing of the students’ own voices and abilities (p. 367).

Many students from diverse backgrounds experience a myriad of challenges that impact their access to and use of internet-based technologies. Educators must be mindful of the structural conditions that create a preponderance of IEPs among culturally diverse students as well as the perception that black and brown students do not have parental support simply because certain levels of access may not be readily available in the home. Teachers need to design instructional strategies that acknowledge the economic disparities across homes which may create differences in technology access among diverse students. Technology can greatly enhance the ability of educators to assist students from various cultures, races, and ethnicities to relate to instruction; thus, following the ARCS model of motivation. If a student from a diverse background can use the technology to relate to their everyday lives, they will certainly be more motivated in their capacity to master the concepts being taught. Students will also be able to
augment their learning by using translation software integrated into the new technology. Although the software is not completely accurate; it does allow for students to translate fairly easily between English and native languages.

The SAMR model and technology are intertwined in a complex way. Technology is seen as a tool that can change the way of teaching from the substitution level through the redefinition level. “For example, technology tools in the augment category provide teachers with improved ways of interacting with students. This is evident in the way that Google Forms transform exit tickets by quickly and efficiently identifying areas of confusion, highlighting opportunities to dive in to the next day’s lesson” (Portnoy, 2018, p. 3) Portnoy deems technology to be an integral component in implementing Puentedura’s SAMR model, because it not only allows the teacher/student interaction to become more augmented; but, it also provides the tools necessary to redefine the lesson itself. Technology in education is allowing students to take field trips to the moon; teachers to flip classrooms and redefinition of lessons to take place (Portnoy, 2018). These examples are evidence of technology working along the levels of SAMR. Even at the basic substitution level, technology allows students to type notes more quickly as opposed to writing them on paper with a pencil.

Effective integration of technology in the classroom also contributes to student engagement. Many of the methods used in traditional classrooms are also effective in the classroom which includes technology. The teacher cannot simply rely on the technology to teach the class; they must follow the framework for instructional planning. According to Pitler, Hubbell, and Kuhn (2012), the teacher must create an environment for learning, help students develop understanding, and help students extend and apply knowledge.
Some examples given are to extend the framework for instructional planning by
including: communication and collaborative software, instructional media, multimedia
creation, and types of kinesthetic technology. These examples help to further the ideas
behind cooperative learning, providing quicker feedback, and generating and testing
hypotheses (Pitler, Hubbell, and Kuhn, 2012). Proper integration of technology in the
classroom will be a combination of including applications which augment the framework
for instructional planning; while also allowing the students autonomy and freedom to
define their own outcomes.

Motivating students is not as complicated as it seems. Students want to have a
purpose in their education. They want to be “wowed” by what they are learning. The
levels of modification and redefinition of SAMR allow the students to feel the sense of
satisfaction, confidence, and relevance. Again, even at its basic level (substitution) some
students will feel a sense of satisfaction and confidence as they are able to keep up with
the notes and class in ways that they were not able to in the past.

“The potential of these tools (technologies) resides in their ability to untether our
nation’s teachers from the physical boundaries of their classrooms and untie our
nation’s students from arbitrary groupings while unleashing an exciting new level
of truly immersive learning. To harness the true utility of these tools we must
continue to address the digital divide that perpetuates inequities in our classrooms
by not only bringing high speeds to our classrooms but also access to the tools
that students and teachers need to support our most valuable assets, our future
citizens.” (Portnoy, 2018 p. 4)
In conjunction with technology we can use SAMR to transform the entire learning environment for our students.

Keller’s ARCS model of motivation is a useful framework, teachers can use to plan for effective classroom instruction (Song & Keller, 1999). However, we also need to transform learning in the classroom and the SAMR model is the guideline for this study in transforming learning for students while staying on the spectrum of ARCS for motivation.

**Research Questions**

The purpose of this study is to identify how to better support student achievement through the integration of technology that develops and maintains the motivation to learn among high school social studies students. To achieve goals, I have designed, implemented and studied a series of lessons that were developed using the ARCS model of student motivation and the SAMR model for technology integration. I integrated these research-based models into a theoretical framework which guided by development of a unit plan, daily lessons, and data collection strategies for assessing the impact of the lessons. Technology was integrated into my daily lessons for a two-week period in a variety of ways (substitution, augmentation, etc.) in order to address the characteristics of effective motivation (attention, relevance, etc.). My research questions are as follows:

1. How might varying the levels and format of technology integration into high school social studies classroom lessons impact students’ motivation to learn?
2. How might the teacher’s effort to support student motivation through the integration of technology support student achievement?
Researcher Positionality

My position as it relates to this study is that of: observer, data analysis, and the facilitator of lessons. Considering the levels of modification and redefinition the teacher must be the facilitator. I will allow the students to use the technology to inquire and solve problems and will give them minimal boundaries in their learning during these phases. I will collaborate with both my students and my colleagues in order to insure this study meets the needs of all stakeholders (including the district) but most importantly the needs of the students. I will collaborate with my colleagues to make sure they understand the findings of this study and can incorporate ideas into their classrooms, to solve the same problems I am seeing in my classroom. I am a teacher with over 12 years of experience in the classroom, I am in insider partaking in this research, and my values and beliefs are guided in the one premise: this research will help students and teachers alike. I will discuss more about my personal experience and possible biases that may impact the research and outcomes in chapter three of this study.

Research Design

I will be discussing how motivation and student engagement are impacted (as my lessons move along the SAMR model) by designing a qualitative case study through action research. I will correlate the data through semantic coding, Likert Scale surveys, and the constant comparative method of qualitative data to augment my field observations in the study. The classroom provides an opportunity for a qualitative case study. A case study is defined as, “an empirical inquiry that investigates a contemporary phenomenon (The case) in depth and width in its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident” (Yin, p.16). I
will give a formative assessment each day and observe and code the data from an exit ticket each day to understand how my teaching processes along the levels of SAMR are helping my students to gain attention, relevance, confidence, and satisfaction. Due to the nature of insufficient quantitative data involving student engagement in the classroom, a qualitative case study is the logical approach to observe what is going on in the classroom in order to answer the research questions regarding student engagement; however, in this case study, action research is also important in order to determine the teacher’s role in implementing and teaching the material properly. Typically, a case study only involves observation; however, with the inclusion of action research and my active participation; implications and conclusions can be generated in regards to the research questions at hand. Action research can be defined as, “a process in which participants examine their own educational practice systematically and carefully, using the techniques of research...Although there are many types of research that may be undertaken, action research specifically refers to a disciplined inquiry done by a teacher with the intent that the research will inform and change his or her practice in the future.” (Ferrance 2000, p. 7). I will reflect upon each unit as I move from the different levels of SAMR to determine how my teaching strategies are impacting the levels of ARCS in the students. I fully intend to use my observations of the class in this case study to augment the changes which I will participate in; to facilitate the way my students learn in the future. These ideas of the impact of SAMR on ARCS should provide me with an understanding of how the progression up the levels of SAMR will affect the outcome of my students' motivation in the classroom.
Weeks 1-3 will be based on one unit with a specific unit objective. A pre and post assessment will be given at the beginning of the unit and at the end of the unit, as well as an exit ticket (through google classroom) every day the class meets. The exit ticket will focus on the ARCS motivation model. The lessons from each day will focus on one level of SAMR in an attempt to determine how teaching strategies and ARCS relate to moving through the various levels of SAMR; some days may be substitution; while others will move along the model to the redefinition stage. Each day will include one formative assessment, as well as the exit ticket. I will also be keeping a daily journal of field observations in the classroom, which will augment the data from my students. At the end of the lesson, I will allow each student to assess the effectiveness of the use of technology in the classroom using a Likert scale survey.

Weeks 4-6 will focus on a different unit, however, the same criteria as Week’s 1-3 will be used. The students will still take a pre and post assessment, have an exit ticket each day based on ARCS, and a different randomly chosen focus group will be picked for the SAMR student survey. I will continue to collect field observations and record them in my journal to compare to the student data. After Weeks 3 and 6, I will tabulate the data on a Likert scale for the SAMR student survey and I will analyze my field observations and the google classroom/surveys to determine the effectiveness of the SAMR and ARCS models on student motivation while using technology in the classroom. I will also use the data from the pre, post, and formative assessments throughout the study in order to ascertain and record progress.
Credibility, Trustworthiness, and Ethics

Ethical concerns and positionality were strongly considered while collecting the data especially in regards to protecting the confidentiality of the participants and in reducing bias. Anytime one is dealing with students; ethical considerations must certainly play a major role. “Most universities and school districts have some sort of review process for ensuring that a proposed research study is conducted in such a manner as to protect the rights of any human subjects involved” (Mertler, p. 106). Due to the fact that I included data from student work, interviews, and surveys; parent permission slips were obtained before data collection (Mertler, 2014). Several principles must be followed in order to ensure an ethical research study including: principle of accurate disclosure, principle of honesty, and the principle of importance (Mertler, 2014). The study must not manipulate the data in a way that may try to reach a predictable outcome and the study must be for the benefit and usefulness in the educational field. “Keeping caring, fairness, openness, and truth at the forefront of your work as a teacher-inquirer is critical to ethical work” (Dana & Yendol-Hoppey, p. 150) in this statement Dana & Yendol-Hoppey summarize the core of ethics in an action research study. The main focus of ethical considerations has to be on the student. I am conducting this study in order to first and foremost help the student attain their goals and secondly to help colleagues, school districts, and administrators reach decisions based on factors impacting the individual student. When dealing with students a researcher must understand that certain stipulations do apply and the National Education Association’s Code of Ethics, must be followed at all times and at all costs. Dana and Yendol-Hoppey (2013) also stated, “Similar to many other professional standards for teaching, these NEA
standards are based on two principles— a commitment to the student and a commitment to the profession” (p. 148). It is not only the ethical responsibility of the teacher to look after the best interest of the student, but, it is also an ethical responsibility to take on the tasks of such studies in order to further the education system in general. Without action research and or case studies in the classroom, where would studies take place in order to advance the profession? Educators owe it to themselves and to their colleagues to advance the profession. The only way to advance the profession is to observe what is going on in the classroom and try to improve it. I positioned myself as an educator who has an ethical obligation to share my findings. In many cases educators are not inclined to share information with each other often due to the isolated nature of the profession. Action research often provides an opportunity to collaborate and use several sources in order to present a more precise and accurate study.

Limitations of the Study

The significance of this research study will only deepen as we continue our journey into the technological age of teaching. This study also touches on how the use of technology helps our ESL and students from various cultures and backgrounds by augmenting instructional practice. States and districts are spending billions of dollars on technology for the classroom and the vast majority is not being used to its maximum potential. According to Richtel of the New York Times, “...here and across the country. In a nutshell: schools are spending billions of dollars on technology…with little proof that this approach is improving basic learning” (2011, p. 2).

Limitations do exist in this study which include (among other aspects) that this is a case study based on one classroom at one school; it will be necessary to pattern this
research to other classrooms, most especially to other classrooms with different student make-up to broaden its implications. This study should be performed in a lower socio-economic school system, a higher SES school system, and schools with greater diversity; including more ESL students to increase its applicability. This study also needs to be applied to other disciplines within the school curriculum, as this study was only performed for a social studies class. The other limitation for the study consisted of technological infrastructure. On some occasions the internet would not function properly; therefore, adjustments had to be made to existing lesson plans. These adjustments could have had a possible impact on student engagement and also on the way the technology was implemented.

**Definition of Terms**

*Action Research*: A method of systematic inquiry that follows a cyclical process of planning, acting, developing, and reflecting (Mertler, 2014).

*ARCS Model of Motivation*: Keller’s ARCS Model of Motivation is based upon the idea that there are four key elements in the learning process which can encourage and sustain learners: attention, relevance, confidence, and satisfaction (Pappas, 2015).

*Personalized Learning*: Efforts to tailor instruction to meet the different needs of students (Howton, 2015).

*Qualitative Case Study*: A case study involving observation, questioning, and hypothesis; without the inclusion of hard data (Yin, 2014).

*SAMR Model of Personalized Learning*: SAMR is a framework in which the teacher and student use four phases of evaluation. SAMR stands for substitution, augmentation, modification, and redefinition (Reese, 2018).
**Scaffolding:** Process in which teachers’ model or demonstrate how to solve a problem, then step back and offer support as needed (Taylor, 2004).

**Student Engagement:** The process by which students are active participants in a given assignment, demonstrated by focus (Akin, 2009).

**Technology:** Specifically referring to the use of laptops and or tablets in a classroom setting with one on one use or as a classroom setting. (Boylin, 2004)

**Organization of the Dissertation**

In the following chapters of this dissertation in practice, I will provide a thorough account of my use of action research to plan, study, and reflect upon my efforts to effectively motivate students through the integration of technology into my classroom teaching practice. In Chapter Two, I will provide a review of the relevant literature regarding the challenges associated with student motivation, technology integration, and professional development focused on technology integrated instruction. I will also fully describe the development of my theoretical framework and how it serves to guide this study. Chapter Three will discuss the specific methodologies used during the qualitative action research case study; as well as the premise behind choosing such methodologies. Chapter Four will present and analyze the data from the study and Chapter Five will discuss the action plans implementing the solutions found throughout the study and the implications for future research.
CHAPTER 2
LITERATURE REVIEW

The purpose of this study is to identify how to better support student achievement through the integration of technology that develops and maintains the motivation to learn among high school social studies students. In my work as a social studies teacher at a large, rural high school in the southeast United States, I have been challenged by my school’s recent adoption of a one-to-one approach to classroom computing. Each student has been assigned a Google Chromebook for completing educational activities, providing an opportunity to integrate technology into the learning processes both in school and at home. While the district provided professional development for teachers which focused on implementing technology-enhanced lessons that would provide opportunities for students to use their Chromebook for educative purposes, I have found it difficult to keep students engaged and on task during classroom instruction. “Most importantly, the level of laptop use was negatively related to several measures of student learning, including self-reported understanding of course material and overall course performance (Fried, 2008, pg. 906). With this problem in mind, I have focused this dissertation on my attempts to better understand this problem and to develop technology-enhanced lessons that will maintain student motivation to learn. I have integrated the ARCS model of motivation and the SAMR model of technology integration into a conceptual framework for this study.
With these research-based frameworks in mind, my research questions are:

1. How might varying the levels and format of technology integration into high school social studies classroom lessons impact students’ motivation to learn?

