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Military Instructors' Perspectives of Integrating Instructional Multimedia Into Military Classrooms

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MILITARY INSTRUCTORS' PERSPECTIVES OF INTEGRATING INSTRUCTIONAL MULTIMEDIA INTO MILITARY CLASSROOMS

by

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ABSTRACT

The United States Army has made efforts to meet the demand for digital technology. There is a continued need to train Soldiers with integrated multimedia instruction products to ensure soldiers are combat-ready. The purpose of this study was to investigate military instructors' lived experiences and perspectives on interactive multimedia instructional (IMI) product integrations' influence on students learning experiences and knowledge transfer and to understand the challenges instructors face, the strategies, needs, barriers, and the resources they use when integrating IMI products at a U.S. Army School of Excellence. The study uses a qualitative research design using a phenomenological approach. The participants of this study composed of seven certified military instructors. The researcher used Semi-structured interviews as a means of data collection. The researcher performed a qualitative content analysis. The analysis yielded five themes related to military instructors' perspectives on integrating interactive multimedia instruction products into military classrooms. The findings of this study suggest that foundational technology experiences are critical to military instructors' integration of IMI products. Military Instructors are integrating an array of IMI products into military instructional settings that are most useful to them. Military Instructors must be aware of available IMI product professional development training opportunities. Software licensing, wireless connectivity, multicultural learners, visual assessments of learning comprehension, and interpersonal struggles with support staff where identified as inhibitors that impact military instructors' abilities to integrate IMI products. Finally, military instructors’ perceptions of learners’ experiences with IMI products skills transfer to future job requirements.

ACKNOWLEDGMENTS

Several significant contributors have ensured my success in completing this study. Without God, my strength to continue this research study would not exist. Without my wife, Lenisha Campbell, and children consistently motivating me to complete this study, I would not have made it this far in my academic career. My mother and father, Charlotte and Michael Campbell, and life-long mentor, Jeff Mills, have always pushed me to be more than mediocre in everything that I do. My brothers, Micheal Campbell, Lamar Billups, and Ronald Morris, serve as my big brothers and have always taught me how to be a “go-getter” and never settle for less. To my sisters, Laushanta Campbell, and Kanisha Campbell, thank you both always have providing me with the laughs necessary to make it through this process. To my advisor, Dr. Shuyan Wang, thank you for consistently pushing me to think deeper and focus on what I love to do. Finally, to my committee members, Dr. Brown, Dr. Beedle, and Dr. Lunsford, the research experience you have afforded me has been invaluable and much appreciated.

DEDICATION

I dedicate this work to Florida Agricultural and Mechanical University (FAMU). FAMU allowed me to excel as a student when other institutions wouldn't consider investing in a student like me. I am forever in debt to the College of Love and Charity

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LIST OF ABBREVIATIONS

ALC	Army Learning Concept
DOD	Department of Defense
IMI	Interactive Multimedia Instruction
LMS	Learning Management System
PME	Professional Military Education
QCA	Qualitative Content Analysis
TAM	Technology Acceptance Model
TPACK	Technological Pedagogical and Content Knowledge
TRADOC	Training and Doctrine Command

CHAPTER I - INTRODUCTION

Technology modernization is a central theme within the defense community (National Defense Strategy, 2018). Global powers advances drive the Department of Defense to improve technology use and application. Global powers such as China and Russia are enhancing their technology capabilities (Strategic Studies Institute, 2009). The Department of Defense has directed the Army to develop a modernization strategy that supports transformation of the force into a global, dominant land power. The Army Modernization Strategy (2019) states that the Army must modernize "who we are," which encompasses leader development, education, and 21st-century talent management. Furthermore, the Army Modernization Strategy (2019) focuses on 'how we fight," which is central to training modernization. The modernization of education and training includes elements of technology modernization. As an introduction to this study, this chapter provides a background, problem statement, purpose of study, research questions and objectives, the significance of study, conceptual framework, assumptions, limitations, delimitations, the definition of terms, and chapter summary.

This study explored military instructors' perspectives on current instructional technologies such as interactive multimedia instruction (IMI) products. Graves et al. (2017) state that there is a need to explore how best to integrate interactive multimedia instruction (IMI) products used across different military learning environments, contexts, and learning needs. IMI products are interactive, electronically delivered, and supports distance learning (Pamphlet 350-70-3, 2018). Current IMI products include interactive courseware, electronic testing, electronic management tools, simulations, and electronic publications (Department of the Army, 2013).

The National Defense Strategy outlines the operations and readiness priorities of the U.S. military forces (Department of Defense, 2018). Within the current operational environment, there is a significant demand for service members who can operate in multiple domains of warfare (Department of Defense, 2018). These multiple domains of warfare revolve around technology application and management. The National Defense Strategy of 2018 describes incorporating technology into the fight to dominate the opposition. The Department of Defense Instruction policy states that digital readiness and modernization crises require the military to leverage technology faster than its adversaries (Department of Defense, 2019). Leaders must ensure that service members can fight and dominate in battle by providing learning opportunities that recapitulate performance tasks found in combat.

The U.S. Department of Defense is currently developing a deliberate digital capability response by fielding a digitally capable defense force (Department of Defense, 2019). Creating a digitally capable defense force will match proper learning environments and conditions with the best talent. Senior Department of Defense leaders state that leaders must make the best use of all skills to stay ahead of competitive adversaries (Department of Defense, 2019). Digital natives consist of service members who are familiar with using digital technologies. Digital natives are matriculating through the digital age and are familiar with digital technology use and applications (Liston, 2016).

Digital natives are entering military service and trained with antiquated instructional methods (Liston, 2016). Over the last six years, military instruction has experienced a cultural shift that allows learners to share knowledge, evaluate

perspectives, and construct socially constructed knowledge using instructional technologies (Liston, 2016). The former ways of instruction, such as direct instruction, have led to the frustration of digital native learners due to the exclusion of technologies in the learning experience (Liston, 2016). Conversely, the learners' demands for modern technology have led to a significant shift in how military education is developed.

According to the Department of Defense (2018), military learning environments require a new emphasis on embracing technology to train service members and counter foreign military competitors' digital capabilities. This new emphasis on embracing technology in military learning environments focuses on adaptation of modern learning products, processes, and support systems (Department of the Army, 2017). The adaption and integration of modern technologies provide military learners with an opportunity to experience replicable combat environments or situations within a learning environment that is challenging and realistic (Department of the Army, 2017).

Statement of Problem

Having adequately trained military personnel is necessary for the current operational environment (Department of Defense, 2018). There is a significant demand for service members who can operate in multiple domains of warfare (Department of Defense, 2018). These multiple domains of warfare revolve around technology application and management (Department of Defense, 2018). The National Defense Strategy of 2018 describes how incorporating technology into the fight is imperative to dominating the opposition. Military learners must have interactive digital technologies that resemble combat environments to defeat the opposition (Department of Defense, 2018).

Global powers such as China and Russia have modernized instructional technologies that are on the verge of being comparable to the Department of Defense's current instructional technologies (Strategic Studies Institute, 2008). The Department of Defense is currently attempting to meet China and Russia's technology advancement through technology modernization and integration mandates and guidelines (Department of Defense, 2018). However, current Department of Defense personnel lacks adequate training on modern instructional technologies, preparing them to defeat global powers like China and Russia (National Security Strategy, 2018).

Martin (2016) and Graves et al. (2016) conducted studies that contributed to the existing knowledge on IMI product integration. Martin (2016) examined the relationship between students' perceptions and instructions with digital technology in military education. Martin (2016) found a statistical significance regarding students being issued military computers and instructional delivery methods used in military education. The study also indicated that technology enhances military education and helps students with their jobs. The Graves et al. (2016) study argues that training instructors should have practical self-directed learning skills when using IMI products. This study also argues that instructors with new IMI product knowledge and integration skills learn independently in their regular duties. However, both studies are antiquated and do not explore military instructors' perceptions of integrating IMI products into military classrooms or developing personnel through training on modern instructional technologies.

Purpose of Study

The purpose of this study was to investigate military instructors' lived experiences in integrating IMI product integrations' influence on learners' experiences and knowledge transfer. This study also sought to understand instructors' challenges, strategies, needs, barriers, and resources when integrating IMI products at a U.S. Army School of Excellence.

Research Question and Objectives

This study focused on one overarching research question. This research question is what are military instructors' perspectives on IMI product integration in military learning environments? The research question focuses on military instructors' perspectives on the implications of IMI product integration in their organization. This research question explored the phenomenon of military instructors' developing perspectives on their lived experiences of integrating IMI products in military learning environments. The overarching research question provides the necessary focus and direction to contribute to existing literature.

The following objectives drove the exploration of military instructors' perceptions of IMI product integration:

RO1 - Describe participants' age, ethnicity, gender, years of instructing, years of service, and level of education.

RO2 - Explore enlisted and officer instructors' pre-service experiences with IMI products.

RO3 - Explore enlisted and officer instructors' perspectives on strategies, challenges, needs, barriers, and resources associated with IMI product integration in military instructional settings.

RO4 - Explore military instructors' perspectives on the influence of IMI product integration on student learning experiences.

Significance of the Study

Within the military, digital natives and immigrants are the populations that are currently serving our nation. In this study, digital natives are service members born after 1980 and familiar with 21st-century digital technologies (Baily, 2016). Conversely, digital immigrants are service members born before 1980 and have little familiarity with 21st-century digital technologies (Bailey, 2016). These service members have generally learned in environments that included technology within the learning experience (Liston, 2016). According to the Department of Defense (2019), a digital readiness crisis requires the Department of Defense to leverage these technologies faster than U.S. adversaries. The digital readiness crisis revolves around rebuilding and improving the lethality of digital technologies within the military (Department of Defense, 2019). The military has published various policies which established the requirement for the Department of Defense to include technology in the classroom as part of the plan to improve digital readiness (Department of Defense, 2018). According to the Department of Defense (2018), Professional Military Education (PME) requires a new emphasis and embracing technology to counter competitors. Most PME courses need IMI products to train military personnel effectively. The findings of this study should expand the existing knowledge of how technology influences military instruction and mitigates digital readiness.

Instructional technologies such as IMI products are essential to any education or training organization like U.S. Army Training and Doctrine Command (TRADOC). TRADOC is a central U.S. Army command responsible for training Soldiers, developing adaptive leaders, doctrine development, and shaping the Army of the future (TRADOC, n.d.). This study will provide TRADOC with valuable research on the current military instructors' perspectives of IMI product integration. The findings of this study should provide TRADOC with valuable insight into how the organization can best train its personnel in modern technology-rich environments. This study may also influence military instructor professional development training across TRADOC. TRADOC will receive the study results for successful IMI product integration perspectives. Exploring military instructors' perspectives of IMI product integration should add value to digital modernization readiness in TRADOC, the U.S. Army, and the Department of Defense.

Conceptual Framework

According to Green (2014), the conceptual framework provides researchers with the underpinnings of appropriate research methodology. Jabareen (2009) states that a conceptual framework idea of interrelated concepts provides a comprehensive understanding of a phenomenon. The conceptual framework provides concepts, themes, and terms from existing bodies of knowledge. Within the conceptual framework (see figure 1), constructivism and technological pedagogical content knowledge (TPACK) theory investigate the strategies, needs, challenges, barriers, and resources that inform military instructors' perspectives of IMI product integration into military classrooms.

Constructivism revolves around the premise that learners are at the center of creating their knowledge (Morchid, 2020). Learning takes place through experiences that

require learners to exercise their problem-solving skills. Morchid (2020) argues that constructivism is a theory of accommodation and assimilation in learning. According to Morchid (2020), prior mental models accept new perspectives of the world. Assimilation processes allow for integrating further information into existing pre-established experiences. Through these experiences, learners can build upon their preexisting knowledge base (Morchid, 2020). Constructivism displays the learners' understanding level into higher levels of thinking (Baharuddin et al., 2020). Constructivist theorists promote using technology tools to facilitate valuable learning experiences (Singh, 2019). Gilakjani et al. (2013) suggest that constructivism acknowledges that learning is an active experience without age or development stage restrictions and emphasizes the need for students to construct personally significant constructs.

The TPACK theory is "a useful framework for thinking about what knowledge teachers must have to integrate technology into teaching and how they might develop this knowledge" (Polly & Byker, 2020, p. 4). The TPACK theory is a practical conceptual theory for the teaching and instruction profession due to the emphasis on technological knowledge and technology integration into instructional efforts (Singh, 2019). According to Mishra (2019), the TPACK theory requires teachers to have technical knowledge about the various IMI products available. Technical knowledge includes having qualities of knowledge and knowing organization preconditions such as strategies, needs, challenges, barriers, and resources that support technology integration (Mishra, 2019; Decksler & Ifenthaler, 2021).

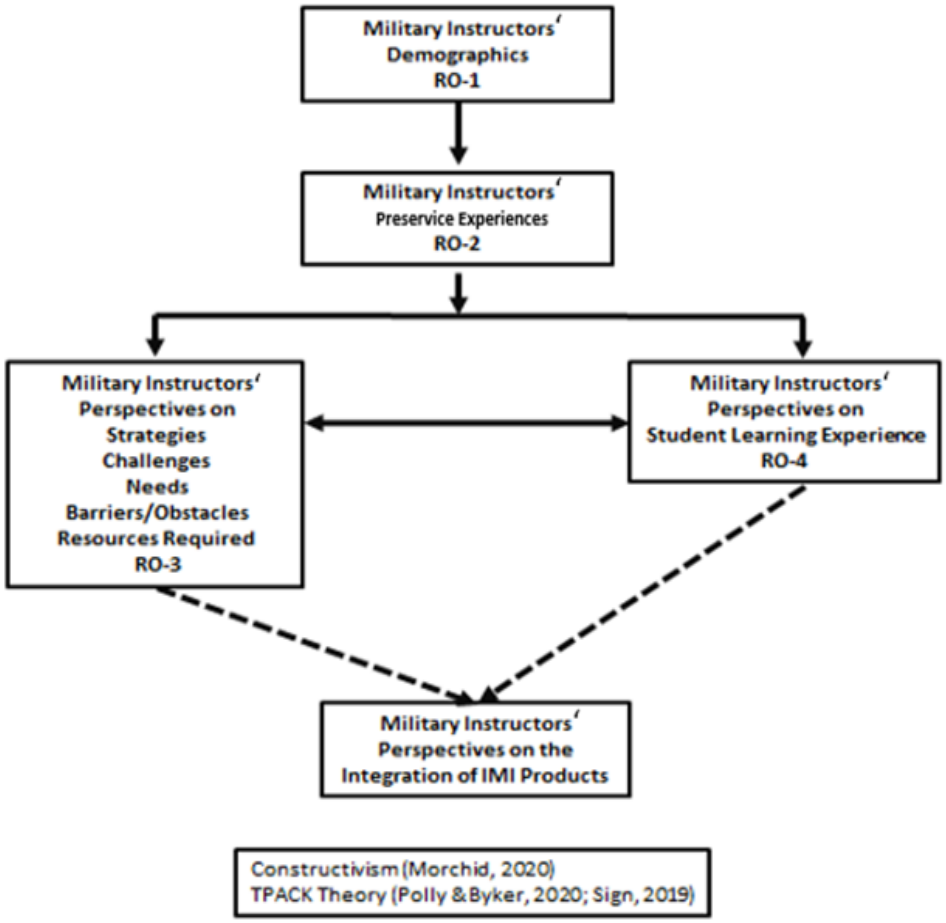

Figure 1. Conceptual Framework

Assumptions, Limitations, and Delimitations

Several beliefs and factors within a research study are beyond the researcher's control. A research study includes deliberate choices made by the researcher which impact the planning of a research study (Simon & Goes, 2013). These beliefs, factors, and intentional choices represent the researchers' assumptions, limitations, and delimitations made within the study. This study has several premises, limitations, and delimitations which focus on military instructors' perspectives of integrating IMI products into military classrooms.

Assumptions

This study discloses several assumptions. First, the investigator lacks experience integrating IMI products into military learning environments. The investigator does have a background in instructional technology and design. However, the investigator does not have experience in IMI product integration in military learning environments. The researcher assumes that integrating IMI products is a priority of the participating organization. Furthermore, the researcher assumes that the participants will provide truthful and honest interview responses. Finally, the researcher believes that instructors have contributed to policies that inform IMI product integration.

Limitations

The limitations of a study are elements that are not under the researcher's control (Theofanidis & Fountouki, 2018). First, the study's methodological limitations revolve around the U.S. Army's need to improve digital readiness by integrating IMI technologies into military classrooms. The methodological limitation impacts this study because the U.S. Army may have other digital readiness priorities, influencing the level or degree of IMI product integration awareness amongst military instructors. Department of Defense COVID-19 mitigation strategies limited data collection methods to video-conferencing. Video-conferencing will impact how the researcher assesses participants' comfort level during interviews which will inform the accuracy of participants' responses. In consideration of the limitations of the study, the primary investigator of this study does not control these identified limitations.

Delimitations

The delimitations of a study are elements that guide the research study (Theofanidis & Fountouki, 2018). The overarching research question explored respondents' perspectives on their lived experiences associated with IMI product integration. The overarching research question will guide the researcher through data collection, analysis, and reporting. Secondly, the U.S. Army Learning Concept Model follows the constructivist learning theory's ideas and the technology integration philosophy of the TPACK theory (FM 7-0, 2016). The theoretical underpinnings of the U.S. Army Learning Concept Model provide a conceptual and theoretical description of the phenomenon. This study selected the phenomenological approach as the research design to explore the lived experiences of research participants. The research design in this study is most appropriate due to the shared lived experiences of integrating IMI products. Finally, the target participants within this study were selected based on current National Security Strategy technology modernization requirements. National Security Strategy technology modernization requires military instructors to be familiar with instructional technologies. The delimitation elements described will drive the investigation in a direction that best supports a study of this nature (Theofanidis & Fountouki, 2018).

Definitions of Terms

The definition of terms section helps researchers and readers understand the basic research terms used within a study (Noori, 2021). Vakulenko (2014) states that researchers should formulate relevant, comprehensive terms by generalizing definitions. By generalizing existing term definitions, the following terms will assist the reader in

understanding the language and terminology used in exploring military instructors' lived experiences and truths on IMI product integration.

1. *Army Learning Concept* is a U.S. Army training model that focuses on the systematic development of training experiences (TRADOC PAM 525-8-2, 2018).

2. *Digital Native* is a 21st-century learner who is significantly familiar with digital technologies and was born after 1980 (Bailey, 2016).

3. *Educational Technologies* are any form of digital-based applications in teaching and learning, such as Web 2.0, computers, smartboards, multimedia products, and other five years or less old (Martin, 2016).

4. *Interactive Multimedia* is a form of educational technology that includes simulators, electronic documents, learning management systems, and other technologies (TRADOC PAM 350-70-3, 2018).

5. *Interactive Multimedia Instruction* is a form of instruction that delivers course content through interactive electronic support products (TRADOC PAM 350-70-3, 2018).

