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Community College Adult Learners' Perceptions of the Influence of Classroom Mobile Technology on Emotional Engagement

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Walden University
2024

Abstract

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MSHAPI, New York Chiropractic College, 2015

BSN Brigham Young University, 1989

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Higher Education & Adult Learning

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Abstract

The problem in this study is lack of research regarding perceptions of first-year nontraditional students (FYNTSs) who are enrolled in a face-to-face community college course regarding how mobile learning in the classroom affects their emotional engagement. Understanding this provides critical insights as well as enhanced and more accessible pathways for academic engagement. Grounded in Kahu and Nelson's student engagement in the educational interface, the purpose of this basic qualitative study was to explore FYNTS perceptions regarding how mobile technology integration in the face-to-face community college classroom affects their emotional engagement. The research question involved examining FYNTS perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotional engagement, including their self-efficacy, emotions, sense of belonging, and wellbeing. Purposive sampling was used to recruit participants. Data were collected through semi-structured interviews with 15 self-identified current FYNTS who were enrolled in a rural California community college. Inductive analysis was used to identify codes, themes, and categories. Key findings of the study were that FYNTS often perceived mobile learning technology as enhancing their emotional engagement; however, it was pedagogical practices of the instructor rather than the technology itself that tended to be the determining engagement factor. This study may lead to positive social change by providing stakeholders with a deeper understanding of mobile learning's utility in a community college classroom for boosting emotional engagement.

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Dedication

I want to dedicate this dissertation to my family. First, I dedicate my work to my eternal love, best-friend, husband, and companion, Jeffrey Thomas Keele. I love you forever and thank you for all the support and encouragement you have given me throughout this educational journey and always. Second, to my children, Leslie, Clark, Thayne, and Rebecca, thank you for your patience and encouragement. Thirdly, to my grandchildren, D.J. (DJ), Evalyn, Rachel, Hyrum, and Eleanor, if Grandma can do this, you can too! Stay in school and never stop learning! Lastly, to my mother, Betty Louanne Mann Henderson. I love you Mama, and I miss you! Thank you for pushing me into grad school and giving me the support to do so. This work is for your Smart Shelf!

Acknowledgments

I would like first to acknowledge my mother, Betty Louanne Mann Henderson, who broke the chains of poverty and pushed her children to get an education. Thank you, Mama, for pushing me to continue my education. I want to thank my family for their patience these past years. I know I missed some activities because I had to complete my assignments. However, I hope my children and grandchildren learn from this how important education is and how it is worth the sacrifices it takes to get it. Never stop learning! It does not have to be formal education; however you do it, continue learning something new daily! Jeff, I love you! There is no way I could have done this without your support.

I could not have accomplished this research without the continual support of dissertation chair Dr. A. Yvette Myrick. Thank you for your continual support and reminders that family is essential! Your comments and feedback provided me with just the right amount of guidance. I would also like to thank Dr. Michael F. Butcher, my methodologist, for his positive support and feedback.

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Chapter 1: Introduction to the Study

The number of nontraditional students enrolling in community college courses is rising. These mature adult students encounter different academic challenges compared to their younger and more traditional peers. Community colleges offer education to students who might otherwise not have access to higher education (Community College League of California, 2019). First-year nontraditional students (FYNTS) have been identified as at risk for disengagement (Bean & Metzner, 1985; Brewer & Yucedag-Ozcan, 2013; Ellis, 2019; Hunter-Johnson, 2017; Juszkiewicz, 2020; Shapiro et al., 2017). The number of FYNTS in higher education is climbing, especially at community colleges (Community College League of California, 2019; Griffin, 2020; Juszkiewicz, 2020; National Center for Education Statistics [NCES], 2019; Pratt, 2017; Rabourn et al., 2018). Understanding FYNTS' perceptions regarding how mobile technology integration in a community college face-to-face classroom affects their emotional engagement is critical.

Bowden et al. (2021) claimed higher education stakeholders' interest in student engagement is based on its correlation with success. The emotional experience of learning is often neglected in engagement research. By better understanding FYNTS perceptions of m-learning on emotional engagement, educators can be better prepared to provide diverse, equitable, and inclusive instruction to this growing group of community college students.

Chapter 1 includes a description of the study's background, problem statement, and purpose. The research questions are aligned with the conceptual framework. The qualitative nature of this study is detailed, followed by definitions of key terms.

Assumptions, scope, delimitations, and limitations are presented and clarified. This chapter concludes with a discussion of the significance of the study and its potential contributions to social change.

Background

Understanding perceptions of FYNTS regarding their educational experience provides critical insights into enhanced and more accessible pathways for academic engagement. Higher educational classrooms, especially at the community college level, are increasingly composed of nontraditional students (Community College League of California, 2019; Griffin, 2020; Juszkiewicz, 2020; NCES, 2019; Pratt, 2017; Rabourn et al., 2018). The Community College League of California (2019) reported 41.3% of enrolled students are 25 years or older. The educational path of nontraditional students differs substantially from traditional learners and encompasses unique obstacles and barriers to successful engagement, including increased family and financial responsibilities. These barriers, along with gaps in educational trajectory, often leave nontraditional students out of step with academic norms in a system that is designed around the needs of the young (Deschacht & Goeman, 2015; Hunter-Johnson, 2017; Kara et al., 2019; Sallee & Cox, 2019). FYNTS constitute a diverse at-risk population; nevertheless, few studies have explored perceptions of FYNTS regarding academic engagement.

With the rise of mobile technology in community college classrooms, understanding the influence of technology on student engagement is imperative. Mobile technology use in higher education classrooms is rising (Kenyon et al., 2019). While adult FYNTS have mobile technology experience, they have less experience using their phones for formal education (Henson, 2014). Additionally, FYNTS have reported lower confidence in using technology compared to their younger peers (Robinson & Salvestrini, 2020). Current research provides insights regarding using mobile technology, otherwise known as m-learning, in the classroom; however, there is limited research in terms of its influence on emotional engagement. More limited is research focusing on adult FYNTS enrolled in community college and their perceptions of mobile technology integration in the classroom as well as its effect on their emotional engagement. There is a gap in literature regarding how FYNTS perceive mobile technology integration in a community college face-to-face classroom and how it affects their emotional engagement. This study is needed because educators must understand FYNTS perceptions in order to provide diverse, equitable, and inclusive instruction that enhances their emotional engagement.

Problem Statement

I addressed how mobile learning integration in face-to-face classrooms affects emotional engagement for FYNTS. FYNTS often face challenges related to emotional engagement. Increasing adult nontraditional student populations along with increased technology in the classroom creates a need for further research in order to understand experiences of community college adult FYNTS and their perceptions of mobile technology's influence on their sense of emotional engagement. Additionally, Lowell and Morris (2019) identified nontraditional learners as having potential challenges to equitable learning with technology in the classroom. This qualitative study involved exploring community college adult first-year nontraditional learners' perceptions of the influence of mobile technology in the classroom on emotional engagement.

Purpose of the Study

The purpose of this qualitative study was to explore FYNTS' perceptions of how mobile technology integration in a face-to-face community college classroom affects their emotional engagement. Increases of first-year nontraditional students and mobile technology in the classroom generates a need for further research regarding best pedagogical practices for technology integration in higher education at the community college level. Educators can potentially gain insights regarding enhancing engagement by better understanding nontraditional students' perspectives of mobile technology in the classroom. Community college instructors can potentially improve integration of mobile technology in the face-to-face classroom to enrich diverse, equitable, and inclusive instruction while enhancing students' emotional engagement. This study involved using a basic qualitative design with individual interviews to understand the topic.

Research Question

RQ: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotional engagement?

SQ1: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their self-efficacy?

SQ2: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotions?

SQ3: What are FYNTS’ perceptions of how mobile technology integration in a community college face-to-face classroom affects their sense of belonging?

SQ4: What are FYNTS’ perceptions of how mobile technology integration in a community college face-to-face classroom affects their wellbeing?

Nature of the Study

A basic qualitative approach was used because this method best aligns with this study’s question, problem, and purpose. Because the research question demanded a detailed narrative description of individual student perceptions, as is often the case in educational research, a basic qualitative design was the best choice. Qualitative methods involve exploring a phenomenon of interest and understanding individual perceptions, attitudes, beliefs, and actions (Creswell & Creswell, 2017; Patton, 2015). Qualitative research involves exploring individual lived experiences with everyday life (Merriam & Grenier, 2019; Percy et al., 2015; Thompson Burdine et al., 2020). Basic qualitative studies involve exploring perceptions, perspectives, and ideology (Creswell & Poth, 2018). Qualitative research is conducted with an underlying belief that knowledge develops as people engage in and construct meanings regarding experiences (Merriam & Tisdell, 2016). The qualitative approach was suitable because one cannot measure perceptions of FYNTS regarding m-learning’s influence on emotional engagement using numbers.

The phenomenon of interest for this study was student emotional engagement with an educational interface. I used semi-structured interviews to explore FYNTS’ perceptions of mobile technology integration in a face-to-face community college classroom and how it influences their sense of emotional engagement. Participant selection was based on those who met criteria for the phenomenon of interest. I collected data for this qualitative study by interviewing FYNTS from a rural region in a California community college. I used purposeful sampling to select a minimum of 10 FYNTS. The semi-structured interview design allowed participants to speak unreservedly about their perceptions. I used inductive analysis and standard coding methods. During initial grouping, I utilized Kahu and Nelson's SEwEI. I also used open coding analysis. Strategies to ensure credibility, dependability, confirmability, and transferability were implemented to prevent biases.

Conceptual Framework of the Study

The conceptual framework for this qualitative study was Kahu and Nelson's SEwEI framework. As applied to this study, this framework was used for exploring FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotional engagement. Kahu initially blended behavioral, psychological, sociocultural, and holistic perceptions of engagement into a framework of engagement, antecedents, and consequences. Upon further reflection and study, Kahu and Nelson refined the framework into the SEwEI. They expanded the central pillar of student engagement to depict the sociocultural influence of student lived experiences regarding educational interfaces. Kahu and Nelson (2018) claimed both student and institutional structural and psychosocial factors can influence student engagement.

Sociocultural context of the educational interface involves multifaceted interactions and connection points between students and educational institutions (Kahu &

Nelson, 2018). The three domains of student engagement are emotional, cognitive, and behavioral. They are each connected with four critical psychosocial constructs: self-efficacy, emotion, belonging, and wellbeing. Student engagement is complex, holistic, and dynamic (Kahu & Nelson, 2018).

I sought to explore perceptions of adult FYNTS regarding the influence of mobile technology on engagement, specifically emotional engagement. The SEwEI conceptual framework guided this. The central pillar of the SEwEI framework is the educational interface. The educational interface contains domains of engagement, and this study was focused on emotional engagement. The four key psychosocial constructs of the SEwEI framework were used to address four subquestions. Kahu et al. (2020) advocated for continued qualitative research studies on factors influencing nontraditional student engagement. I used the basic qualitative research methodology, data collection, coding, and analysis via the SEwEI framework.

Definitions of Terms

Belonging: One of four critical psychosocial constructs influencing engagement. Belonging involves incorporating feelings of acceptance and being valued, included, and encouraged by others (Korhonen et al., 2019). Belonging is a basic human need for in terms of attachment and safety and involves acts of self-identification and identification with others (Gravett & Ajjawi, 2021).