2. How might the teacher’s effort to support student motivation through the integration of technology support student achievement?

In this chapter I provide a comprehensive review of the literature related to two key aspects of my problem of practice, student motivation and classroom technology integration, as my theoretical framework I also discuss the two models from which I have developed the conceptual framework for this study, the ARCS model of motivation and the SAMR model of technology integration. In these discussions, I provide a review of previous studies that have identified important aspects of the problem and the potential solutions. I also discuss the connections between the research literature and my own context.

For the purposes of this literature review, I used online databases and research indices which provided access to peer reviewed articles and books on these subjects. I used a variety of key terms and phrases in this search which included; student achievement and motivation; student motivation and academics; student motivation and technology; technology, student motivation, academic achievement; and technology, student personalized learning, scaffolding, and student choice assignment/assessment. In doing so, some of the educational databases that were used to look for relevant information on the topic were Google Scholar, ScienceDirect, Ebsco, ERIC, InfoTrac, and ProQuest.
Historical Background

As suggested by Donohue (2008), “getting individuals prepared for success has normally been a moving target of sorts” (p. 18). Over the last few years, it has increasingly become clear that, whereas basic skills remain to be fundamental, the “3 R’s” are insufficient after students are admitted to secondary schools. The development of computer technologies has helped to level the global educational landscape in many developed nations, however, in underdeveloped nations it can also be shown to widen the gap. As a matter of fact, students are currently not engaged in competition with their counterparts in the countryside. Rather, they do so with their foreign colleagues for prudent employment. Conversely, some teachers have been reluctant in adapting to the rapidly changing technological days, and in fact, many have gone at a slower pace to change due to their belief that technology will take over their jobs. As contended by Johnson-Smith (2014), one educator argued that the rising adoption and utilization of information communication technology (ICT) implied that instructors were going to be compelled to give up control as historically it would be clear that a single individual in the classroom is not adequate any longer and that technological advancements open an entirely new environment of learning for students. Primarily, the role of teachers has been transformed from that of a fact distributor to facilitators in acquiring, analyzing, and interpreting information. Teachers must give the learners the autonomy to take additional responsibility in terms of how and what they learn. The facilitators imply changing the way the schools and classrooms are equipped and organized (Johnson-Smith, 2014). If the teachers are to effectively prepare learners for the job market, they must equip their classrooms with devices of instruction apart from the traditional desk and chalkboard. As
asserted by Lemons (1984), the training and educational delivery approaches differed widely historically – as evident in traditional postsecondary and secondary technical and vocational programs. These programs have greatly depended on laboratory tasks with little arrangements of cooperative work. As a matter of fact, technology use has been largely limited. Universities as well as colleges have employed many old methods of instruction, however, some form of change is starting to be shown, especially at the community college levels. Munro (2006) pointed out that apathy toward learning in the classroom is because of what students view to be frequently uninspiring, redundant, and predictable delivery of the curriculum.

Munro (2006) further contended that as teachers move to technologically enhanced classrooms with internet connections, it is of vital importance that teachers do not only depend on technology or concentrate learning on the use of PowerPoint presentations or simple tasks such as basic internet research, setting the stage for the delivery of lecture alongside its inherent passive behaviors among learners. As claimed by the author, classrooms which do not incorporate interactions that are based on teams may result in a declining spiral of disengagement. In addition, as students increasingly become technologically savvy, their traditional classrooms must involve resources which reflect the skills they aim to garner from instructors. However, the main problem for traditional teachers is to enforce applications in the real world into their instruction. Since teachers are the societal architects, they have a greater responsibility to shape it. Kazemek (2007) claimed that as the society gets more and more interdependent across the informational, globalization, and technological confluences, the responsibility of educators (in its entirety) has to adapt. In addition, teachers must be trained properly with
instructional tools and strategies of motivation which will sufficiently make the student ready for a technologically developed world.

**Advantages of Technology Enhanced Classrooms**

Because of the development of technology in modern society: the communication, globalization, and the extension of Internet technology to accommodate social networking sites; the historical instructional approach is becoming obsolete and in fact impossible to avoid change. As stated by Hyllegard and Burke (2002), the integration of instructional technologies based on computers do not simply offer the same instruction using a totally different medium, but instead encourage a change of the learning and teaching process, where faculties are compelled to make changes in their pedagogy from that which is teacher-centered, primarily didactic lecture format, called traditional instruction, to that which is more centered on students and based on learning strategies which are active. The researchers further contended that the traditional method of course instruction (also referred to as face-to-face classroom instruction), entails minimal to no use of technology. The author continues to point out that traditional classrooms are where faculty and students engage in face-to-face interactions in the classroom, or during working hours might engage in communication using little approaches of technology, such as library reserves or a telephone. The technology enhanced classroom uses a different pedagogical view compared to the traditional classroom.

Over the last few years, many high schools were not easily changing their instructional designs so as to integrate technology in the classroom. As indicated by Frey and Donehue (2002), faculty training was substandard when it came to technology use in the classroom. Most of the members of the faculty never received formal training in
instructional technology in their educational programs during their earlier education years. Thus, it is the responsibility of the school and district to offer the required professional development and proper training in obtaining the necessary skills and competencies. The researchers emphasized that the advantages are more flexible in the delivery of instruction, increased student learning and interest, and increased flexibility of assessment. On the other hand, Johnson-Smith (2014) listed the six benefits of classrooms that are technologically enhanced. In his view, these benefits included students start to actively learn from each other, students derive the process of learning, the educators become expert participants in the construction of knowledge instead of knowledge conveyors, and all people benefit from the collaborative methodology to sharing of knowledge. Other benefits that the author cited are: technology enables ideas to be captured and are not lost, and as such, the ideas remain available to everyone in the community for continual improvement and refinement as new learning happens. Learners can clearly see the relationship between older ideas and new ones and between each other’s ideas, and as the community’s knowledge base expands as a result of the continual contribution of theories, ideas, and the expert resources, technology acts to further make the course content deeper for every successive learner in the future.

Educators integrate technology into their traditional instruction using two approaches (Johnson-Smith, 2014). To begin with, they can integrate it as an add-on or hybrid feature to improve traditional methods of teaching. The other way they can use is to integrate it as self-paced, computer-based, multimedia content of course. When technology is used alongside sound pedagogy, it will allow learners to step outside the school structure as well as traditional classroom confines so as to take responsibility for
their learning and their whole class community in a manner which may shock even those that are opposed to the adoption of technology in schools.

**Technology Enhanced Classrooms Development**

The speed with which these technologies develop is going faster than the effective pedagogies regarding their use and thus, caution must be taken in using them in classrooms. As asserted by Stickel and Hum (2008), scholarship at the learning level and tool level is increasingly becoming a common phenomenon. Learning level scholarship is the act of measuring actual learning changes rather than perceptions and attitudes only, whereas tool level scholarship refers to the evaluation applications of tablets by instructors and students. The researchers note that there are many positive applications of tablets at the tool level, such as return of classroom artifacts and digital grading; improvement of feedback between instructors and students; the capacity to replay, retrieve, organize, and take digital notes; student communication and collaboration; and student problem-solving exercises and peer-review; and student peer review and problem-solving exercises. The researchers indicate that even though learners strongly supported the integration of tablets in their classrooms, care should be taken during the integration process, as these technologies must be employed effectively instead of being used exclusively because some learners still have preference for both the blackboard and tablet approaches.

The arrival of technological development globally has led to the need for a workforce that is not only educated, but which is adequately trained and knowledgeable as well. Consequently, it is the responsibility of teachers to prepare students to effectively compete in the global job market. To reinforce the significance of securing the economic
position of America in 2009, the federal government established the Higher Education Reconciliation Act and Race to the Top R2T policies of education. The main aims of this Act were to decrease student loan debt, improve investments in black colleges and community colleges, to expand the Pell Grant program, and improve students’ educational opportunities. According to Akin (2009), the initiative of R2T was a reformation program of the government created to enhance education among K-12 students and to improve the proportion of students enrolling in science and math majors.

The Technology Innovation Challenge Grant is another educational program that the government has started. The role of this program is to create partnerships among community organizations, businesses, and educators through the provision of grants to firms which improve technological learning and teaching. In addition, the funding program offers awards to higher learning institutions which provide services to the students who are economically disadvantaged or those students with the highest need of technology to make sure of technological resources and professional development for teachers. The programs under this initiative are designed to develop new techniques to determine the effect of technological education in the learning of students, develop standards based on a wide variety of disciplines, enhance student access to online resources and technology, and provide professional development for educators. As contended by Angell (2009), many local and state governments mandate technology integration into curriculums of technology education; however, how this technology is integrated and what the outcomes on student motivation will be, are up to the teacher.

Brown and Brown (2010) noted that the objectives of educational technology curriculum are created to generate learners that have a higher technological conceptual
understanding as well as a position of technology in modern society and who are able to capture and assess new technology; which they may never have had an experience with earlier in their lives. As the researchers cite, the educational technology conceptual understanding is referred to as “technology literacy.” Literacy in technology can, therefore, be more elaborately be explained as the capacity to understand the wider technical globe instead of the ability to operate with its pieces. Apart from this first definition of technology literacy, the authors note that its other broader definition is the ability in using, managing, evaluating, and understanding technology. In contrast, the technology literacy definition has changed over the past few years to be in line with standards and assessment of curriculum. According to Brown and Brown (2010), during the initial introduction of the term “technology literacy,” it happened as a technology educational goal. The creation of a more meaningful and deeper technology literacy definition was not seen and was not expected to be complex. Moreover, the researchers argued that technology literacy assessment in the US is still at its most basic level.

For any technology education, the real content lies in its standards that are created by the International Technology Education Association (ITEA) rather than in its curriculum (Brown, & Brown, 2010). The researchers continue to state that the role of ITEA is to create and identify the knowledge and information which every student requires and to accomplish the aims of education and curriculum applications. In their view, the authors organized the standards of ITEA into five key areas, namely the designed world, abilities for technological world, design, society and technology, and the nature of technology. Each of the listed categories are developed further into modules made up of between 3 and 7 content standards, summing to twenty for the entire
technology literacy. Thereafter, these standards are compartmentalized into components of benchmarks for the education sectors at secondary, middle school, and primary levels.

All 50 American states provide technology standards according to the ITEA fundamental standards. As an example, the North Carolina Instructional Technology Plan and Guide: Technological Recommendations and Standards (1995) incorporates the Instructional Technology Plan for North Carolina, and it provides a description of the vision for getting college and high school students prepared for the 21st century. In doing so, the plan looks at and intensively addresses the college and high school students’ developmental needs, as well as the teaching and learning activities which employ technology as their tool. It is important for students to start using technology at the secondary level so that they are well prepared when they reach college. The objectives of utilizing technology and other technology-related resources for tasks assigned are: to design products to share information with other students (that is, podcasts, graphics, Web 2.0 tools, multimedia presentations, and with podcasts); to organize information (that is, collaborative wikis, online note-taking); and to access information (that is, virtual interviews with content experts, online primary resources, multi-database search engines) (The North Carolina Essential Standards Information and Technology Standards for Grades 9-12, 2010).

There are numerous benefits that students can realize with computer simulations. According to Lee and Liu (2010), for instance, computer simulation enables learners to safely carry out lab experiments whereas they study at work, home, or any place in which access to an Internet browser is possible. Just like costly science labs at colleges imitate a real experience of the laboratory, a medical lab simulation provides on-screen note-
taking, real anatomical and physiological features of the body, chemical reactions, graphics, as well as visual and sound effects with no risks of creating dangerous scenarios for the learners in the environment of a classroom. In addition, the authors indicated that virtual labs enable learners to experiment independently rather than having to follow firm instructions, as is the case with traditional labs. Similarly, teachers get the same level of freedom, as the application offers them the capacity to adapt flexible lab directions and methodologies for implementation in their entire classrooms, display lecture material, write and share online notes, showcase visuals which are adaptive and clear, incorporate textbook examples, and design the curriculum at their discretion.

In the modern information age, global societies are presently inundated with technological developments, and information can be accessed faster and more easily by everyone with the ability to process digital data. The higher educational sector is currently expected to offer a wide range of experiences in pedagogy including the technology use for learners to prepare them for employment opportunities in future, regardless of whether such experiences would improve the learning process. In 2010, the National Educational Technology Plan (NETP) described the national goals for learning using technology. As outlined by NETP, the technology’s ubiquitous presence involves directives to transform assessment, learning, and teaching in the US institutions of education. NETP acknowledges the role of the government to provide, support, and fund the research and resources required in achieving the goals. NETP further points out that today, students are more technologically astute than in past generations. In addition, Rhodes (2011) stated that students anticipate their teachers to be technologically savvy as
they get them ready to work in a technologically advanced world. Teachers must adapt their instructional strategies to meet this need.