Summary

The background of this study discusses the Department of Defense's current initiatives to modernize digital technology learning experiences. The problem statement identified a need to explore how to best meet the demand for service members who can operate in multiple domains of warfare using existing and new technologies. This study investigated the strategies, challenges, needs, and resources that inform IMI product integration. The overarching research question was: what are military instructors' perspectives on IMI product integration in 'military learning environments. Finally, the

significance of the study outlined the investigative impact this study will have on U.S. Army educational technology policies and the future of digital readiness within the military.

The remaining chapters include Chapter II literature review, Chapter III methodology, Chapter IV Results, and Chapter V Conclusion. Chapter II establishes the context of previous studies and literature, which support the need to investigate the research problem. Chapter III justifies the identified research approach, environments, sample description, and data collection. Chapter IV reflects a report of the results collected from the semi-structured interviews and journaling and includes the development of themes used to report the findings of this study.

CHAPTER II - REVIEW OF LITERATURE

This chapter will describe the current literature on military instructors' perspectives on integrating educational technologies such as IMI products into military learning environments (Graves et al., 2016; Graves et al., 2017). This literature review addresses several themes and subthemes that extend from broad concepts to finite studies. First, this literature review will address the theoretical framework, explaining why the research problem exists. Next, the literature review will discuss the background of IMI for a foundational understanding of the product. The literature review will also include U.S. Army educational policies and digital modernization efforts, which outline the requirements for the modernization and use of IMI products in military classrooms.

Furthermore, this literature review includes a discussion on digital natives in the military, and the discussion ensures readers understand the demographics represented within military education. Finally, this literature review discusses IMI product barriers and expectations to establish context for the challenges faced with IMI product integration. The organization of this literature review ensured that the synthesis of current literature on the topic supported the need to explore military instructors' perceptions of IMI product integration in military classrooms.

Theoretical Foundations

The theoretical foundations of this study revolve around constructivism and technological pedagogical content knowledge (TPACK). The connection between the problem and the purpose of this study provides context to the findings of this study. Constructivism served as the theoretical framework, and TPACK served as the conceptual framework (Peck, 2020). Both frameworks are appropriate for addressing the

significance of the study and nesting the study within the existing body of research on the topic of perspectives of integrating IMI into military learning environments. These frameworks theoretically guided the study and extended the current knowledge based on the research problem.

Constructivism

Constructivism revolves around the premise that learners are at the center of creating their knowledge. Learning takes place through experiences that require learners to exercise their problem-solving skills. Morchid (2020) argues that constructivism is a theory of accommodation and assimilation in learning. According to Morchid (2020), prior mental models accept new perspectives of the world. Assimilation processes allow for integrating further information into existing pre-established experiences. Through these experiences, learners can build upon their preexisting knowledge base (Morchid, 2020). Constructivism displays the learners' understanding level into higher levels of thinking (Baharuddin et al., 2020). Constructivist theorists use technology tools to promote valuable learning experiences (Singh, 2019). Gilakjani et al. (2013) suggest that constructivism acknowledges that learning is an active experience without age or development stage restrictions and emphasizes the need for students to construct personally significant constructs. The literature suggests that the basis of constructivism provides learners with an opportunity to create knowledge through high levels of understanding facilitated by technology tools.

With the increased use of technology, constructivism now includes rich constructivist technology integration practices (Prajapati & Singh, 2018; Gislakjani et al., 2013). Including technology in various teaching approaches required constructivists to

review traditional theoretical perspectives. Prajapti and Singh (2018) concluded that constructivism was reborn, including technology-based teaching practices. Prajapti and Singh (2018) also state that it is essential that teachers or instructors are familiar with the skills required to facilitate the teaching and learning process using technology-rich constructivist practices that replace traditional approaches. According to Prajapti and Signh (2018), constructivist teachers use and integrate technology more frequently than teachers who use traditional approaches to instruction. The growth in technology usage has brought technology integration into the learning theory of constructivism.

Budiarto et al. (2020) explored integrating IMI products as learning innovations in a digital era. Their study found a need to build skills and contribute more to constructivist learning to increase learning activity and the learners' responsibility during the learning process. To meet the demand of constructivist learners, military instructors must integrate IMI products into instruction. Budiarto et al. (2020) suggest that using digital technologies such as IMI products increases student motivation, independence, and visualization beyond the learning process. Furthermore, the literature in military education does not account for the use of IMI products to increase learners' efficacy and understanding.

Military instructors must understand IMI integration. The constructivist theoretical framework will explain how military instructors create knowledge of integrating IMI products. The instructors' knowledge and ability to use technology are significantly required to create learning environments that actively support knowledge construction (Singh, 2019). By understanding the creation of IMI integration knowledge, this study will explore military instructors' perspectives of IMI integration.

Technological Pedagogical and Content Knowledge

TPACK is "a useful framework for thinking about what knowledge teachers must have to integrate technology into teaching and how they might develop this knowledge" (Polly & Byker, 2020, p. 4). The TPACK framework is a compelling conceptual framework model for the teaching and instruction profession due to the emphasis on technological knowledge and integration into instructional efforts (Signh, 2019). The TPACK framework model will provide the necessary conceptual foundation for this study.

The TPACK consists of three primary areas that focus on how technology and content influence each other through the integration process (Smith et al., 2020). The TPACK framework requires instructors to bring together the three areas of technology knowledge, pedagogy knowledge, and content knowledge. Pedagogical knowledge involves the methods and strategies a teacher or instructor uses in the learners' environment to enhance the learning experience (Smith et al., 2020) define. Technological knowledge is the knowledge of various digital and technological tools within the classroom, and this study acknowledges technology tools used daily within military instructional environments. Finally, content knowledge is the teachers' knowledge of the content. Polly and Byker (2020) state that teachers are responsible for knowing discipline-specific content knowledge of learners' demonstrated mastery of the content. These three primary areas focus on technology and content and how they influence technology integration.

The TPACK framework includes several interactive overlapping sub-areas of knowledge. The first overlapping knowledge area is pedagogical content knowledge.

Polly and Byker (2020) argue that pedagogical content knowledge falls between pedagogical knowledge and content knowledge areas. This convergence connects teaching practices and strategies with content knowledge areas. The junction will provide military instructors with the ability to determine appropriate teaching methods for specified content that requires IMI products. The overlapping of these sub-areas is critical to ensuring that teaching strategies are suitable for the specified content.

Technological pedagogical knowledge is another overlapping sub-area of knowledge in the TPACK framework. By experiencing technology applications, instructors must focus on the constraints of being familiar with online pedagogical experiences. For example, an instructor may require learners to use learning management systems, electronic portfolios, digital textbooks, and instructional media products. Without these pedagogical experiences, instructors would not ensure that learners effectively engage in the instructional content (Polly & Bayer, 2020). The technological pedagogical knowledge area pairs technology and pedagogy together within effective instructional frameworks.

Technological content knowledge is the final overlapping sub-area of knowledge in the TPACK framework. Polly and Byker (2020) argue that the technological content knowledge sub-area is the knowledge of content-specific applications of technology and the barriers associated with the technology. This sub-area is critical for instructors to integrate IMI products with content effectively. The technological pedagogical knowledge sub-area consistently ensures content pairs with the appropriate technology. Within this study, the TPACK framework is the conceptual framework that guided the study's theoretical underpinnings. The TPACK framework consists of interactive main

areas and sub-areas, and the interaction between the main areas and sub-areas informs how integrating IMI products can effectively support learning.

Background of Instructional Media and Major Contributors

IMI products in military settings have been around for several decades. During World War II, the military made significant efforts to redevelop their training programs for mass training requirements. During World War II, many students failed portions of the flight training program, which was unacceptably high. The use of Audiovisual materials and equipment in flight training programs includes training film, film projectors, and overhead projectors (An, 2021). With the tremendous efforts to redevelop these training programs, leading educators and psychologists conducted research to develop instructional materials and programs that increased the pass rate of students in the pilot program and many other programs (Reiser, 2001). After World War II, multimedia consisted of early combinations of instructional media which enhance the learning experiences (An, 2021).

These leading psychologists and educators provided theoretical experiences in evaluation and testing to assess the skills of trainees and individuals who would benefit from these programs (Reiser, 2001). Psychologists examined the general intellectual, psychomotor, and perceptual skills of the individuals who successfully performed skills taught in the program and developed tests that measured those skills (Reiser, 2001).

B.F. Skinner

In the 1950s, B.F. Skinner provided ideas regarding the requirements of increasing human learning and desired characteristics of active learners (Reiser, 2001). B.F. Skinner revolutionized the area of programmed instruction by theorizing that

teachers can improve human learning through appropriate instructional materials (Reiser, 2001).

Benjamin Bloom

In the 1950s, Benjamin Bloom developed the Taxonomy of Learning Objectives, which influenced the objective behavioral movement (An, 2021). This taxonomy comprises knowledge, comprehension, application, analysis, synthesis, and evaluation categories. The taxonomy was primarily used as a continuum that improved student learning behaviors. Benjamin Bloom believed that each learner moves from simple to concrete and abstract ideas (Kurt, 2020). In 2001, the dynamic classification of testing, instruction, and assessment was the taxonomy revision (Kurt, 2020).

Robert Gagne

Robert Gagne made significant contributions to instructional technology when he described the nine instruction events and the five learning domains. The nine events of instruction were crucial to ensuring appropriate learning outcomes occurred during the learning experience. Gagne's theory of the nine events of instruction included:

- Gaining attrition
- Informing learners of objectives
- Stimulating recall of prior learning
- Presenting the stimulus
- Providing learning guidance
- Eliciting performance
- Providing feedback

- Assessing performance
- Enhancing retention and transfer

Robert Gagne also developed five domains of learning which contributed to the U.S. military's development of instructional technologies (Reiser, 2001). These learning domains require different types of instruction that include appropriate instructional media. These five domains of learning include:

- Verbal information
- Intellectual skills,
- Cognitive strategies
- Motor skills
- Strategies.

Robert B. Miller

After World War II, the U.S. military recruited Robert Miller to solve instructional problems. As a psychologist, Robert Miller focused on innovative analysis, design, and evaluation of instructional procedures (An, 2021). Robert Miller developed detailed task analysis methods as a foundation for task analysis and appropriate media in instructional settings (An, 2021).

Robert Mager

In 1962 Robert Mager introduced Preparing Objectives for Programmed Instruction, which described how teachers should write learning objectives to include learner behaviors, conditions, and standards (An, 2021). Programmed instruction materials were developed during the 1950s and 1960s. The intent was to provide learners

with content in small pieces, allow for self-pacing, provide immediate feedback, and require active learner response to questions (An, 2021).

Interactive Multimedia Pedagogy

Various sectors of society, including interactive multimedia applications, have been incorporated. There have been increased investigations on the benefits of multimedia use in education (Adams et al., 1996). In education, multimedia products benefit learners through the engagement of multi-sensory modes. These multi-sensory modes include the visual, aural, and tactile senses with material delivered through a single environment (Adams et al., 1996). Multimedia application in the learning experience revolves around teaching strategies or pedagogies (Adams et al., 1996).

Collaborative Learning

Multimedia technologies include collaborative technologies that provide interactivity in teaching and learning (Al-Rahmi, 2014). Various scholars have cited the application of interactive multimedia technologies to facilitate collaborative learning and communication among teachers and learners (Al-Rahmi, 2014). Al-Rahmi (2014) argues that integrating multimedia in collaborative learning improves students' academic performance through peer and teacher interaction.

Authentic Tasks

Authentic task pedagogy aims to develop learning communities closely related to collaborative practices (Kocyigit & Zembat, 2013). Authentic task pedagogy allows learners to bring their experiences, beliefs, and interests into the classroom (Kocyigit & Zembat, 2013). This interactive exchange of experiences, beliefs, and interests allows the learners to experiment with their knowledge and collaborate on problem-solving

(Kocyigit & Zembat, 2013). According to Kocyigit and Zembat (2013), the incorporation of multimedia has evolved into "authentic tasks activities such as small group discussions, cooperative learning tasks, independent research projects, manual skills, scientific tools, and artistic materials, the use of computer and video technology, and the community-based projects" (p. 1045).

Inquiry Tasks

Through multimedia products, inquiry task pedagogy provides complex collaborative learning experiences. Characteristics of inquiry task pedagogy have been described as successful, complex, open-ended, interdependent, and involving group accountability (Ko, 2016). This description of inquiry task pedagogy reflects the effective pedagogical strategy that enhances collaboration skills amongst learners (Ko, 2016).

Simultaneous Modalities

With the development of new and improved multimedia technologies, there exists a need to consider simultaneous modalities (Adams et al., 1996). Simultaneous modality multimedia technologies provide learners with two or more stimuli which allow the learner to experience multiple inputs simultaneously (Adams et al., 1996). For example, Multimedia Mozart will enable learners to listen and visualize the instructional content (Adams et al., 1996). Simulators are typically the most appropriate multimedia products that allow students to simultaneously receive and engage images, animations, videos, audio clips, notations, and text. The use of simultaneous modalities pedagogy shows a different way of engaging learners through multimedia support (Adam et al., 1996).

Purpose of Interactive Multimedia Instruction Products

The application of IMI products positively influences the learning experience. Raja and Nagasubramani (2018) argue that technological developments such as simulations, virtual reality, digital cameras, projectors, and computers have provided excellent resources for learners to grasp concepts quickly. Raja and Nagasubramani (2018) state that the role of technologies such as IMI products in education is four-fold. First, IMI products are included as part of the curriculum, as an instructional delivery system, aiding instruction, and as tools to enhance the learning process (Raja & Nagasurbramni, 2018). According to Raja and Nagasurbramni (2018), technologies such as IMI products have gone from passive and reactive to interactive and aggressive. These IMI products provide the learners with interactive experiences that meet the Army modernization efforts (Department of Defense, 2017). These products also offer learners interactive learning experiences, ensuring that military learners can exercise critical skills and concepts (Department of Defense, 2017).

IMI products represent the combination and integration between text, graphics, sound, animation, and video, which provide effective results in teaching and learning (Rajendra & Sudana, 2018). Rajendra and Sudana (2018) used a mixed quasi-experimental design that did not include subjects randomly assigned to groups. The study used a quantitative approach to provide information and data realized in numbers. Rajendra and Sudana (2018) used a t-test to evaluate statistical significance. Rajendra and Sudana (2018) argue that the cognitive learning theory of multimedia learning represents a foundation for implementing IMI products.

Rajendra and Sudana (2018) found that multimedia technology empowers the educational process through increased interaction between instructors and learners and can help students understand the instructional material. Rajendra and Sudana (2018) concluded that multimedia instruction effectively engages and teaches cognitive and psychomotor skills and influences retention of learning content. Cognitive and psychomotor skills are critical to the job and mission-related tasks (Rajendra & Sudana, 2018). The Army is modernizing the force with digital age learning experiences that inform military learners' abilities to perform critical tasks. Without IMI products supporting essential task mastery, military learners will not compete with competitive adversaries (Department of Defense 2017).

IMI products have distinct attributes in comparison to other instructional technologies. According to Khamparia and Pandey (2017), there are nine advantages to using IMI products versus conventional approaches. First, IMI products provide personalization of the material according to the knowledge and preference of the learner. Secondly, IMI products are flexible and allow developers to add, remove, or update products at any point during the learning experience. The development of IMI products allows interoperable use of new IMI products for different learning styles. These products also allow learners to collaborate and interact with each other. IMI products allow learners to share resources and materials, demonstrate conceptual understanding, and reflect upon their learning process. IMI products can be reusable and reconstructed in various applications and platforms based on different learning styles. IMI products are cost and time-effective, allow learners to learn anytime, and are less costly than traditional learning approaches. Finally, using IMI products can assist and evaluate

learners' acquired knowledge and performance. Khamparia and Pandey's (2017) nine advantages to using IMI products reflect positive influences on learners' experiences in media-rich environments.

Budiarto et al. (2020) argue that multimedia is needed to support the learning process and integration of skills that inform the competencies of being a skilled learner. Budiarto et al. (2020) methodology included a literature study method. The literature study method included data collection activities by analyzing books, research articles, reports, and documents related to the problem (Budiarto et al., 2020; Nasir, 2013). The results of the literature study method describe a common belief that multimedia is needed to build skills, contribute to more constructivist learning, increase activity, and increase the learner's responsibility (Budiarto et al., 2020). Budiarto et al. (2020) concluded that multimedia learning increases student motivation by enabling learners to be interactive and independent. Budiarto et al. (2020) study reflected on why multimedia is needed and influences learning.

Active Learning and IMI

According to Hamilton (2019), active learning in military education is an alternative or supplement to traditional instructional methods such as lectures. The dynamic learning approach values student learners' problem-solving capabilities and prior experiences (Hamilton, 2019). Hartikainen et al. (2019) state that active learning has a wide variety of definitions, most of which are student-centered approaches that activate instructional methods and instructor-led activities. Hartikainen et al. (2019) go even further in the literature by stating that active learning is not a concept of learning but a concept of instruction. Active learning in military education supplements traditional

instructional methods that value the student learners' problem-solving capabilities and prior experiences (TRADOC Pamphlet 525-8-2, 2018).

Active learning theoretically aligns with constructivism. Hartikainen et al. (2019) argue that constructivism focuses on understanding knowledge rather than memorization. According to Romanovs (2016), in the constructivist learning environment, the learning process is equally important as the learning outcome. Romanovs (2016) suggest that the problem drives learning rather than solving the situation as an application of learning. Learning environments, including IMI products, serve as active settings that make students responsible for learning through meaningful problem-based learning activities (Gilakjani et al., 2013). Military instructional experiences focus on problem-based learning, which improves learners' performance outcomes in the digital age (Romanovs, 2016).

One significant instructional model that best aligns with active learning and constructivist theory in learning environments that include IMI products is the technology-based active learning model (TBAL). Ghilay and Ghilay's (2015) study introduces the TBAL model that improves face-to-face learning experiences. Ghilay and Ghilay (2015) found that the TBAL provides instructors with practical technologies to transfer to the busy learning world. According to the TBAL model, the stakeholders will see a significant improvement in their instructional effectiveness in technology-rich learning environments (Ghilay & Ghilay, 2015). This TABL model supports active learning in technology-rich classrooms and significantly impacts instructors' instructional effectiveness (Ghilay & Ghilay, 2015).

When considering active learning, there must exist a consideration for learning environments that include IMI products. Given the current demand for digital natives in the military, active learning opportunities must be available to the learner (TRADOC Pamphlet 525-8-2, 2018). The implication of active learning in military instruction revolves around the learners' performance outcomes (Romanovs, 2016). These performance outcomes during active learning are associated with instructional effectiveness (Romanovs, 2016).