Community College: Alternatively known as a junior college or 2-year college, a community college is a public institution of higher education that focuses on general education for students, usually with the highest degree being an associate degree (American Association of Community Colleges [AACC], 2020).

Educational Interface: The central pillar of Kahu and Nelson's SEwEI framework, representing the influence of students' lived experience on educational and sociocultural constructs, including both structural and psychosocial influences.

Emotion: One of the four critical psychosocial constructs influencing engagement.

Emotional Engagement: According to Bowden et al., (2021), emotional engagement is "the sum of all enduring emotions experienced by the student" (p. 6). Emotional engagement involves a continuum of emotional responses; positive emotional engagement includes enjoyment and enthusiasm, while negative emotional engagement may involve boredom, frustration, or anxiety (Bedenlier et al., 2020; Bond & Bedenlier, 2019; Halverson & Graham, 2019; Muir et al., 2019; Ornelles et al., 2019; Payne, 2019). The term in this study applies to academic emotional engagement.

Engagement: According to Bond et al. (2020b), engagement is the "energy and effort that students employ within their learning community, observable via any number of behavioral, cognitive, or affective indicators across a continuum" (p. 3). Engagement is an individual and holistic psychological state (Kahu, 2013).

Face-to-Face Classroom: Physical room where students and instructors meet together at a set place and time (Dilling et al., 2020).

First-year: Any student who has satisfactorily completed (obtained a 2.0 grade or higher) less than 30 semester units of higher education at any institution.

Formative Assessment (FA): Any learning activity that provides feedback to students or instructors and can be used to modify the learning process (Black & Wiliam, 1998).

Mobile Learning (M-learning): Use of technology to assist in the learning process, often via cellular phones, as well as laptops and tablets (Dunn & Kennedy, 2019).

Nontraditional Student: Adult students enrolled in higher education who delayed enrollment, are over the age of 24, employed part- or full-time, are financially independent, have dependents, or lack a high school diploma (Horn & Carrol, 1966; NCES, 2013; Radford et al., 2015; Remenick, 2019).

Self-efficacy: One of the four critical psychosocial constructs influencing engagement. Self-efficacy is the belief in one's ability to control life circumstances, as well as self-confidence in their ability to accomplish tasks (Bandura, 1989; Kahu, 2013; Kahu & Nelson, 2018).

Student Response System (SRS): A category of interactive m-learning platforms that collect student responses to formative assessments and then provide instant feedback to both learners and instructors (Cheng & Wang, 2019).

Wellbeing: One of the four critical psychosocial constructs influencing engagement. Wellbeing is achieved when an individual is "able to fulfill their personal and social goals and achieve a sense of purpose in society" (Field, 2009, p. 9).

Assumptions of the Study

I assumed by ensuring confidentiality, participants shared their genuine and unreserved perceptions about the influence of m-learning on their emotional engagement. This assumption is essential to ensure trustworthiness of study results. I also assumed all participants understood questions.

Scope and Delimitations

To gain insights regarding FYNTS perceptions of how mobile technology integration in a community college face-to-face classroom affects students' emotional engagement, I chose a small sample size of students in one geographic region who met study criteria. All participants in the study were first-year nontraditional students. FYNTS are not a homogenous group. Many factors influence FYNTS perceptions of emotional engagement. Individual FYNTS present with a variety of nontraditional characteristics. Students were purposefully recruited to glean perspectives of those along the nontraditional continuum. Participants enrolled in different classrooms covering diverse subjects, providing distinctive data.

Additionally, instructors who implemented m-learning had their own unique approaches, practices, and philosophies, and as such, the potential to provide a broad spectrum of student responses and perceptions. I did not assume that this study may be generalized to all FYNTS. The purpose of this study was to explore their perceptions regarding how mobile technology integration in this face-to-face community college classroom affects students' emotional engagement.

Limitations

A potential limitation of the study is my personal connection to the topic. I was a nontraditional student and enrolled in community college. Additionally, I was an instructor at a community college for over 20 years and regularly used mobile technology in the classroom to enhance student engagement. It has been my perception that FYNTS are more likely to disengage when mobile learning activities are integrated into the classroom. To address these challenges and potential biases, I used a reflective journal to manage personal biases and remain transparent. I used member checking as a form of triangulation. I used the interview guide to safeguard continuity during the interview process for all participants.

Significance

This original study will reduce the gap in research pertaining to FYNTS perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotional engagement. Findings of this study might potentially contribute to identifying best practices that enhance emotional engagement within community colleges and m-learning environments. Results of this study can contribute to positive social change by strengthening emotional engagement among FYNTS. The nontraditional student population on college campuses is growing despite more significant barriers to engagement (Community College League of California, 2019; Griffin, 2020; Hongwei, 2015; Horn & Carroll, 1996; Juszkiewicz, 2020; National Center for Educational Statistics, 2019; Pratt, 2017).

Mobile devices have surpassed desktop and laptop computers in terms of usage (Pew Research Center, 2021; Statcounter, 2016). Even in the classroom, m-learning is increasing in higher education (Kenyon et al., 2019). Integration of technology into the classroom may be a way to facilitate student learning. However, limited insights have been offered regarding how nontraditional students perceive technology integration involving emotional engagement or disengagement.

This study was used to address a gap in research on FYNTS' perspectives of mobile technology integration in the classroom and how it influences their emotional engagement with academic pursuits. Extensive research has been conducted on m-learning in distance/online learning platforms. Further research is needed to study disparities involving mobile technology perceptions among diverse student populations. Researchers also call for future studies to examine how mobile technology can be implemented effectively to increase student emotional engagement. Without understanding how FYNTS perceive m-learning in the classroom, strategies for effective implementation are limited and may even decrease engagement among this population. This study has the potential to contribute to positive social change by identifying strategies that enhance adult FYNTS engagement in higher education. Additionally, with cognizance and sensitivity regarding FYNTS perceptions on mobile technology integration and emotional engagement, educators can implement practices that ensure diverse, equitable, and inclusive instruction for this growing group of community college students.

Summary

In Chapter 1, I outlined central elements of this study. The problem in this qualitative study was lack of research regarding perceptions of FYNTS enrolled in community college on how mobile learning integration in face-to-face classrooms affects emotional engagement. I used Kahu and Nelson's SEwEI.

The basic qualitative research design was appropriate for this study to explore perceptions and gain insights regarding this topic. Participants were 15 FYNTS from one geographic region enrolled in a face-to-face community college course where the instructor had implemented m-learning strategies in the classroom. Participants were recruited to ensure they met selection standards. Limitations of the study include the small sample size, limited geographic region, and potential biases, all of which were addressed.

This study has the potential to contribute to positive social change by increasing understanding of FYNTS' perceptions of m-learning in terms of their emotional engagement. Educators may devise more effective strategies to engage students positively during their educational pursuits. With insights regarding this topic, community college educators can implement mobile technology in face-to-face classrooms in more accessible manners for FYNTS.

In Chapter 2, I provide an overview of literature regarding FYNTS. The conceptual framework is explored in depth with a focus on the educational interface pillar. Literature regarding engagement with an emphasis on emotional engagement is presented as well as the four psychosocial constructs of belonging, self-efficacy, emotion, and wellbeing. Current literature on m-learning in face-to-face classrooms and its influence on emotional engagement is also presented. Chapter 3 includes a detailed explanation of the study's methodology, including data collection and analysis, along with a description of the participant selection process and methods for ensuring trustworthiness.

Chapter 2: Literature Review

Community colleges provide educational opportunities for diverse student populations, including those recognized as at risk for disengagement and poor success. This qualitative study involved exploring the community college FYNTS' perceptions of the influence of mobile technology in the classroom on emotional engagement. The problem is this population often faces challenges related to emotional engagement, including lack of sense of belonging and self-confidence. The purpose of this qualitative study was to explore community college FYNTS' perceptions of mobile technology integration in face-to-face classrooms and how it influences learners' sense of emotional engagement. With the rise of mobile technology in community college classrooms, understanding the influence of this technology on student engagement is imperative. Mobile technology use in higher education classrooms is rising (Kenyon et al., 2019).

Although adult FYNTS have experience using mobile technology, they have not used it for formal educational purposes and have lower confidence in performing at the same level as their younger peers (Henson, 2014; Robinson & Salvestrini, 2020). Current research provides insights regarding m-learning in the classroom; however, there is limited research on this and its influence on emotional engagement. There is a gap in literature regarding mobile technology integration in face-to-face classrooms and best practices for engaging adult FYNTS in higher education. Increasing numbers of adult nontraditional students along with increased technology in classrooms creates a need for further research to understand experience of community college adult FYNTS and their perceptions of mobile technology's influence on their sense of emotional engagement.

Chapter Organization

This chapter includes a discussion of seminal research to inform this study and current studies on perceptions of FYNTS' enrollment in community college face-to-face courses regarding mobile technology and its influence on students' emotional engagement. I explain strategies to locate and obtain relevant literature for this study. I examine the SEwEI, including history and development of the conceptual framework. Previous research using the SEwEI framework and challenges to the framework are examined. I explore models influencing this study's critical variables, including engagement, nontraditional adult students, educational technology, and m-learning. I discuss key concepts and variables associated with this study.

Literature Search Strategy

In this study, I used the following databases: Academic Search Complete, AMC Full-Text Collection, APA PsycArticles, APA PsycInfo, EBSCOHost, Business Source Complete, CINAHL Plus with Full Text, Communication & Mass Media Complete, Complementary Index, Computers & Applied Sciences Complete, Directory of Open Access Journals, Education Source, ERIC, Full-Text Finder, IEEE Explore Digital Library, Journals@OVID, Learn TechLib Digital Library, Library, Information Science & Technology, Medline with Full Text, Political Science Complete, ProQuest, PubMed, SAGE Premier 2020, Science Citation Index, ScienceDirect, Social Science Citation Index, Supplemental Index, and Teacher Reference Center. Manually obtained reference lists from retrieved articles were also incorporated into the literature review. I also consulted web sites for the following organizations: AACC, Australian Council for Educational Research, CCC, and National Survey of Student Engagement (NSSE).

For this study, I used the following search terms: *adult education*, *adult learner*, *adult learning*, *andragogy*, *clickers*, *community college or junior college or two-year college*, *disengagement*, *educational technology*, *engagement affective or emotional*, *engagement motivation involvement or participation*, *feedback*, *first-year student*, *formative assessment*, *higher education*, *impostor syndrome*, *inquiry-based learning*, *m-learning*, *mobile technology*, *nontraditional student*, *self-directed learning*, *self-efficacy*, and *student response systems*. A review revealed limited availability of research focusing on FYNTS' emotional engagement and mobile technology in the classroom; therefore, multiple key terms needed to be applied concurrently to narrow search results. Reference lists of associated scholarly articles, particularly those focused on m-learning, engagement, and nontraditional students, were assessed to identify seminal research. Most selected articles were published between 2018 and 2024.

A literature review tracking matrix was maintained using Microsoft Excel throughout the literature search process. The matrix included the article title, author, journal, publication dates, DOI numbers, search terms, method and design, sample, problem/purpose, summary, and notes. Significant themes from literature were identified using this matrix.