Effects of Technology on Learning

Within the classroom Stes, Coertjens, and Petegem (2010) and Snyder found (2013) different forms of technologies which integrate interactive engagement can impact learning in different ways. Generally, however, technology can have numerous advantages in technologically enhanced classrooms, such as permitting teachers to observe the activities of students and enable person-to-person interaction as well. To add to this, the use of technology in the classrooms can make it possible for students to work independently at speeds they so desire. As asserted by Boulware and Crow (2008), using technology for learning provides immediate teacher communication and feedback to the learners and proactive guidance of students’ activities, while Chickering and Ehrmann (2008) and Li et al. (2010) pointed out its other benefits, such as enabling interactive opportunities of learning like synchronous simulations, student groups, and peer assessment. More importantly, technology use in classroom permits educators to effectively teach life skills required in our modern society; operates as a way through which to ensure attention of students while increasing their reflection on learning and augments the engagement and motivation of students to solve and analyze problems that require mathematical formulas, diagrams, and sketches (Amelink et al., 2012; Dickerson et al., 2009; Sommerich, Ward, Sikdar, Payne, & Herman, 2007; Rogers & Cox, 2008; Lin & Dwyer, 2009). As stated by Rogers and Cox (2008), using interactive technologies in classrooms improve and enhance interactions between students and the faculty, enable joint solving of problems, and enable students to share resources. As a result,
technologies can play a critical role in the creation of teams which can then make learning better and allow apprentice-like tasks to take place within the classroom. Moreover, Lui et al. (2011) further noted that new media technologies may be employed in creating such ‘playful’ environments that integrate aspects of scaffolded, narrative, and fantasy content while bestowing authentic roles with tasks that are useful upon students.

Apart from the benefits, Amelink, et al. (2012) and Lui, et al. (2011) contended that instructional technology has the capacity to help with motivation. The researchers propose that motivation in students is influenced both by environmental factors and by personal factors, and they continue to argue that these technologies have indicated promise in impacting student motivation in learning. Further, the authors claimed that compared to teacher-centered classrooms, learners might feel more motivated in student-centered classrooms since learners that are conditioned by years of instruction that is teacher-centered are more motivated to learn technical information in an environment where they are permitted to engage in substantial control levels and personal responsibility. The authors finally reported that increased motivation and engagement of students to learn is heavily impacted in environments with tablet PCs.

**Student Engagement and Motivation**

According to Akin (2009), student engagement is a term that is defined broadly as the degree to which learners or students are actively involved in meaningful activities and experiences related to education. Errey and Wood (2011) stated that the two aspects which tend to be greatly salient to student motivation are enriching educational experiences and collaborative and active learning. As asserted by Whittaker (2004), it is a great tool in school to have teachers that are effective. The author goes ahead to note that
in the presence of ineffective educators, a school does not have the keystone to achieving this greatness. The argument by Lemons (1984) that technology will need more sophisticated job skills is mainly based on two assumptions: to begin with, technology will provide more support to technical-level and professional jobs, and the other is that technology will improve the skill requirements of the present jobs due to the equipment which are increasingly becoming sophisticated by the day. As students get prepared for jobs in their different professions, they will need to have experienced and learned the most recent technology and how it is used. Educators may promote learning when they provide learners with an environment that is highly engaging and that incorporates the necessary materials and resources, guidance, realistic objectives, and a clearly stated purpose. By effectively using these strategies, students will be able to receive a sense of ownership of and responsibility for their academic achievement. Academic achievement, as Frick, Chadha, Watson, Wang, and Green (2009) pointed out, is primarily based on five guiding principles, such as learning is promoted when new knowledge is: integrated into the world of the learner, applied by the learner, and demonstrated to the learner, as well as when the existing knowledge is activated as a foundation for new knowledge, and learners are motivated in giving solutions to real problems in the world. According to Larry Ferlazzo (2017), four key elements have been identified that help student engagement: autonomy, competence, relatedness, and relevance. With attention, interest in content, and moderate challenge, learners will be motivated to learn. In terms of relevance teachers can also employ more effective approaches, such as examples, case studies, analogies, and simulations connected to the current and immediate experiences and interests of the students. High school students, for instance, appreciate reading stories
incorporating themes related to isolation, popularity, and stigma since, at the time of their lives, the themes are very significant. In relation to confidence the manner in which an individual attribute the causes of their failures or successes is another aspect. Achieving success in a particular state may enhance the overall confidence of an individual in case the individual allots success to personal ability. Nonetheless, confidence in learners’ ability is likely to decline if they ascribe their achievements to external factors, namely others’ decisions, insufficient challenge, or luck. When it comes to satisfaction; extrinsic rewards, both symbolic and substitutive, can also result in satisfaction and can include monogrammed school supplies, certificates, promotions, privileges, grades, and/or other achievement tokens. Opportunities for personal recognition and applying what is learned reinforce intrinsic satisfaction feelings. Lastly and more importantly, fairness or a sense of equity is key to ensuring satisfaction. Learners have to feel that the grading was fair, that internal consistency between tests, content, and objectives exists, and that the quantity of work needed by course is relevant.

Student autonomy is defined as the ability to provide input into the way they learn (Ferlazzo, 2017). Students must also be competent enough to understand the task at hand or at the very least be modeled in a way in which they can complete assigned tasks. If a student is given an assignment in which they do not have the background to find the outcome; student engagement will be negatively impacted. The student may show signs of helplessness and ultimately give up on the assignment; due to a lack of background knowledge. In order for students to be motivated they must also relate to the teacher or at least have a respect for the teacher. Finally, the learning activity must have relevance and be interesting to the student’s self-interest (Ferlazzo, 2017). According to Akers (2017),
students are also more engaged when they feel as if a positive climate has been created. Encouraging student feedback and letting go of some of the control in the classroom is essential if the teacher wishes to provide a positive climate.

**Teaching Strategies**

As suggested by Ray (2004), learning takes place when teaching strategies use students’ critical thinking skills, when students are presented with challenging questions or situations, have opportunities for interaction with other people, facilitate learners to be actively engaged, and are surrounded by nurturing learning environments. As cited by the author, there are strategies that may be used to ensure that classrooms are made better. First, discussing in small groups or pairs concerning the presented information may be an effective approach to assist students explore concepts and share their understanding or experiences of the information. Second, teachers need to utilize the three-two-one method as a technique of summarizing. That is, at the end of every class, learners are given these three key prompts to respond to: three key concepts that I was able to learn today, two things which I heard today which I require to ponder further, and one thing which I would like to learn more associated to the topic. Third, teachers can use case studies so as to engage the learners actively in thinking about the concepts believed to be complex. Fourth, the simulation of real-life situations may be of great help for students apprehending a concept under consideration.

The ARCS model provides the foundation to aggregate the different tactics, strategies, theories, and concepts which impact the motivation in learning and delineate the first key component of the model of ARCS that is the amalgam of the wide literature in motivation (Keller, 1987). A more recent study, “showed that the ARCS model
inserted language instruction had positive influence on students’ course motivation in all categories (Yunca, 2017, p. 1). Moreover, the four categories offer the basis for the ARCS model's second main feature that relates to the systematic process of design which helps in constructing motivational approaches consistent with the needs and characteristics of students. As indicated in Figure 2.1, the ARCS model has a 10-step process of design to develop motivational systems in learning environments. The first two steps are components of the general process analysis components, which create information regarding the status quo thereby giving the foundation to analyze gaps including their causes that are performed in steps three and four. The fifth step involves preparation of performance improvement project objectives and the manner in which its assessment will be done. However, this depends on the previous analyses. Thereafter, the design takes up to two steps. In the sixth step, educators brainstorm within every category of motivation so as to produce a viable set of possible solutions. In the next step, a further critical analysis is conducted to select solutions which effectively suit the situation’s resource, time, and other compelling aspects. The remaining steps are similar to any other developmental model, and they involve development and evaluation.

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<th>Motivational Design Steps</th>
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<td><strong>Design</strong></td>
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<td><strong>Evaluate</strong></td>
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<td>10. Evaluation of student reactions</td>
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Figure 2.1 Motivational design: Ten step model
Credit: https://courses.lumenlearning.com/edpsy/chapter/kellers-arcs-mode
Apart from the ARCS model, individualized learning is the other teaching strategy that is considered in this study. Individualized learning can be defined as the teaching method, where learning pace, instructional technology, and content are based on every learner’s interest and ability. The authors emphasize further that even though the curriculum standards and design goals might be the same for all learners, the plan and profile of individual learning might differ since every student advances through the material at varying rates based on their abilities or needs (Greer, & McCalla, 2013).

The SAMR model (Figure 2.2) is demonstrated through imagery by PuenteDura (2014, http://www.hippasus.com/rrpweblog/7). This figure pinpoints the differences between simply enhancing instruction and actually transforming instruction in the classroom. According to Kamalruzzamon et al. (2017), “The SAMR Model is an instructional model which guides educators to infuse technology with teaching and learning thus enables teachers to design digital flipped-class learning experiences that utilize technology in class time” (p. 43).

![Figure 2.2 SAMR Model Enhancement to Transformation](image-url)
Instructional Technology in Classroom

The Los Angeles County School District is the second largest school district in the nation and in 2013 they invested in a plan to roll out iPADs to every student in the district (Jacobs, 2014). The total cost of the program was $1.3 billion dollars and even though the physical plant of many schools was deteriorating; the investment was made nonetheless. It seems as though many of these “rollouts” are not thought all the way through, they are thrown together at a tremendous cost to the taxpayer; especially when additional items such as Bluetooth keyboards and ear buds are added into the initial cost (Jacobs, 2014). “Additionally, faulty software allowed for students to easily bypass security measures and set up their own profiles on the devices…instead of solving math problems or doing English homework, as administrators envisioned, more than 300 Los Angeles Unified School District students promptly cracked the security settings and started tweeting, posting to Facebook and playing video games” (Jacobs, p. 3). A study of schools in Quebec Canada found that about 1/3 of the students surveyed about using iPADs in class admitted to playing games during school and 99% said they found the introduction of the new technology to be distracting. The survey included about 6,000 Canadian students. Researchers surveyed 6,057 students, who were enrolled in Grades 6-10, and 302 teachers about their experiences with using the tablets in the classroom. The findings in the report conclude that giving large numbers of student tablets; is a worthwhile venture, as long as teachers are well prepared and trained for the use of iPADs in the classroom. Karsenti, et al (2013) noted that teachers do not seem to be comfortable with the integration of iPADs in the classroom, mainly due to: a lack of training in the applications, sound teaching strategies using technology, and security
features of the devices. “Some of the teachers were getting the iPad on the first day of school with their students, can you imagine? All the students were on Facebook, Twitter and the teachers were like, ‘Oh my God, this is not working,’ and blaming the technology because he or she was not ready,” said Karsenti who is the Canada Research Chair for information and communication technologies in education (Karsenti, 2013). The researchers were also amazed that in some ways, the tablet technology wasn’t being used to its full potential. Students said they did relatively little reading on their tablets and were still using paper textbooks, while many assignments were still submitted on paper rather than electronically. “The U.S. K-12 sector spent $35.8 Billion in 2020 on all things EdTech, including hardware, major software systems, digital curriculum resources and networks, a healthy increase of $7.5 Billion over 2019” (Cauthen, 2020, p.1). With expenses on technology increasing at this rate, stakeholders want to see the observable impact of these expenditures vs. the ability to pay for other areas of need such as facility maintenance and deferred capital projects.

The development of the digital age together with its associated technologies has coincided with the evolution of education as it relates to students’ learning. Presently in the modern-day classrooms, there are a number of easily manageable forms of technologies past the usual personal computers. Goad (2012) points out that some of these technologies are handheld devices, such as wireless systems and cell phones; tablet PCs; laptops; and web-oriented software, namely video-audio applications including wikis, blogs, podcasting, Twitter, Facebook, applets, YouTube, iTunes, and many others which will allow the teacher to focus on a more individualized student approach.
According to Johnson-Smith (2008), instructional technology broadly refers to the theory and practice of designing, developing, utilizing, managing, and evaluating the processes and resources for learning. As further cited by the author, it is both controlled and purposeful, and it incorporates personnel, namely support staff, administration, and teachers, as well as applicable forms of technology used within and outside the classrooms, such as software and hardware along with their delivery infrastructure. In instructional technology, software refers to codes or programs which permit the users to interact with the hardware components to accomplish a task like computer gaming, word processing, as well as interacting with stakeholders of schools. Quicken Money Management, iTunes, Explorer, Microsoft Word, PowerPoint, Excel etc. are some of the examples of software. On the other hand, hardware refers to the physical components or forms of technology, such as speakers, microphones, scanners, webcams, printers, wireless connections, portable devices, and computers. In addition, the instructional technology delivery infrastructure can be argued as the different means in which both the software and hardware are crafted, articulated, connected, and therefore delivered to the stakeholders of learning. Thus, both the software, hardware, and infrastructure may be integrated to carry out an activity. As an example, software programs may allow a user to write a sample by typing on the keyboard of the computer, that is, the hardware, and hence, showcasing many symbols on the screen. Thereafter, what has been done can then be communicated across the infrastructure so that other users can access. As can be seen, therefore, it is possible to usefully and meaningfully transmit knowledge across the various components. This seems to be very simple, however, an understanding of the
basic knowledge of technology is an integral part of the teacher using it during instruction.