K-12, Higher Education, and Foreign Military IMI Product Integration

The integration of IMI products has played a vital role in various institutional learning environments. Cook (2012) suggests that many advocates for IMI product use believe that IMI products enhance the learning environment. The increased influence of IMI products enhances learning environments in the private sector (Cook, 2012). Given the nature of this study, three learning environments have contributed to the study of IMI product integration. K-12, higher education, and foreign military learning environments have contributed to the existing body of knowledge (Cook, 2012). The contributions of these institutions will provide substantial implications supporting this study's purpose.

K-12 IMI Integration and Challenges

K-12 institutions have used IMI products to improve the learning experience significantly. Pricilia et al. (2020) suggest that in K-12 environments, interactive tools facilitate the development of globally competitive and competent students and increase learner motivations. However, there exist several negative implications for K-12 teachers' technology integration.

To begin with, K-12 teachers have faced challenges with adopting and accepting technologies. Tang et al. (2020) performed a mixed-methods inquiry by including the Technology Acceptance Model (TAM), which integrated qualitative and quantitative methods to understand teachers' intentions of adopting open education resources. Teachers use the TAM framework to reinforce the implementation of technologies in the K-12 setting. Open Educational Resources are freely accessible and open-licensed multimedia and digital applications. The quantitative phase of the study focused on exploring the relationship among each variable in the TAM to predict teachers' intentions of adopting technologies. The TAM recognizes this study's perceived ease of use and usefulness challenges. According to Tang et al. (2020), perceived ease of use describes teachers' perceptions of the effort needed to use the technology, and perceived usefulness represents the teacher's determination to adopt a technology. The qualitative phase sought to explore the patterns in the participants' reflection findings. Sixty-eight participants were included in this study and had five or more years of teaching experience. The quantitative phase found that perceived ease of use and usefulness predict teachers' willingness to adopt technologies. The qualitative phase provided insight into the quantitative findings by describing teachers' perceived strengths and weaknesses through the perceived ease of use and perceived usefulness variables. This study's quantitative and qualitative phases shed light on the challenges faced in integrating technologies in classrooms.

Liu et al. (2020) explored multimedia-assisted instruction's effects on learners' abilities and autonomy to read based on multimedia technology-assisted instruction. Lieu et al. (2020) used mixed methods research approaches to address the research problem.

The research study took place at a junior high school in China, and the study consisted of 89 student participants from two classes in the same grade level. Liu et al. (2020) used pre and post-testing data collection methods for the quantitative and qualitative phases of data collection. The data collection methods focused on quantitative methods of the reading strategy questionnaires and reader autonomy questionnaires. Liu et al. (2020) found that successful modern sustainable technology improves the learning experience through learner autonomy. Learner autonomy focuses on the learners' abilities to be responsible for their learning experiences. This responsibility allows learners to use modernized multimedia tools to provide operational learning experiences that promote learner autonomy (Liu et al., 2020). The implication of modernized multimedia in learning environments provides explicit support for improving the learning experience.

Higher Education IMI Product Integration

Abdurasulovich et al. (2020) argue that interactive multimedia integration has significantly improved teaching effectiveness in higher education. Effective teaching in higher education includes improved information transmission channels through multimedia (Abdurasulovich et al., 2020). These improved information transmission channels are interactive multimedia products that do not have redundant information and facilitate interrelated problem-solving (Abdurasulovich et al., 2020). The corresponding problem-solving and the sharing and verifying of information through multimedia will improve the teaching and learning experience through collaborative efforts.

Higher Education IMI Integration Challenges

There exist similar IMI product challenges found between higher education and military education. Azmuddin and Radzuan (2020) argue that a significant challenge in

higher education is the use of learning management systems that guide the Community of Inquiry (CoI) framework. Yang and Yuen (2010) define learning management systems as instructional systems that facilitate communication and collaboration between students and teachers and enable electronic assignments and assessments (Yang & Yuen, 2010). Yang and Yuen's (2010) definition coincides with the CoI framework, a theoretical framework used to design online learning environments to support critical thinking and discourse among learners and instructors. Suppiah et al. (2019) analyzed collaborative dialogues based on the CoI framework in the EDMODO learning management system and found shortcomings in enhancing and providing a more critical evaluation of topics within the discussions. Voss (2021) argues that currently, in the military, the CoI framework does not include the significance of instructors' leadership in virtual settings such as a learning management system. Furthermore, Voss (2021) argues that leadership in virtual environments can impact learners' performance. Between poor critical evaluations of dialogues and the lack of inclusion of instructors' leadership in learning management systems, the CoI framework has shown to be challenging in higher education and virtual military settings.

Digital technologies such as IMI products do not account for learners' emotional needs in higher education (Casteneda & Selwyn, 2018). The literature review by Casteneda and Selwyn (2018) analyzed six articles revolving around neuroscience topics for understanding: instructional technology, affordances of technology, big data reform, mobile learning, digital strategies, and an analysis of personalized and adaptive learning. Casteneda and Selwyn's (2018) literature review finds that digital technologies should engage the learners' emotions and feelings during the learning experience. However,

current digital technologies do not support the transmission or exchange of emotional information between staff and learners (Casteneda & Selwyn, 2018). The exchange of information in the literature review focuses on exploring emotions, moods, feelings, exhaustion and excitement, boredom, fatigue, and relief. Casteneda and Selwyn (2018) further argue that digital technology challenges are the feelings and emotions of the learner informing their ability to think critically and problem solve in digital learning environments. This engagement establishes a valuable relationship between IMI products and higher education learners' behaviors, producing positive learning experiences.

Renze and Hilbig (2020) argue that accounting for cultural change challenges interactive multimedia. There exists a cultural shift between the traditional understanding of education and the modernized idea of education and knowledge transfer within higher education (Renze & Hilbig, 2020). Learners are culturally developing learning behaviors that require interactive multimedia to access information and knowledge. Accounting for cultural change is a challenge requiring consistent development of multimedia products in higher education to meet learners' developing demands. Howard and Monjeko (2015) argue that the cultural change in modernized educational technology leads to increased teacher disengagement. The increase in teacher disengagement links to the cultural behavior of learners' everyday use of digital technologies that assist in learning gains, not so much as the technology used in the classroom (Howard & Monjeko, 2015).

The literature suggests that the engagement between IMI products and learners' behaviors has led higher education institutions to transform the learning experience. Naidu et al. (2019) suggest that multimedia products are needed to change learners' behaviors within these institutions. Naidu et al. (2019) also indicate that interactive

multimedia, such as cloud computing, can significantly increase performance and productivity in higher education.

The learners' productivity in higher education links to learners' preferences for high-quality multimedia content (Suartama et al., 2019; Naibaho, 2019). Naibaho (2019) study found that students that used interactive multimedia performed better than learners who used traditional multimedia tools. The transformative nature of multimedia products is critical to improving behaviors, performance, and productivity. Instead, focus more attention on the interplay between the use of digital technology and people's emotions, feelings, and affect. The interplay is essential if we fully engage with identity, responsibility, accountability, and the idea of digital technology use as a collective endeavor grounded in social relations.

Foreign Military IMI Product Integration

Like higher education institutions, foreign military educational institutions have also witnessed an increased use of IMI product integration. According to the National Security Strategy (2018), allied, competitor, and adversary militaries have made significant advancements to their technology and digital capabilities. Shatz (2019) study found that cooperative or allied military educational institutions such as British, Canadian, New Zealand, and Australian forces have increased the use of game-based learning, mobile learning, eBook learning, and augmented learning realities. The increase of IMI products has significantly improved the digital capabilities of allied forces.

Cooperative or allied military educational institutions have improved digital learning experiences through the increased usage of technologies, and this improvement has directly increased their digital capabilities through skill transfer. Santos et al. (2019)

argue that foreign military educational institutions have identified the existing relationship between technologies and teaching and learning methodologies which enables skill transfer. By applying current teaching and learning methodologies, foreign forces have been able to capitalize on digital learning experiences.

Foreign Military IMI Products

Allied foreign military education institutions are not the only forces capitalizing on using IMI products. Competitor forces such as the Chinese military have also significantly increased their digital capabilities (National Security Strategy, 2018). The Strategic Studies Institute (2008) reported that the Chinese Army has increased funding for technology modernization to improve its digital capabilities. The Strategic Studies Institute (2008) found that the Chinese military has applied various technologies which provide diverse methods to improve combat capabilities and unique educational opportunities. Strategic Studies Institute (2008) reported that the Chinese Army had used IMI products such as simulators and virtual wargaming to lower the risk of losing weapon systems or personnel during traditional face-to-face training exercises. The Chinese military's digital and technology-driven training efforts prevent foreign militaries such as the United States from assessing their warfighting capabilities (Strategic Studies Institute, 2008). By capitalizing on IMI products, adversaries have effectively expanded their digital warfighting capabilities.

Beyond the Chinese military, other adversary competitor nations have significantly improved their technological warfighting capabilities (Morgan & Cohen, 2020). Morgan and Cohen (2020) report that Russia invests heavily in A.I. applications to enhance Russian electronic warfare capabilities. Morgan and Cohen (2020) stated that in

2018 the Russian military had desired to begin building a technology center to concentrate scientific talent in developing A.I., robotics, and pattern-recognizing technologies. According to Cohen (2020), it is of concern that the Russian military is successfully developing IMI product integration plans to train their forces for future combat operations. Morgan and Cohen (2020) suggest that the Russian proliferation of military technologies such as A.I. will substantially risk the United States having a technologically advanced adversary who will determine the outcome of any potential future engagements.

K-12, higher education, and foreign military institutions have significantly increased their usage and integration of technology, primarily IMI products. K-12 institutions have used IMI products to increase learner motivation and academic achievement. Higher education institutions have contributed to the existing knowledge on the future of technology in training and education. Foreign militaries have used IMI products to advance IMI products to advance their combat capabilities. The influence of these three institutions has triggered the U.S. Army to develop technology modernization, a priority that includes IMI products. The U.S. Army's technology modernization priority has provided a foundation for training and technology policies and regulations.

U.S. Army Educational Technology Policies

The U.S. Army has developed instructional policies that align with the technical requirements of the National Security Strategy 2018. The U.S. Army developed Field Manual (FM) 7-0 Train to Win in a Complex World. This manual describes how the Army develops training readiness and the capabilities that support Army and joint force commanders at all organizational levels (FM 7-0, 2016). The Army has also developed

Training Pamphlet 525-8-2 (2016), which describes the future Army learning environment that meets the need to create Soldiers with adaptable thinking patterns and Army civilians with learning competencies to generate and sustain trained teams from 2020 to 2030.

Field Manual 7-0 and Training Pamphlet 525-8-2 provide the framework and standard for Army learning environments. Both policies identify the need for training environments that evoke soldiers' critical thinking and problem-solving. These policies outline the need for technology in Army learning environments to train soldiers against competitive hostile nations. Instructors' efforts to integrate IMI products into military learning environments are critical to meeting the U.S. Department of Defense technology modernization efforts through educational technology integration guidance (Department of Defense, 2019; TRADOC PAM 350-70-3, 2018).

Exploring instructors' perception of IMI integration allows stakeholders to understand how these perspectives inform instructional resources and learners' abilities to transfer and apply their learning in complex operational environments (Delvaux, 2017). Understanding military instructors' perspectives of integrating IMI alludes to identifying barriers, positive influences, and appropriate support (Fugere, 2020). Exploring these instructors' perspectives can best support the Department of Defense and the Department of the Army's efforts to modernize learning experiences effectively.

Digital Modernization of the Army Learning Model

The U.S. Department of Defense's Digital Modernization Strategy (2019) outlines the benefits of future digital environments. The categorization of Future IMI product integration is beneficial as a tool that can enhance the military workforce through

education, training, and professional development (Department of Defense, 2019). Through the increased use of IMI products, the Department of Defense can cultivate a talented digital workforce (Department of Defense, 2019). For the U.S. Army, the digital workforce comprises digital natives who can provide competitive talent that supports the digital modernization needs of the Army (TRADOC Pamphlet 525-8-2, 2018). However, current literature does not include how IMI product use increases modernization efforts across the U.S. Army. The Department of Defense Digital Modernization Strategy provides a way forward but does not include the modernization of learning technologies such as IMI products (Department of Defense, 2019).

TRADOC Pamphlet 525-8-2 (2018) establishes the need for the Army Learning Model to incorporate a comprehensive modernization strategy. The modernization efforts of the Army Learning Model include modernization of training and education capabilities (TRADOC Pamphlet 525-8-2, 2018). IMI products serve as capabilities conducive to the Army's modernization priorities. According to the literature, the Army requires faster and more effective education capabilities than identified adversaries and maximizes the high pay-off technological solutions that support digital modernization. The modernization of the Army Learning Model reflects the need to explore military instructors' perspectives of IMI product integration.

The literature describes the required adaptation of learning products within the Army Learning Model. TRADOC Pamphlet 525-8-2 (2018) describes the requirement of curricula and learning products adapting to allow Soldiers, Army civilians, and teams to use new technologies to improve IMI experiences (TRADOC Pamphlet 525-8-2, 2018). Adopting learning products provides an understanding of the implications of

strengthening IMI experiences through digital modernization (Liston, 2016). Learning products will not support IMI experiences without the necessary adaptations, impacting the conceptual understanding of IMI product use in U.S. Army education institutions (Liston, 2016; TRADOC Pamphlet 525-8-2, 2018).

Conceptual Understanding of IMI products in U.S. Army Education

According to TRADOC Pamphlet 525-8-2 (2017), Army policies and procedures must rapidly adapt to learning products such as interactive multimedia. However, training topics related to military doctrine or history have been taught through traditional methods and not treated with technology products (Santos et al., 2019). TRADOC Pamphlet 525-8-2 (2017) designates instructors as responsible for interactively guiding learning and can be experts and authorities within the discipline. IMI products provide training and combat environment learning experiences that military instructors facilitate as resource authorities (TRADOC Pamphlet 525-8-2, 2017).

These IMI products stimulate military learners' cognitive skills, resulting in an in-depth understanding of concepts (Prajapati & Signh, 2018). Further, Prajapati and Signh (2018) describe the use of technologies such as IMI products to help both instructors and learners as a means to expand information and make necessary connections within the content. Understanding why IMI products are in military classrooms is crucial in understanding instructors' perspectives on integrating these products into the learning experience (Prajapati & Signh, 2018).

Liu et al. (2020) further argue that IMI products such as virtual reality provide the necessary instructional experiences for military learners, supporting the U.S. Department of Defense's efforts to establish U.S. forces as a dominant force in the 21st century. The

dominance of influence by the U.S. military is associated with various training exercises facilitated through IMI products. These products will enable senior leaders to discover and solve possible problems in future combat operations (Liu et al., 2020). With the increase of military policies that improve learning products, military instructors use IMI products as a strategic means to solve real-world security problems.

Understanding why IMI products are critical to the instructional experience is crucial to understanding military instructors' lived experiences and truths associated with integrating IMI products. First, IMI products are instructional software and software management used to support instructional programs (TRADOC Pamphlet 350-70-12, 2018). The list of IMI products identified by TRADOC Pamphlet 350-70-12 (2018) is below:

- Interactive Courseware: web-based, CD-ROM based
- Electronic Testing
- Electronic Management Tools: job aids, electronic performance support systems, learning management systems, and computer-aided instruction
- Simulations: virtual reality and games
- Interactive Courseware

The Army requires interactive courseware to improve Soldiers' competency in skill-based learning experiences (TRADOC Pamphlet 350-70-12, 2018). Baharuddin and Dalle (2017) developed an interactive courseware learning aid that increased students' competency in practicing electrical motor installation. Baharuddin and Delle (2017) state that interactive courseware or media is related to the quality of teaching and learning. Interactive courseware contributes to meaningful learning experiences and facilitates

teacher-student interaction, enriching the learning experience. This study interviewed five teachers and ten learners. Based on the interviews, the teachers were unhappy with textbooks teaching skill-based subjects. The teachers in the study believed that it is challenging to impart knowledge to learners because the textbooks cannot visualize the skills process. The learners were not happy nor engaged in the text-based learning process. The interviews and observations identified a gap in the skill development among learners in vocational high school, particularly in the electoral motor subject. With the results of this study, Baharuddin and Dalle (2017) designed and developed interactive courseware for skill-based learning requirements.

Electronic Testing

The U.S. Army has tried to modernize testing and assessment products over the last two decades (TRADOC Pamphlet 350-525-2, 2011). Martin (2016) argues that traditional paper assessments or open books do not provide rigor and technology integration and fail to measure learning levels. Martin (2016) further argues that Soldiers and leaders use assessments and evaluations to leverage technology to improve their effectiveness while executing Army missions. Anderson et al. (2001) suggest that interactive assessments ensure purposeful learning and provide the most significant impact on higher levels of learning, as supported by Bloom's Taxonomy Revised. For military instructors, this means that interactive assessments provide learners with valuable learning experiences at higher levels.

Electronic Management Tools

Using technologies that can independently function or simultaneously manage other technology applications has become a focal point for the military. Electronic

management tools allow the learners to engage in interactive tools that support skill and task-based learning experiences—an example of an electronic management system in the U.S. Army learning management system (LMS) Blackboard. An LMS like Blackboard is a digital technology environment that provides digital learning experiences and facilitates teacher and learner engagement (TRADOC Pamphlet 350-70-12, 2018).

Simulations

Using simulations within the Army focuses on exercising learners' technical and tactical skills. The Army uses simulations to provide learners with interactive, complex, and dynamic learning experiences. The learners operate from their stations to control individual objects and agents' learning situations and behaviors. By controlling the simulated experience, the learner can exercise their technical and tactical skills. The simulation allows learners to engage in simulated experiences, preparing them for missions (TRADOC Pamphlet 350-70-12, 2018).

Virtual Reality

The Army uses virtual classrooms as a type of learning simulation experience. The virtual classrooms allow instructors to lead assignments, facilitate discussions, track progress, and communicate with students. The virtual classroom enables military instructors to facilitate synchronous or asynchronous collaboration amongst learners. The dislocation of instructors from a small number of dispersed learners is a significant factor in developing Army's virtual classrooms (TRADOC Pamphlet 350-70-12, 2018)

Gaming

The use of gaming courseware has been highly beneficial to the Army. Gaming courseware has simulated interactive environments for mission rehearsals or unit training.

The Army has invested in ensuring that learners receive the highest level of interactivity through the appropriate application of gaming simulations. The interactivity of the gaming simulation should lead to the instructional goal and prevent distractions from the learning experience.

Digital Natives and Immigrants in Military Education

This study's critical point of discussion is the demographics of digital natives and immigrants. Both digital natives and immigrant demographics within military education are stratified based on the department of service, rank, age, sex, and ethnicity. However, there exists a common category among military instructors. Currently, most military instructors belong to the digital native population of 21st-century learners (Bailey, 2016). Sarkar et al. (2017) define digital natives as people who have grown immersed in digital technologies. This demographic is critical in studying the military instructor participants.