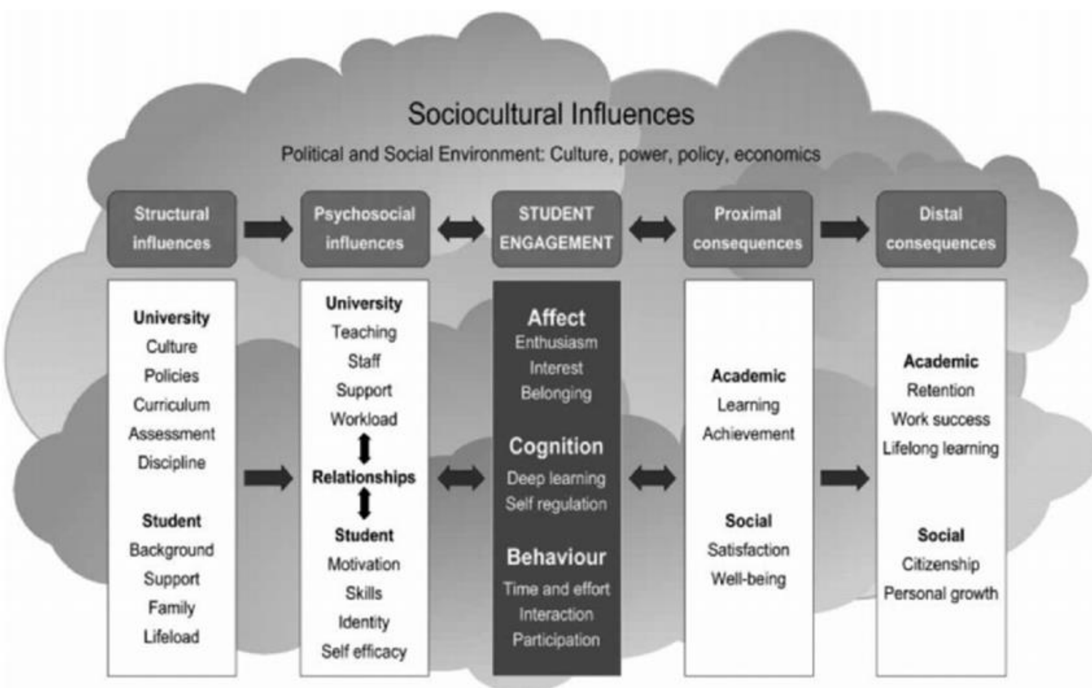
Conceptual Framework

Student engagement within educational institutions is critical for student success. The conceptual framework for this qualitative study was Kahu and Nelson's continuum of SEwEI. This framework provided a foundation for exploring perceptions of nontraditional first-year students enrolled in a face-to-face community college course that used m-learning and technology's influence on their emotional engagement. This section includes a description of the conceptual framework, including its origins, development, and history. I describe associated theories and models, including applications of this framework in other studies. I conclude this section by relating how this guided this study's research design.

The SEwEI framework was initially designed out of concern for enhancing FYNTS retention rates in higher education (Kahu et al., 2013).

Figure 1

Framework of Engagement Antecedents and Consequences

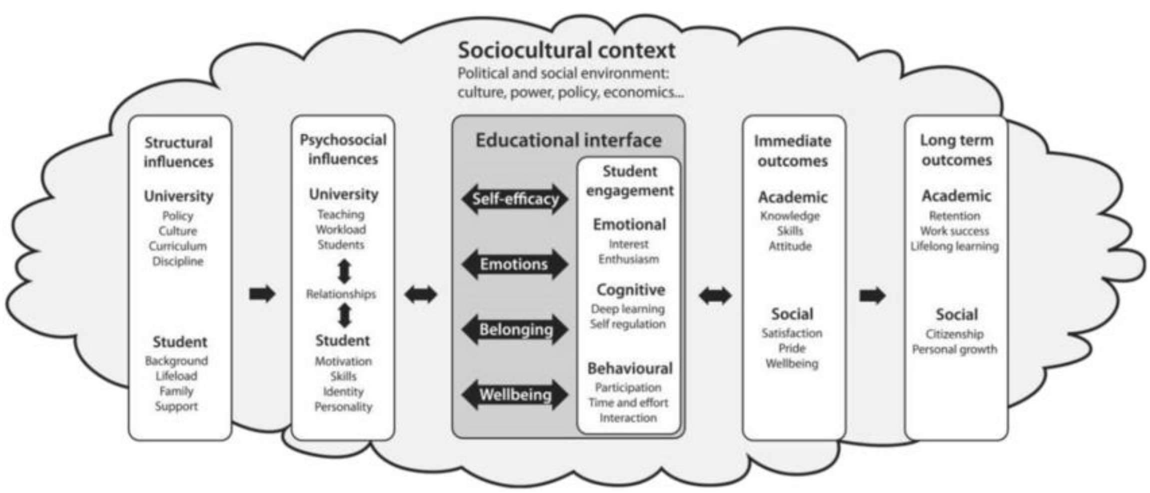


Note. From “Framing student engagement in higher education,” E. R. Kahu, 2013, *Studies in Higher Education, 38*(5), p. 758. https://doi.org/10.1080/03075079.2011.598505. Used with permission by the author.

Kahu and Nelson amended the FEAC into a refined conceptual framework SEwEI (see Figure 2). The refined framework expanded the central pillar of student engagement to depict the influence of the student's lived experience within the educational interface. Kahu and Nelson (2018) declared both student and institutional factors influence student engagement. The educational institution's environment, policies, and practices can significantly influence engagement.

Figure 2

Student Engagement Within the Educational Interface



Note. From Kahu and Nelson (2018) *Refined conceptual framework of student engagement incorporating the educational interface* (p. 64). https://doi.org/10.1080/07294360.2017.1344197 Used with permission by the author.

Both the refined framework SEwEI and the original FEAC have core similarities. Both frameworks focused on student engagement in higher education. Both frameworks comprise five pillars within a sociocultural context: structural and psychosocial antecedents, the engagement experience, and proximal and distal consequences. Both frameworks included the three holistic dimensions of engagement within the engagement pillar: emotional, cognitive, and behavioral (Kahu, 2013; Kahu & Nelson, 2018). The similarities between the two models demonstrate the foundational influence of Kahu's original work on the refined SEwEI framework.

Although the refined framework SEwEI and the original FEAC have core similarities, several significant differences exist. First, the authors expanded the central pillar, newly titled the educational interface, to represent students' interactions and contact with the institution. The underlining assumption is that these complex interactions influence engagement and, therefore, represent modifiable points of contact that can be enriched to boost engagement and enhance success. The educational interface became the central element of the framework while still embodying student engagement. Second, the authors added four critical psychosocial constructs for facilitating student-institution interactions. These four crucial constructs, self-efficacy, emotions, belonging, and wellbeing, are represented within the educational interface pillar, within bi-directional arrows. The bi-directional arrows represent the complex mediating mechanisms of influence that are had by these four psychosocial constructs (Kahu & Nelson, 2018). Lastly, although the FEAC was designed with the engagement challenges of the first-year student transitioning to higher education in mind, the transition metaphor was dropped with the refined continuum framework. Kahu and Nelson (2018) claimed that the educational interface concept includes traditional and nontraditional students' experiences.

Neither the original FEAC nor the SEwEI framework was created as a deterministic model for engagement. Instead, they were designed to exhibit the multiple unique influencing factors in each student's academic phenomena (Kahu, 2013). FEAC did not align specific structural or psychosocial influences to the particular domains of engagement. Instead, the authors recognized the collective nature of the influencers on motivation and viewed engagement as complex and dynamic (Kahu & Nelson, 2018). Likewise, the proximal and distal consequences are not linked to one specific engagement domain but rather a beneficial outcome of holistic engagement (Kahu, 2013). With refining the conceptual framework, the authors again chose not to limit the critical psychosocial constructs' influence on specific dimensions of engagement (Kahu & Nelson, 2018). Through the use of bidirectional arrows and open zones of influence and outcomes, Kahu and Nelson (2018) could diagram the intricate network of SEwEI.

Student Engagement

There are multiple definitions of student engagement with various nuances based on context. Kahu (2013) defined engagement as "complex," "multifaceted," and formed by "meta-constructs" (p. 758). Furthermore, the author declared student engagement to be more than an "internal static state" (Kahu, 2013, p. 758) and instead the product of the sociocultural context in which the student is embedded, influenced by both the students and institution (Kahu, 2013). The author asserted that the literature on higher education engagement did not sufficiently delineate the state of engagement, the influences of engagement, and the ramifications (Kahu, 2013).

Originally, the center of Kahu's (2013) FEAC was the student and the phenomena of the engagement experience. Drawing upon the psychological perspective and recommendations of Fredrick et al. (2004), the three dimensions of engagement, behavior, affect, and cognition are embedded into the central element of the framework (Kahu, 2013). The central pillar includes descriptive attributes associated with each dimension of engagement. Affect is allied with enthusiasm, interest, and a sense of belonging. Cognition is allied with deep learning and self-regulation. Behavior is joined with participation, interaction, time, and effort (Kahu, 2013). The engagement attributes listed within the frameworks are not a limited representation of engagement within each domain; they are merely points of reference or examples. In the revised framework, student engagement remains the central element. However, it has been expanded to include an educational interface.

Educational Interface

The educational interface pillar is the most significant change between the FEAC and the refined framework continuum. Student engagement remains the central pillar, but the SEwEI framework encases engagement within the realm of the educational interface, along with the four critical psychosocial constructs of self-efficacy, emotions, belonging, and wellbeing. The educational interface is where the student and education intersect. It is multi-layered and multi-dimensional (Kahu & Nelson 2018). Kahu and Nelson expanded the metaphor of the educational interface from the works of Nakata (2007), who described the interface as the "intersection of time, place, distance, different systems of thought… and different systems of social, economic and political organizations" (p. 199). Kahu and Nelson (2018) rejected student deficit models that paint nontraditional students as lacking the skills and experiences to succeed in the educational interface. Instead, nontraditional students bring experiential and social capital to the interface that can be tapped to enhance engagement and learning. The authors continuously emphasized that agency, decision, and choice are vital components for activating the connection between the student and education. Each student's experience with the educational interface is unique and results from structural and psychosocial influences, including lifeload.

Student engagement requires that students be active agents in negotiating their education interactions, not passive participants acted upon by inanimate learning institutions. The student experience is far greater than engagement. The educational interface is not a singular event or a "transition or temporary state" (Kahu & Nelson, 2018, p. 63). Instead, it represents the dynamic relationship between the empowering lived experience and the influence of education on the student's life. Kahu and Nelson (2018) argued that the psychosocial constructs of self-efficacy, emotions, belonging, and wellbeing constitute the fundamental modifiable mechanisms influencing student engagement within the educational interface. These constructs, in essence, become the psychological pathways to engagement or, adversely, disengagement (Kahu, 2013; Kahu et al., 2019). The following four sections will expand upon the critical psychosocial paths to engagement.

Self-Efficacy

Based on Bandura's sentinel works (1977, 1982, 1986, 1997), Kahu and Nelson's (2018) refined framework embedded self-efficacy as a modifiable mechanism within the educational interface. Bandura (1997) concluded that unless people believe that they can be successful, they will not have the motivation to act. Kahu and Nelson (2018) determined that self-efficacy influences motivation, persistence, and self-regulation, all considered vital elements of academic success. The authors contend that a lack of self-efficacy may be the most significant contributing factor to lowered engagement levels among nontraditional students. Nevertheless, Kahu and Nelson (2018) highlighted the ability of the members of the educational interface to influence and enhance self-efficacy in the students through encouragement, role-modeling, and enhanced cultural awareness.