**Scaffolding with Interactive Technologies**

Zyndey (2012) points out that over the last few years, a lot of interest has been developed by educators in scaffolding offered via tools based on the computer due to the challenge of attempting to offer individual help to every student within their larger class. The author continues to note that scaffold techniques may be used within and with applications of technology by an educator to establish relevant information and give directions to learners. As suggested by Grincewiz et al. (2011), scaffolding instruction has several common attributes, such as “recruiting and maintaining learners’ attention, simplifying the task, modeling and demonstrating the activities, ongoing analysis and diagnosis and fading support, leading to eventual knowledge transfer” (p. 232).

According to Grincewiz et al. (2011), educators work using several zones of proximal development within a classroom, therefore, meeting the needs of individual students is not an easy task. Nonetheless, through the distribution of scaffolding across various learners and resources within classrooms, teachers are able form optimal learning environments. Lia and Calandra (2010) assert that factors which assist in explaining why and how the scaffolds improve reflective thinking are the structure of the scaffolds, aspects conveyed in the scaffolds, and critical incidents used in anchoring reflective learning of students.

Technology allows for this optimization. Therefore, students receive important benefits at a time, and in ways that most effectively provide support to their needs at the individual level (Lia & Calandra, 2010). Numerous scaffolding levels may be assigned,
ranging between faded and continuous scaffolding, based on the activity. Learners then, with the use of technology, may develop solutions through creating relationships to existing frameworks of knowledge while also taking advantage of the customized learning environments (Lia & Calandra, 2010). Moreover, Lin and Lehman (1999) students can articulate their ideas. As argued by Grincewicz et al. (2011), distributing scaffolds across students, teacher, and software is recommended so that each of them is made a part of the greater community and thereafter slowly “fading” the scaffold, subsequently enabling the community to act as the “expert other.” Lia and Calandra (2010), comment on the variation between “soft” and “hard” scaffolds when utilizing technology. In their view, hard scaffolds refer to fixed supports created according to the expected students’ needs. On the other hand, they note that soft scaffolds can also be referred to as scaffolding techniques of the teacher which are spontaneous and adaptive to the present situation. Lia and Calandra (2010) continue to point out that hard scaffolds are inadequate in giving support to students’ learning, therefore, to make successful progress, it is incumbent upon educators to align and use every form of scaffolding for learners.

It is also possible to scaffold writing with technology and problem-solving activities. Using problem-based environments of learning with hypermedia, such as video, audio, and texts connected by common subjects and subject links, may assist in engaging problem solving among students. According to Belland, French, and Ertmer (2009), problem-based learning refers to the learning which comes due to the process of working toward the resolution or understanding to assist learners in building confidence and skills to formulate problems they have not encountered. Since scaffolding allows
starters to accomplish goals, perform tasks, and solve problems which would not be possible past their solo efforts, it may be efficacious. As stated by the researchers, computer-based augmentation may be used in scaffolding with young learners as well. The findings of the study by Belland et al. (2009) revealed that scaffolds within technology supported augmentation through “emphasizing the development of procedural, strategic, and conceptual hard scaffolds,” “having learners articulate their views,” and “embedding scaffolds within systems.” As noted by Ravencroft and McAlister (2008), the increased utilization of these emerging technologies implies that further argumentation reasoning may be more persuasive, public, and participative. Many researches have explored the writing scaffolding, such as scaffolding reflective activities of journaling. In their study, Lai and Calandra (2010), for example, found that using scaffolding mediated by technology substantially enhanced writing performance, more particularly in relation to abilities of students to produce texts that are more organized. The researchers additionally point out that technologies can be used in helping less proficient writers to improve their skills in writing by assistance technologies, anchors, and tools. They conclude that computer-based scaffolds remarkably improved the reflective journal writing among the participants.

**Scaffolding and Student Created Assessment**

Scaffolding is an effective teaching practice for the proper integration of technology into the classroom. Scaffolding in education is defined as, “…a teacher providing clues, encouragement, suggestions or other assistance to guide the student’s learning efforts” (Parkay and Stanford, p. 350). Scaffolding in technology integration involves the teacher demonstrating the use of the technology in order to help guide the
student. My idea is that through scaffolding, the teacher can help the student attain the “competence” according to the four elements of student engagement argued by Ferlazzo. The teacher is simply giving the students the guidance necessary to help them formulate their own methods of problem solving. A student will not be engaged in a technology assignment; if they do not know where to begin. In a journal article by Natalia Monjelat, Laura Mendez and Pilar Lacasa (2017), scaffolding is introduced as a means of increasing student engagement. This study explores the role of students as tutors in an assignment where they will assist their fellow peers in solving problems in a game-based educational scenario. Teacher and student scaffolding allow the students to assume different roles in the assignment; thus, creating personalized learning.

This study is further framed by the theory that students will continue to be engaged in an assignment if they are given autonomy and student choice in the assignment itself, as well as the method of assessment. According to an article by Hanewicz, Platt, and Arendt (2017), student choice in assignments can create a learner-centered teaching environment. This expands the idea of the four elements of student motivation as provided by Ferlazzo. This study allowed for students to choose their method of assessment in course and the findings were that when students were allowed to choose their method of assessment; they performed better than a standardized format of a final exam (2017). Weimer (2002) argues that students will perform better and be more motivated in studies if: the balance of power is equal among teachers and students, the function of content is to develop learning skills, the role of the teacher is to provide resources for students and to guide them in learning, getting students to accept responsibility for their own learning, and evaluation and assessment should also promote
learning. Wyman (2017) also suggests that alternative assessments encourage critical thinking skills and collaboration; while reducing student complaints about assessment and by more effectively measuring mastery of content.

**Tablet PCs: Teacher Feedback and Scaffolding**

Over the recent years, technology has continued to develop. More recently, tablet PCs have been developed. They are new portable technologies that are like the usual table-top PCs; in contrast, these technologies have the portability features as is the case of laptop PCs but have an added functionality which is used in marking on their screens. More particularly, they can be defined as a type of notebook computer with the screens where users may write. Tablets may come in two forms: in convertible and slate formats. The former has a screen and a keyboard, whereas the latter only has a screen and a pen without a keyboard (Sneller, 2007). These technologies can function with no dedicated keyboard, allowing learners and educators to directly write on the screen of the devices using the “digital inks” that have finger-strokes or pen-like styluses. According to Enriquez (2010), due to this feature, tablet PCs can be used in a wide variety of classroom opportunities that were not initially workable in traditional classrooms, such as analysis of data, real-time collaborative collection, long-hand classroom journals, authentic writing experiences, and real-time annotating of documents. To add to this, Lumkes (2010) notes that tablets offer the “real-time submission of learners’ responses to the teacher, real-time collaboration among learners, ability for multimedia presentation, and flexibility of traditional handwriting. The researcher continues to note that tablets have a number of other benefits, such as use of digital colors and inking, ease of following the progress of written materials, benefits related to saving of results by posting
online, integration of multimedia and graphics, and utilization of a wide range of software applications. These “hands on” benefits have been shown to increase student motivation as they reach another level of thinking and engagement on the part of the teacher and of the student.

Tablets in classrooms have the ability of enriching learning environments in many ways. More particularly, scaffolding activities, teacher feedback, and interactive communication may be significantly backed by these technologies. This can be through: encouraging the utilization of interactive systems based on PC, permitting the analysis of problems needing sketches; allowing enhanced presentations of lectures; providing instantaneous communication between students and educators; and enabling digital inking, use of hyperlinks and annotations. According to Enriquez (2010), immediate feedback from instructors using these technologies may be an effective tool of increasing the efficiency of learning. This may be because of increased attentiveness and focus of learners in class because they are aware that their instructor is carefully taking note of their progress. Thus, integrating PC tablets into classrooms ensures that there are timelier and better interactions while at the same time allowing educators to structure and manage activities within the classrooms. Scaffolding approaches and teacher feedback using tablets and interactive technologies have been studied by many researchers.

According to Price and De Leone (2008), tablets when connected to the Internet become virtual whiteboards upon which instructors can immediately present materials, such as PowerPoint slides. Thus, the educator may display student work and make inked annotations and as such, transmit responses to individual learners instantly and allowing computer-mediated communication. In addition, when these technologies are matched
with interactive software particularly made for use with tablets, such as Ubiquitous Presenter, Classroom Presenter, and DyKnow, they allow students to interact more effectively and frequently and synchronize teacher feedback by recurrent teacher improvisation and peer instruction.

Dickerson, Williams, and Browning (2009) carried out research on the impacts of the use of tablets in a course of information technology at the university level. The instruction was designed in a way to improve student learning with this technology with direct engagement between teacher and students, teacher demonstration, and student discussion. The findings of the study revealed that the difference in the development of skills in students was related directly to the support level offered during the events of learning by the educator. In addition, they found that scaffolding of tasks permitted learners to make independent decisions regarding technology which significantly benefited them. In addition, the researchers reported that technology positively impacted learners by increasing their motivation as well as their motivation.

In another qualitative case study, Hennessy, Deaney, and Ruthven (2005) examined secondary school educators that scaffolded instruction in an environment that was integrated with technology. Instructors acted as teacher-student interactions and student learning mediators in this setting and facilitated learning among students using intentional teacher scaffolding through selection, change, amplification, and interpretation of the students’ choices and objects in the technology-rich setting. Therefore, the educator defined a set of interactions and environment that allowed learners to be part of tasks at or near the individual student learners’ ZPD. As is evident, students remained as active participants in sets of conversations mediated socially. As the
students went on with their learning process, educators could take away their “scaffolding” and gave learners the space and time to build their “inner voices.” Thereafter, the researchers grouped general effective strategies of teaching to mediate technologies in these learning environments that were scaffolded. The techniques were developing a culture of shared ideas, facilitating collaboration with technology, avoiding student obsession with technology presentation and distraction and facilitating teacher opportunistic interventions, pre-structuring student tasks in supporting interactions (such as pre-formatted exercises), setting clear parameters for electronic searches, and electronic resources integration with other resources. As noted by the researchers, these were assisted by encouraging student’s independent thinking, experimentation, and participation; interactive whole class teaching, opportunistic educator interventions to accommodate the changing needs of learners, pre-structuring tasks to support interaction of students and technology, and electronic resource integration with other resources.

Dertling and Cox (2008), while using tablet technology in an introductory course in Chemistry among undergraduates indicated that the key advantages of this technology included the capacity to analyze many various physical problems, instant availability of teacher feedback along with classroom notes, and enhanced student participation in course-related exercises. In their study, the authors revealed that the test scores of these students significantly and statistically improved more than the old American Chemical Society Standardized exam that is lecture-based. In addition, learners themselves tended to have a more positive view of this technology as they agreed that it was an effective method to improve learning. Its other benefits that they cited were increased work on a
wide range of problems, improved student interaction with the educator, promotion of student learning, increased availability of notes, and a better environment of learning.

In addition, Sommerich, Ward, Sikdar, Payne, and Herman (2007) carried out research on science students in high school to assess their encounters using tablets in classrooms. After an intensive analysis of the responses that the participants provided on the questionnaires, the researchers made the conclusion that in general, high school students had a positive perception of tablets. The participants pointed out that while utilizing this technology, they experienced some challenges such as infrequent malfunctioning of the devices; however, they noted the experience was generally good since they could more easily access old notes. Moreover, the technology made the school enjoyable and kept them motivated about the assignment.

Even though there are significant benefits associated with technology in the classroom, caution has to be taken. Individual educators, as pointed out by Lumkes (2010), have to select the appropriate software and hardware to suit their specific method of teaching. In addition, they have to be cautious in using the added flexibility that tablets have brought with them, such as the ability to switch between various applications, pen colors, multimedia, annotations in ways that improve student learning rather than distract. As an example, adding questions to discuss during presentations and making significant efforts to provide an opportunity for students to interact might be of great help for students learning topics that are complex.

In another study by Pryor and Bauer (2008), the researchers aimed at testing the effectiveness of use of tablets in team-taught sections during the laboratory portion of an introductory course in biology among undergraduate students. The findings indicated that
teachers that used tablets enjoyed using it. However, they had inconclusive views in relation to the integration of tablets with laboratory learning. The teachers pointed out certain challenges of working with this technology, such as decrease in teacher-student interactions, connectivity issues, dependence on content transmission, increased need for external support networks, and educators making students lose attention in computer-based labs.

As indicated by Hlebowitsh (2005), the educator starts with the course curriculum within the environment of education and this includes course activities planned both within and outside of the classroom. In addition, it entails other activities, such as purposing resources to be used in implementing the curriculum like technologies, selecting educational materials, planned course activities, and establishing the classroom environment. The boundaries that the teacher sets within the curriculum are impacted by the teaching philosophy of the educator that is additionally determined by their ideas in using instructional technology and their constructivists’ beliefs in learning to enhance student learning within that setting. The essence of social constructivist learning is to promote social interactions in students that subsequently compels individual students to scan through their current conceptual frameworks. As pointed out by Wells and Arauz (2006), this relies on classroom dialogue, language, and negotiations within the students. The process of social negotiation thereafter creates conceptual conflicts within the learners for them to embrace and incorporate new concepts and ideas.