Amongst military instructors, there are shared similar learning experiences with technology, which informs their learning perspectives as digital natives. The study by Sarkar et al. (2017) identified seven general characteristics of digital natives. The first characteristic of a digital native is immersion in a technology-infused learning environment. This characteristic of digital natives focuses on the expectation that technology includes learning experiences. The flexible schedule is another characteristic of digital natives. They prefer to learn in flexible and individualized programs with informal learning structures. Digital natives possess short attention spans and prefer speed versus slow-paced learning environments. The fourth characteristic of digital natives is immediate feedback. Digital natives expect consistent and immediate feedback for their performance efforts. The fifth characteristic of digital natives is collaborative

learning. They prefer to learn in collaborative and team-focused environments. The sixth characteristic of digital natives is active learning, where the preference is to learn through activities instead of traditional lecture methods of instruction. The final characteristic of digital natives are mobile devices. Digital natives have adopted mobile devices to facilitate learning (Sarkar et al., 2017).

Peck (2020) argues that integrating digital technologies such as IMI products is critical to meet the needs of digital native learners in today's digital world in a superior way. Digital native learners are familiar with digital tools that engage learning (Peck, 2020). These digital tools, from mobile devices to simulators, provide military learners with typical learning experiences (Peck, 2020). Familiarity with digital tools is associated with military learners' experiences in civilian learning experiences and their everyday use of digital technologies (Peck, 2020). However, Peck (2020) suggests that teachers may not be as willing to integrate IMI products when the learner becomes dependent on technology.

Army training organizations consider that some military instructors may be digital immigrants, which is imperative in understanding their immersion experiences with digital technologies such as IMI products. According to Evans and Robertson (2020), there are four distinct phases of the digital native debate. These four phases include conception, reaction, adaption, and reconceptualization. The conception phase from 1996 through 2006 focuses on The Prensky Decade, the beginning of increased technology within education systems because of students' demand for technology changes. The reaction phase, 2007 through 2011, focuses on the moral panic of educators adjusting to learners' needs and technology preferences. In the adaption phase, 2012 through 2017,

educators found that technology in teaching and learning has just as many advantages as disadvantages. The final phase is the reconceptualization phase. The reconceptualization phase, 2017 to present, focuses on the diverse populations promoting the use of technologies with increased appearances amongst digital natives. Evans and Roberston's (2020) four phases as discussed, also has significance in the evolution of military instruction as well.

As digital natives, military instructors reflect the same theme as their digital counterparts. According to Kem et al. (2017), military learners and instructors are exposed to, and have shared experiences with other digital learners, such as their civilian peers. Military instructors and learners will not fully appreciate learning without computer products, and life without computers is synonymous with educational technologies such as IMI products (Bailey, 2016).

IMI Product Integration Barriers

Dinc (2019) categorized barriers in technology integration into two groups: first-level and second-level barriers. First-level barriers are primarily external factors such as resources available. These resources include access to IMI products, time available, support service, and professional development. Second-level barriers are known as internal barriers. These internal barriers include instructors' confidence in using technology and beliefs about technology's usefulness. The integration barriers within Dinc (2019) allude to external and internal influences that will impact an instructor's perspective of integrating IMI technologies into military instruction.

According to Onalan and Kurt (2020), two barriers influence instructors' perspectives on integrating IMI products into military learning experiences. The first-

level barriers include a lack of resources, lack of training, or lack of technical support. The second-level barriers are instructors' underlying beliefs about technology use. Onalan and Kurt (2020) argue that instructors' beliefs and attitudes serve as powerful predictors of instructors' use of IMI products. Onalan and Kurt (2020) identified a correlation between self-efficacy beliefs and instructors' intention to use technology. Instructors with higher self-efficacy tend to use technology more frequently than their peers (Onalan & Kurt, 2020). Onalan and Kurt's (2020) findings show that resources and beliefs about using technology influence the military learning experience.

Predictors of Acceptance

Santos et al. (2019) further discuss barriers to integrating IMI by providing readers with four constructs known as predictors of acceptance. The first construct is known as the expectation of results. The expectation of results consists of internal beliefs and attitudes about information communication technology. Certain IMI products are synonymous with information communications technology (Santos et al., 2019). Santos et al. (2019) suggest that users accept technology because of its potential befits. The third construct described by Santos et al. (2019) is social influence. The social influence construct is perceived social pressure to perform a behavior. According to Santos et al. (2019), the personal factors construct includes self-efficacy with technology innovations, including IMI products. These four constructs are barriers to military instructors' apprehensiveness about accepting IMI products.

Military instructors' acceptance of IMI products is crucial to breaking down IMI product integration barriers. Santos et al. (2019) incorporated the Technologies Acceptance Barrier questionnaire into the study. The questionnaire measures the extent

and nature of technology integration barriers. The study found that users' beliefs and attitudes, outcome expectations, performance improvement, and computer self-efficacy contribute to the acceptance of technologies. The literature shows consistent inquiries into technology acceptance and integration.

Stereotype Barriers

Smith et al. (2020) provide a unique argument about digital learners' stereotype barriers. Smith et al. (2020) argue that alternative technology ideas can change how people learn. The alternative is associated with the notion that digital natives, such as current military instructors, naturally possess the knowledge and abilities required to use technologies (Smith et al., 2020). The assumed innate behavior of military instructors being skilled digital technologists does not coincide with competence (Smith et al., 2020). Smith et al. (2020) describe competence as a requirement to integrate technology practices effectively. These technology practices include IMI integration. These two stereotypes provide value to understanding the unique barriers that military instructors face in integrating IMI products (Smith et al., 2020).

Professional Development Barriers

The literature further discusses that IMI integration barriers connect to available professional development resources. Hutchison and Woodward (2018) suggest that technology integration professional development models are simple and provide no context. This study focuses on the current instructional needs of digital learners with a situational approach that supports building instructors' knowledge of digital technologies such as IMI products (Hutchison & Woodward, 2018). TRADOC Regulation 600-21

Faculty Development and Recognition Program provides limited professional development opportunities on IMI product integration for military instructors.

The 21st-century military instructor and learner participate in professional military education (PME), reflecting instructional strategies theorized within civilian institutions. Bailey (2016) argues that PME instructional strategies develop military learners' critical thinking and adaptability skills. The development of military learners' critical thinking and adaptability skills connects to the internet, digital tools, social media, games, and simulations within training environments (Bailey, 2016; Almeida, 2019). As digital natives, current military instructors and learners are accustomed to learning digital tools such as IMI products (Peck, 2020). As digital natives, military instructors and learners are becoming increasingly familiar with digital tools within instructional strategies in PME (Bailey, 2016; Peck, 2020).

The knowledge gap in understanding military instructors' perspectives on integrating IMI products is significant to their professional growth (Anagun, 2018). First, learning environments assist in developing competencies that influence personal and professional self-perspectives (Anagun, 2018). Developing these competencies is associated with the constructivist approach to creating learning environments. Secondly, identifying instructors' perspectives about integrating IMI products into their learning environments will inform TRADOC's efforts to modernize classrooms using constructivist learning environment models (Anagun, 2018; TRADOC Pamphlet 350-70-12, 2018). Next, instructors' perspectives of integrating IMI products are associated with their technology proficiency (Anagun, 2018). Dinc (2019) and Jones et al. (2019) argue that self-confidence in technology use positively affects technology integration. Another

implication of this study is that technology integration positively affects instruction collaboration (Dinc, 2019). The partnership among instructors reinforces their confidence in integrating IMI products (Dinc, 2019; Jones et al., 2019). However, these barriers significantly influence instructors' confidence in integrating IMI products.

Implications of IMI Product Integration

Various stakeholders in military education may have different perceptions of technology-rich environments. The study by Martin (2016) identified that student participants believed there is a need for more technology military training. The study includes descriptions of the facilitation of learning through appropriate visual or mechanical training devices rather than PowerPoint (Martin, 2016). Participants in this study also stated that their military training organization should allow more digital equipment in their training environments to familiarize students with what they will experience beyond the classroom. Student participants' responses also identified how technology could support education and increase the ability to think critically. The student participants' responses suggest that technology-rich environments influence their future performance. However, a military instructor who is confident with instructing in technology-rich environments must be available. The instructor's effectiveness in a technology-rich environment will significantly influence the future potential of learners.

The Martin (2016) study includes instructors' perceptions of instructional technology in a military instructional environment. In this study, the participants' perception of technology suggests that technology facilitates a learning environment that prepares soldiers for future missions. Martin (2016) aligns with the National Security Strategy in claiming that IMI products will influence the future potential of Soldiers in

contested environments. In this study, the instructors' responses included the recommendation of technology to facilitate learners' critical thinking. Understanding the instructors' perceptions about IMI products will provide significant insight into their attitudes about their instructional effectiveness.

According to the literature, teachers have several common expectations when integrating IMI products into the classrooms. Pricilia et al. (2020) suggest that teachers' designs of IMI products must include videos, animations, images, and summaries. Toteva and Grigorva (2014) state that supplemental products can improve the quality of the instructional content presented to learners. Toteva and Grigorva (2014) recognize that to reach learning goals, instructors should consider pairing teaching approaches and techniques with appropriate IMI products. However, a knowledge gap exists between military instructors and their abilities to design IMI products for the classroom. This gap reflects the need to explore military instructors' perspectives on integrating IMI products into military classrooms.

The literature describes how tailored IMI training is most effective for Soldiers. Graves (2016) discusses the necessity of military instructors and TRADOC to provide tailored IMI training at the point of need. Military instructors provide IMI experiences to learners within the same conditions and constraints as common Soldier or learner performance tasks. These conditions and constraints are provisions at the point of need, which is how a learner would execute performance tasks. The gap in knowledge about military instructors' perspectives of being expected to provide IMI products at the point of need warrants exploration.

There exists a common expectation that teachers or instructors have high levels of technical knowledge (Alhassan, 2017). High technical expertise informs teachers' or instructors' decisions to use multimedia products. Alhassan (2017) found that teachers are more likely to direct their learners to Web 2.0 tools such as multimedia sharing websites, podcasts, or Google documents. Alhassan (2017) found that teachers who were reluctant to use these multimedia tools are not adequately integrating these multimedia tools. Military instructors expect to share the same technical knowledge as primary, secondary, or higher education instructors (Alhassan, 2017). However, this expectation is problematic as there is a gap in the knowledge of military instructors' perspectives of high technical knowledge of integrating IMI products in military classrooms.

The literature describes the expectation that military instructors should be familiar with various teaching styles and methods. Hamilton (2019) and Liu et al. (2020) suggest that effective teaching requires multiple techniques and strategies to maintain learners' interests and learn more effectively. Roy and Halder (2018) argue that teacher effectiveness impacts teaching methods, classroom organization, classroom resources, and learners' performance. For military instructors, properly integrating classroom resources such as IMI products is an indicator of teacher effectiveness (Roy & Halder, 2018).

Summary

There exists a gap in the literature on military instructors' perceptions of integrating IMI products. The implications of IMI product use ensure a positive learning environment and facilitates learning content retention. With the contributions of historic instructional technologists, K-12 education, higher education, and foreign militaries, IMI

products prove to be viable solutions to learners' instructional needs and demands. With the current national defense guidance, U.S. Army policies include integrating IMI products into existing training programs to increase combat capabilities and readiness and mitigate the oppositions' technological advancements. The literature provides the basis for further exploring the barriers instructors may face in their classrooms. The literature also suggests that intrinsic interest, policy, and capability resources are central themes that impact an instructor's willingness to accept and adopt IMI technologies. The knowledge gaps identified in the literature support the need to explore military instructors' lived experiences of integrating IMI products into military classrooms.

CHAPTER III - METHODOLOGY

The methods of exploring individuals' realities vary from study to study. However, the research methods used to explore military instructors' perspectives on integrating IMI products into military classrooms will follow a basic phenomenological research design. The research methods discussed in this chapter include the research methods, population and sample, data collection procedures, and data analysis.

Research Methodology

Understanding qualitative research methodology is critical to exploring participants' interpretations of their world. According to Johnson and Christensen (2014), qualitative research applies when little is known about a phenomenon and is also used to understand people's experiences and express their perspectives. Johnson and Christensen (2014) state that different groups construct other realities or perspectives that influence their world in qualitative research. Creswell and Poth (2018) state that "qualitative researchers study things to make sense of or interpret phenomena regarding participants' meanings" (p.44).

Philosophical Assumptions

According to Creswell and Poth (2018), researchers bring certain conscious or subconscious beliefs, known as philosophical assumptions, to their research. Researchers' philosophical assumptions influence the study's direction, research question development, and data collection. Typically, these beliefs are deep-rooted in researcher training and reinforced through educational experiences. These beliefs inform the four qualitative philosophical assumptions: ontological, epistemological, axiological, and methodological. The researcher in this study made epistemological assumptions

throughout the study. Epistemological assumptions relate to what counts as knowledge and how these claims are justified (Creswell & Poth, 2018). These claims require the researcher to get as close to the participants as possible. The proximity of the researcher to the participants aligns with the epistemological assumptions (Creswell & Poth 2018). Through this closeness, collecting subjective knowledge evidence from individual participants and their views shapes how knowledge is known (Creswell & Potth, 2018). Participants' subjective experience provides researchers with firsthand information through lived experiences and truths, forming the basis of the phenomena' knowledge. In this study, the researcher explored participants' lived experiences and truths of integrating IMI products into military classrooms. The researcher explored the participants' unique interpretations or perspectives of their experiences. The epistemological assumption was most appropriate for this study because it embraced the idea of multiple subjective lived experiences and truths. The evidence of the various experiences enables the researcher to use these various forms of evidence in themes using actual phrases of different individuals and presenting diverse perspectives (Creswell & Poth, 2018).

Phenomenology Characteristics

This study uses a phenomenological research design. Suddick et al. (2020) state that phenomenology is also generally concerned with understanding the meaning of an individual's lived experiences and aims to understand their worldview and being. Leedy and Ormond (2016) state that phenomenological studies attempt to understand perceptions and perspectives relative to a particular situation. Creswell and Poth (2018) describe phenomenology as focusing on what all participants have in common as they experience a phenomenon. Leedy and Ormond (2016) posit that by looking at multiple

perspectives on the same situation, the researchers can generalize something from an insider's view.

Researcher Bias

Researchers may strive to be objective while collecting and interpreting data but bring particular bias to their investigation (Leedy & Ormond, 2016). Leedy and Ormond (2016) state that phenomenological researchers must suspend preconceived notions or personal experiences during the study. Conversely, suspending preconceived notions and personal experiences will allow the researcher to understand the participants' everyday experiences. Leedy and Ormond (2016) state that phenomenological researchers must suspend preconceived notions or personal experiences during the study.

Essentially, researchers define research bias as influences that distort the outcome of a study's results (Galdas, 2017). This author states that researchers must be transparent and reflexive about how data is collected and analyzed due to the impact of the research data on the economy, society, culture, public policy or services, health, or the environment. For transparency, the researcher of this study has previous experience integrating multimedia products in secondary education environments and the federal government. The researcher is also a current U.S. Army training and operations community member with 16 years of service. However, the researcher has no experience integrating instructional multimedia products into military training environments.

Overcoming research bias is critical to ensuring that the world receives no false conclusions or misleading results (Simundic, 2013). The researcher has taken several actions to mitigate research bias in this study. The researcher overcame research bias by providing the participants with transcriptions of their responses for accuracy. By giving

the participants their response transcriptions, the researcher accounted for any beliefs or previous experiences in education and the Army training community. As a member of the Army training community, the researcher did not use any items associated with military service during recruitment and interviews. By divesting military titles and uniforms used during the investigation, the researcher accurately represented the population without selection bias. During data analysis, the researcher will use a journal and jotting to focus on the participants, responses and not the researchers' beliefs.

Research Settings

The research setting is a military training school, which will be named U.S. Army School of Excellence. The pseudonym, U.S. Army School of Excellence, was selected to maintain the anonymity of the organization and the participants. This research setting is a matter of convenience. Currently, the researcher's relationship with the facility revolves around the researcher's access to various courses. The School of Excellence is a traditional brick-and-mortar institution with distance learning capabilities. The classrooms include smartboards, overhead projectors, Wi-Fi, and individual computer stations. The School of Excellence uses Blackboard as its LMS record for hybrid learning. Under the Department of Defense COVID-19 pandemic health protection guidelines, Microsoft Teams software is part of the School of Excellence instructional technology plan. The School of Excellence has separate simulator rooms for various types of virtual combat and Military Occupation Specialty (MOS) performance tasks and experiences. After completing prerequisite training, the School of Excellence provides field training experiences as capstone exercises for students.

Population and Sample

The population for this study consisted of U.S. Army enlisted and officer instructors. The participants included instructors certified to instruct by U.S. Army Training and Doctrine Command (TRADOC). The distinction between enlisted instructors and officer instructors revolves around duties and responsibilities. Enlisted instructors serve as technical experts across several specified MOSs and instruct new Soldiers within their specified MOS field. Officer instructors serve as generalists and train new officers to execute missions and plan and coordinate missions for Soldiers assigned with MOSs. Pseudonyms will identify the participants to maintain the confidentiality of participants and the School of Excellence.

Sampling Procedure

Phenomenology uses criterion sampling, in which participants meet predefined criteria. The most prominent criterion is the participant's certification as a U.S. Army instructor. The researchers look for participants who have shared an experience but vary in characteristics and individual experiences. According to Naderifar et al. (2017), the criterion sampling method allows researchers to access participants with target characteristics, and the sample for this study was not difficult to reach. Naderifar et al. (2017) further argue that the criterion sampling method allows existing participants to recruit future participants with similar experiences.

Participant Recruiting and Incentives

Gatekeeping was used to recruit participants through email communications. According to Roulston (2018), a gatekeeper is a person who has administrative access to a population and has an in-depth knowledge of the participants' community. The

researcher sent the gatekeeper an email (see Appendix A) requesting potential participants' supervisor's contact information. In this study, the gatekeeper was the U.S. Army School of Excellence Director of Training and Leader Development. Upon receiving the contacts for the participants' supervisors, the researcher sent the supervisors' participant recruiting support email (see Appendix B) to the participants' supervisors. The supervisors' participant recruitment support email (see Appendix B) requested that the participants' supervisors assist in recruiting and provide emails and phone numbers for potential participants. In the email (see Appendix C) to the initial participants, the researcher asked them if they had contact points for any colleagues interested in participating in the study. Participants that did not respond to the email (see Appendix C) were contacted directly via the telephone.

Sample Size

There is not a fixed number of participants within a study. Still, the number depends on the questions guiding the research, the data collected, the progress of the analysis, and the resources available to support the investigation (Merriam & Tisdell, 2015; Webster, 2019). Determining the sample size required this qualitative study to follow the concept of saturation. The establishment of saturation occurs when new data collection does not shed further light on the issue under investigation (Mason, 2010). The data provided by each participant in this study belonged to a specific theme that is no longer supporting the new information. With the identification of no new data, the researcher could determine that saturation had been met by interviewing a select number of participants in the enlisted and officer groups. The basis of this determination revolved around new data being redundant to previously collected data.