Emotions

Like self-efficacy, emotions are personal and subjective, seen through the eyes of the student. Recognizing and acknowledging the student's emotional experience within the educational interface is imperative. Kahu and Nelson (2018) argue that the diversity of emotions partly accounts for the complex relationship of the educational interface. Emotions also represent another modifiable mechanism of engagement. Kahu and Nelson (2018) identified that nontraditional first-year students are a group experiencing unusually high emotional angst. Kahu et al. (2015) warned that anxiety could diminish learning engagement, especially severe or chronic stress. Furthermore, the authors noted that life-integrated pedagogical approaches could enhance emotional responses to the course content. Life-integrated strategies happen when the content is presented in such a way as to demonstrate a direct application to the student's current life challenges and circumstances (Kahu et al., 2015).

Belonging

A sense of love and belonging is a fundamental human need (Maslow, 1943). Kahu and Nelson (2018) argue that belonging within the educational interface includes feelings of connection to the staff, instructors, other students, the area of study, and the institution itself (Kahu, 2014). The authors claimed that a sense of belonging directly influences retention. Bourdieu's (1997) work on habitus influenced Kahu and Nelson to include belonging in their framework (Kahu & Nelson, 2018). Bourdieu (1997) defined belonging as the degree of fit a student feels within the learning environment. A sense of belonging can form a perpetual cycle of participation. Belonging can empower a student to participate in class. Participation increases belonging, motivating the student to participate more (Kahu, 2013). Kahu et al. (2019) attempted to connect belonging to a sense of community and claimed social interaction was imperative for developing belonging. However, the authors also noted that nontraditional students are often more interactive in class than traditional students, yet they often lack a sense of belonging and struggle with academic identification (Kahu et al., 2019). The disparity in belonging among nontraditional students highlights the need for research on this at-risk population.

Wellbeing

The last psychological construct of the educational interface is wellbeing. The authors depict wellbeing as the opposite of stress (Kahu and Nelson, 018). In defining and explaining the role of wellbeing within the educational interface, the authors repeatedly referenced the concept of stress yet chose to use the more favorable term of wellbeing within the framework. Student stress often arises from lifeload. Lifeload, "the sum of all the pressures a student has in their life" (Kahu, 2013, p. 767), includes the complex, individualized relationships that influence the student. Lifeload appears within the framework design within the structural influence pillar (Kahu, 2013; Kahu & Nelson, 2018).

The four psychological constructs embedded into the educational interface pillar were drawn from the literature by Kahu and Nelson (2018) as having a significant effect on student engagement. Kahu and Nelson (2018) presented the four critical constructs as unique and separate influencers on engagement. However, they regularly act together to enhance or suppress engagement (Kahu et al., 2019). Kahu and Nelson (2018) posited that the psychological pathways also represent "mediating mechanisms" (p. 64) or points of influence and change. Kahu et al. (2019) noted that psychological constructs have the potential to initiate either positive or negative cycles. The psychological constructs presented within the educational interface are more likely to be marred in nontraditional student groups (Kahu & Nelson, 2018).

Emotional Engagement

Kahu and Nelson (2018) placed the three classic domains of engagement, emotional, cognitive, and behavior, within the educational interface pillar. Kahu (2013) drew these domains from Fredricks et al. (2004), who determined that engagement occurred due to a student's relationship to learning within these three domains. The psychological perspective on engagement influenced the FEAC and the SEwEI framework (Kahu, 2013). Later work by Kahu et al. (2019) that utilized the SEwEI framework highlighted the difficulty of assigning a student's experience with the educational interface exclusively to one engagement domain. Instead, the authors acknowledged that the phenomenon of student engagement is a holistic and dynamic experience. While recognizing the difficulty of isolating one domain of engagement from a meta-construct experience, this research will focus on the emotional domain, sometimes referred to as the affective domain of engagement.

One of the challenges of studying emotional engagement is that a student's emotions are highly influenced by what is happening outside of the classroom in the student's personal life. The SEwEI model highlights this challenge with the continuum design. Both the structural and psychosocial antecedent pillars, as precursors to the interface of engagement, and the inclusion of the four psychological constructs within the interface, demonstrate the multiple factors that influence all domains of engagement, especially emotional. The emotional experience of learning is often neglected in engagement research (Askham, 2008; Bowden et al., 2021; Kahu et al., 2015). Kahu and Nelson (2018) listed interest and enthusiasm as descriptive characteristics of emotional engagement within the educational interface pillar. Students emotionally engage when they can link the content of the course directly to their interests and present and future lives (Kahu et al. (2015). The connection with the content creates an intense emotional encounter linked to the act of learning (Askham, 2008). The emotional domain of engagement highlights the difference between intrinsic and extrinsic motivation, emphasizing intrinsic motivation as deeper engagement (Kahu, 2013). The psychosocial pathways of self-efficacy, emotion, wellbeing, and belonging are most overtly associated with the emotional domain of engagement. Still, the design of the SEwEI emphasizes Kahu and Nelson's declaration that the pathways influence all engagement domains.

Cognitive Engagement

The second engagement domain within the SEwEI framework is cognitive engagement (Kahu, 2013; Kahu & Nelson, 2018). Self-regulation is the most common indicator of cognitive engagement and is the ability to manage one's thoughts, feelings, and behaviors (Kahu, 2013). Therefore, cognitive engagement is the psychological effort to understand, learn, and master skills or knowledge. Cognitive engagement is often referred to as participating in deep learning strategies (Guo, 2018l; Kahu, 2013; Sugden et al., 2021). Kahu (2013) claimed that instructors view engagement primarily through a cognitive lens and implement active learning strategies to enhance engagement and critical thinking (Kahu et al. 2013).

On the other hand, students view engagement principally in terms of affective engagement, and therefore, without self-efficacy, they struggle with persistence and self-regulatory strategies. Kahu and Nelson (2018) later found that cognitive engagement is best facilitated by aligning the content to the student's current life circumstances, which echoes the andragogical principles that Knowles et al. (2015) exposed. Kahu (2013) noted that several researchers argue that emotional and behavioral engagement is necessary for achieving cognitive engagement (Gibbs & Poskitt, 2010). Students find cognitive engagement easier when course content aligns with topics they are interested in learning (Kahu et al., 2014; Kahu et al., 2015).

Behavioral Engagement

The third domain of engagement is behavior, the acts of learning. Behavioral engagement is the most recognized and studied perspective of student engagement. Nevertheless, when isolated, behavior is too narrow of a mindset, as it does not incorporate or recognize the psychological state of engagement (Kahu, 2013). The author of the FEAC and the refined SEwEI framework used the Australians Council for Educational Research's (2010) definition of behavioral engagement, the "time and effort students devote to educationally purposeful activities" (p.1). Kahu and Nelson (2018) acknowledged that the FEAC lacked interaction between students and institutions. Therefore, building on the early works of Astin (1984), Kahu and Nelson (2018) created the educational interface where they acknowledged that teaching practices influence student behavior. Thus, these interactions can be viewed objectively as behavioral engagement. Kahu (2013) recognized the benefit of exploring the relationship between student behavior and success but declared that the behavioral perspective alone is too narrow and lacks the holistic engagement perspective.

The behavioral perspective is one of the most studied fields in engagement literature due to its objective nature. Nevertheless, Kahu (2013) repeatedly noted that focusing exclusively on the behavior domain results in an incomplete representation of the engagement phenomenon. The domains of engagement are interconnected and difficult to separate into distinct, separate categories. Different researchers will attribute various measures to each of the engagement domains. Kahu and Nelson's (2018) engagement continuum acknowledges the interrelationship and dynamic nature of the realms of engagement. While defining the engagement fields, the framework does not align any specific measure to a particular domain.

Antecedents

A unique component of Kahu's (2013) FEAC was distinguishing antecedents to engagement from the state of engagement. The description of engagement as a process is emphasized by including psychosocial and structural precursor pillars before the pillar of engagement (Kahu, 2013). Kahu (2013) affirmed the critical link between connection and engagement. The psychosocial precursors' influences included the student's relationship with the university's faculty and professional staff. Additionally, the student's unique personality and character, including the level of motivation, skill sets, identity, and self-efficacy, shape the psychosocial antecedent of engagement. A bi-directional arrow was placed on the framework between the proximal psychosocial antecedent and student engagement, emphasizing the intense reciprocity between these elements (Kahu, 2013). Kahu et al. (2015) studied the link between academic emotions and student engagement and validated the bi-directional reciprocal relationship between a student's emotions and engagement, for better or worse.

Adding structural influences to the FEAC is another unique design of Kahu's (2013) framework. The structural influence pillar included the university's culture, policies, curriculum, assessment, and distinctive discipline designs. Also included with the structural influences are the student's personal background, support systems, families, and lifeload. Lifeload is "the sum of all the pressures a student has in their life" (Kahu, 2013, p. 759). These pressures are not limited to academic pressures but can include employment, family, and financial obligations. Lifeload can be a vital leveraging variable on student engagement (Kahu, 2013).

Consequences/Outcome

Kahu (2013) maintained that one of the significant challenges within the study of student engagement was a lack of delineation between the antecedents or precursors of engagement, the state of engagement itself, and its consequences. Kahu (2013) attempted to portray and distinguish between these events by placing them within pillars along a continuum. The consequences or outcomes of engagement, such as critical thinking, retention, and success, are driving factors in institutional interest in the topic of engagement and fall heavily within the domain of the behavioral perspective. Nevertheless, these outcomes "do not represent the psychological state of engagement" (Kahu, 2013, p. 760). Yet, the consequences of engagement are a critical aspect of the engagement continuum and a strength of Kahu's frameworks.

The consequences of the FEAC are divided into two pillars: proximal and distal (Kahu, 2013). The pillars are renamed immediate and long-term outcomes in the refined framework but remain substantially the same. The proximal consequences were initially divided into academic (learning and achievement) and social (satisfaction and wellbeing) to correspond with the work of Tinto (1975). In the refined framework, the academic and social themes remain; nevertheless, the descriptors changed slightly. The immediate academic outcomes were described as knowledge, skill, and attitudes, while the social outcomes added pride to the descriptors of satisfaction and wellbeing. The distal consequences or long-term outcomes were divided into the same two themes: proximal, academic, and social. The definitions of long-term academic outcomes (retention, work success, and lifelong learning) and social outcomes (citizenship and personal growth) remained the same in both frameworks. The distal or long-term outcomes of engagement highlight the potential influence engagement has on the holistic benefits of learning.

Application of SEwEI Framework in Previous Research

The FEAC and the revised SEwEI have been used as a conceptual framework for numerous studies on student engagement, focusing on various student demographic groups, settings, levels of education, and pedagogical styles. Aparicio et al. (2021) identified Kahu as one of the leading researchers in student engagement in higher education, with over 220 (between 1998 and 2018) published articles citing Kahu (2013) in their research. The twenty-one-year period encompassing Aparicio et al. (2021) study would not have included researchers citing or utilizing Kahu and Nelson's refined SEwEI framework. Nevertheless, the analysis of Aparicio et al. (2021) highlights the influence of Kahu in the initial, developmental, and expansive stages of scientific research on student engagement in higher education.