To accelerate these different forms of interactions educators can engage in activities to exploit intentional scaffolding strategies. Some of the activities that teachers can do are making student knowledge more visible, eliciting and keeping the attention of
students, designing activities to enhance connections, and modeling knowledge and procedural steps in which social interactions allow people to build a more developed thought through repetitive interactions with community members that are more experienced. Therefore, the function of scaffolding activities is to generate a convergence of pressures – time management, grade/assignment, and social/instructiveness, in the setting of the classroom, Zydney (2012). This results in learner motivation and settles internal disputes by social interaction and internal dialogue. Jang and Stecklein (2010) argue that targeted and timely feedback strategies which nurture interactions may help in producing these pressures and pacify the unresolved conceptual conflicts.

In addition, the use of interactive technologies may impact both the instructional strategies and conceptual development of the learner. As noted by Dickerson et al. (2009), the integration of instructional technologies permits a wide range of efficient and scaffolded teacher feedback which is timely, targeted, and interactive. Nevertheless, Peterson (2010) asserts, it is only possible to employ technology in situations, where the stakeholders of the school not only accept the technology, but integrate it as well. Therefore, educators have to organize activities in a proper manner (with realistic instructional objectives) and have to use technologies with which they are not adequately familiar with so that they get accustomed to them. According to El-Gayar et al. (2011), this encompasses engaging mechanisms of support to enhance the use of technology, designing a setting with a positive image of technology, and influencing the perceptions and attitudes of students toward technology. As such, they have to change their accompanying practices of teaching as well. Learners, on the other hand, have to also respond physiologically and behaviorally to this new social environment of learning by
developing useful learning attitudes and habits that align with the curriculum of the educator, and perhaps suitable epistemological beliefs so as to allow them effectively to learn within the technology enhanced classroom. In addition, their initial attitudes and beliefs concerning the subject and how learning takes place within that environment will then be later impacted positively.

**Limiting Internet Access Time and Student Motivation**

Student motivation, which consequently impacts academic performance of a learner, is an important factor which has substantial effects on the life of the student. The Internet is a versatile way to perform leisure activities, retrieve large quantities of information, and engage in social interaction (Kim, Kim, Park, Kim, & Choi, 2017). According to Kim et al. (2017), effectively controlled utilization of the Internet as ICT could offer a number of opportunities such as improvement of learner’s motivation. Networks of the Internet permits us to communicate with a variety of people globally. Moreover, Internet-based health interventions, medical education systems, and learning programs have been associated with positive outcomes (Wimble, 2016). According to Rasmussen et al. (2015), about 70% of European schools and 93% of US schools have been indicated to utilize the Internet between 2 and 4 hours a day.

On the other hand, the overuse of Internet has increasingly become a concern as the number of students owning personal devices, such as cell phones, tablets, and laptops, is on the rise. In fact, Rasmussen et al. (2015) point out that an estimated 13.1% of adolescents are grouped as problematic Internet users. In their study, the researchers also found about 21.8% of students to be overusing computers for gaming. As the authors stated, Internet overuse can result in self-injurious behavior and many psychological
problems, such as daytime sleepiness, attention deficit hyperactivity disorder (ADHD), and depression. In addition, using the Internet excessively has been linked to detrimental physical health problems like obesity. Tsitsika et al. (2016), in their study, found that overusing the Internet is connected to reduced student motivation and hence poor academic achievement. Similarly, Salmela-Aro, Upadyaya, HakkarainenLonka, and Alho (2017) revealed that school burnout and Internet overuse impact each other reciprocally. Apart from schoolwork distraction and the relative time shortage to engage in academic-related tasks caused by overusing the Internet, physical factors like alcohol use, smoking, and medication use; psychological factors such as stress; and socioeconomic aspects, including the area of residence, parental education level, and income level might mediate the impacts of Internet use on student motivation (Kim et al., 2017). As a result, Kim et al. (2017) considered these aspects in determining the relationships between student motivation and Internet use.

Even though past research has found that use of the Internet has negative influences on student motivation and academic achievement, Kim et al. (2017) state, their analyses never fully took into consideration the purposes of Internet use. The authors continue by noting that certain studies disregarded this aspect and explored their influences on student motivation and this revealed lack of consistency in their findings. Moreover, a number of researchers have paid attention to extreme scenarios of use of the Internet, identifying negative behavioral and psychological outcomes as a result of problematic use. In contrast, Kim et al. (2017) argues that the Internet gives diverse and easily accessible contents if used appropriately, particularly in aspects of its purpose and effective use of time and thus, can be an effective way of student learning and
motivation. In investigating the connections between school performance and Internet use time in Korean students, Kim et al. (2017) found increased student motivation and higher school performance to be correlated positively and significantly with the use of the Internet for learning. On the other hand, student engagement and higher school performance were found to be negatively correlated with use of the Internet for general purpose. Thus, using the Internet for academic purposes or for learning could lead to better student motivation and hence academic achievement.

**Chapter Summary**

Thus, the simple use of technology is inadequate. To ensure its effectiveness within the classroom, a number of aspects, such as effective teacher feedback to learners, social construction of knowledge, individualized student learning and teacher scaffolding of activities, have to be involved. In other words, this translates into an overall acceptance of the student and use of interactive technologies, whereas at the same time acknowledging that the student is in control of their learning, and that future actions by the teacher are dependent on the student installation of their learning independently. An appropriate change of expectations within such an environment and the student’s overall acceptance of technology need to be anticipated. The ARCS and SAMR models can work cohesively to help students stay motivated and intrinsically rewarded for their efforts in the classroom.
CHAPTER 3

METHODOLOGY

The purpose of this study is to identify how to better support student achievement through the integration of technology that develops and maintains the motivation to learn among high school social studies students. To address this problem of practice, I have integrated two theories from the education research literature. The ARCS model of student motivation provides a developmental framework for classroom lessons and an analytical framework for analyzing the impact of the lesson on student achievement. The SAMR model of classroom technology integration provides a framework for planning lessons that vary the type and level of integration in an effort to support student motivation and student achievement. I chose these two models as a suggestion from my instructional coach who presented them in a professional development session. This encouraged me to move into a more interactive instructional model and I embraced these models as I was beginning to feel as if my students were more engaged in my personality; as opposed to my lessons. The integration of these two frameworks served to guide the decisions I made throughout this study. From the perspective of an insider studying his own practice, I developed the following research questions;

1. How might varying the levels and format of technology integration into high school social studies classroom lessons impact students’ motivation to learn?
2. How might the teacher’s effort to support student motivation through the integration of technology support student achievement?

To address these questions, I have chosen to enact a qualitative action research study which closely follows a case study design. I chose a qualitative action research study due to the nature of limited hard data involving the impact to student achievement. In this chapter I first discuss Mertler’s action research framework and the nature and purpose of qualitative research. I build on this discussion with a description of why these frameworks were selected for this study and how I used the methods associated with case study design to support the study of my intervention.

I also discuss the context and setting of the study, the details of the intervention, a description of the variables, a diagram of how the data collection unfolds, and my roles as a researcher with the participants. I address the participants to include: the sample, the justification for the participants, the reasons that I chose to include only 9th and 10th graders in the study, and my positionality as the researcher to the participants. Methodological techniques including the use of qualitative interview surveys, Likert scale surveys, and field observations for data collection are analyzed using the constant comparative method. All of my tools are discussed and how I developed them to connect to my problem of practice, theoretical framework, and my research question. After discussing the data collection measures, instruments and tools, I delve into the research procedure to include clarity on how to understand or replicate the study and details on how to protect the participants of the study. Lastly, I provide analysis of my data coding and finish the chapter with a summary.
The first part of this study is to explore sound pedagogical practices to keep students engaged while completing assignments which use the internet. As a teacher I was positioned with an insider status for this case study. I was able to both change and modify my lesson plans in order to implement the lessons chosen for the technology and I was also able to scaffold and demonstrate the ways in which the students could use and integrate the technology into the classroom. The South Carolina social studies standards are moving to a more inquiry-based model and this movement will elevate the impact of technology in the classroom. Over a time period of six weeks, I was able to integrate technology into the classroom for a total of 25 days (or six weeks) while modifying my lesson plans and collecting data. This chapter addresses this research question as it relates to student motivation and the ARCS model and identifies the methodologies used during the process of data collection and the reasoning behind choosing these particular methodologies for this qualitative action research case study.

**Research Positionality**

This is my 12th year as a teacher, mostly teaching as an advanced placement social studies teacher. In the past several years we have moved to an inquiry-based teaching method and I have wholeheartedly embraced this change. I am a single father who has seen the struggles with my own two children at home, while using technology in the classroom. I come from generation X, therefore, I am accustomed to the use of technology and technology savvy, however, I am not as ingrained in technology as generation Y or Z. I firmly believe that we are making an investment in our students through the integration of technology with the students always coming first in our decision making. I am heavily influenced by progressive teaching philosophies such as,
learning by doing, collaboration, and education for social responsibility and democracy. My view of the world challenges social injustice and I try to find ways to bridge the gap between underrepresented groups and the ones who have access to better technology and therefore better opportunities to learn. My teaching philosophy is to get to know my students, get to know their home lives, and get to know what they want to learn. I then take what is relevant to them and align them to the standards. These ideas are grounded in student centered learning, student chosen assessment, and allowing students to choose primary source documents with which they can relate. I especially like to give them the option to choose the missing voice in their readings or primary sources that are geared toward their cultural backgrounds and personal interests.

**Research Design**

Action research in the teaching profession allows the teacher to become a researcher and find ways to improve their craft by developing research questions and gathering and analyzing data specific to the questions (Mertler, 2014). My action research study is a qualitative case study. A qualitative case study “is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-world context especially when the boundaries between phenomena in context may not be clearly evident” (Yin, 2014 p. 16). It is very difficult to place student engagement on a “scale” or to assign a numerical value to a construct which is more easily observed than it is “scored.” However, by using Likert scale student surveys, exit tickets (with coding), interviews, and observations I was able to firmly grasp if a student was engaged in an assignment and to what level of SAMR impacted students along the ARCS motivational levels. A case study is the best form of research when a researcher is trying to answer the
questions of “how or why” (Yin, 2014). My research questions exploring how a focus on different levels of SAMR for technology integration impacts student motivation and why is it important that these are aligned to the district and student goals are strong examples of the how and why type questions referred to by Yin. The micro setting of a classroom with 14 students in the 9th and 10th grade is ideal for a qualitative action research case study. The goal of this study is to provide responses toward an improvement to the problem of practice: of how to effectively integrate technology into the classroom while keeping students motivated.

The constructs to be explored are student motivation as it relates to different levels of the SAMR model. I would like to explore how student motivation (ARCS) is impacted as lessons move along the SAMR model. Student Likert scale surveys, taken every day, through google classroom gave me an understanding of how the students are being motivated throughout each lesson. I also gave a student survey as it related to ARCS, SAMR, and technology at the end of each unit, for a total of three Likert scale surveys for the units taught.

Six sources of collecting data exist in a case study according to Yin: Documentation, Archival Records, Interviews, Direct Observation, Participant Observation, and Physical Artifacts (Yin, 2014). Each of the six methods have both strengths and weaknesses and each data collection method will not apply to every case study. In this study I used documentation, interviews, direct observations, and participant observation. Sub-categories which are relevant to these data collection methods include: Likert Scale surveys, exit tickets, and individual interviews. I specifically used the triangulation of data from method one, the Likert Scale surveys, method two, the exit
tickets, and method three, my observations and journaling to show the trustworthiness of my results.

Direct observation plays an integral part in maintaining the integrity of this case study. Interviews, surveys, and exit tickets provide data which are generated by the student. A student may feel pressured to answer in a particular way or may not be inclined to provide comprehensive feedback to make the study trustworthy. However, through uninterrupted direct observation, I can view the students in their natural learning environment. Software does exist which allows the teacher to monitor what students are viewing on their technology devices; however, for the purposes of this study we did not have the software in time for it to impact my observations. I sought to be as unobtrusive as possible as I walked around the classroom and monitored what the students were doing on their technological devices. I would then transfer my observations to my journal and detail if the student was on task, on the appropriate website or inquiry, and what exactly the student was doing with the technology. I kept journals for each day of the study and then correlated my answers in to subgroups which included: On task and on the right website, or off task and on the wrong website or inquiry. Student interviews were conducted weekly and students were chosen at random until all students gave an interview.