According to Leedy and Ormond (2016), a sample size of five to 25 individuals is typical in phenomenological studies. The composition of the sample in this study consists of two sample groups. The first sample group consisted of three enlisted instructor participants at the U.S. Army School of Excellence. The enlisted personnel consists' of subject matter experts within their career fields. The enlisted instructors are responsible for certifying that Soldiers have met all the requirements to receive their MOS. The second group consisted of four officer instructor participants. Officer instructors certify junior officers have met all requirements to serve as junior managers or supervisors within their respective branches.

Instrumentation

Given the qualitative research design of this study, the research investigator will serve as the primary research instrument. As the primary instrument in this study, the investigator's background and previous experiences will be treated as biases. In qualitative research, the researcher's beliefs and prior experiences can be problematic with data analysis (Johnson & Christensen, 2014). According to Johnson and Christensen (2014), research investigators should bracket or nullify their biases with full disclosure. The researcher fully disclosed biases in this chapter's researcher bias section.

Constructs

A clear description of the constructs is required to develop boundaries that assist and guide the construction of interview questions (Miller et al., 2009). The researcher identified three constructs that shape the interview questions: participants lived experiences related to the ease of use, usefulness, fulfillment, and conscientiousness required for IMI product integration in military learning environments. The researcher

identified the instrument constructs based on a literature review. The ease-of-use construct describes how easily military instructors can use IMI products and integrate them into military learning environments (Karahanna & Straub, 1999). *Usefulness* is defined as a construct that describes the degree to which an instructor believes IMI products would enhance their performance through utility and practical applications (Rose & Fogarty, 2006; Merriam-Webster, n.d.). *Fulfillment* is defined as a construct that describes instructors' need to experience autonomy, feel competent, and develop relationships (Moss, 2016). Finally, *conscientiousness* is defined as a construct that describes instructors' abilities to exhibit self-discipline, organization, carefulness, and reliability in military learning environments (Shaffer, 2020).

Interview Structure and Protocol

According to Alirezaei and Roudsari (2020), phenomenological interviews serve the purpose of exploring and gathering experiential narrative material that serves as a resource for developing a more prosperous and deeper understanding of a human phenomenon. Hamm et al. (2019) also suggest that interviewing is the primary data collection strategy in phenomenological studies. As such, semi-structured interviews facilitate exploring unknown trends and issues and provide participants with response flexibility (Rahman, 2019). Semi-structured interviews allow the researcher to present consistent questions to each participant within the study (Stofer, 2019). This interview format enables the researcher to ask questions for clarification and follows the participant's train of thought (Stofer, 2019). Conversely, unstructured interviews are free-flowing and inherently flexible, with no guidelines limiting the boundaries of the exploration (Mueller & Segal, 2015). The unstructured interview method was

inappropriate, for the lack of structure will impact data collection and analysis (Mueller & Segal, 2015).

The semi-structured interview method facilitated free and open participant responses. The semi-structured interview method allowed the investigator to ask participants open-ended questions. Open-ended questions allow researchers to fully understand the participants' independent thoughts, which develop into qualitatively rich data (Rahman, 2019). Bankauskaite and Saarelma's (2003) study used open-ended questions with an appropriate sample size which yielded qualitatively rich data. Mozersky et al. (2020) concur with Bankauskaite and Saarelma (2003) by arguing that qualitative research produces qualitatively rich data to understand better-lived experiences.

Phillips et al. (2013) state that interview protocols ensure all required information is collected and consistent data collection. The researcher used an interview protocol consisting of five sections (see Appendix D). The first section of the interview protocol will consist of a pre-interview checklist. This checklist focuses on the logistics that will support the interviews, such as pens, paper, wireless connectivity, and Zoom video conference tool functionality. Section two is the interview guide introduction statement. This statement outlines the researcher's purpose and interview parameters for the study. Section three of the interview protocol focuses on interview questions (see Appendix E). Section four provides the participant with an outline of follow-up actions required before data analysis. The researcher explained that the MAXDA transcribed the participants' interview responses. The researcher provided a copy of their transcription for member checking. Finally, section five of the interview protocol focuses on the close-out

procedure. Section five close-out procedure, concentrates on thanking the participant, asking them if they would like a copy of the study's final results, and asking any further questions.

Interview Location

The researcher scheduled meetings with the participants individually based on their availability. Zoom's video conferencing software was the primary medium for interviews and collecting data. Archibald et al. (2019) found the viability of Zoom as a tool for collecting qualitative data simply because of ease of use, cost-efficiency, data management, and data security options. Based on the literature, the researcher did believe that using video conference software will impact the quality of data collection (Archibald et al., 2019). The researcher provided multiple interview settings to provide the participants with the highest comfort level during the interview sessions. Zoom provided the researcher and the participant with the privacy required for data collection. The participant and researcher were dislocated in safe, non-distracting, and private environments. These environments are conducive to recorded virtual interviews.

Confidentiality

Phillips et al. (2013) state that researchers must keep respondents' identities confidential and anonymous at the onset of a survey project. The researcher ensured complete confidentiality by following specific steps throughout the study. First, the researcher will provide a statement in the informed consent letter. The researcher then traced all data from reception to published study results. Next, the researcher communicated to participants that only the School of Excellence, the researcher's dissertation committee members, and contracted transcription and data analysis

services will have access to the names of the participants. Finally, the researcher maintained participant confidentiality by assigning each participant a pseudonym. Interviews will consist of six demographic questions and 14 semi-structured, open-ended questions. The participant survey instrument (see Appendix E) provides the opened-ended questions required for this study.

Survey mapping involves aligning each research question with a research objective (Phillips et al., 2013). Survey mapping is a means to ensure content validity (Phillips et al., 2013). Table 1 illustrates how the interview questions align with the research objectives.

Table 1

Mapping of Research Objective to Interview Questions

Research Objects (RO)	Interview Questions
RO1 - Describe participants' age, ethnicity, gender, years of service, and level of education	Q1, Q2, Q3, Q4, Q5, Q6
RO2 - Explore enlisted and officer instructors' pre-service experiences with IMI products	Q7
RO3 - Explore enlisted and officer instructors' perspectives on strategies, challenges, needs, barriers, and resources associated with IMI product integration in military instructional settings.	Q8, Q9, Q10, Q11, Q12, Q13
RO4 - Explore military instructors' perspectives on the influence of IMI product integration on student learning experiences.	Q14

Internal Review Board (IRB)

The IRB is a select committee established by the University of Southern Mississippi to review and monitor human subject studies. The University of Southern Mississippi IRB is authorized to approve, deny, or modify any research study. The IRB is also responsible for protecting human subjects' rights and welfare and ensuring minimal risk, adhering to specific protections. The IRB approved participant anonymity protocols and maintained confidentiality throughout the study. This study was submitted to the IRB for approval before collecting data (see Appendix F).

Data Collection Procedure

The phenomenological approach to qualitative data collection is most appropriate for investigating multiple individuals who have shared phenomenon experiences (Creswell & Poth, 2018). There are many methods available for collecting data in phenomenological research. The gold standard for phenomenological data is the focus group or interview; the most common method is the unstructured or semi-structured interview (Colaizzi, 1978, Wimpenny & Gass, 2000).

This study used one-on-one interviews to collect data from the participants. One-on-one interviews between a researcher and a participant provide in-depth insight into various experiences (Stofer, 2019). The one-on-one interview method is valuable for gaining insight into participants' perceptions, understandings, and experiences of a phenomenon and can contribute to in-depth data collection (Ryan et al., 2009).

The investigator collaborated with representatives from a U.S. Army installation in the Midwest to gain written approval to perform the study on the installation. After the approval, investigator initiated the research process by completing the Collaborative

Institutional Training Initiative (CITI) courses as the initial requirement for obtaining approval from the University of Southern Mississippi Internal Review Board (IRB).

After gaining approval to perform the study at the U.S. Army installation, the researcher submitted the interview questions to the installation approving authorities (see Appendix G). The U.S. School of Excellence Director of Training and Leader Development prescreened the questions to ensure all military research regulations were maintained. The investigator agreed only to use data collected for research purposes only. An IRB does not need to be performed by the Army to conduct this study. The Director of Training and Leader Development will receive the approved findings of this study.

Before the semi-structured interviews, the participants received the informed consent form (see Appendix H) via email. The researcher gave the participants instructions to submit their informed consent form (see Appendix H) to the researcher via email. Interview 1 Protocol (see Appendix D) reflected the researcher's questions during the semi-structured interview. Phillips et al. (2013) state that interview protocols ensure all specified information is collected and consistent data collection. The researcher scheduled a meeting with the participants individually based on their availability. Zoom's video conferencing software was the primary medium for interviews and collecting data. Archibald et al. (2019) found the viability of Zoom as a tool for collecting qualitative data simply because of ease of use, cost-efficiency, data management, and data security options. Based on the literature, the researcher does not believe using video conference software will impact the quality of data collection. The researcher provided multiple interview settings to provide the participants with the highest comfort level during the

interview sessions. The data collection location provided privacy for both the instructor and investigator.

The one-month data collection period will provide the participants with only interviews. The first interviews captured the participants' lived experiences integrating IMI products into military classrooms. According to Leedy and Ormond (2016), phenomenological study exclusively depends on lengthy interviews, one to two hours long. In this study, each interview lasted approximately one to two hours, giving the participants time to describe their everyday experiences related to the phenomenon (Leedy & Ormond, 2016). As outlined in the participants' informed consent form (Appendix H), the researcher used a voice recording device during each session to record the participants' responses. The participants will only receive the option of being recorded as outlined in the informed consent form (Appendix H). The researcher needed the recorded responses to transcribe the participants' responses. The participants who could not participate in their scheduled time received an additional opportunity to participate in the interview. The participants' recorded responses were secured through Zoom video conferencing security options.

The researcher purchased an introductory subscription to the MAXQDA qualitative data analysis and transcription service. The School of Excellence has no approval requirements for transcription or qualitative data analysis vendors. MAXDQA is a qualitative data analysis and transcription service that uses automatic speech recognition and artificial intelligence to transcribe speech or audio into textual data. Before transcription, the researcher must purchase a subscription to MAXQDA. The participants' audio-recorded responses were saved as MP4 files on the researcher's hard

drive. The MP4 files will be encrypted using a password encryption key. The researcher imported the encrypted MP4 files into MAXQDA to begin transcription. Once MAXQDA transcribed the MP4 files to textual data, the researcher saved the textual data as a PDF. MAXQDA permanently deletes transcribed files. MAXQDA did not encrypt the data, but there existed no issue of MAXDA interfering with the Adobe encryption online tool. The researcher will upload the textual data to the Adobe online tool to encrypt the PDF. After uploading the textual data to Adobe online tool, the data will be password protected and stored in the Adobe online tool. Adobe online tool will delete the data from the servers within a short period. Only the Director of the Training and Leader Development, Dissertation Committee Members, University of Southern Mississippi IRB, and the researcher are authorized to access data file passwords. Below, Table 2 illustrates the 13-week data collection plan.

Table 2

Data Collection Plan

Week	Tasks
Pre-Study	• Gain approval from the USM Institutional Review Board.
1	• Email information detailing the purpose of the study to the gatekeeper and request a supervisor contact list Email supervisors' recruitment support letter. • Email participants recruitment letter and informed consent letter. Schedule interviews date, time, and location. .
4	• Conduct one on one interviews (via Zoom).
5-7	• Send audio data to the transcriptionist. • Begin reading and reading transcripts for accuracy. • Send post-interview emails to participants detailing • the next step and member check

Table 2 (continued)

Week	• Tasks
5-7	• Email participants a copy of the transcript for member checking. • Start analyzing interview transcripts, identifying themes, coding, and comparing transcripts.
8-9	• Compare data from observations and one on one interviews.
10-12	• Create a report of findings and key themes
13	• Email thank you letters to the participants

Trustworthiness and Validity

Trustworthiness in qualitative research requires researchers to demonstrate that an accurate picture of a phenomenon under investigation is presented (Shenton, 2003). According to Roberts (2006), trustworthiness is the credibility factor that gives the reader confidence in the investigator's data analysis. For this study, the researcher reduced any trustworthiness issues by using triangulation strategies.

Triangulation

According to Heale and Forbes (2017), triangulation uses various approaches to explore a research question. Using these multiple approaches ensures the researcher avoids potential biases over data collection. The researcher used journaling and member checking as the two triangulation methods in this study.

The researcher used journaling to capture his thoughts and perspectives during the data collection. Before each interview began, the researcher explained that notes would be taken. After completing each interview, the researcher listened to the audio recording and added additional notes. The journal notes include notes about body language and

behaviors presented during the interview sessions. The journal also captured how relevant each question is to their assigned objective in this study.

The researcher included member checking as part of the data triangulation methodology. Member checking allowed the participants to edit, clarify, elaborate or delete their narratives (Carlson, 2010). The researcher emailed each participant a copy of their recorded interview transcription. The participants provided return email messages confirming that no edits, missing information, or additional information were required to be added.

The researcher chose the best data collection method suitable for data analysis (Elo et al., 2014). This study used recorded interviews and transcribed responses for validity (Elo et al., 2014). Unstructured data collection methods such as semi-structured interviews are more trustworthy than those collected in structured or formal settings (Elo et al., 2014). The researcher provided the participants with options for the virtual semi-structured interviews based on availability.

The researcher used an electronic transcription service to turn audio responses into textual data upon completing the interviews. This study used member checking to qualify data and assure internal validity (Webster, 2019). According to Carlson (2010), member checking is a way to determine whether the data analysis is congruent with the participants' experiences. Member checking allowed participants to approve particular aspects of interpreting the data they provided (Carlson, 2010). Member checking allowed the participants to edit, clarify, elaborate or delete their narratives (Carlson, 2010). The researcher emailed each participant a copy of the transcription.

Data Analysis

After collecting the data aligned with the phenomenological research approach, the researcher will perform content analysis. Erlingsson and Brysiewics (2017) state that interview data collected on the human experience is multifaceted and complex. This study will have various difficult interview data points which will require extensive analysis. These data points are identified in Table 3, Data Analysis Plan.

Table 3

Data Analysis Plan

RO/ RQ	Item(s)	Scale	Data Analysis
RO1 Q1	Age	Interval	Frequency Distribution
Q2	Ethnicity	Nominal	Frequency Distribution
Q3	Gender	Nominal	Frequency Distribution
Q4	Years Instructing	Ratio	Frequency Distribution
Q5	Level of education	Ordinal	Frequency Distribution
Q6	Years of Army Service	Ratio	Frequency Distribution
RO2 Q7	Background Experience	Text	Content Analysis
RO3 Q8	Usefulness	Text	Content Analysis
Q9-Q12	Ease of Use	Text	Content Analysis
Q13	Forethought	Text	Content Analysis
RO4 Q14	Fulfillment	Text	Content Analysis

Qualitative Data Analysis Principles

According to Erlingsson and Brysiewics (2017), the content analysis allowed the investigator to transform extensive text data into an organized and concise summary of data results. The researcher used the MAXQDA software package to organize, analyze, and visualize the transcribed interview data. The basis of data analysis revolves around semi-structured interview data. The semi-structured interview data provided unknown trends and issues and ensured flexibility in participants' responses (Rahman, 2019). The

clarification of data points occurred through additional follow-up questioning of participants for transcription accuracy before data analysis (Rahman, 2019). Unlike interview data analysis, observation data analysis was inappropriate for this study because natural habits and behaviors are not analyzed. Observation data has several limitations and concerns, including requiring skilled observers, less control over the natural environment, inability to make generalizations, and observers can lose objectivity (Ratner, 2002).

The rationale for conducting a qualitative content analysis QCA is invaluable but requires refinement by including the abductive approach. According to Harnett (2016), coding confusion is the rationale for associating the abductive approach with QCA (Harnett, 2016). After collecting the data, the researchers used the abductive approach as little data and direction about coding existed (Harnett, 2016). Another rationale for conducting a QCA in this study is reliability. Reliability in content analysis revolves around the researcher's belief in dependability based on data consistency (Hafeez-Baig et al., 2016). Another significant rationale for conducting the content analysis is interpretive validity. Interpretive validity refers to the researchers' ability to interpret or construct the meanings of objects, events, and behaviors of the participants engaged in the phenomenon (Hayashi et al., 2019).

First Cycle Coding. The QCA will begin with the participants' transcribed interview response data. According to Miles et al. (2020), the first cycle of descriptive coding will enable the researcher to assign a short symbolic phrase to the textual data and summarize and translate each data unit (Miles et al., 2020). Descriptive coding was most

appropriate for this study because the data consisted of interview transcriptions of varying sizes (Miles et al., 2020).

Second Cycle Coding. After the first completion of cycle coding, the researcher began the second cycle pattern coding. Pattern coding allowed the researcher to group the data summaries into smaller and more manageable categories or themes based upon the participants independently providing similar data points (Miles et al., 2020). The research used the MAXQDA software to develop visual displays to map the pattern codes and see the codes' interconnectedness. This process ensures that the researcher clarifies emergent categories or themes (Miles et al., 2020). After the initial pattern codes were analyzed, the researcher applied the codes to new participants' data until saturation.

Jotting. According to Saldana (2016), as researchers collect and format data, they should jot down notes and any preliminary or phrases for codes on the notes, transcripts, or documents. The researcher used these notes as ideas for analytic consideration throughout the research study in this study. In this study, it was imperative to include jottings to strengthen the codes by uncovering underlying issues that deserve analytic attention (Miles et al., 2021). The researcher jotted notes concurrently with first and second cycle coding.

Categorization. Saldana (2016) states that concepts are researchers develop more general, higher-level, and abstract constructs. The researcher synthesized the coded data to develop general constructs during the analysis. The researcher used the categorized data to determine the codes' meaning and develop the study's research themes. The researcher then changed the codes and categories throughout the categorization process by analyzing information.

Themes. During qualitative data analysis, the development of themes begins when a comparison to comparably themed data is made (Miles et al., 2020). In this study, the researcher will use themes as a phrase that identifies what a unit of data means (Miles et al., 2020). The themes' development consisted of comparing comparable data, codes, categories, and jotting notes.

Data Saturation

According to Saunders et al. (2018), the requirement of data saturation refers to how much data or number of interviews are available for data analysis. The researcher continued coding until the participants provided no new apparent information. Data saturation was met upon the researcher seeing redundant responses from the participants. With no new emergent themes identified, the researcher will begin the data analysis process (Saunders et al., 2018).

Demographic Data Analysis

According to Moorse (2020), the need for demographics in qualitative research is an indicator of the quality of a study. To ensure the quality of the study, the researcher measured the demographics of age, ethnicity, gender, years of instructing, level of education, and years of army service. Table 3 provides a clear visual of the quantitative analysis requirements of the demographic data points.

Limitations

This study used the self-reporting approach to collecting data. Interview questions were short, clear, and did not lead participants to respond. However, the researcher asked the interview questions for nearly one hour. The time allotted was brief and may have impacted how the participants responded to the interview questions. However, the

investigator asked questions about their background and teaching experiences to gain rich responses to their perspectives on IMI products. Should the time allotted for the interviews go beyond 1 hour, the investigator asked if the participant would continue. Self-reporting bias will be relatively easy to mitigate as a limitation.