After the publication of the FEAC, Kahu and others continued to research student engagement in higher education using the FEAC model. For example, Kahu (2014) declared the need to increase the positive emotional engagement of nontraditional first-year distance education students, as emotional engagement was the lynchpin for improving behavioral and cognitive engagement and ultimately enhanced student outcomes. Kahu et al. (2015) utilized the FEAC to link academic emotions and student engagement among nontraditional first-year students participating in higher education distantly and online. The study concluded that emotions and engagement formed a perpetual cycle either upwards toward further engagement or downwards toward disengagement. The outcomes of this study strongly influenced the author's revised design of SEwEI. Also critical to refining the SEwEI framework was the research conducted by Kahu et al. (2014), which explored the elements of space and time to engage among nontraditional, distance university students. The authors concluded the necessity of flexibility of online courses for facilitating engagement in nontraditional students from the research.

Kahu and various colleagues have continued to research utilizing the SEwEI framework. Kahu et al. (2017) used the refined framework to investigate engagement among first-year university students. The authors concluded that situational interest enhances behavioral and cognitive engagement and outcomes. Picton et al. (2018) joined Kahu and Nelson to investigate first-year university students' perceptions of their understanding and definition of success. The authors determined that emotions, self-efficacy, and belonging were vital for students' perception of success. Again, Kahu et al. (2019) continued to utilize the SEwEI framework to conduct a longitudinal study of first-year university students' pathways to engagement. The authors found empirical support for the SEwEI framework and the critical nature of self-efficacy, emotion, and wellbeing in the path to student engagement. Kahu et al. (2019) call for further research to explore best practices to reduce cycles of disengagement. Kahu and Pictor (2019) examined the emotional engagement benefits of the instructor and first-year student relationships within the SEwEI framework. The authors declared the student-teacher relationship a key interface or touchpoint for improving wellbeing and belonging among first-year university students.

Most recently, McKay et al. (2021), working with Kahu, utilized the refined framework to investigate the experience of first-year university students enrolled in an undergraduate teacher education program during 2020 and the impact of COVID-19 and the rapid shift to online learning. McKay et al. (2021) determined that finding the time and space to study, the ability to sustain relationships online, and the lifeload played heavily in the student's success, all of which are represented within Kahu and Nelson's (2018) framework antecedents. Kahu et al. (2014) previously recognized space and time variables when investigating nontraditional adult distance students' engagement. Kahu et al. (2014) concluded that educational institutions played a vital role in promoting policies that ensured flexibility in course design.

Technology use in education has the potential to enhance or diminish student engagement. In some studies, Kahu's framework has been utilized to investigate student engagement while using technology (Alkhezzi & Ahmed, 2020; Farrell & Brunton, 2020; Hegarty & Thompson, 2019; Xu et al., 2020). Working under the premise that technology use does not guarantee engagement, Xu et al. (2020) called for research investigating effective teaching methods using technology. Farrell and Brunton (2020) claimed the SEwEI model effectively framed their study on the engagement of online undergraduate students in Dublin. Hegarty and Thompson (2019) concluded that the antecedents and outcomes of the SEwEI model are critical to understanding student engagement and self-efficacy in their study on smartphone use in education. It has been noted that researchers investigating technology in the classroom tend to prefer to lead with a model that places technology at the center rather than the student (Alkhezzi & Ahmed, 2020).

Those who have studied engagement with technology have often conducted their research from an online or distance platform. Although not the direct subject of this study, it is essential to note that both the FEAC and the continuum of SEwEI frameworks have often been used in discussions and research regarding student engagement within online learning (Farrell and Brunton, 2020; Ornelles et al., 2019; Tai et al., 2019; Xu et al., 2020).). Farrell and Brunton (2020) utilized Kahu and Nelson's (2018) refined framework in their qualitative study of online undergraduate students' engagement in a university. Farrell and Brunton (2020) concluded that both psychosocial and structural factors influenced student engagement. Farrell and Brunton (2020) also highlighted the increasing number of older, nontraditional, and disadvantaged student groups enrolling in distance education. Tai et al. (2019) support Kahu and Nelson's claim that the definition of engagement must include contextual variables, including power, relationships, and emotions, with their study of the students' perceptions of digital learning on engagement. Tualaulelei et al. (2021) relied heavily on Kahu and Nelson's framework in mapping pedagogical touchpoints in online learning. The authors found it particularly important to recognize the socio-cultural context of the students' experience both within and outside the university. Tualaulelei et al. (2021) also noted that many online learners are nontraditional students, a motivating focus in Kahu's (2013) original framework design. Brown et al. (2022) acknowledged the contribution of Kahu and Nelson in framing student engagement and showed the application of SEwEI to online learning.

Nevertheless, Brown et al. (2022) felt the online environment created unique challenges that must be addressed outside the framework Kahu and Nelson presented (2018).

Ferrer et al. (2022) studied the importance of attitude concerning online learning success. The authors were building upon the concept of perpetual cycles presented by Kahu (2013). Ferrer et al. (2022) posited that students actively engaged in learning receive emotional value from the effort and thus achieve better outcomes. Kahu and Picton (2022) reaffirm the concerns expressed by Kahu (2013) that student surveys on engagement by design miss opportunities for understanding the students' experience. Kahu and Picton (2022) utilize a unique research strategy, photo-elicitation, to ascertain first-year students' emotional experiences. The study results revealed that students lacked control over their educational journey and could not keep up, similar to a rollercoaster ride. This research methodology elicits new metaphors for understanding the first-year student experience.

A study that expanded on Kahu's (2013) work conducted by Murillo-Zamorano et al. (2019) on using a flipped classroom pedagogical method in higher education concluded that engagement and student satisfaction are positively linked. Murilla-Zamoran et al. (2019) utilized Kahu's (2013) posited antecedent of student skill sets to examine the relationship between engagement, skills, student satisfaction, and the flipped classroom modality. Guo (2018) confirmed the bidirectional interaction and influence of antecedents and outcomes on the state of engagement in his study involving 2,616 full-time senior university students in China.

Arjomandi et al. (2018) studied the role of active teaching strategies in student engagement among traditional and nontraditional business students using Kahu's FEAC. The researchers identified noticeable differences in engagement between traditional and nontraditional students in behavioral engagement measurements. Generally, nontraditional students displayed greater engagement than traditional students. However, traditional students were more likely to respond with greater engagement in the presence of active teaching strategies. This study was not focused on first-year students; therefore, the nontraditional students had already demonstrated resiliency and perseverance in their educational pursuits.

Alternative Models

Kuh is the most cited author on student engagement in higher education due to his involvement in developing the National Survey of Student Engagement (NSSE) (Aparicio et al., 2021; Kuh, 2001). Kuh (2000) identified two frequently used models to explain student engagement in higher education: Astin and Pascarella. Astin (1970) presented the input-environment-output (I-E-O) model, from which Kahu (2013) drew to form the FEAC. Pascarella's (1985) model of engagement views learning as influenced by the student's background, institutional characteristics, student interactions, and effort. Another seminary framework on engagement is the work of Fredicks et al. (2004), who concluded that engagement is linked to positive outcomes, including retention and success (Boekaerts, 2016). Kahu (2013) lamented that the behavioral perspective heavily influenced the seminal works on engagement, often disregarding the emotional domain.

Numerous conceptual frameworks focus on technology and student engagement; nevertheless, the vast majority place technology at the center of their framework or have an online or distance education perspective. Garrison et al. (1999) Communities of Inquiry (CoI) is one of the earliest modern frameworks for online learning. COI was initially presented as a model for scientific discovery by Peirce and Dewer (Garrison, 2010Ger). The model consists of three circles that converge to form a Borromean ring, with the center Reuleaux triangle labeled the educational experience. Ornelles et al. (2019) adapted CoI to align with adult learning and engagement theory into an instructional design and facilitation framework. Online courses are becoming a significant part of higher education, and nontraditional adult learners gravitate toward the online venue (Ornelles et al., 2019). Course designs must incorporate models that align with adult learning andragogical methods (Ornelles et al., 2019). Ornelles et al. (2019) identified three factors influencing engagement: personal and social interactions and problem-based learning. Redmond et al. (2018) advanced five engagement elements for teaching and learning in the online environment: social, cognitive, behavioral, collaborative, and emotional engagement. Brown et al. (2022) presented a framework on engagement specifically for online learning, which measured engagement based on behaviors and involvement in active learning pedagogical strategies, again emphasizing the behavioral perspective. Online learning frameworks are occasionally used in studies on mobile learning in the classroom (Aljaloud et al., 2019).

Researchers investigating technology in the classroom generally rely on conceptual frameworks that place technology at the center of their model (Alkhezzi &

Ahmed, 2020). Yet, if course design is not purposeful in including mobile technology, student engagement and outcomes will be hindered (France et al., 2021). In developing a pathway toward mobile technology utilization in a higher education classroom, France et al. (2021) looked to incorporate both pedagogical and technological logistics into a guiding path for the utilization of m-learning. However, as with most models of technology used in education, the center of the pathway is technology, not the student. Schindler et al. (2017) belied that the role of technology was lacking in Kahu's engagement model.

Halverson and Graham (2019) claimed that no framework had guided student engagement in a blended context before their published framework. They presented their blended learning framework, a blend of face-to-face with online instruction, the relationship between facilitators, indicators of engagement, and learning outcomes, as a linear, one-directional model (Halverson & Graham, 2019). The progression of the model begins with the learner's characteristics and experience, flows into the indicators of engagement (cognitive and emotional energy), and ends with desired outcomes. Johnson et al. (2018) utilized Pittaway’s (2012) engagement framework. Johnson et al. (2018) concluded that the element that most influenced the adult learner’s engagement was the “other context” or the outside of academia stressors and responsibilities, which Pittaway’s framework did not address (p. 103).

Bond and Bedenlier (2019) put forth a framework of student engagement through educational technology, incorporating technology-enhanced learning environments, student engagement, and outcomes. The outcomes of Bond and Bedenlier's (2019) framework are designed after Kahu's (2013) FEAC framework, which only adds a few additional examples of academic and social outcomes. The three domains of engagement are associated with the behavioral perspective and guide the student engagement component of Bond and Bedenlier's (2019) model. The unique element of Bond and Bedenlier's model is the sphere of the technology-enhanced learning environment. This sphere places the student at the center, surrounded by microsystem influences: technology, activities, environment, peers, and teacher. Like Kahu and Nelson, Bond and Bedenler (2019) represented environmental factors, internal and external, as creating a unique personalized influence on engagement for every student. Althought Bond and Bedenlier's (2019) framework incorporates technology into the education environment, it fails to define engagement beyond the three domains of the behavioral perspective. Additionally, Bond and Bedenlier's framework is not specific to higher education (Bond, 2020a).

A few scattered frameworks can be found regarding technology use in the classroom. Nang and Harfield (2018) presented a framework for evaluating the effectiveness of m-learning in elementary schools. Hews' (2016) model of engagement with mobile learning (m-learning) connected the three domains of engagement with the three needs defined by self-determination theory (Deci & Ryan, 2008). Game theory frameworks are also occasionally used for studies involving m-learning (Alsubhi et al., 2020). However, gaming frameworks often focus on game elements (Alsubhi et al., 2020), and not all m-learning in the classroom is game-based.

Application of SEwEI Framework in This Study

The conceptual framework of student engagement with the educational interface (SEwEI) (Kahu & Nelson, 2018) will guide the research design of this study. The educational interface contains four critical psychosocial constructs or pathways which directly influence student engagement: self-efficacy, emotions, belonging, and wellbeing. Each of the pathways has the potential to shape the three domains of engagement: emotional, behavioral, and cognitive. The research question for this study focuses on the emotional domain of engagement within the educational interface, and the sub-research questions arise from the four psychosocial constructs. During data analysis, the themes of the four constructs will provide the initial coding concepts.