Research Setting and Participants

The school within which this study took place is in a rural setting with a 60% poverty rate. The total school population is 1174 students and the demographic breakdown is as follows: 75% White, 14% Black, 8% Hispanic, 3% two or more, 1% Asian. The school placed in the top 30% of all schools in South Carolina for overall test
scores (math proficiency is top 50%, and reading proficiency is top 20%) for the 2019-20 school year. The percentage of students achieving proficiency in math is 53% (which is higher than the South Carolina state average of 45%) for the 2019-20 school year. The percentage of students achieving proficiency in reading/language arts is 67% (which is higher than the South Carolina state average of 45%) for the 2017-18 school year. The student: teacher ratio of 19:1 is higher than the South Carolina state level of 15:1. The community (as a whole) is very accepting of other cultures and races, however, in the past the community suffered from evidence of systemic racism as an example can be found just outside of town, with a store that still sells Confederate regalia. The town is now more reluctant to embrace these ideas as new members of the community have settled here from more accepting locations. The participants for my case study included all of the 9th and 10th grade students in a social studies class. I chose the 9th and 10th grade students, due to the fact that they were more likely to respond to the student exit tickets and surveys. Before this study, I found that the response rate on exit tickets was nearly 50% higher among the underclassman than it was for the upperclassman. Attrition was not a problem with this study, however, on days when students were absent; they did not get an exit ticket. I chose 14 students who are in grades 9 and 10, ages 14-16. I chose the 9th and 10th grade students due to their excitement to participate in the study and their willingness to provide feedback and answers regarding the use of technology in the classroom. Approximately 40% receive free or reduced lunch, 2 students have IEP plans, 2 students are ESL students and my participant group consist of 8 girls and 6 boys. Of the 8 girls, 6 identify as White, 1 identifies as Hispanic, and 1 identifies as Black. Of the 6 boys 3 identify as White, 2 identify as Black, and 1 identifies as Hispanic.
Data Collection Procedures, Instruments and Tools

As mentioned previously I used student exit tickets, Likert scale surveys, observation and journaling, and student interviews for this study. The tools are not new; however, they are modified for this study and were modified in concert with my dissertation advisor. We formulated tables which would grasp the student response in order to be measured as: positive, neutral, or negative. While investigating the student responses to the exit tickets, I looked for patterns which arise as the different levels of SAMR are explored in the lessons. The exit ticket (Appendix B), includes information on the: level of SAMR, the lesson agenda, the formative assessment for the day, and 2-3 direct student quotes along the ARCS model. The Likert scale student survey (Appendix C) includes questions rated on a scale of 1-5 with 1 being “Strongly Disagree” and 5 being “Strongly Agree.” The idea behind the Likert scale is to see if students become more motivated or less motivated as we continue to use technology on a daily basis and how this scale aligned to the student responses on the exit tickets. Examples of lesson plans which are used can be found in (Appendix D) and parallel the SAMR models as shown on the exit tickets. My strategy for collecting data involves 25 class periods over a span of 6 weeks. I chose 14 students to participate in my data collection. The 14 chosen students were all 9th and 10th graders, due to their eagerness to participate in the study and their response rates to earlier assignments through Google Classroom. The 11th and 12th graders throughout the year have not been as responsive to exit tickets through Google Classroom, therefore, they were excluded from the study. Also, the upperclassmen have a higher absentee rate in my class; therefore, I was worried about sufficient and consistent data among the older students.
Each day focused on a different level of SAMR, with a formative or summative assessment. The students were then given an exit ticket through Google Classroom in order to measure their responses of how the lesson motivated them according to the levels of ARCS. I created a data spreadsheet that included: the lesson number and date, the number of participants (as indicated by n=), the agenda for the day, the formative assessment, and 2-3 quotes from the student exit tickets. I gave my overall impression of the day’s lesson from the correlation of the exit tickets and my direct observations and journal entries. I did this for all 25 lessons and along each level of SAMR. During the 25 lessons I included 8 days dedicated to the substitution level, 7 days dedicated to the augmentation level, 6 days dedicated to the modification level, and 4 days dedicated to the redefinition level. Every student responded, unless one or more students were absent in which case “n” would equal no less than 12 daily participants. I then created another data spreadsheet which included: the lesson, the level SAMR involved in the lesson, an overview of the lesson, the student responses to ARCS (labeled low, medium, high) to gauge their motivation for the lesson, and progress towards mastery based on the formative and summative assessments. These are labeled as proficient, developing and not proficient.

At the end of the unit the students were given SAMR student surveys based on a Likert Scale of 1-5. This was intended to gauge how the students were feeling about technology based on the unit as a whole and if they believed the technology was: relevant, motivational, and attention grabbing. I analyzed this data to understand if using the technology more frequently, changes their perceptions of its usefulness, while at the same time comparing the scores to the student responses on the exit tickets to look for
trends. Also, some units were more heavily tied to different levels of SAMR, I want to find out if units which included more of one level of SAMR impacted the Likert score from the surveys.

**Treatment, Processing, and Analysis of Data**

As the researcher and classroom teacher, I am positioned to observe the students and interpret the data. The students should feel no sense of obligation to provide this information; as many teachers are currently asking for data as it relates to technology in the classroom. By using the students in my classroom, I can gather this data and make positive change based on the methodology used in my position as a teacher. Using this data to make positive changes in the classroom for future lessons is the key to my action research.

I processed the data every day and recorded responses in real time. Students were also observed and a journal was kept every day, in which I kept a record of when I observed students on task or off task (Appendix E). At the end of the unit, I took all of my raw data and formulated processed it into charts showing the results. The data was not shared with anyone and all entries were made by myself.

I collected multiple sources of data to support the triangulation method. My triangulation model is as follows:
A triangulation of data can be described as using multiple sources of data to show the data can be trustworthy or verified, while considering that they may have inherent biases (Mertler, 2014). Triangulation shows consistency in the data. If responses from my Likert Scale responses are also correlating to the responses from my exit tickets, while also lining up with my observations; then the data can be considered trustworthy. I did not use my student interviews in the triangulation of data, I did however use the interviews as part of my constant comparative method. The constant comparative method can be described as using multiple sources of data to examine for key issues and
recurring events, collecting data that provide the categories of focus, describing the findings (while at the same time collecting more data), finding relationships in the data, and coding and analyzing the findings. I felt that because some younger students may be nervous during the interview process; I used it as a supplementary data source. Students may have shown some bias during the interviews, maybe telling me what they thought I wanted to hear, as opposed to the exit tickets surveys and Linkert scales, which were anonymous. Despite the potential for bias in the student interviews, I decided to include them in the constant comparative method non-the-less to augment the research from the other data collection tools.

Chapter Summary

Chapter Three sought to focus on my research design and my data collection methods. Research tools such as Likert Scales, exit tickets, and observation/journaling formed my basis for triangulation. Student interviews helped to augment my research even further, although student bias was expected during the interview process. Students received exit tickets everyday which were coded positive, negative, and neutral based on their written responses about the way they felt about the lesson and the integration of technology into the lesson. I then created another data spreadsheet which included: the lesson, the level SAMR involved in the lesson, an overview of the lesson, the student responses to ARCS (labeled low, medium, high) to gauge their motivation for the lesson, and progress towards mastery based on formative and summative assessments. These are labeled as proficient, developing and not proficient.

At the end of each of the three units (which spanned a total of six weeks) they were given a Likert Scale survey which asked questions pertaining to ARCS and SAMR
models. They were asked to rate their scores from 1-5, with 1 being “strongly disagree” and 5 being “strongly agree.” To complete my triangulation of data, I walked around the room each day and observed my students tallying how any times they were observed “On Task” or “Off Task.” I then put the data into a table in order to analyze trends using the constant comparative method.

In the next chapter, I present my findings and the results of my data analysis. Examples of student responses to the exit tickets are given, the coding of the exit tickets based on positive, negative, and neutral are aligned, the Likert Scale student surveys are analyzed, and my journaling and observations are presented. The results of the student interviews are also provided to solidify the trends of the data. Chapter Four addresses the research questions of:

1. How might varying the levels and format of technology integration into high school social studies classroom lessons impact students’ motivation to learn?
2. How might the teacher’s effort to support student motivation through the integration of technology support student achievement?

Once the data was analyzed and presented the reader may seek to further understand how technology impacted student engagement and motivation in the classroom.
CHAPTER 4

PRESENTATION AND ANALYSIS OF DATA

The purpose of this study is to measure the impact on student motivation (in relation to the ARCS model) as the rigor of lessons are moved along the SAMR model from substitution to redefinition; with the use of technology in the classroom. The purpose of this study is to explore how student motivation is impacted (while using technology in the classroom) as the scope of the lessons become more reflective upon student interests and more rigorous. The study seeks to examine student outcomes including engagement in the lesson and use of the technology in a manner consistent with educational expectations as the lesson becomes more rigorous and technology is used in a more efficient manner. The problem (as seen in the classroom) is that students do not use technology in the classroom to its fullest advantage and are frequently seen mis-using the technology for individual entertainment value. The thought process driving this investigation was to examine the impact of different levels of instruction on student motivation while using technology in the classroom. In order to explore student motivation several tools of data research were used including: documentation, interviews, direct observations, and participant observation. Sub-categories which are relevant to these data collection methods include: Likert Scale surveys, exit tickets, and individual interviews.

I applied two theories as the conceptual framework in order to complete my research during this investigation. I used the SAMR model for technology integration
and then I compared the results of moving along the different levels of the SAMR model to the corresponding levels on the ARCS model of student motivation. The primary research questions are:

1. How might varying the levels and format of technology integration into high school social studies classroom lessons impact students’ motivation to learn?
2. How might the teacher’s effort to support student motivation through the integration of technology support student achievement?

These questions were developed after years of speaking with colleagues and after classroom observations of the misuse of technology in the classroom and in addition to the review of relevant literature. In this chapter I discuss the general findings and results of the study, an analysis of the data based on the research questions, and a summary which help provide the basis for additional benefits of subsequent studies on this topic.

**General Findings and Results**

My strategy for collecting data involves 25 class periods over a span of 6 weeks. I chose 14 students to participate in my data collection. The 14 chosen students were all 9th and 10th graders, due to their willingness to participate in the study and their response rates to earlier assignments through Google Classroom. The 11th and 12th graders throughout the year have not been as responsive to exit tickets through Google Classroom, therefore, they were excluded from the study. Also, the upperclassmen have a higher absentee rate in my class; therefore, I was concerned about sufficient and consistent data among the older students.

Each day focused on a different level of SAMR, with a formative or summative assessment. The students were then given an exit ticket through Google Classroom in
order to measure their responses of how the lesson motivated them according to the levels of ARCS. I created a data spreadsheet that included: the lesson number and date, the number of participants (as indicated by n=), the agenda for the day, the formative assessment, and 2-3 quotes from the student exit tickets. I gave my overall impression of the day’s lesson from the correlation of the exit tickets and my direct observations and journal entries. I did this for all 25 lessons and along each level of SAMR. During the 25 lessons I included 8 days dedicated to the substitution level, 7 days dedicated to the augmentation level, 6 days dedicated to the modification level, and 4 days dedicated to the redefinition level. Every student responded, unless one or more students were absent in which case “n” would equal no less than 12 daily participants. I then created another data spreadsheet which included: the lesson, the level SAMR involved in the lesson, an overview of the lesson, the student responses to ARCS (labeled low, medium, high) to gauge their motivation for the lesson, and progress towards mastery based on formative and summative assessments. These are labeled as proficient, developing and not proficient.

**Daily Exit Ticket Findings**

After each lesson, students were given an exit ticket in google classroom to allow them to express their levels of attention, relevance, confidence, and satisfaction from the lesson in terms of positive, negative, or neutral experiences. The exit ticket questions were as follows:

1. Do you believe the use of technology was able to grab your attention today, why or why not?
2. Do you think the use of technology during today’s lesson was relevant (or were you able to use it make the lesson relevant) to your own style of learning, if so how?

3. Did technology enhance your confidence in the material being taught today, why or why not?

4. How did technology provide you with a sense of satisfaction about the lesson; if it did not, please explain.

5. Did we use a game, story, or social interaction with the technology that helped you stay motivated and interested today; if so, what was it?

Originally, I planned to offer extra credit points for the students who completed the lessons; however, the decision to remove the upperclassmen from the study required reconsideration. I determined that the extra credit may have posed a threat to the integrity of the study. I felt that students may want to provide positive experiences from all levels of SAMR in order to secure points for the exit ticket. Therefore, participation was deemed mandatory; however, extra credit was not given and nor were penalties handed out for those who did not provide a response. After analyzing all responses from the exit tickets, I was able to put them into a table (Table 4.1), which provides the number of responses corresponding to each level of SAMR.

**Table 4.1 Positive, Negative, and Neutral Responses from Student Exit Tickets**

<table>
<thead>
<tr>
<th></th>
<th>Substitution</th>
<th>Augmentation</th>
<th>Modification</th>
<th>Redefinition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pos</td>
<td>Neg</td>
<td>Neu</td>
<td>Pos</td>
</tr>
<tr>
<td>Attention</td>
<td>3</td>
<td>63</td>
<td>18</td>
<td>24</td>
</tr>
</tbody>
</table>
The data correlated from this table shows that although the number of lessons taught at the modification and redefinition level were less than the number of lessons taught at the substitution and augmentation level; the number of positive responses (especially in regards to attention, relevance, and satisfaction) were much greater as shown in table 4.2 below, where the totals are valued together.