The sample size for this study was relatively small. However, the small sample provided in-depth and meaningful responses, which will become data used to analyze the phenomenon. The investigator will adjust questions as needed using open-ended questions and the semi-structured interview method to gain more detailed and meaningful responses. The sample size for this study is appropriate, given the research design.

Throughout this qualitative study, the researcher recognized various ways to improve the interview process. After each interview, the researcher would make reflective notes on the quality of the interview approach. The researcher would synthesize the notes with previous interview notes and determine if the interview process is improving. The researcher did exercise the interview protocol with fidelity and ensured that follow on questions did not lead to the desired response. Through practice and conducting multiple interviews, the researcher learned when to ask follow-up questions, which required more profound responses from the participants.

Summary

This chapter describes the methods and procedures used to explore military instructors' perceptions of integrating IMI products in military classrooms. The researcher used a qualitative phenomenological approach, ensuring that the researcher understood the participants lived experiences. In this study, the researcher served as the primary instrument. The data collection procedure for this study used one-on-one interviews with

semi-structured interview questions. The researcher analyzed the textual data by conducting a content analysis to develop themes and categories about the phenomenon. Finally, this chapter closes with a description of the method's limitations.

CHAPTER IV - RESULTS

Chapter IV reflects a report of the results collected from the semi-structured interviews and journaling and includes the development of themes used to report the findings of this study. This chapter begins with a description of the data analysis process during this study. This chapter also discusses the validity and reliability of the data collected. This chapter then includes a brief description of the participants involved in the interviews to allow the reader to understand the participants' lived experiences. This chapter will present findings from the investigation corresponding with the researcher's objectives.

Data Analysis

Data analysis is a research tool used to determine the presence of certain words and themes within some given qualitative data (Elo et al., 2014). The QCA focuses on the characteristics of language as communication with attention to the contextual meaning of the text (Hsieh & Shannon, 2005). In this study, the researcher explored the context of participants lived experiences as transcribed from interview data. The QCA analysis design represents a systematic and objective means of describing and quantifying a phenomenon (Elo et al., 2014). Implementing QCA to analyze data requires the researcher to become deluged in the data collected (Larkin & Thompson, 2012). The researcher implemented the QCA process as outlined by (Hsieh & Shannon, 2005), using general phases in the QCA process (see Appendix I):

Following Hsieh and Shannon's (2005) QCA steps, the researcher began data analysis by reading all the transcripts repeatedly to achieve immersion and understanding of the context of the textual data. The researcher read and listened to the audio transcript

while checking for accuracy. Step two required the researcher to read word for word by first highlighting the exact phrases from the transcripts. During this step, the researcher used MAXQDA software to highlight precise phrases.

Step two begins the first cycle coding process, which occurs concurrently through all phases of the QCA. According to Miles et al. (2020), the first cycle of descriptive coding will enable the researcher to assign a short symbolic phrase to the textual data and summarize and translate each data unit (Miles et al., 2020). The researcher used the comment application in MAXQDA to note the relationship between unique and significant similar and different codes aligned to RO2, RO3, and RO4.

Step three required the researcher to reflect on jotted notes during the interviews. The researcher approached the data by jotting his first impressions, thoughts, and initial analysis (Hsieh & Shannon, 2005). The researcher used these notes as ideas for analytic consideration throughout the research study in this study.

The researcher began the fourth step after completing the first cycle coding process and jotted notes and reflections. Step four required the researcher to sort the initial codes and notes into categories based on how the different codes are related (Hsieh & Shannon, 2005). During the categorization process, the researcher made necessary changes to the codes and categories based on data analysis.

Step five required the researcher to develop themes from the sorted categories. The researcher sorts the initial codes and notes into categories based on how the different codes are related (Hsieh & Shannon, 2005). The researcher developed themes from the sorted categories using the Qualitative Content Analysis Matrix (see Appendix I).

Through step five, the researcher effectively explored the lived experiences associated with RO-2, RO-3, RO-4, and RO-5. (see Appendix I)

Participant Demographics

RO - 1 *Describe participants' age, ethnicity, gender, years of instructing, years of service, and level of education*.

The researcher achieved the first research objective by obtaining demographic data from the participants using the interview protocol demographic questions. Seven military instructors currently assigned to the U. S. Army School of Excellence participated in the interviews. For this research study, the participants included four officers and three enlisted instructors.

The interview participants represent several departments across the U.S. Army School of Excellence. Table 4 provides demographic information on the seven research participants. The researcher protected the participants' anonymity by assigning a pseudonym to each participant. The demographic information did not include the participants' rank and position within the U.S. Army School of Excellence. Four participants were officer instructors, and three participants were enlisted instructors at the U.S. Army School of Excellence. The only requirements to participate in this study were, being instructor certified by TRADOC and being a current instructor at the U.S. Army School of Excellence.

Table 4

Descriptive Demographic Data

Participants	Title	Gender	Age	Ethnicity	Level of Education	Service Year	Teaching Year
Castle	Officer Instructor	Male	32	African American	MS	9	2
Jim	Enlisted Instructor	Male	40	Caucasian	MS	18	9
James	Enlisted Instructor	Male	38	Caucasian	MS	14	2.5
Steven	Enlisted Instructor	Male	37	Caucasian	MS	19	4
Eric	Officer Instructor	Male	36	Caucasian	BS	16	2.5
Elizebeth	Officer Instructor	Female	40	Hispanic	AS	10	4
Kendrick	Officer Instructor	Male	33	African American	MS	14	3

Participant 1 - Castle

Castle is a 32-year-old African American male. Castle is an Officer instructor with nine years of service in the U.S. Army. Castle currently has two years of experience as a military instructor and has a master's degree.

Participant 2 - Jim

Jim is a 40-year-old Caucasian male. Jim is an Enlisted instructor with 18 years of service in the U.S. Army. Jim currently has nine years of experience as a military instructor, and Jim possesses a master's degree.

Participant 3 - James

James is a 38-year-old Caucasian male. James is an Enlisted instructor with four years of service in the U.S. Army. James currently has 2.5 years of experience as a military instructor, and James earned a master's degree.

Participant 4 - Steven

Steven is a 37-year-old Caucasian male. Steven is an Enlisted instructor with 19 years of service in the U.S. Army. Steven currently has four years of experience as a military instructor, and Steven has a master's degree.

Participant 5 - Eric

Eric is a 36-year-old Caucasian male. Eric is an Officer instructor with 16 years of service in the U.S. Army. Eric currently has 2.5 years of experience as a military instructor. Eric's highest level of education is a bachelor's degree.

Participant 6 - Elizabeth

Elizabeth is a 40-year-old Hispanic female. Elizabeth is an Officer instructor with ten years of service in the U.S. Army. Elizabeth currently has four years of experience as a military instructor. Elizabeth's highest level of education is an associate's degree.

Participant 7 - Kendrick

Kendrick is a 33-year-old African American male. Kendrick is an Officer instructor with 14 years of service in the U.S. Army. Kendrick currently has three years of experience as a military instructor. Kendrick's highest level of education is a master's degree.

Themes

Participants in this study provided an array of responses to semi-structured, open-ended questions about their lived experiences of implementing IMI into military classrooms. Through an analysis of data and theme development, the researcher identified five themes related to military instructors' perspectives of IMI product integration (see figure 2). The following themes were developed from participants' recorded interview transcriptions and the researcher's journal notes.

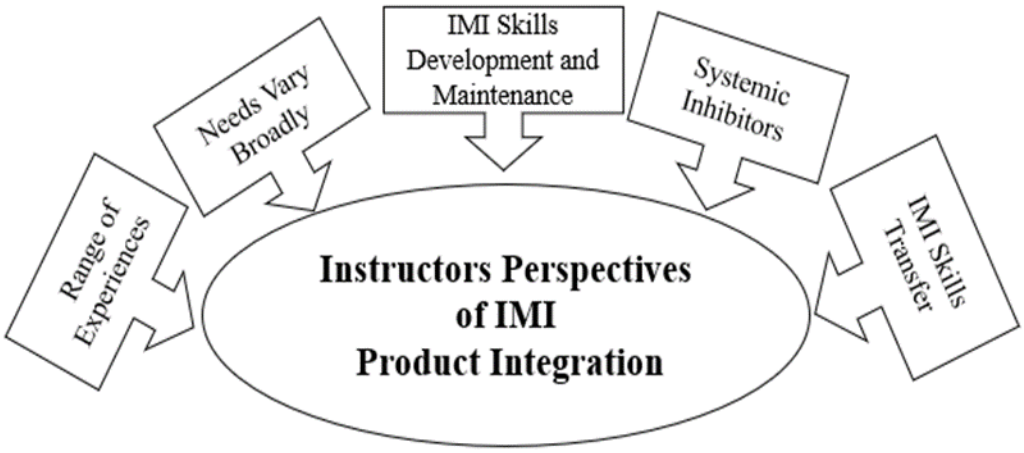

Figure 2. Instructors' Perspectives of IMI Product Integration

- Theme 1 – *Range of Experiences*
- Theme 2 – *Needs Vary Broadly*
- Theme 3 – *IMI Skills Development and Maintenance*
- Theme 4 – *Varying Systemic Inhibitors*
- Theme 5 – *IMI Skills Transfer*

Theme Associated with Military Instructor Pre-Service Experiences

RO2 - *Explore enlisted and officer instructors' pre-service experiences with IMI products.*

Theme 1. Range of Experiences. When discussing instructors' pre-service service experiences, six participants described their lived experiences with IMI products before becoming an instructor. Two participants described having frequent use of IMI products in high school and college. Two participants described having a deep interest in IMI products which developed from using technologies at an early age. One participant alluded to having essential experiences with technologies related to everyday life. One participant alluded to having little to no exposure to IMI products before becoming a military instructor. When asked about their pre-service experiences, all six participants recalled their pre-service experiences with IMI products.

- I've used virtual rollover simulators, and those are to reenact being hit by IED [Improvised Explosive Devise] …but in the academic environment, also a bunch of like different Blackboard websites and other virtual training, uh, websites as well. So a fair amount of experience using them. (Kendrick)
- Yeah, for undergrad, I definitely used it [IMI products] quite a bit—like, math labs and different things. I've used simulators for a few things during my undergrad. (Eric)
- I've always had a deep interest in multimedia and technology. I was into gaming as a kid growing up. Starting with the Nintendo system, following those through, playing PlayStation, and all that stuff. (James)
- So prior to being an instructor, many of my virtual and, uh, products came from video gaming. So that was kind of my upbringing. A lot of those virtual experiences were growing up, playing video games, and probably in a classroom environment. (Castle)

- Because back then, we did not even have cell phones, which was kind of a new thing at the time. Then progressing forward, any civilian job I had before the military was basic computer knowledge, computer programs, and emails. Then in joining the military, that is when that [IMI product experiences] exposure started to develop. (Elizebeth)
- I had little integration with the smart boards or anything like that when I was coming up through high school. (Jim)

Themes Associated with Needs Vary Broadly, IMI Skills Development and Maintenance, and Varying Systemic Inhibitors.

RO3 - *Explore enlisted and officer instructors' perspectives on strategies, challenges, needs, barriers, and resources associated with IMI product integration in military instructional settings*.

Theme 2. Needs Vary Broadly. When discussing what types of IMI products the research participants currently use in their classrooms, all interviewed alluded to the various IMI products various types of IMI products that they use in instructional settings.

- Kahoot is very useful in an institutional or learning environment. Just it is more like speed think type stuff, you know, so students increase how fast they [learners] process information. Which is what we need, um, sometimes for our type of environment and the way we, we test people (Eric)
- So Google earth is heavily used. Let us see here, um, kind of have multiple products that I use, uh, beyond that, um, in the classroom. (James)

- So, we have blackboards set up in addition to PowerPoint and YouTube videos. That is where a lot of the is going to be housed in Microsoft Teams lately, and that teaching over video chat. (Kendrick)
- So we use VR [virtual reality] … it is becoming a huge thing, especially in the military and with instruction, because some of the equipment we need to teach our students is not always accessible. (Elizabeth)
- I have used simulators, PowerPoints, um, audiovisual stuff. (Steven)
- I use different smartboard systems and PowerPoint uh, Excel, spreadsheet, trackers, and utilization of the Army's publication system. (Jim)
- We have interactive interfaces, uh, via, uh, Blackboard website. (Castle)

Two participants provided detailed responses on using IMI products in instructional settings. The two participants provided the following answers.

- Google classroom, I can provide individual feedback to students through emails through instant messages through the system. Um, they can also download the Google classroom app to their phone. (Eric)
- I use things [IMI Products] like Cal Topo, mapping software that'll help you create and print your maps. (James)

Theme 3. IMI Skills Development and Maintenance. When asked about professional development experiences that support IMI integration, six of seven participants alluded to their experiences with professional development or lack thereof at the U.S. Army School of Excellence. The participants described their professional experiences as such:

- When some new program or system comes out, the military is pretty decent at training, how you phrase it, train the trainer, and teaching the instructor what it is that they need to know in order to utilize whatever that specific piece of technology or programming is for us to utilize it in the classroom. (Elizabeth)
- So in order to become an instructor, uh, you have to go to the instructor course. While in that course, they teach the adult learning model. Moreover, they teach about the 18 different teaching techniques in that class. That course is a two weeklong course, and it is the course. It is offered at multiple locations, but it does not introduce to, um, technical platforms. (Kendrick)
- It typically goes back to the same thing on atrophy and attrition [skills]. Um, I know I have done well keeping myself up to date on the most current simulators in how we are trying to get information across regarding training. (Steven)
- Professional development, for the most part, has been personal development. Um, it is just kind of me jumping on and trying to figure out how to use this stuff [IMI products] and see if it would be beneficial. Nothing institutional [organization professional development] or uh, you know, or other entities that have come to try to help or give us pointers on how you might be able to use other products. (James)
- Professional development opportunities or professional development systems we are currently utilizing. There was no training whatsoever. (Jim)
- They will bring us in and show us the function of this new update so that we know how to utilize it [IMI products]. Usually, when we have that [IMI product professional development], it is almost every quarter. So that helps. It allows us to

get that insight and enlightenment from those products before we use them [IMI products]. (Castle)

When asked to describe the strategies used when implementing IMI products into the classroom, five of the seven participants alluded to the various strategies they used to integrate IMI products into the instructional setting. The participants described their professional experiences as such:

- I think the most prominent strategy is having the students do pre-reading, uh, about the topics that we will talk about beforehand, so that they can come into the class or come in already having a general idea of what we are going to be talking about. In addition to that, the videos help touch the different learning styles because some students need to be able to see them. (Kendrick)
- I do not know a particular strategy, and I would say that I have just figured out different ways that I can better communicate with my students. I, I do not know if that is a strategy per se, but, you know, uh, I think communication is vital, you know, not just, not just communication, like, you know, this is how I am doing, like this feedback or anything like that. (Eric)
- We do more interactive things like, um, um, like feedback based, uh, practical evaluations and exercises, whereas before it was just kind of like, we throw things up on a slide, and then we try to talk them through it, but now we are actually like making them be interactive and make them use the skill that's being taught. (Steven)
- I find it critical to incorporate things like Google Earth, that is, or simulations that are flashier than anything it needs. (James)

- One of the main utilizations I have used is taking information from PowerPoint or Blackboard, pulling the information off of Blackboard, utilizing whiteboards, and things like that. And then going back into the learning management systems or multimedia products as a tool to reinforce what was already discussed in a small group discussion or utilizing a whiteboard. (Jim)
- We have terminal learning objectives and what it does. So that is the way that the schoolhouse teaches stuff. So every time [instruction] there are steps to how students learn. Moreover, we try to keep it standardized across the entire schoolhouse. Now, as instructors, we have our way of throwing what we call our own experiences on it [instruction]. (Castle)

Theme 4. Varying Systemic Inhibitors. When asked to describe the challenges that have been faced when implementing IMI products in the classroom and how the participants overcome these challenges, all participants alluded to their experiences with the challenges they face when implementing IMI products. The participants described their experiences with challenges as such:

- I guess some challenges would be licensing issues and ensuring everyone has access to the computers they are given as part of the class. Um, a lot of them [licensing challenges] are non-issues. It just requires a button push. (James)
- I would have to say this might sound silly, but the biggest challenge we run into is simply connectivity. So anything [IMI products] that would require connection to the internet or a service similar to that, and ensure it is not disrupting a particular program or a game we might be using. (Elizabeth)

- I will say that online students cannot see their faces and gauge how well they comprehend. Furthermore, they are at home often and have things in their backgrounds that sometimes pull them away. So it is just a matter of keeping them engaged and getting them in the right learning environment. I think that is; the key to getting them in a place to learn without distractions. (Kendrick)
- Whenever I cannot get the point across or explain a concept, you know, through digital, I go back to the hands-on type thing. I will take the students out and say, hey, this is how we do this. I do that quite frequently. (Eric)
- The challenges that I face is that you have to learn that students come from different parts of the world and, uh, some of them are just more analog driven, and what I mean by analog driven, there is a lot of the digital interfaces and digital products that we use. Some students shy away from it because they just get frustrated with having to go through the steps of learning technology. (Castle)
- One of the main challenges I often run into in my organization is internet or Blackboard site downtime. Much of our information is on computer servers, SharePoint, or sharedrive. So when the network goes down, it is almost impossible to retrieve the information unless it is saved on someone's hard drive. That is probably the biggest challenge, utilizing those kinds of things. The students we teach are primarily familiar with Blackboard or the learning management systems we utilize. So we do not run into any other issues. It is more, uh, server or site issues (Jim)
- As far as in the classroom, not a whole lot. Um, it is more of dealing with the people who structure and certify our programs of instruction and work on our

courseware. That is the challenge I typically face; once they get something set in stone, they are very unwilling to change it, even if there is a clear issue. Um, that is, I think that is the way of the world. I did not think it was a thing to figure out, but I deal with certain entities at the center of excellence, and I get more resistance than anything about changing things or fixing them. (Steven)

When asked to describe the barriers or obstacles encountered when using IMI products in the classroom and how to work through them, all participants alluded to their experiences with these barriers and obstacles. The participants described their experiences with barriers or obstacles as such:

- I mean, it is like what I told you earlier about how we restructure the classes that are more difficult for them [students] to get, and that we have seen issues with the evaluations. Furthermore, we structure them [classes] in a way that they [students] can receive it [instruction]. (Eric)
- So, you know, we run into that a lot. Sometimes the internet goes down. So we know we are talking about anything digital that relies on wifi or the internet. When the internet goes down, we have to either skip a lesson plan or come up with the analog version of how to teach it [lesson content]. Because we know we lose power, we lose connectivity and allow of these platforms are all, you know, they [IMI products] function off of electricity and connectivity... So there are some language barriers when it comes to the schoolhouse. Because, you know, in our military is not just, you know, there is some languages, some cultural barriers, so it is not just, you know, straight cookie cutter. (Castle)

- So, one of the most significant barriers with these new programs and systems that are coming out is having updated software and hardware that is compatible or can support those systems and programs. (Elizabeth)
- The most significant [barrier] is the software changes. The Army is constantly pushing updates out to computers. Furthermore, these updates will sometimes make the smart boards not compatible with the computer anymore. It can be challenging working with the department to get them to come in and reinstall the proper drivers and update them. So that way [installing software drivers], the technology continues to work. For all of the classes where I teach, we all have the technology inside of the classes, but I would say maybe only 5% of the classes get it to work. (Kendrick)
- Resistance to change is a common thing that most people experience or feel. So anytime you bring in a new product, there is a certain amount of that [resistance]. Some will see how I utilize multimedia, uh, and, that is, that is not how we do order briefs, or that is not, you know, pen and paper. (James)
- So sergeants [enlisted students], ... less technologically savvy due to just being through high school or not having multimedia products at their fingertips every day, such as the college student, um, or a new officer would. One of the things we had to do for them was to take them and hand them the product and show them up on our digital screens or our smartboards how to go ahead and access the products. (Jim)
- Um, they [classes] are typically PowerPoint-based, like 100 percent is always a PowerPoint. I mean, that is something that I have dealt with my entire career is,

you know, it is the easy way to get information out there, but it does not work for the students because they are not used to that. They are used to being much more interactive with stuff because the generation I am teaching is, you know, people between the ages of 23 and 33 on average with four to 10 years of service. They do not grasp things. Um, that way, very quickly, they get very bored with it. I mean, it is not that they cannot pass the course. It is just that how they receive information is not how it works for them. (Steven).