The SEwEI aligns with this research study in several ways. The framework depicts the dynamic and multi-contextual nature of engagement and has, throughout its history, focused on higher education, emotional engagement, and nontraditional higher education students (Kahu, 2013; Kahu & Nelson, 2018). The continuum of SEwEI has been utilized repeatedly to demonstrate nontraditional adult students' strengths and challenges within institutions of higher learning. Kahu argues that the sociocultural perspective of engagement consistently concentrates on traditional social groups, significantly contributing to poor retention and success rates among nontraditional students (Kahu, 2013; Kahu & Nelson, 2018). The first-year student has also been a focus of research using SEwEI (Arjomandi et al., 2018; Kahu & Picton, 2022). Lastly, the student experience is the center of the SEwEI model, which is critical for any pedagogical or andragogical research (Caldwell, 2007; Knowles, 1980; Woxland et al., 2017).

It must be acknowledged that although this study will utilize Kahu and Nelson's (2018) SEwEI framework, there are limitations to this framework within this framework. First and foremost, the SEwEI and most subsequent studies used to validate the framework were based on research conducted at four-year universities. The student population of four-year universities is substantially different, especially regarding the number and preparation of nontraditional students (American Association of Community Colleges (AACC), 2020). Additionally, Kahu and Nelson (2018), in designing the SEwEI, dropped the focus on nontraditional students from the framework, stating that the model applied to all students. Also, The SEwEI does not explicitly address the use of technology or any active teaching strategies and is challenged by some researchers for the omission (Ornelles et al., 2019). Nevertheless, active teaching strategies can be studied using the SEwEI model, as evidenced by the plethora of research conducted since the framework's presentation.

The qualitative research design of this study and the utilization of one-on-one semi-structured personal interviews are governed by Kahu and Nelson's (2018) framework on SEwEI. Kahu (2013) repeatedly emphasized the complexity of engagement and argued that survey instruments "obscure the participant voice" (p. 760). Kahu and Nelson (2018) called for qualitative design studies to mitigate the suppression of the student experience and noted that surveys could not effectively measure engagement. The definitions of engagement require objective and observable manifestations of engagement; however, emotional engagement responses are subjective and open to interpretation. The student's perspective is needed to validate the emotional reaction of students' affective engagement. Therefore, this study will use one-on-one semi-structured interviews to understand the student's perspective of engagement within the educational interface, specifically in the classroom, during the use of mobile technology. Kahu (2013) also argued that evidence of engagement would vary across disciplines, calling for qualitative studies utilizing different student demographics. This study will focus on first-year nontraditional adult community college students enrolled in a face-to-face course that uses m-learning technology in the classroom.

Literature Review Related to Key Concepts and Variable

FYNTS

Determining a student's year in higher education varies from institution to institution and study to study. For this study, the definition of a first-year student is any student who has successfully completed less than 30 semester units of higher education at any institution. California educational code, Title 5, decreed that a student must satisfactorily complete a minimum of 60 semester units to obtain an associate degree (California Code of Regulations (CCR), 2022). "Satisfactorily completed," defined by the CCR section 55063, means either the student obtained a 2.0 grade or a pass in a pass/no-pass course. As an associate degree is generally referred to as a two-year degree, the first year would consist of the first 30 units of study.

The first year of higher education is critical for students transitioning from secondary education (Krause & Coates, 2008; Korhonen et al., 2019; Tinto & Russo, 1994). First-year students in higher education have been identified as an at-risk population for attrition and disengagement (Aparicio et al., 2021; Gill, 2021; Kahu et al., 2015; Kahu et al., 2019). Current research has revealed that students at different stages of their educational path respond to active teaching strategies with varying degrees of engagement (Arjomandi et al., 2021). Personal variables such as poor self-efficacy, anxiety, and motivation have been identified as potential challenges to first-year students' engagement (Jenert et al., 2017).

Traditional Versus Nontraditional Students

The nontraditional student will be the emphasis of this study. A traditional college student is considered to be between the ages of 18 and 24 and transitioned directly from high school to an institution of higher learning (Gibon & Slate, 2010). Traditional students are often dependent on their parents for financial aid. Traditional students either do not work while going to school or obtain a part-time job in an unrelated field from their desired career path (Choy, 2002). Conversely, a nontraditional adult student has delayed college enrollment and is over twenty-four years of age (National Center for Education Statistics, 2016). By 2000, only 27% of higher education students in the United States met this definition of a traditional student (NCES, 2002). Therefore, 73% of students had some degree of nontraditional status. The growth of the nontraditional student population has been rapid and is expected to surpass that of traditional student populations (Rabourn et al., 2018). Lin (2016) added that the nontraditional female student group had become the fastest-growing population in education.

Many studies on nontraditional students use age to determine their nontraditional status (Bean & Metzner, 1985; Hunter-Johnson, 2017; Hurtado et al., 1996; Kamer & Ishitani, 2021; Rabourn et al., 2018). Nevertheless, Horn & Carroll (1996) chose to identify nontraditional students based on the behaviors and choices that placed learners at high risk for attrition, including enrollment patterns, high school graduation status, financial status, and family responsibilities. The following characteristics were identified as being attributes of nontraditional students.

- Delayed enrolment (did not attend an institution of higher learning during the same year as they graduated from high school)
- Part-time enrollment (less than 15 semester units) during part of the academic year
- Full-time employment (more than 35 hours/week) while enrolled
- Financially independent (based on financial aid eligibility)
- Dependents other than a spouse (for example, children)
- Single parent
- Lacking a high school diploma (may have a GED or high school completion certificate or did not complete high school)

Horn and Carroll (1966) created a continuum of nontraditional status with this list of characteristics. A student who possessed one factor would be considered minimally nontraditional. A student with two to three factors would be moderately nontraditional. Finally, a student with four or more factors would be highly nontraditional. By defining nontraditional learning by a list of common attrition risk factors, the nontraditional student at risk for poor success becomes tautological.

Nevertheless, these characteristics continue to describe nontraditional students and are more common among older adult students (NCES, 2013; Radford et al., 2015; Remenick, 2019). Nontraditional students differ from traditional students in the above characteristics and their goals, commitment, and work ethic (Tinto, 2012). According to Rabourn et al.'s (2018) analysis of 2013 and 2014 NSSE data on first-year student engagement, nontraditional learners are more likely to be diverse across multiple variables.

Mubayrik (2020a) claimed that while there is overlap, there are distinct differences between adult and nontraditional students. Adult students are associated with being enrolled in vocational training and perceive themselves primarily as workers, not students (Mubayrik, 2020a). Lin (2016) makes no such distinction between terms and places adult students, nontraditional students, re-entry students, and returning students into the same group. As the proposed participants in this study will be currently enrolled community college students, the difference between adult and nontraditional students is moot.

FYNTS in Community College

The setting of this study will be the community college, sometimes referred to as a junior college or two-year college. The American Association of Community Colleges (AACC) (2020) contended that the community college student population is unique among undergraduate students. Community college students are more diverse in terms of ethnicity, socioeconomic background, and age (average of 28 years) (AACC, 2020). They include a high number of veterans (5%), single parents (15%), disabled (20%), part-time enrolled (64%), and first-generation to attend college (29%) compared to the student body of four-year college and university students (AACC, 2020). Over 40 percent of California Community college students are over twenty-five and have already entered the workforce (Foundations for California Community Colleges, n.d). Hart & Park (2021) affirmed that the community college population comprises a higher percentage of nontraditional students than in four-year institutions. While acknowledging that FYANTS are particularly relevant for community colleges, Kim et al. (2011) warned against "mentally marginalizing these institutions" (p. 403) as primary enrolling nontraditional students. The prevalence of adult education is expanding in formal and non-formal educational venues (Hunter-Johnson, 2017). Moreover, it must also be acknowledged that the increased diversity of a student population creates challenges in developing engagement strategies and goals (Hafer et al., 2021). Research on community college-specific issues is limited and is often underrepresented in the literature (Schinske et al., 2017).

Eighty-nine percent of students who transfer to a four-year institute from the California Community College system obtain a bachelor’s degree within four years (Johnson & Mejia, 2020). Nevertheless, only 19% of California Community College students who express a desire to transfer to a four-year institution do so within four years of starting at the community college level (Johnson & Mejia, 2020). Transfer rates are higher (26%) among those who successfully completed 12 units. A big jump in transfer rates, up to 73%, is seen in community college students who successfully complete 30 or more transferable units during their first year. The revelation provided by these transfer figures has motivated many campus administrators to focus and push for students to take an increased number of units. Often, nontraditional adult students cannot attend full-time due to work and family responsibilities. The RP Group (2019) revealed that most California Community College students (58%) reported balancing work and family responsibilities as very challenging.

Nontraditional Adult Student Barriers to Learning

As noted in Horn and Carroll's (1996) classification continuum of a nontraditional student, adult learners often have multiple barriers to their learning. The more nontraditional characteristics a student has, the more insurmountable the financial, structural, institutional, and cultural obstacles for the student to achieve their higher education goals (Remenick, 2019). Hunter-Johnson (2017) noted that much of the research on nontraditional adult student barriers in higher education has focused on e-learning and online learning. Barriers to learning are often divided into two categories: internal and external. External barriers are primarily outside the student's control, although internal barriers are often associated with personal attitudes (Hunter-Johnson, 2017; Merriam et al., 2007). External barriers include work, time management, family responsibilities, and finances (Gill, 2021; Hunter-Johnson, 2017). The prevailing internal barriers for nontraditional adult students are psychosocial and can be arranged into three themes (Hunter-Johnson, 2017; Kara et al., 2019). The first theme identified was management challenges, such as an inability to balance education and other responsibilities. The second was learning challenges, such as a lack of self-efficacy or academic preparedness. Hunter-Johnson (2017) added depression, loneliness, and anxiety to this list. The third theme was the technical challenges associated with online learning. These challenges included difficulty communicating through the internet, poor computer skills, and a lack of access to resources and information (Kara et al., 2019).

Astin (1999) asserted that all college students have limited time and energy and must decide how to spend their time and how involved they will be in academic life. Nontraditional adult students often have more responsibilities and demands on their time than traditional students, as they have the added burden of family and work responsibilities. (Gill, 2021). Given these challenges, nontraditional adult students are more likely to enroll in flexible education opportunities, such as online and part-time. Such educational scheduling often leads to delayed completion and limited engagement (Rabourn et al., 2018).

Many FYANTS face unique barriers when enrolling in higher education (Karmelita, 2020). Robinson and Salvestrini (2020) argued that insufficient research focuses on overlooked and vulnerable groups. These vulnerable groups often have prior experiences that affect the learner's ability to trust, which in turn creates barriers to engagement (Jones & Nangah, 2021). Often, they have anxiety and insecurities related to past academic challenges, resulting in fewer learning strategies (Bourke et al., 2020; Digital Promise, 2016; Karmelita, 2020; Whitehead & Wright, 2017). FYANTS may find the classrooms different from past experiences (Lowell & Morris, 2019) and ill-prepared for technology-based learning (Digital Promise, 2016). Family responsibilities often place non-negotiable time demands on nontraditional students (Hafer et al., 2021).