**Table 4.2 Correlated Values of all Exit Tickets**

<table>
<thead>
<tr>
<th></th>
<th>Positive</th>
<th>Neutral</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substitution</td>
<td>72</td>
<td>57</td>
<td>150</td>
</tr>
<tr>
<td>Augmentation</td>
<td>129</td>
<td>48</td>
<td>42</td>
</tr>
<tr>
<td>Modification</td>
<td>168</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Redefinition</td>
<td>120</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

From the information in Chapter Three, it may be recalled that during the 25 lessons I included 8 days dedicated to the substitution level, 7 days dedicated to the augmentation level, 6 days dedicated to the modification level, and 4 days dedicated to the redefinition level. If we extend out Table 4.2 using an equal number of lessons (Example: redefinition multiplied by 1.75) we can then deduce that the total number of positive answers from students would have equaled 210. We can also do this with modification (Example: modification multiplied by 1.33) we can deduce that the total number of positive answers from students would have equaled 223. These are
significantly greater numbers than are shown at the substitution and augmentation levels of SAMR. Just by analyzing the answers given from the student exit surveys, the trend in data suggests that students were much more engaged and felt that the lessons and technology was best used at the modification and redefinition levels. We can see in the examples of the student responses below in Table 4.3 that although the level of student engagement is higher at the modification and redefinition levels, there are still some positive outcomes at the substitution and augmentation levels. I included the raw data from lessons portraying each of the four levels of SAMR in order to demonstrate an understanding of how the students felt during each level of SAMR. Direct quotes students about the lessons on the various ideas of ARCS follow:

**Table 4.3 Sample Lessons with Student Responses**

<table>
<thead>
<tr>
<th>Lessons: 10-29-19</th>
<th>Lesson 1 Sub. (n=14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO: intro to content topics through lecture</td>
<td></td>
</tr>
<tr>
<td>Overall- students seemed to like taking the notes on the Chrome-book; however, it did not stimulate them in terms of relevance or confidence. Many were satisfied in their ability to get their work done more quickly.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Daily Agenda</th>
<th>Notes on Chapter 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will use Chrome-books to substitute note taking on paper for digital note taking during lecture.</td>
<td></td>
</tr>
<tr>
<td>Assessment</td>
<td>Formative assessment questions on the roles of parents; with student input on what they believe the parents roles should be.</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Student Response Related to “A”</td>
<td>“...students do not want to use them for learning purposes.” “...it is still better than taking notes on paper.” “...I think in the end, technology is just a distraction”</td>
</tr>
<tr>
<td>Student Response Related to “R”</td>
<td>“Like it was ok but I swear if you throw in a web quest I’m a flip.” “It isn’t relevant, I would have rather done it on paper and pencil…” “Yes, I was able to find research that I understood…”</td>
</tr>
<tr>
<td>Student Response Related to “C”</td>
<td>“Not really, my confidence stayed the same.” “No not really it just really did not have anything to do with it.” “Yes, it increases my confidence because I so not fall behind in class…”</td>
</tr>
<tr>
<td>Student Response Related to “S”</td>
<td>“I feel the same as I did…” “There is no sense of satisfaction” “Yes, I was able to get my work done in a timely manner.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lessons: 10-30-19</th>
<th>Lesson 2 Aug. (n=14)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall- The students seemed to enjoy the lesson as it was about their personal narratives; however, it seemed as though the students again enjoyed the word processing part of the lesson and the technology did not really enhance the lesson itself.</td>
</tr>
<tr>
<td>Daily Agenda</td>
<td>Students will use their Chromebooks for augmentation in order to research and create a personal experience essay based on their own life.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Assessment</td>
<td>Formative assessment question: Do you think spanking should be a jailable offense, why or why not?</td>
</tr>
</tbody>
</table>
| Student Response Related to “A” | “...the lesson grabbed my attention because the story was about me.”
“...this was an interesting lesson, but, I could have written it.” |
| Student Response Related to “R” | “Yes, it was relevant, it was my story.”
“Not sure the technology made it relevant, the lesson did.”
“No, the technology did not help.” |
| Student Response Related to “C” | “The technology did not affect my confidence.”
“Yes, I was confident using the technology for this assignment...” |
| Student Response Related to “S” | “I was very satisfied using technology for this assignment.”
“This was a satisfying assignment and lesson.”
“I enjoyed the lesson.” |
Lessons: 10-31-19

| Daily Agenda | Notes on Chapter 31
Students will use Chromebooks in modifying their personal experience essay to reflect on the blog posts from the experiences of other students |
| Assessment | Formative assessment: Socratic discussion on the role of parents in monitoring their children's technology usage. |
| Student Response Related to “A” | “...comparing my experiences to those of other students grabbed my attention.”
“Yes, this was a very interesting assignment and technology helped out.”
“We could not have done this assignment without the Chromebooks.” |
| Student Response Related to “R” | “The technology made this lesson relevant because I read blogs every day at home”
“The blogs were cool to read and compare to my story.”
“This was a fun and relevant use of the Chromebook.” |
| Student Response Related to “C” | “I was confident using technology for this assignment…”
“I was confident that this was boring.”
“I liked using the Chromebooks for this lesson.” |
| Student Response Related to “S” | “We could not have done the lesson without technology.”
“It was satisfying comparing our papers with the blogs…”
“The blog readings were interesting.” |
| Lessons: 11-01-19 | Lesson Re (n=14)  
Overall - The students were very satisfied with the outcome of the lesson using the Chromebook. Some students were not as confident using the Chromebooks, but, I believe that is because I did not completely understand how to demonstrate the application. |
| Daily Agenda | Finish Chapter 31 notes via lecture. Digital drawing using the Chromebook for redefinition |
| Assessment | Formative assessment question on digital drawing using Chromebook applications. |
| Student Response Related to “A” | “I like that we were able to use the Chromebooks to draw.”  
“...I love to draw and digital drawing is awesome!” |
| Student Response Related to “R” | “Digital drawing made my project relevant to my story…”  
“It is relevant because it belongs to me”  
“I found it to be relevant, but, I could have drawn it on paper, but, it would not have come to “life” the way it did.” |
| Student Response Related to “C” | “I was not confident drawing on the Chromebook”  
“My teacher did a pretty good job of explaining how to use the app, but, it was still hard.”  
“I was very confident in the lesson!” |
| Student Response Related to “S” | “The outcome was very satisfying.”  
“I was satisfied that we were able to use the Chromebooks to draw.”  
“This was more satisfying than just drawing on paper.” |
As one looks at the answers from the students, it was evident that they were more engaged and enjoyed the lessons at toward the upper two levels of SAMR. Answers such as, “This was more satisfying than just drawing on paper” and “we could not have done the lesson without technology,” prove that the students valued the technology when used at these levels. Conversely answers such as, “I think in the end, technology is just a distraction” and “No the technology did not help,” at the substitution and augmentation levels show that the students did not believe the technology was holding their attention or felt the relevance in using it. One very surprising answer from the students that appeared several times was, “it is easier to take notes this way.” These answers were only found in the substitution level, however, the frequency with which they appeared was quite surprising. Therefore, some benefit was derived even at the substitution level.

Likert Scale Findings

Table 4.4 shows the Likert scales given at the end of each of the three units. As the data shows students were much more inclined to relate the lessons to their lives with the use of technology (11 strongly agree, 2 strongly disagree). The students preferred to take notes on Chromebooks (13 strongly agree, 4 strongly disagree). The students enjoyed using the technology for creativity and collaboration (18 strongly agree, 1 strongly disagree). The students preferred to use the technology to do research, over a book (19 strongly agree, 2 strongly disagree). The students are more motivated to learn when using technology in the classroom (11 strongly agree, 0 strongly disagree). Students felt that the use of technology in the classroom allowed them to learn in their own unique learning styles (12 strongly agree, 3 strongly disagree). The students also believed that the use of technology within the lessons allowed the teacher to transform
the learning from simple note taking to creation and other forms of student participation in the lesson (15 strongly agree, 1 strongly disagree). The one outlier in the data was the question that asked if technology was a distraction in the classroom (7 strongly disagree, 5 strongly agree) while the remaining students were more neutral. This leads me to believe that when the technology is not correctly used in the classroom, students will abuse the privilege and use the technology for distractive purposes not related to the lesson.

**Table 4.4 Likert Scale Findings from each Unit**

Please answer the following questions by rating your answers 1-5 (Unit 1)

<table>
<thead>
<tr>
<th>Question</th>
<th>1= Strongly Disagree</th>
<th>2= Disagree</th>
<th>3= Neutral</th>
<th>4= Agree</th>
<th>5= Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am able to more easily relate lessons to my life by using technology in the classroom</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>I prefer to take notes on paper than to use Chromebooks</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I enjoy using the Chromebooks to create and play games, tell stories, and work collaboratively</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>I prefer to do my research with a book, then to use technology</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I am more motivated to learn when I use technology in the classroom</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>
Sometimes I get distracted by having technology in the classroom  | 2  | 4  | 3  | 2  | 3  |
---|---|---|---|---|---|
I feel that technology allows me to learn by my unique learning style  | 1  | 1  | 3  | 4  | 5  |
---|---|---|---|---|---|
Technology allows my teacher to transform learning from just taking notes to creation and participation  | 0  | 0  | 1  | 5  | 8  |
---|---|---|---|---|---|
Please answer the following questions by rating your answers 1-5 (Unit 2)

<table>
<thead>
<tr>
<th>Question</th>
<th>1= Strongly Disagree</th>
<th>2= Disagree</th>
<th>3= Neutral</th>
<th>4= Agree</th>
<th>5= Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am able to more easily relate lessons to my life by using technology in the classroom</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>I prefer to take notes on paper than to use Chromebooks</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>I enjoy using the Chromebooks to create and play games, tell stories, and work collaboratively</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I prefer to do my research with a book, then to use technology</td>
<td>8</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>I am more motivated to learn when I use technology in the classroom</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>
Sometimes I get distracted by having technology in the classroom | 1 | 2 | 6 | 4 | 1

I feel that technology allows me to learn by my unique learning style | 1 | 0 | 6 | 3 | 4

Technology allows my teacher to transform learning from just taking notes to creation and participation | 0 | 0 | 3 | 6 | 5

Please answer the following questions by rating your answers 1-5 (Unit 3)

<table>
<thead>
<tr>
<th>Question</th>
<th>1= Strongly Disagree</th>
<th>2= Disagree</th>
<th>3= Neutral</th>
<th>4= Agree</th>
<th>5= Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am able to more easily relate lessons to my life by using technology in the classroom</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I prefer to take notes on paper than to use Chromebooks</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>I enjoy using the Chromebooks to create and play games, tell stories, and work collaboratively</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>I prefer to do my research with a book, then to use technology</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>I am more motivated to learn when I use technology in the classroom</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>
Sometimes I get distracted by having technology in the classroom

| Feeling | 4 | 4 | 0 | 5 | 1 |

I feel that technology allows me to learn by my unique learning style

| Feeling | 1 | 1 | 3 | 6 | 3 |

Technology allows my teacher to transform learning from just taking notes to creation and participation

| Feeling | 1 | 1 | 3 | 7 | 2 |

**Direct Observation Findings**

As I walked around my classroom and composed my observations into journal entries, I found it much more simplistic to just have two categories. Either the students were on task or they were not on task. The classroom is set up in groups of four desks to a “pod” with a total of 6 pods in the classroom. I could not distinguish through their expressions or faces if they were engaged or motivated; I could however, determine if they were actually working on their assignments or if they were not and at what level of SAMR we were working on as a class. The findings were interesting in that the majority of the students were on task during the substitution level and the modification and redefinition levels, however, they were not on task during the augmentation levels.

During my walk around observations I documented 318 times that students were using technology in the classroom. At the substitution level 87 times students were on task, 12 times students were not on task. Mainly at the substitution level the students were simply substituting their technology for pen and paper and overwhelmingly they were on task.

At the augmentation level 64 times students were on task, 36 times students were not on
task. At the modification level 56 times students were on task 22 times students were not on task. Lastly, at the redefinition level 42 times the students were on task, 14 times the students were not on task. The main concern I had was that students would simply minimize the off-topic material on the technology and show me a screen with the lesson for the day, however, the first day of observations I began to show me their browser history if they suddenly clicked a button as a was about to walk by. I noticed the incidences were very minimal and would not impact this study, as the students knew I had a way to see if they were on task or not. The data showed that at the substitution and redefinition levels the “On task” was at its peak. Although the data demonstrated a connection to being on task at the modification level, it was not much higher than the data showed at the augmentation level. These three methods of data collection contributed to my triangulation of data and I concluded the study with my student interviews.

**Student Interview Findings**

I interviewed each of the 14 students I chose to participate in this study. I conducted between 2-3 student interviews each week and only asked them two questions. What do you like best about using technology in the classroom and as we use technology for more than note taking, are you engaged in the lesson? Most of the students came up with answers along the lines of, “It does help with notes, but, I like it more when we can use it to create things.” Other answers included, “Using the technology to draw and create visuals was really fun,” and “technology helps me focus.” For the second question, the students overwhelmingly answered “yes” they were more engaged in learning. I used the interviews as a secondary data collection method in the bigger
picture of my constant comparative method. I was well aware of the bias involved in the interview questions and despite the results learning toward the other data collection methods; that yes technology in the classroom helps to keep students engaged and motivated, I am just not convinced that this method of data collection alone would suffice to make a judgment on my two research questions.

Impact on Student Achievement

I found the impact on student achievement was much more difficult to analyze. Due to the nature of a qualitative case study, demonstrating a relationship between student engagement and achievement, while using technology, was very difficult to accomplish. The students were given a pre-test and post-test, as well as formative assessments, each day. They were also given a summative assessment at the end of each of the three units. Class mean scores went from 35% to 70% on the pre and post assessments respectively, however, the scores on the unit summative assessments also saw gains going from 75% to 84% respectively. Suggesting a relationship between these pre and post assessments, as well as the summative assessments, and student engagement is possible and even plausible, but other variables could be responsible for the shift in student outcomes. Questions such as, did the scores go up due to more subject knowledge and content, or was it the technology that provided the catalyst for the increase? Or was there cheating involved, are variables which could possible render the quantitative data invalid. What was measurable in this qualitative case study was the formative assessments. The student exit tickets provided students ways to comment on their overall attention, relevance, confidence, and satisfaction. I then took those answers and correlated them into my overall view of the lesson. If we look at the formative
assessment: Socratic discussion on the role of parents in monitoring their children's technology usage, from 10-31-19, the responses, “We could not have done the lesson without technology.”

“It was satisfying comparing our papers with the blogs…”

“The blog readings were interesting.”