When asked what the resources required and needed to use IMI products in military classrooms are and how these resources impact instructors' abilities to use them, six of the seven participants alluded to their experiences with the resources in their classrooms. The participants described their experiences with available resources as such.

- One of the most considerable resources, or at least something we need, would be more funding for upgraded technology to support these new programs and systems. So we need, you know, upgraded computers. Um, we need to upgrade the software. (Elizabeth)
- In my classroom, I have a large projector screen, and then right to the side, I have a large smartboard, uh, and they can both show the same information, or you can split it screen and information. I have a tablet in my class that controls the class and all the technology in it. (Kendrick)
- I think the most significant resource I need to have…updated equipment, you know what I mean? I think that is the biggest thing. Because you know, the military is known well for buying something; they will wait 20 years to buy something else. (Eric)

- I think it goes back to how I feel like everything has been centered around PowerPoint. I mean our classrooms are our set up, they are kind of modernized classroom what I would expect to see in most, um, most, you know, high school to middle school, uh, with, with the way that they have technology set up. (Steven)
- We have computers connected to projectors and a projector screen. And then I have got a second screen, a smartboard, which is used for integration with the students that come up and draw stuff [learning engagement]. (James)
- So, the resources we have is the help desk. I call that a resource because we can always contact them when something goes down. Moreover, at the schoolhouse, we are a priority. So, you know, if, if some piece of equipment, a simulator goes down or one of the interfaces goes down, and it is not working, we have the resource [help desk] where we can call over, and we are a priority to come out and fix it. (Castle)

Theme Associated with IMI Skills Transfer

RO4 - *Explore military instructors' perspectives on the influence of IMI product integration on student learning experiences.*

Theme 5. IMI Skills Transfer. When discussing the participants' perspectives on the influence of IMI product integration on student learning experiences, five of seven participants described their perspectives on the influence of IMI product integration on student learning experiences. Five of seven participants alluded to their perspectives and described their experiences with available resources as such:

- A positive influence because many of my students are hungry to learn and get out there in the real world. Furthermore, I will say that the number one key is teaching our students how to be critical thinkers. So I would say that these IMI products are the closest to real-world scenarios. (Castle)
- I have some students who call me and say, "Hey, can I get those slides one more time"? Or "can you run me through how you use Google Earth one more time"? I would like to use it as part of an op PD [professional development]. So beyond educating others, I am not sure how much more it [IMI products] gets more integrated, like whether or not they have incorporated it [IMI products] into their MDMP [military discission making process] process, or if it is simply in support of spreading the word. So I can kind of pass on to my fellow soldiers where I am now how you can use these multimedia products to do whatever to better the train or whatever the case is. (James)
- Students learn well through doing things, you know, and whenever it is just by PowerPoint, which is about 98% of how we learn in the military. I don't really think that that is, that is, that is teaching anybody anything. So whenever we can incorporate some interactive system that makes it one more fun and entertaining, which keeps people paying attention, you know? Moreover, I think if we can keep people, you know, keep people's attention, then they retain a little bit more information as well. (Eric)
- Now, with the current situations that have been happening over the last couple of years, um, I think it is imperative, you know, for us to have access to these

resources, for us to be able to, um, IM with the impact, teach the students what they need to learn to be successful in their career. (Elizabeth)

- I think it [IMI products] has an enormous influence on their learning experience just because when you look at some of these capabilities that we have, again, those touch each one of the four different learning styles… I think it has a considerable influence, and I used them all to help enrich and facilitate the information we are teaching them. Still, it also exposes them to different learning methods and other forms of promoting knowledge. (Kendrick)

Research Objectives and Theme Correlation

After conducting a qualitative content analysis, the researcher identified five overall themes. The statistical descriptions of the participants' demographic data satisfied RO-1 (see Table 4). The participants' interview excerpts from Theme 1 meet RO-2, and the excerpt from Theme 2-4 satisfy RO-3. The participants' interview excerpts from theme 5 satisfy RO-3. Table 5 provides the correlation between the research objectives and the themes of the study.

Table 5

Research Objectives and Themes Correlation

Research Objective (RO)	Themes
RO-1	• Interview Protocol and Demographic Data
RO-2	• Theme 1: Range of Experiences
RO-3	• Theme 2: Needs Vary Broadly • Theme 3: IMI Skills Development and Maintenance • Theme 4: Varying Systemic Inhibitors
RO-4	• Theme 5: IMI Skills Transfer

Summary

Chapter IV describes the data analysis methods used to develop the study's codes, themes, and results. The chapter includes sections that outline the steps taken to ensure the trustworthiness of the results. The participants' demographics displayed in a Table 4 with brief descriptions allows the reader to become familiar with each military instructor and their lived experiences. Transcribing the interview excerpts addresses the research objectives of this study. The participants' interview responses and the researcher's journal notes provided five overall themes. Finally, Table 5 displays the research objectives and theme correlation. Chapter V provides a detailed discussion on the conclusions, interpretation, and recommendations for future research.

CHAPTER V – Conclusion

This study focused on the military instructors lived experiences of integrating IMI products into military instructional settings. Chapters I-IV provides the background information supporting the need for this research study, a literature review, methodology, and the findings from the data collection. Chapter V includes a summary of the study, findings, discussion of each result, conclusions, and recommendations. Lastly, the chapter closes with recommendations for further research, implications of limitations, and a chapter summary.

Summary of Study

The purpose of this study was to investigate military instructors' experiences and perspectives on interactive multimedia instruction product integrations' influence on students learning experiences and knowledge transfer to understand the challenges instructors face, the strategies, needs, barriers, and the resources they use when integrating IMI products at a U.S. Army School of Excellence. The researcher uses a phenomenological approach to qualitative data collection. The following objectives drove the exploration of military instructors' perceptions of IMI product integration:

RO1 - Describe participants' age, ethnicity, gender, years of instructing, years of service, and level of education.

RO2 - Explore enlisted and officer instructors' pre-service experiences with IMI products.

RO3 - Explore enlisted and officer instructors' perspectives on strategies, challenges, needs, barriers, and resources associated with IMI product integration in military instructional settings.

RO4 - Explore military instructors' perspectives on the influence of IMI product integration on student learning experiences.

Summary of Results

The researcher collected the participants' demographic data, which satisfied RO-1. Qualitative Content Analysis of the interview transcripts yielded five overall themes. One of the five themes supported RO-2. Three of the themes supported RO-3. One of the five themes supported RO-4. Excerpts of the interview transcripts from the interviews and journal notes were used to support the themes of this study.

Findings, Conclusions, and Recommendations

Finding One: Having foundational technology experiences is critical to Military Instructors' successful integration of IMI products.

Finding one of this study indicated that most participants use IMI products frequently, and some even use them daily. Participants from the study spoke about their pre-services experiences with IMI products before becoming military instructors. These pre-service experiences range from childhood experiences, secondary education experiences, higher education experiences, and job requirement experiences. Each participant acknowledged an array of IMI products that they engaged which informed their current knowledge of IMI products and their uses. However, a participant admits that they did not engage in IMI products due to a lack of available IMI products.

Conclusion. Finding one of this study aligns with current literature, which argues that there exists value in military instructors' pre-service experiences with IMI products. According to Mishra (2019), teachers or instructors should have technological knowledge of available IMI products. Mishra (2019) agree that technological knowledge includes

having the qualities of knowledge that provide a basic understanding of how to properly apply IMI products to preconditions such as strategies, needs, challenges, barriers, and resources that support technology integration:

Finding one showed that military instructors who have been deluged with IMI product experiences and possess the knowledge required tend to incorporate outsourced IMI products into the instructional experiences. Furthermore, Finding one showed that military instructors who have had limited pre-service experiences with IMI products focused on integrating readily available products such as Microsoft PowerPoint and smart boards.

The level of military instructors' familiarity with IMI products reflects in their abilities to integrate these technologies into military instructional settings. Peck (2020) agrees that familiarity with digital tools is associated with military instructors' experiences in civilian learning experiences and their everyday use of digital technologies. Understanding a military instructor's pre-service experiences or familiarity with IMI products benefits an organization's effort to modernize or enhance the instructional experience. As military instructors, they must assess their familiarity with IMI products and develop an understanding of IMI products and their various applications.

Recommendation. Prior to assignments, instructors should participate in an instructor duty assignment assessment. This assessment would take inventory of military instructors' pre-service IMI product experiences. The assessment can help identify military instructors who have a depth of familiarity with these products but, most importantly, identify those with little understanding of IMI products. The current School

of Excellence IMI product inventory can potentially inform what type of IMI products military instructors need to become familiar with before engaging learners. Through this analysis, the military instructors can successfully impart knowledge to the learner by applying appropriate and helpful IMI product training.

Developing and incorporating a pre-service IMI product experience survey instrument can potentially benefit TRADOC military instructor credentialing course. By combining the assessment instrument of this type, TRADOC can potentially identify which products instructor candidates should experience. Furthermore, Army schools across the United States can potentially have an instructor population readily prepared to integrate IMI products into various instructional settings.

Finding Two: Military Instructors are integrating an array of IMI products into military instructional settings that are most useful to their instructional needs.

IMI products are instructional tools critical to enhancing the learning experience and improving instructor effectiveness. All participants described using an array of IMI products in their classrooms, and many participants alluded to using IMI products only available in their assigned instructional settings. However, participants with in-depth knowledge of IMI products incorporated additional outsourced IMI products into their classrooms.

Conclusion. Finding two of this study aligns with Martin's (2016) study, which found that learning should be facilitated through appropriate visual or mechanical training devices beyond PowerPoint. Finding two also aligns with Pricilia et al.'s (2020) study, which found that teachers' or instructors' instructional designs must include various animations, videos, or images. Finding two also showed that military instructors use an

array of multimedia products. All participants alluded to using traditional IMI products such as PowerPoint and smartboards. However, the participants possess in-depth knowledge and experience with IMI products which informs their abilities to integrate an array of IMI products such as simulators, virtual reality, Kahoot, Google Earth, Google Classroom, and YouTube.

Recommendation. Develop a comprehensive IMI product list that supplements current IMI products found in School of Excellence Classrooms. This product list could include IMI products that meet U.S. Army cyber security guidelines and regulations. Participants alluded to using various free IMI products as supplements to IMI products found in their classrooms. An approved supplemental IMI product list can improve the quality and quantity of instructional content presented to learners (Toteva &Grigorva, 2014).

Toteva and Grigorva (2014) recognize that to reach learning goals, instructors should consider teaching approaches and techniques that pair well with appropriate IMI products. Military instructors can provide the best learning outcomes for students with the various types of IMI products and their associated components. According to interview excerpts, participants selected an array of IMI products and integrated these products as tools to enhance the learning experience. With the various IMI products and their associated components, military instructors can provide the best learning outcomes for students (Abdulrahaman et al., 2020). Providing military instructors' the autonomy to select from an approved list of IMI products can potentially enhance students learning (Abdulrahaman et al., 2020).

Finding 3: Military Instructors must be aware of available IMI product professional development training opportunities.

IMI product support tools and services are crucial to building and sustaining military instructors' IMI product knowledge and application skills. However, the literature suggests that current technology integration professional development models are simple and provide no context (Hutchison & Woodward, 2018). Several participants alluded to insufficient IMI product integration support systems such as professional development available to them. However, other participants alluded to having access to support systems such as the School of Excellence help desk and technology specialists that provide "train the trainer" support. Many participants described how they must be self-reliant and engage multimedia to stay current with available IMI products.

Conclusion. Finding three revealed inconsistent awareness of available IMI product professional development training opportunities. Finding three does not align with current literature asserting that learners' instructional needs require systematic approaches built upon the instructors' knowledge of digital technologies (Hutchison & Woodward, 2018). Finding three shows that inconsistent professional development opportunities impact an organization's ability to ensure military instructors are of professional development opportunities. Awareness of available IMI product professional development provides a foundation to build digital technology knowledge, and available resources support this knowledge of digital technologies at the School of Excellence. As previously mentioned, some participants acknowledged the professional development resources. However, other participants did not allude to these available professional development resources.

Recommendation. As mentioned in the literature, a need exists to build and sustain military instructors' IMI product knowledge and application skills (Hutchison & Woodard, 2018). The School of Excellence should become more intentional in ensuring military instructors know the support systems. Advertising new IMI products and product use professional developments across departments should become part of the organization's educational technology plan. The School of Excellence can provide recurring scheduled professional developments that develop the military instructors' IMI product knowledge and application skills. According to Aydin et al. (2021), professional development training is vital to not only institutions but individuals as professional development training programs can increase the self-efficacy of military instructors.

The School of Excellence should consider conducting a needs analysis to determine military instructors' professional development needs associated with integrating IMI products into instructional settings. Professional development needs are the gaps that exist between the competencies employees already have and those competencies that military instructors need to effectively integrate IMI products into instructional settings (Aydin, 2021). The needs analysis is a systematic process that identifies differences between military instructors' current and expected competencies. The participants' responses allude to the need for professional development due to potential insufficiencies within current professional development programs (Aydin, 2021).

With the findings from the needs analysis, The U.S. Army could develop a universal educational technology plan that ensures all military instructors receive the necessary IMI product professional development. This plan can detail the guidelines for

IMI product professional development training programs and frequency of delivery. The literature supports the need to develop military instructors' IMI product knowledge and skills through a universal plan.

Finding 4: Several inhibitors impact Military Instructors' abilities to integrate IMI products.

The study participants alluded to several barriers, obstacles, and challenges while integrating IMI products into instructional settings. One participant alluded to constantly facing software licensing issues that inhibit participants' ability to use available classroom IMI products. Two participants described experiencing frequent connectivity issues. One participant described experiencing challenges with using IMI products in instructional settings that include multicultural learners. Two participants alluded to experiencing barriers preventing the participants from visually assessing learning comprehension of the learning content facilitated through IMI products. Finally, another participant's interpersonal struggles with support staff members unwilling to adopt updated or new IMI products.

Conclusion. Finding four aligns with the studies of Onalan and Kurt (2020) and Dinc (2019), which postulate the existence of several significant barriers and inhibitors that impact instructors' abilities to integrate IMI products. In discussing the inhibitors that military instructors face when integrating IMI products, all participants provided a swath of issues they have experienced. This study's participants' lived experiences identify problems that can be potentially systemic across the organization. Military instructors who share these cannot expose the learners to consistent valuable instructional experiences facilitated by IMI products. Mayes et al. (2015) state that exposure to

modern technologies meets learners' expectations, improves student productivity, contributes to career success, and complements lifelong learning. However, learners cannot facilitate the benefits of current IMI products if military instructors experience these inhibitors.

Recommendation. Even though a participant alluded to a support help desk, developing a competent educational technology support team may provide military instructors with the support required to mitigate the inhibitors military instructors face. Mayes et al. (2015) state that it is a collaborative effort to integrate educational technologies such as IMI products. The competent educational technology support team should consist of educational technologists, instructional designers, multimedia specialists, technology support specialists, network engineers, computer programmers, and software developers (Mayes et al., 2015).

The educational technology support team can comprehensively plan IMI product integration and manage technologies and support services. However, an education technology leader must be identified to lead the team. The educational technology leader can provide the School of Excellence and military instructors with the necessary services to mitigate any issues or inhibitors to IMI product integration.

A participant alluded to other stakeholders' reluctance to adopt new or make changes to IMI products. This reluctance could be associated with organizational "change fatigue" (Orlando, 2014). However, change is necessary when there exists a need in learners' educational outcomes. The School of Excellence can develop a change-agent team comprising various stakeholders that provide a variety of perspectives. This team would be responsible for observing new IMI product demonstrations and meeting with

potential vendors when changes in the IMI product list are being considered. The goal of the change-agent team is to involve all stakeholders in the decision-making process. Through the development of the change-agent team, all stakeholders would have some form of buy-in to the required or requested change (I'anson & Fergusson-Lutz, 2017).

Finding Five: Perceived learners' experiences with IMI products skills transfer to follow on job requirements.

Skills transfer in military education is crucial to maintaining a highly influential force. Participants described multiple cases in which former students would reach back and inquire about IMI products used in their classes. One participant stated that students are anxious to get out in the force and apply critical thinking skills learned through IMI products. Another participant described receiving frequent phone calls from previous students who requested a list of IMI products used in the class. Another participant alluded to using IMI products to maintain learners' attention and improve information retention. One participant alluded to using IMI products to ensure learners are successful in their military careers. Finally, one participant described using IMI products to expose learners to various learner styles they may engage in instructional settings. This participant indicated junior military leaders as future trainers at their local units and subordinate training personnel.

Conclusion. Finding five aligns with the literature, as there exists value in learner experiences with IMI products and the associated skill transfer. Sasson & Miedijensky (2020) study found that the success of a learning experience depends on the learners' ability to transfer newly gained knowledge and skills into practice. The military instructors' students find their experiences with IMI products meaningful and attempt to

integrate these IMI products into their everyday jobs. The participants believe that IMI products are valuable tools for acquiring new knowledge and transferring skills into practice. Moving learners' skills into regular practice coincides with the U.S. Army's initiative to modernize technologies such as IMI products.