A commonality among nontraditional adult students is a break in the continuity of their education trajectory (Bean & Metzner, 1985; Choy, 2002; Horn & Carroll, 1996; National Center for Educational Statistics, 2014). This enrollment gap often leaves nontraditional students out of step with current educational practices in the classroom and exaggerates feelings of negative self-efficacy, such as feelings of not belonging and lack of confidence (Darney & Larwin, 2018; Eichelberger & Imler, 2016; Hunter-Johnson, 2017; Robinson & Salvestrini, 2020). Negative self-efficacy traits are correlated with emotional disengagement (Kahu & Nelson, 2018; Bond & Bedenlier, 2019). Being faced with the challenges of new technology, along with their already heightened fears of inadequacy, can negatively affect student engagement and success (Darney & Larwin, 2018).

Clynes et al. (2020) reported that working more than 16 hours per week had a negative academic impact on nontraditional nursing students. Nontraditional-aged students (> 25 years) can experience barriers when entering higher educational institutions, barriers such as agism, transportation challenges, lack of experience with computers and technology, increased family and work responsibilities, illness, and their own negative fears and doubts (Cody-Conner, 2015). In Kuwaiti, nontraditional female students have unique educational barriers: feeling undervalued because of their gender and feeling as if the teaching strategies do not account for their life experiences (Alshebou, 2019). Bourke et al. (2020) reported that nontraditional Canadian students with low-income experience extensive barriers when enrolling and completing higher education degrees. Identifying barriers to enrollment and completion demonstrates the global need to study engagement practices for nontraditional students.

Adult learners, especially in their first year, often feel like outsiders or imposters due to being out of step with their younger peers and lacking academic experience (Karmelita, 2020; Whitehead & Wright, 2017). The imposter phenomenon, often associated with FYANTS, is a deeply held conviction that one is not good enough or is undeserving of what one has (Whitehead & Wright, 2017). To succeed academically, nontraditional adult students must often reconstruct their identities (Busher & James, 2019). FYANTS often experience isolation and frustration (Shumaker & Wood, 2016). Returning to formal education for the nontraditional adult learner is a high-risk endeavor, which many are hesitant to engage in (Busher & James, 2019).

Adult Learning and Andragogy

Knowles (1980) affirmed with his principles of andragogy that adult learners are more likely to engage in learning when they can relate the new knowledge to their life experiences. Owens and Medaille (2021) confirmed that facilitating the students' finding of personal relevance is an effective strategy for increasing engagement in nontraditional adult students. Knowles (1980) and others (Merriam et al., 2007) asserted that adults have unique learning needs, including self-direction, intrinsic motivation, and problem-based learning experiences. Nontraditional adult learners have been shown to have different goals, expectations, and needs than traditional students (Kim et al., 2011; Reinhardt et al., 2018; Renirie, 2017).

Nontraditional students often have different and preferred ways of learning (Dauenhauer et al., 2021; Dos Santos, 2020). Appropriate m-learning teaching and learning strategies are needed to motivate nontraditional students. Dauenhauer et al. (2021) called for implementing intergenerational pedagogical approaches. Conversely, due to their recent life experiences, traditional students are better informed and situated to manage educational technology (Bengo, 2020).

The adult learning theory paradigm is critical to this research. Adult learning theory emphasizes the uniqueness of adult learners and how their experiences may influence learning and engagement (Rabourn et al., 2018). Henschke (2015) identified the differing views of andragogy through an international lens. European references to the term andragogy mainly refer to adult education and training rather than higher education. Nevertheless, the differing views on andragogy have merged closer together in recent years, especially in distance education (Henschke, 2015).

American Andragogy. Knowles (2015) contended that adults learn differently from children and presented six-core adult learning principles (Knowles et al. 2015). The six-core adult learner principles are one, adult learners need to know the content's why, what, and how, especially the why. Two, adult learners' self-concept of learning is autonomous and self-directing, needing to work things out themselves. Three, adult learners bring vast stores of experience, resources, and mental models into the classroom. Four, adults are ready to learn based on life-related challenges. Five, adults are problem-centered learners, and their orientation to learning is often contextual. Six, adult learners' motivation to learn is often intrinsic and seeks personal payoff. Several scholars have debated the theoretical nature of Knowles's theory of andragogy, claiming that rather than a learning theory, Knowles's principles were a list of good teaching practices (Brookfield, 1986; Hartree, 1984; Jarvis, 1984).

Social Learning Theory. Bandura was one of the first to break away from the behaviorist's theory of learning (Merriam et al., 2007) when he presented his social learning theory (Bandura, 1977). Bandura and other social learning theorists recognized that the social environment provides the bulk of human learning experiences through self-performance or observation of others (Merriam et al., 2007). The SEwEI model is framed within a psychosocial context (Kahu & Nelson, 2018). Bandura (1989) asserted the concepts of self-reflection and self-regulation through the ability to visualize consequences and self-efficacy, the belief in one's ability to control their life circumstances. The notions of self-efficacy, as presented by Bandura (1989), and intrinsic motivation, as maintained by Knowles (2015), are closely intertwined and are represented in the antecedents of the SEwEI framework (Kahu & Nelson, 2018).

Self-Efficacy. Self-efficacy is a psychological measure that can predict behaviors and coping mechanisms for engagement and motivation toward goal achievement (Bandura, 1982). Self-efficacy is the most potent predictor of student outcomes (Bandura, 1996; Jenert et al., 2017; Wang & Lin, 2007). Wang & Lin (2007) discussed three motivational components that significantly affect academic success: self-efficacy, task value, and affective response. Bandura (1996) suggested that performance or experience enhances self-efficacy exponentially, including viewing or modeling the successful implementation of others in similar experiences (Bandura 1986). Bandura (2000) reported on the collective efficacy of groups and the positive influence on enhanced effort, persistence, and achievement.

Engagement

Engagement is an academic "buzzword" (Kahu, 2013, p. 758). Bowden et al. (2021) confirm that higher education stakeholders' persistent interest in engagement is associated with success and retention. Researchers have linked engagement to student outcomes for several decades (Astin, 1999; Bandura, 1977; Fredricks et al., 2004; Kahu, 2013; Kuh, 2009; Tinto, 1989). Student engagement has been used synonymously with quality (Kuh, 2009). Den-Eliyahu et al. (2018) defined engagement as "the intensity of productive involvement with an activity" (p. 87). Nevertheless, the definition of engagement remains under debate (Boekaerts, 2016; Kahu, 2013; Xu et al., 2020). It is generally agreed that student engagement is complex and multifaceted, requiring the consideration of various contextual factors (Bond & Bedenlier, 2019; Bowden et al., 2021; Guo, 2018; Kahu, 2013). Yet, some researchers feel that the meta-construct definition is too broad, and the core elements of engagement have not been isolated (Azevedo, 2015; Boekaerts, 2016; Sinatra et al., 2015).

Fredricks et al. (2004) used three interrelated domains of engagement, behavioral, cognitive, and emotional, to diagram a definition of engagement. Kahu (2013) defined engagement as an "individual psychological state" (p. 764), a holistic experience that includes the students' emotions, behavior, and cogitative processes. Kuh (2009), who was instrumental in the design of the National Student Survey on Engagement (NSSE), declared engagement to be the "quality of effort and involvement in productive learning activities" (p. 6). The emphasis on ‘effort’ highlights Kuh's behavioral approach to engagement, while the term ‘involvement’ is a nod to Tinto's (1987) and Astin’s (1999) seminal works on involvement theory. Nonetheless, Kahu (2013) criticized the NSSE for its behavioral focus and noted that only one question on the survey measured emotional engagement.

Bond et al. (2020b) defined student engagement as the “energy and effort that students employ within their learning community, observable via any number of behavioral, cognitive, or affective indicators across a continuum. It is shaped by a range of structural and internal influences, including the complex interplay of relationships, learning activities, and the learning environment. The more students are engaged and empowered within their learning community, the more likely they are to channel that energy back into their learning, leading to a range of short and long-term outcomes that can likewise further fuel engagement." (p 3). Bond et al.'s (2020a) definition emphasized that engagement is experienced along a continuum. Engagement is an energizing experience that perpetuates and influences learning and learning outcomes.

Another standard definition of engagement in education comes from Schaufeli et al. (2002, p. 71). "A multi-aspect construct that includes effort, resiliency, and persistence while facing obstacles (vigor), passion, inspiration, and pride in academic learning (dedication), and involvement in learning activities and tasks (absorptions) as the main facets of this construct." This definition of engagement highlights the importance of task value and self-efficacy. Schaufeli et al. (2002) also included in their description of engagement links to academic outcomes that are used to accredit, rank, and finance educational institutions, thus exposing the reason for the engagement buzz.

Emotional Engagement

Emotional engagement is a learner's enjoyment and enthusiasm in their educational pursuit. Emotional engagement has been referred to as affective engagement (Beatson et al., 2020; Bond et al., 2020a) or affective reactions (Fredricks et al., 2004). The term 'emotional engagement' will be used predominantly in this study as the emotional domain of engagement will be the focus of this research. Emotional engagement has been defined as "the sum of all enduring emotions experienced by the student" (Bowden et al., 2021, p. 6). The attention of emotional engagement is on the student's internal affective response towards the content and the learning environment or context (Simmons & Chau, 2021; Xu et al., 2020). It is imperative to acknowledge that factors outside the academic setting highly influence the students' emotions (Bowden et al., 2021). The students' emotional engagement is influenced by numerous psychosocial factors, including relationships within the educational community (peers and faculty), self-efficacy, and lifeload (Farrell & Brunton, 2020). Even the milieu of the classroom set-up has been shown to significantly influence emotional engagement (Holec & Marynowski, 2020).

Redmond et al.'s (2018) definition of emotional engagement focused on the "students' emotional reaction to learning" (p. 195). These emotional reactions may be positive or negative and include motivation, commitment, values, interests, and expectations. In contrast, Dunn and Kennedy (2019) identified emotional engagement as the amount of investment a student deposits into learning, stressing that the amount in question is not merely time. Halverson and Graham (2019) propagated the image of emotional engagement as the fuel for cognitive engagement and, thus, a necessary antecedent for other forms of engagement (Skinner & Pitzer, 2012). Yet, for some, the definition and indications of engagement, especially emotional engagement, lack a definitive definition or measure (Boerkaerts, 2016).

Bond and Bedenlier (2019) identified specific manifestations of state engagement in each of the three domains of engagement: behavioral, cognitive, and emotional. The criteria used to signify emotional engagement were attributes that demonstrated a positive connection with the learning milieu, such as excitement, satisfaction, curiosity, ability to envision relevance, interest, a sense of safety and belonging, energy, validated, realism, enjoyment, self-efficacy, a desire to succeed and positive interactions within the learning community (Bond & Bedenlier, 2019). These criteria reflect a wide range of emotional responses. All engagement domains, especially emotional engagement, lay on a continuum (Bedenlier et al., 2020; Bond & Bedenlier, 2019; Muir et al., 2019; Ornelles et al., 2019; Payne, 2019). While positive emotional responses that lead to engagement are a part of the continuum, so is disengagement (Bedenlier et al., 2020). Nevertheless, negative emotions do not always activate disengagement. Positive and negative emotional responses can positively influence student engagement (Redmond et al., 2018). Confusion, for example, can positively or negatively shape engagement, depending on the context (Halverson & Graham, 2019). The negative constructs most associated with disengagement include boredom, frustration, and anxiety, with anxiety as the most destructive to emotional and cognitive reserves (Halverson & Graham, 2019).