Seem to correlate with my overall observation of the lesson that day, Overall- The majority of students had positive things to say regarding all aspects of ARCS. This modification lesson on the SAMR scale, was the first time that the responses for each level of ARCS were overwhelmingly in favor of technology. On the contrary, if we take the student answers for the lesson on a substitution day (10-21-19), “I feel the same as I did…”

“There is no sense of satisfaction”

“Yes, I was able to get my work done in a timely manner.”

We seem to find that the lesson was not stimulating and therefore would not have impacted student achievement positively. The lesson for the day was, formative assessment questions on the roles of parents; with student input on what they believe the parents roles should be. My overall observation of the lesson further points out that although the students enjoyed using the technology for note-taking: Overall- students seemed to like taking the notes on the Chromebook; however, it did not stimulate them in terms of relevance or confidence. Many were satisfied in their ability to get their work done more quickly.
Chapter Summary

The triangulation of data clearly showed that the proper use of technology in the classroom and moving to higher levels of SAMR was instrumental in keeping students motivated and engaged in the lessons. The exit ticket findings in regards to ARCS clearly showed that students felt the lessons gave them the most satisfaction and confidence, as well as being the most relevant and attention grabbing along the modification and redefinition levels of SAMR. The Likert scale data at the end of each unit also correlated to the exit ticket findings in that the higher levels of SAMR gave the students the most positive experiences along the ARCS model. My observations and journaling confirmed the triangulation of data, as students were mostly on task along the Redefinition level of SAMR. The biggest surprise in the findings of data were that along the substitution level of SAMR, students were also on task and were very much involved in the use of the technology. I believe, however, that the data suggests students’ greater satisfaction and relevance at the higher levels of SAMR and that using the technology as a substitute for note taking did not increase student engagement or motivation to learn. The real engagement and motivation came at the redefinition level, where student centered learning, student created assessments, collaboration, and creation were the key factors that the technology provided the students in order to fulfill the lesson at the utmost levels of engagement.

It was difficult to measure student engagement and motivation using the technology in the classroom using qualitative data and assessment. Indeed, the data points to a positive upward trend in student achievement as I moved along the SAMR model, however, outside variables could also be responsible for this trend during the pre,
post, and summative assessments. The formative assessments were more easily measured, however, again I am using qualitative data and representing it quantitatively. I believe the triangulation of data and the constant comparative methods do show a trustworthy relationship between moving to higher levels of SAMR while using technological methods. I also believe further quantitative studies will be needed to alternatively measure the impact on student achievement, which I will examine in the next chapter of this study, as well as the summary, action plan, and implications for future studies on this topic.
CHAPTER 5

ACTION PLAN AND IMPLICATIONS FOR FUTURE PRACTICE

This chapter seeks to reflect on this study and describe the implications and key findings from the body of this dissertation. This chapter also provides some insight into what direction the author plans to utilize in the classroom and areas where other teachers may find it beneficial to use the ideas and findings in their classrooms as well. The findings of any action research study should be used and tested for practitioners and researchers in the future. Based on the findings from Chapter Four teachers, administrators and others with a vested interest in this subject matter should be able to use the findings to help them use technology in a way that maintains student engagement in the classroom. The purpose of this study was to explore ways in which technology can be implemented into the classroom while keeping students motivated and engaged in learning. I wanted to know how educators can monitor student motivation while keeping up with 21st century teaching trends by utilizing the technology in the classroom. I believe student centered and focused learning can be the outcome if the teacher effectively models the desired technological behavior. One of the first concerns my students had is that teachers simply use the technology for note taking or research application and direct students to use the technology in ways they consider “uninteresting.” It is my hope that through sound pedagogical practices and effective integration of technology we can achieve the academic engagement goals of both the district and the students. The primary research questions for this study were:
1. How might varying the levels and format of technology integration into high school social studies classroom lessons impact students’ motivation to learn?

2. How might the teacher’s effort to support student motivation through the integration of technology support student achievement?

After analyzing the data, it is evident that as my lessons moved along the higher levels of the SAMR model (to the modification and redefinition levels) students were more motivated and engaged to learn. The triangulation of data from collection method one, the student surveys; collection method two, the Likert scale values; and collection method three, direct observation and journaling; it leads to a confirmation of the results. Students did not find the integration of technology appealing when it was only used for substitution or (unless it was for taking notes) augmentation. However, when they were using the technology for student centered and student focused learning; they were very much engaged and motivated by the lessons. In this chapter I discuss the implications and findings from Chapter Four to include the key findings and observations from the study. I also discuss the methodological design and the limitations of this study and how I plan to implement my findings from this study into my classroom. I also discuss how to help other teachers within my building with professional development in order to augment the technological strategies that the district still wishes to implement.

**Implications: Reflections on the Big Key Findings from Chapter Four**

The data from Chapter Four clearly demonstrated that as I moved my lessons along the higher levels of SAMR, students were more engaged and motivated. The biggest surprise was how well the students used the technology as a substitute for pen and paper note taking, however, this did not increase their satisfaction or relevance along the
ARCS model. The only way to increase student relevance and satisfaction was to move to higher levels of SAMR. The triangulation of data and the constant comparative analysis supported the conclusion from every lesson at the modification and redefinition level; there were positive impacts on student engagement and motivation along the ARCS model. My direct observations and journaling also served to further these findings in a positive trend of upward engagement and motivation.

**Discussion of Changes**

For a study such as this, I would like to have had a larger sample population. I also believe it would have been beneficial to have more students from diverse backgrounds. At the school where the study took place, the sample population reflected the demographics and socio-economic group subsets, however, I was limited to only five students of color who either identified as Hispanic or African American. I would like to have been able to perform a study with a larger group of under-represented children who may not have access to technology at home. I feel as if some of the assignments may have been expanded in the home and some of my students may have not had access to internet; thus, hindering their ability to garner greater satisfaction and confidence in using the technology. I would also like to use more applications for my ESL students, which would include more translation software and tools in which the language accessibility may have been increased.

Another change I would like to have performed is to use more quantitative data in order to measure student achievement alternatively; possibly a mixed methods research study would have been more beneficial in measuring student achievement. If individual summative assessments were given along each level of SAMR, perhaps a trend would
have appeared in regards to how much the technology was helping with student achievement. I believe this may be difficult however, as the teacher must lay the foundation of material at the lower levels of SAMR before working up to the higher levels, therefore, measuring student achievement with a “grade or score” could prove to be most difficult. In actuality this study did demonstrate a positive relationship with student achievement. I would like to compare this research to other studies without the use of technology in the classroom, with the same lesson content and analyze the student outcomes. I would also like to see the use of GoGuardian software in future studies. This technology did not exist during the study I conducted, however, it is now a valuable and integral part of classroom management when it comes to what students are looking at on their technological devices, as well as what websites they are visiting. With GoGuardian and other software, the teacher can sit at their workstation and monitor what students are doing on their devices. This would have been a very “game changing” supplement for the researcher as a tool to monitor if the students were engaged in the lesson or browsing other websites, playing games, or just off task in general.

**Action Plan**

There is no doubt that as we continue to use technology in the classroom, moving to the higher levels of SAMR will be my objective. I do believe using the technology for a substitute to pen and paper note taking is also effective, however, it is what is done after the note taking that truly engages and motivates the students. Allowing more student created assessment, more student-centered learning, creation, and collaboration will serve to allow the district to meet its goals, while also allowing the best learning environment for my students. I plan to also hold professional development sessions in order to get this
information out to the teachers in my building and possibly in the district as a whole. As a department chair, I believe it is my duty to ensure that all social studies teachers in the district understand the impact of moving to the higher levels of SAMR and the ability to engage and motivate students as they do so. Furthermore, as I reflect on Chapter One and the conversation I overheard from my colleagues regarding students being “off task,” I wonder if it was the student who was off task, or was the teacher not giving them the technology tools to keep them on task. Perhaps the student was just bored and looking at trucks for sale on Craigslist or playing games was more entertaining than augmenting a lesson. Perhaps if the student was creating an art piece or writing about something that related to their lives, they could have enhanced their academic engagement with the use of technology.

My first step will be to rewrite some of my unit lesson plans to mirror the ones that I used in this study. I do believe using the technology for substituting note taking will still be effective, however, I want to move closer and closer to being the facilitator of lessons and not so much the “Sage on the Stage.” I believe this process will take some time and well thought out lessons which allow the students to more independently explore effectively using technology to learn, will be refined as I increase my curriculum construction skill set. After making sure technology is being effectively used in my classroom, I would like to then move on to sharing these curriculum construction skills through professional development within my own department. From there, perhaps school wide professional development and then district wide professional development would enhance our use of instructional technology.
Conclusion

The problem I saw in my classroom and in schools was that students were not using technology in ways that were beneficial to the learning process. All too many times I would hear other teachers or administration speak of students who were not “focused” on the lessons they created with the involvement of technology. In my own classroom, students would play games, “surf” the web and generally be disengaged in what I was trying to teach them. The districts expect teachers to use technology in the classroom and spends millions of dollars to make sure students are functioning at a 21st century level of learning; however, many critical aspects of technology implementation including proper professional development and an understanding of what motivates and engages students while using technology in the classroom are often omitted from the decision-making process.

During this action research case study, I learned how to be a research practitioner. I learned how to triangulate data and recognize trends. I learned how to use the constant comparative method to analyze data and re-analyze data and to continue the data collection process throughout a study. This case study gave me a better understanding of my class, my students, and the ability to help other teachers who are struggling in the field of technology integration into the classroom. I was amazed to see the responses from the students on the exit surveys and delighted in seeing them speak highly of the attention, relevance, confidence, and satisfaction they were getting at the higher levels of SAMR while using technology in the classroom.

I would like to have seen more measurable evidence of positive student growth and achievement as I moved to the higher levels of SAMR. Although there appeared to
be growth regarding higher achievement, a longitudinal study design that explored correlational variables might provide more compelling data in this regard. It would be beneficial to attempt this study with a larger sample size and with a more diverse background of students. Although technology is supposed to bridge the gap between lower socio-economic groups and students of color; the formula for addressing these social justice issues are complex, and the strategies employed in this study were not adequate to address equity aspects. I am not confident that access to technology, especially at home, is affecting all of our students in the way that decision makers and stakeholders believe. This study also leaves me wanting to explore more in the possibility of assisting ESL students with language accessibility through technology. More training is needed to increase our ability to support diverse students and make the difference in helping all learners to be engaged and motivated in every classroom that integrates technology into their curricula.
REFERENCES


Boylan, M. (2004). *What have we learned from 15 years of supporting the development of innovative teaching technology?* Social Science Computer Review, 22(4), 405-425. DOI: 10.1177/0894439304268646


https://doi.org/10.1142/9789813148826_0005


Powell, Cleveland, et. al. (2016). Using multi-instructional teaching and technology-supported active learning strategies to enhance student engagement. *Journal of Technology Integration in the Classroom, 4*(2) 42.


Yuncu Kurt, P., & Keçik, İ. (2017). THE EFFECTS OF ARCS MOTIVATIONAL MODEL ON STUDENT MOTIVATION TO LEARN ENGLISH. *European Journal of Foreign Language Teaching*, 0. doi:http://dx.doi.org/10.46827/ejfl.v0i0.478

APPENDIX A

STUDENT INTERVIEW QUESTIONS

Why do you think students get off task while using technology connected to the internet?

Would it help if a teacher broke the work into 30-minute segments (chunking) each day, as opposed to 1.5 hours?

What percentage of students do you believe are off task during a technology assignment?

What are the positives and negatives of using technology in the classroom?
APPENDIX B

DAILY EXIT TICKET RESPONSE

1. Do you believe the use of technology was able to grab your attention today, why or why not?

2. Do you think the use of technology during today’s lesson was relevant (or were you able to use it to make the lesson relevant) to your own style of learning, if so how?

3. Did technology enhance your confidence in the material being taught today, why or why not?

4. How did technology provide you with a sense of satisfaction about the lesson; if it did not, please explain

5. Did we use a game, story, or social interaction with the technology that helped you stay motivated and interested today; if so, what was it?
APPENDIX C

LIKERT SCALE STUDENT SURVEY

Please answer the following questions by rating your answers 1-5

<table>
<thead>
<tr>
<th>Question</th>
<th>1= Strongly Disagree</th>
<th>2= Disagree</th>
<th>3= Neutral</th>
<th>4= Agree</th>
<th>5= Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am able to more easily relate lessons to my life by using technology in the classroom</td>
<td></td>
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<tr>
<td>I prefer to take notes on paper than to use Chromebooks</td>
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<tr>
<td>I enjoy using the Chromebooks to create and play games, tell stories, and work collaboratively</td>
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<tr>
<td>I prefer to do my research with a book, then to use technology</td>
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<tr>
<td>I am more motivated to learn when I use technology in the classroom</td>
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<tr>
<td>Sometimes I get distracted by having technology in the classroom</td>
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<tr>
<td>I feel that technology allows me to learn by my unique learning style</td>
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<tr>
<td>Technology allows my teacher to transform learning from just taking notes to creation and participation</td>
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APPENDIX D

SAMPLE DAILY LESSON

Objective:
- Students will show mastery of Unit 3 by creating a student chosen assessment.

Agenda:
- The teacher will facilitate Socratic review that includes the whole class.
- Students will be placed into group of four where they will have chance to get peer-to-peer feedback.
- After 15 minutes of peer-to-peer feedback, students will have the opportunity to ask the teacher any last questions before completing the assessment.
- Students have a choice of assessment: create a blog, write a paper, or create their own multiple-choice test with an answer key.
- When students are finished, they will submit the assessment through Google Classroom.