Recommendation. The School of Excellence can explore commissioning an empirical study that assesses how to further improve military learners' skills transfer through IMI product exposure. Considering how IMI products effectively contribute to learners' abilities to share knowledge is critical to identifying key indicators of the effectiveness of available School of Excellence IMI products (Sasson & Miedijensky, 2020). Morrison-Love (2014) postulates that the opportunity should be provided for learners to extend learning forward into their working environments. The participants' beliefs about IMI product influence on learners' transferable skills warrants exploration.

Implications of Limitations

The limitations of a study are elements that are not under the researcher's control, but they can affect the research study and interpretation of the results in a significant way (Theofanidis & Fountouki, 2018; Lunenburg & Irby, 2008). Within this study, there was an occurrence of several implications of limitations. However, through journaling, the researcher could account for his biases and reduce the potential for preferences affecting the methodology and results of the study.

The First limitation of this study is the researcher's inability to solicit more military instructors that are certified instructors at the School of Excellence to participate in semi-structured interviews. Through criterion sampling, only seven potential candidates responded to the department chairs' solicitation of participants in this study.

All seven potential candidates contacted the researcher and expressed their interest in participating in the study. The researcher sent a participation email to all seven potential candidates, who responded and became participants in this study.

Finally, the findings from this qualitative research study may not be generalizable in the fields other than in the military training schools. The generalizations of these findings in K-12, higher education, or adult education settings can produce different results. The credentialing requirements for civilian and military instructors are significantly different, impacting future study research methodologies. Moreover, this research study only included participants currently certified military instructors from one U.S. Army School of Excellence.

Recommendations for Further Research

Future research may investigate the lived experiences of military instructors at the other military schools within U.S. Army Training and Doctrine Command. This study explored military instructors' perspectives on integrating IMI products into classrooms as a single phenomenon. Future research could compare military instructors' lived experiences across multiple U.S. Army Schools of Excellence. Furthermore, research exploring the lived experiences of military instructors at U.S. Army Schools of Excellence compared to the lived experiences of military instructors at the U.S. Air Force and U.S. Navy training centers.

A study comparing the phenomenon across multiple U.S. Army Schools of Excellence relates to organization IMI integration plans, policies, and strategies. An analysis of this nature could compare the differences among the various U.S. Army Schools of Excellence IMI organizations and management. Findings from an assessment

of this nature could lead to the development of universal IMI product integration best practices and strategies across the various U.S. Army Schools of Excellence.

A study comparing the phenomenon across the U.S. Department of Defense as it relates to Department of Defense efforts to modernize educational technologies. An analysis of this nature would provide the U.S. Department of Defense with various perspectives on IMI product integration. The findings of this study could be used to train military instructors and senior leaders across U.S. Department of Defense training centers and schools on modern IMI product management and support services.

Contributions to Instructional Technology and Design.

This study provides several contributions to the field of instructional technology. First, this study reflects the significance of instructors' perspectives on using IMI products. Highlighting end-user perspectives can provide the field with various ideas on 21st-century IMI product development. Secondly, this study contributes to the existing body of knowledge on inhibitors instructors may face when integrating IMI products. The disclosure of these inhibitors can provide organizations with the information necessary to mitigate potential problems within instructional technology systems. Finally, this study adds to the discussion of technology modernization within the U.S. Department of Defense. Modernizing instructional technologies will ensure that each military organization is providing quality learning experiences.

Summary

This chapter presents a summary of the study, a summary of results, findings, conclusions, recommendations, implications of limitations, and suggestions for further research. This study explored lived experiences of military instructors who instruct at a

U.S. Army School of Excellence. This research examined military instructors' perspectives on integrating IMI products into military classrooms. The researcher used semi-structured interviews to collect data, which was interpreted using qualitative content analysis.

This study highlights the need to explore and broaden the existing knowledge of IMI product integration in military instructional settings. The experiences of military instructors' alludes to their desires to provide quality instructional experiences with practical and supported IMI products. The QCA process yielded five themes: range of experience, needs vary broadly, IMI skills development and maintenance, varying systemic inhibitors, and IMI skills transfer.

The researchers' goal is that this study's results, findings, and recommendations attract the interest of researchers who desire to assist the U.S. Army in modernizing educational technology programs and systems. The creation of standard support services and IMI product integration best practices ensures that military instructors are prepared to enhance learning experiences through the integration of IMI products into instructional settings. Furthermore, by strengthening military instructors' knowledge of IMI product integration, the U.S. Army could significantly improve the task performance of digital learners who experience IMI products in the military. This study focused on the military instructors lived experiences of integrating IMI products into military instructional settings. Chapters I-IV provides the background information supporting the need for this research study, a literature review, methodology, and the results provided from the data collection. Chapter V summarizes the results, findings, conclusions, and

recommendations. Lastly, the chapter closes with the recommendations for further research and a chapter summary.

APPENDIX A – Gatekeeper Email

Good morning Ms. Brown,

Thanks again for allowing me to complete my investigation at your institution. The University of Southern Mississippi Internal Review Board has approved my investigation *Exploring Military Instructors' Perceptions of Integrating Instructional Multimedia into Military Classrooms* (Protocol Number 21-435). Now that I have approval, I would like to know if you can provide me emails and phone numbers of the supervisors of the potential participants. I want to email the instructors to solicit their participation directly. I am available at any time to answer any questions you or your leadership may have.

This project has been reviewed by the Institutional Review board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820.

Respectfully,
Keontra C. Campbell
Primary Investigator
University of Southern Mississippi

APPENDIX B – Supervisors' Participant Recruitment Support Email

Hello,

My name is K. C. Campbell, and I am currently an Instructional Technology and Design doctoral candidate at the University of Southern Mississippi. I am writing to you to request your assistance in recruiting participants in a doctoral research study that I am conducting titled: *Exploring Military Instructors' Perspectives of Integrating Interactive Multimedia Instruction products into Military Classrooms* (Protocol Number 21-435).

I need your assistance because you have military instructors with experience using interactive multimedia instruction products within your department. These interactive multimedia products include simulators, virtual reality, games, power points and other multi-media products.

As you know, the Department of Defense is focused on modernizing every aspect of technology to include interactive multimedia products. Your departments' participation will contribute to the Department of Defense technology modernization research efforts.

If possible, I request that you inform your instructors of the study and provide me with potential research participants' emails and phone numbers. This study is entirely voluntary and confidential. Your instructors' names will not be included in the study to maintain confidentiality. Please forward my email, keontra.campbell@usm.edu, to your instructors if they're interested in participating in this unique study.

This project has been reviewed by the Institutional Review board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820.

Respectfully,

K. C. Campbell
Primary Investigator
Doctoral Candidate
University of Southern Mississippi

APPENDIX C – Participants' Recruitment Email

Hello,

My name is K. C. Campbell, and I am currently an Instructional Technology and Design doctoral candidate at the University of Southern Mississippi. I am writing to you to solicit your participation in a doctoral research study that I am conducting titled: *Exploring Military Instructors' Perspectives of Integrating Interactive Multimedia Instruction products into Military Classrooms* (Protocol Number 21-435).

I am requesting your participation in this study because you are a current military instructor with experience in using interactive multimedia instruction products. These products include simulators, virtual reality, games, power points and other multi-media products. You will share your lived experiences and share truths about integrating these products into your classroom through your participation.

As you know, the Department of Defense is focused on modernizing every aspect of technology to include interactive multimedia products. Your participation will allow you to contribute to the Department of Defense technology modernization efforts.

This study provides basic demographic information and one-on-one Zoom interviews with 14 basic questions. Participation is entirely voluntary, and you may withdraw from the study at any time. The study is entirely confidential. The study results will not include your name or other identifying information.

If you would like to participate in the study, please read the attached Informed Consent form. To begin the study, you will need to submit a signed copy of the informed consent form to keontra.campbell@usm.edu before the interview. You will be provided an opportunity to schedule a time for the interview upon receiving the informed consent form.

This project has been reviewed by the Institutional Review board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820.

K. C. Campbell
Primary Investigator
Doctoral Candidate
University of Southern Mississippi

APPENDIX D – Interview Protocol 1

Exploring Military Instructors Perspectives on Integrating Instructional Multimedia Instruction Products into Military Classrooms

Date:	Place:
Interviewer:	Interviewee:
Position Title:	Pseudonym:
Start Time:	End Time:

1. Before the start of the meeting

a. Check to make sure notepads and pens are available to capture non-verbal details and high points that may need additional explaining.

b. Check Zoom connectivity.

c. Make sure to retrieve a signed copy of the interview form.

2. Interview Guide

Hello _____. I appreciate you taking the time to meet with me. I am Keontra C. Campbell, a Ph.D. candidate conducting this research. This research investigation explores military instructors' perspectives on integrating Interactive Multimedia Instruction products into classrooms. These questions will focus on your lived experiences as a military instructor in hopes of understanding the strategies, needs, challenges, and resources that inform the integration of IMI products.

The interview session will last approximately 1 to 2 hours. With your agreement, I would like to record our conversation to accurately capture your perceptions. At times, I may be writing notes during the interview. The recordings are for transcription and analysis only and will not be released in any publications or reports. The Director of Training and Leader Development, my Dissertation Committee Members, University of Southern Mississippi IRB, and I are the only individuals who will have access to your responses and your name. Your name will not be associated with anything that is said today. All information received from you will be strictly confidential. You will be identified in the research by a pseudonym. Only summarized data will be presented at meetings or in publications, and none of the information obtained today will make it possible for anyone to identify you.

The interview questions are designed to evoke responses about your lived experiences as a military instructor at a U.S. Army School of Excellence. I want you to provide honest and accurate accounts of your experiences and personal

feelings; however, should you feel uncomfortable with any of the questions, feel free to skip questions.

Your participation in this study is entirely voluntary. You are free to withdraw at any time, for whatever reason. The data collected today will be transcribed by a third-party transcription company, MAXQDA transcription service Once the transcript is verified for accuracy, I will contact the transcription agency requesting them to delete all the files and recordings associated with this interview.

3. Start the recording:

a. Verbal identification of the recording: Date, time, place
Interviewer's name: _____
Interviewee's name: _____

b. Ask semi-structured, open-ended interview questions. Use prompts, and more profound questions as needed to assist the interviewee in answering the questions and to help the discussion refocus should the conversation go in a different direction. Describe to the participant why the research needs this information.

Q1. How old are you?

Q2. Describe your ethnicity

Q3. Describe your gender

Q4. How many years have you been an instructor?

Q5. What is your highest level of education?

Q6. How many years have you served in the Army?

Q7. Before becoming an instructor, describe your previous experience with Interactive Multimedia Products such as simulators, virtual reality, games, smartboards, electronic tests, learning management systems etc.

Q8. What type of IMI products do you use in your classroom. When/How do you use them? How would you describe these products' usefulness?

Q9. How would you describe your professional development experiences that support your efforts to apply IMI products?

Q10. Describe the strategies you have used in implementing IMI products into the classroom.

Q11. What challenges have you faced when using IMI products in your classroom? How do you overcome these challenges?

Q12. Describe the barriers or obstacles you have encountered when using IMI products in your classroom? How do you work through these barriers or obstacles?

Q13. What are the resources you have and will need to use IMI products in your classroom effectively? Describe how these resources impact your abilities to use IMI products.

Q14. How would you describe IMI product integration's influence on students learning experiences?

4. After the interview:

a. Explain that a contracting service will transcribe the interview and that a paper copy of the transcript will be emailed to them for validation.

b. Explain the importance of "member-checking."

5. After the meeting

a. Thank the participant once again for their support of the research project.

b. Schedule Interview Session 2 for member checking

c. Answer any remaining questions.

APPENDIX E – Approved Interview Questions

Q1. How old are you?

Q2. Describe your ethnicity

Q3. Describe your gender

Q4. How many years have you been an instructor?

Q5. What is your highest level of education?

Q6. How many years have you served in the Army?

Q7. Before becoming an instructor, describe your previous experience with Interactive Multimedia Products such as simulators, virtual reality, games, smartboards, electronic tests, learning management systems etc.

Q8. What application of IMI products do you use in your classroom? When/How do you use them? How would you describe the usefulness of these products?

Q9. How would you describe your professional development experiences that support your efforts to apply IMI products?

Q10. Describe the strategies you have used in implementing IMI products into the classroom?

Q11. What challenges have you faced when using IMI products in your classroom? How do you overcome these challenges?

Q12. Describe the barriers or obstacles you have encountered when using IMI products in your classroom? How do you work through these barriers or obstacles?

Q13. What are the resources you have and will need to use IMI products in your classroom effectively? Describe how these resources impact your abilities to use IMI products?

Q14. How would you describe IMI product integration's influence on students learning experiences? Describe your perspective on IMI product integration's impact on the student learning experience

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Research Integrity

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NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident submission on InfoEd IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER:	21-435
PROJECT TITLE:	Exploring Military Instructors Perceptions of Integrating Instructional Multimedia Into Military Classrooms
SCHOOL/PROGRAM	School of Leadership
RESEARCHERS:	PI: Keontra Campbell Investigators: Campbell, Keontra~Wang, Shuyan~
IRB COMMITTEE ACTION:	Approved
CATEGORY:	Expedited Category
PERIOD OF APPROVAL:	26-Jan-2022 to 25-Jan-2023

Donald Sacco

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX G – Site Permission Memorandum

DEPARTMENT OF THE ARMY

[redacted]

08 November 2021

SUBJECT: Permission to Conduct Research

Dear Institutional Review Board;

The purpose of this letter is to inform you that I give Keontra C. Campbell permission to conduct the research titled *Exploring Military Instructors Perspectives of Integrating Multimedia Instruction Products in Military Classrooms* at the U.S. Army [redacted]

[redacted]

APPENDIX H – Informed Consent Form

ORI | Office of Research Integrity

INSTITUTIONAL REVIEW BOARD

STANDARD (SIGNED) INFORMED CONSENT

STANDARD (SIGNED) INFORMED CONSENT PROCEDURES
Use of this template is optional. However, by federal regulations (45 CFR 46.116), all consent documentation must address each of the required elements listed below (purpose, procedures, duration, benefits, risks, alternative procedures, confidentiality, whom to contact in case of injury, and a statement that participation is voluntary). Signed copies of the consent form should be provided to all participants. Last Edited August 13th, 2021

Today's date:XX/XX/2021

PROJECT INFORMATION

Project Title: EXPLORING MILITARY INSTRUCTORS' PERCEPTIONS OF INTEGRATING INSTRUCTIONAL MULTIMEDIA INTO MILITARY CLASSROOMS		
Principal Investigator: Keontra C Campbell	Phone: 2562391738	Email: w989107@usm.edu
College: College of Business and Economic Development	School and Program: School of Leadership	

RESEARCH DESCRIPTION

1. **Purpose**:

The purpose of this study is to investigate military instructors experiences and perspectives on interactive multimedia instruction product integrations influence students learning experiences and knowledge transfer as to understand the challenges they face, the strategies, needs, barriers and the resources they used when integrating IMI products at a U.S. Army School of Excellence.

2. **Description of Study:**

This study seeks to explore the military instructors' lived experiences in integrating interactive multimedia instruction products in military classrooms

3. **Benefits:**

Participants will be a part of the U.S. Army's efforts to modernize digital technologies within military learning environments. The participants will share their lived experiences as military instructors within the instructional technology community. The participants' contribution to

this study will enable participants to bring forth new ideas and strategies to integrate interactive multimedia instruction products across the U.S. Army.

Risks:

This study does not include any physical, psychological, social, or financial research-related risks or side effects. The participants may be inconvenienced based upon their availability to participate in the study. To mitigate the time inconvenience, participants can opt-out of the interview at any point in time.

5. **Confidentiality:**

Each participant will be assigned a pseudonym as their name to maintain confidentiality. The primary investigator, USM Dissertation Committee Members, and School of Excellence Director of Training and Leader Development are the only individuals who will have access to the participants' data.

6. **Alternative Procedures:**

None.

7. **Participant's Assurance:**

This project and this consent form have been reviewed by USM's Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5125, Hattiesburg, MS 39406-0001, 601-266-5997.

Any questions about this research project should be directed to the Principal Investigator using the contact information provided above.

CONSENT TO PARTICIPATE IN RESEARCH

Participant's Name: _____

I hereby consent to participate in this research project. All research procedures and their purpose were explained to me, and I had the opportunity to ask questions about both the procedures and their purpose. I received information about all expected benefits, risks, inconveniences, or discomforts, and I had the opportunity to ask questions about them. I understand my participation in the project is completely voluntary and that I may withdraw from the project at any time without penalty, prejudice, or loss of benefits. I understand the extent to which my personal information will be kept confidential. As the research proceeds, I understand that any new information that emerges and that might be relevant to my willingness to continue my participation will be provided to me.

_____

Research Participant

_____

Date

APPENDIX I – Qualitative Content Analysis Matrix

Measuring Unit	Code	Category	Theme
RO- 2 Question 7 Kendrick	I've used virtual, uh, rollover simulators, and those are to reenact being hit by IED and how to, uh, get yourself out, um, in that, but in the academic environment, also a bunch of like different Blackboard websites and other virtual training, uh, websites as well. So a fair amount of experience using them.	Experiences as a Soldier	Range of Experience s
RO- 2 Question 7 Jim	I had little integration with the, with the smart boards or anything like that. Coming up through high school.	High School Experiences	Range of Experience s
RO- 2 Question 7 James	I've always, I've always had a deep interest in multimedia and, and, um, uh, technology. Um, so, you know, into gaming as I was a kid growing up, starting with the, uh, Nintendo system and kind of following those through and playing PlayStation and all that kind of stuff.	High School Experiences	Range of Experience s
RO-2 Question 7 Steven	It just that the knowledge management wasn't really, um, kept up as well as it should have been as far as like the instructor on the other side, like operating the system or something like that.		Range of Experience s
RO- 2 Question 7 Castle	So prior to being an instructor, a lot of my virtual and, and, uh, products came really from video gaming. So that was kind of my upbringing. A lot of those virtual, uh, experiences	High School Experiences	Range of Experience s

	was just growing up, playing video games and, uh, probably in a classroom environment,		
RO- 2 Question 7 Eric	Like, oh, uh, yeah, for, for undergrad, I definitely used it quite a bit. A lot of like, um, you know, math, uh, what do you call those things? Math labs and, um, different things, you know, like, uh, I've used simulators for a few things during my undergrad	College Experience	Range of Experience s
RO- 2 Question 7	Um, I could probably honestly say that before I really became an instructor. I really didn't have a whole lot of exposure or experience.	Limited Experience	Range of Experience s

APPENDIX J – Member Checking Email

Hello,

Thank you for participating in the research study titled *Exploring Military Instructors' Perspectives of Integrating Interactive Multimedia Instruction products into Military Classrooms* (Protocol Number 21-435).

As mentioned in the interview, I am providing you with a transcription of our interview. Please verify the accuracy of your responses to the interview questions. If there is anything requiring edits, missing, or additions please feel free to corrections and return to me at keontra.campbell@usm.edu.

This project has been reviewed by the Institutional Review board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820.

Respectfully,
Keontra C. Campbell
Primary Investigator
University of Southern Mississippi

REFERENCES

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