There is a great need to understand emotional engagement in academia better. Emotional engagement has been under-researched (Aslam, 2018; Bowden et al., 2021; Kahu, 2013). The difficulty in measuring the continuum of the affective domain is a significant factor in emotional engagement being under-researched (Bowden et al., 2021; Halverson & Graham, 2019; Kahu, 2013). When Redmond et al. (2018) presented their online engagement framework, they expanded the domains of engagement from three to five and included social and collaborative engagement. These two new domains framed emotional engagement, with social engagement becoming a measure of emotional engagement. Henrie et al. (2015) noted that in reviewing measures of student engagement in technology-enhanced learning, 77% of the research measured behavioral indicators, 43% measured cognitive, and only 41% measured emotional indicators. Schindler et al. (2017) noted that very little research had been conducted on computer-based technology and emotional engagement outside of digital gaming. Schindler et al. (2017) pointed out a unique difference in the studies of computer-based technology and engagement research. Most studies on educational technology, outside of gamification, focus on behavioral engagement. Yet, gamification research focuses on cognitive and emotional engagement. Halverson and Graham (2019) noted that researchers often measure external behaviors, hoping they imply emotional engagement. Tualaulelei et al. (2021) declared emotional engagement to be “less visible” (p. 4). Noel et al. (2015) concluded that defining and measuring emotional engagement was difficult.

Emotional engagement is subjective and open to interpretation. Therefore, the student’s perspective is required. Emotional engagement must be assessed using self-reported measures (Fredricks et al., 2004; Kahu, 2013). In attempting to isolate emotional engagement, it is essential to remember that engagement is a meta-construct with overlapping dimensions and, therefore, cannot be wholly dissected away from the other domains of engagement (Kahu, 2013). In the FEAC and SEwEI, engagement outcomes are not aligned to one particular engagement domain but rather the holistic experience. The psychosocial constructs of self-efficacy, emotions, belonging, and wellbeing are all part of the meta-construct of engagement and, thus, a part of emotional engagement.

Self-Efficacy. Self-efficacy, or the self-confidence one has in their ability to accomplish the task set before them, is one of the central elements of student engagement within the educational interface. Historically, self-efficacy was introduced as a critical element in Bandura's (1977) social learning theory. Bandura (1977) described self-efficacy as “a generative capability in which cognitive, social-emotional, and behavioral sub-skills must be organized and effectively orchestrated to serve innumerable purposes” (p. 36-37). Kahu’s justification for identifying self-efficacy as a critical construct for student engagement and not linking self-efficacy exclusively to the emotional domain is evident. Self-efficacy is essential for student success. Success requires an individual to possess and utilize both skills and positive self-efficacy (Bandura, 1982). According to Tinto (2017), self-efficacy is the foundation for student success and involvement. Students who do not believe they can accomplish the goal will not initiate engagement or interface with the educational institution.

A person’s level of self-efficacy is fluid; it can be enhanced or diminished. Self-efficacy is built upon past experiences, the perception of their capacities, and the locus of control (Bandura, 2017). Therefore, Agency, autonomy, and self-regulation are critical to self-efficacy and learning (Bandura, 1982), elements also highlighted in Knowles's (1980) theory of andragogy. Involvement has a spiraling effect on self-efficacy. Positive experiences for participation will enhance self-efficacy and propel further engagement.

Conversely, negative experiences can diminish self-efficacy and propel disengagement. Institutions can influence a learner’s self-efficacy through the experiences provided (Renirie, 2017; Tinto, 2017). Academic self-efficacy is linked to student outcomes, including persistence and completion (Schwehm, 2017). Thus, positive interactions with the educational institution, the interface that enhances self-efficacy, can propel a student upward through persistence to succeed.

Various institutional strategies can enhance students' self-efficacy, including contextualizing the curriculum, active learning, and feedback. An essential efficacy-building design is to connect the content of the curriculum with the context of the student’s life (Renirie, 2017). Tinto (2017), whose work has often been used to emphasize the importance of extra-curricular involvement, also espoused the importance of the perceived curriculum value on student motivation. Active learning strategies, including technology, have also enhanced students’ self-efficacy (Arico, 2019; Bandura, 1989; Bond, 2020; Darney & Larwin, 2018). Yet, as Hattie and Timperley (2007) noted, a student’s willingness to engage in the active learning and feedback process depends upon the learner’s level of self-efficacy.

Reinhardt et al. (2018) examined the influence of instructor feedback on self-efficacy among adult students. Feedback delivered promptly was reported to enhance student self-efficacy while delaying feedback led to uncertainty and lower self-efficacy. Others confirmed that feedback provided to students could boost their self-efficacy and performance (Clark, 2012; Hattie & Timperley, 2007; Kahu et al., 2019; Sanchez et al., 2020). Clark (2012) calls for classrooms to increase student participation and formative assessment opportunities. Technology-enhanced active learning pedagogical practices have been shown to provide feedback that can enhance self-efficacy (Arico, 2019; Chapman, 2017; Dunn & Kennedy, 2019; Yilmaz, 2017). The acceptance of technology is often related to past experiences and perceived self-efficacy (Chan & Ko, 2019; Robinson, 2020).

Emotions. The manifestation of emotional engagement is revealed in the affective responses of the learner. Strain and D'Mello (2015) maintained that a student's affect is indivisibly connected to the "process and product" of learning (p. 1). The emotional state of learning is in response to the context and content; it is expansive and includes both negative and positive responses (Lester, 2013). Positive affective reactions include happiness, enjoyment, and interest (Finn & Zimmer, 2021; Halverson & Graham, 2019; Kahu & Nelson, 2018; Lester, 2013; Ryan & Deci, 2001; Skinner & Belmont, 1993; Strain & D'Mello, 2015). Bowden et al. (2021) added pride, delight, enthusiasm, openness, joy, elation, and curiosity to the manifestations of positive emotional engagement. McDonald et al. (2020) included enthusiasm, interest, and pride and added positivity, energetics, and excitement in their survey on emotional engagement. At the same time, Fredrick et al. (2004) listed interest, boredom, happiness, sadness, and anxiety. Kahu and Nelson (2018) referred to anxiety as the opposite of wellbeing; therefore, this study will address anxiety in wellbeing.

Bowden et al. (2021), building on Tinto's (1987) seminal work, contended that emotional engagement should be evident both within the classroom and without, specifically on campus. Strain & D'Mello (2015) focused their research on affective regulation, the learner's ability to control mood. Affective regulation requires the learner to maintain the positive emotional energy needed to persist, complete academic tasks, and achieve their goals. Strain and D'Mello (2015) identified the learner's appraisal of the context and content as a significant influencer on emotional affect. Most important in the students' appraisal is whether the content is of value to them and whether, as learners, they have the control necessary to achieve a positive outcome. These themes are consistent with Knowles's (1980) principles of andragogy as well as Bandura's (1977) social learning theory. Research on the learner's affect during academic engagement beyond anxiety is limited (Kay, 2007; Lepp et al., 2014; Strain & D'Mello, 2015).

According to Bowden et al. (2021), the most important manifestation of emotional engagement is when the learner recognizes the applicability and intention of designed learning activities. Halverson and Graham (2019) also differentiate interest and curiosity, which they identify as indicators of cognitive engagement. The authors claimed that situational interest and enjoyment are derived from external stimuli such as entertainment. In contrast, happiness and confidence are the internal constructs of positive emotional engagement (Halverson & Graham, 2019). According to Halverson and Graham (2019), happiness is that momentary state of contentment associated with increased creativity and stimulating cognitive engagement.

Belonging. A sense of belonging is associated with relationships and connections. As with the other psychosocial constructs, seminal researchers consider a sense of belonging to be a significant factor in student engagement, retention, and success (Ahn & Davis, 2019; Kuh et al., 2005; Tinto, 1987). The definition of a student's sense of belonging incorporates feelings of acceptance along with being valued, included, and encouraged by others (Korhonen et al., 2019). Using a sense of belonging scale developed by Bollen and Hoyle (1990), Erb and Drysdale (2017) used a three-item survey to measure the students belonging. "' I see myself as part of the campus community,' 'I feel that I am a member of the campus community,' and 'I feel a sense of belonging to the campus community.'" (p. 67). These three survey measures provide a reference for the term belonging and center around the concept of community. Ahn and Davis (2019) identified two branches of belonging: 'university belonging' attachment to the university and 'school belonging' association with the academic department in which the student is studying.

Kahu and Nelson (2018) added to the definition of belonging by incorporating a transformation component in the student. They claimed that developing a sense of belonging in higher education requires the student to create a new identity by changing their understanding of themselves with other individuals, the academic program, and the institution. Thus, when used in higher education, belonging is defined as a feeling of safety and involves an act of self-identification and identification with others (Gravett &

Ajjawi, 2021). Ahn and Davis (2019) defined a sense of belonging as a personal attachment or connection to the specific learning institution the student attended. The authors associated a sense of belonging with the social sphere of engagement (Ahn & Davis, 2019). In contrast, others contend that belonging, connection, and involvement are framed within the emotional sphere of engagement (Finn & Zimmer, 2012; Kahu, 2013; Skinner & Pitzer, 2012).

Gravett and Ajjawi (2021) defined a sense of belonging as a human need and an emotional attachment. Included in their definition is the feeling of safety. Maslow (1943) identified safety and a sense of belonging as critical drivers of human motivation. A sense of belonging also entails an aspect of a person's self-identification and the identification of others, thereby forming a relationship and bond (Gravett & Ajjawi, 2021). Nevertheless, some learners may wish to be identified as not belonging to the dominant demographic group (Baik et al., 2019; Gravett &Ajjawi, 2021).

Historically, belonging has been viewed as a contextual domain, referring to the campus's physical spaces. However, with the pivot to online learning because of COVID-19, institutions have been forced to reexamine the concept of belonging and perhaps expand its scope (Gravett & Ajjawi, 2021). Institutions have been compelled to recognize that students belong to and have identities outside the academic setting. These alternate identities come with obligations, responsibilities, and commitments. Bandura (1997) posited that institutions have limited influence on a student's intellectual development if there is oppositional influence from the home or community. As with other aspects of engagement, the definition of a sense of belonging is in flux, with a lack of consensus on how to define or measure it (Ahn & Davis, 2019). And yet, despite the ambiguity, institutions have sought ways to remove barriers to belonging for marginalized groups, as belonging is seen as essential to student engagement, success, and retention (Kahu & Nelson, 2018; Tinto, 2017).

A student's academic self-efficacy is insufficient to ensure academic success (Tinto, 2017). For students to persist to completion, they must engage with and feel they belong as members of the community of learners (Tinto, 2017). A sense of belonging is strengthened as the student connects their education to their goals (Tinto, 1999). Tinto (2017) contended that the student's involvement with the university is the primary determinant of a student's sense of belonging and emphasized extra-curricular activities. Tinto (2017) argued that engagement does not matter in student success. Instead, the student's perception of belonging arises from engagement. Students who feel they belong are more likely to engage in the learning experience and ultimately be more successful (Allen et al., 2016; Tinto, 2017). However, Ahn and Davis (2020) emphasized that academic and social engagement are not directly connected. They are independent of each other and should be treated as such. A sense of belonging is associated with retention, not necessarily academic success (Anh & Davis, 2019, 2020; Tinto, 1987).

Interactions and relatedness develop a sense of belonging and identity with individuals (Korhonen et al., 2019; Tinto, 2019). Igniting a sense of belonging can result from connections with a small group (Tinto, 2017). Several studies focus on the benefits of out-of-class activities to increase learners in higher education to develop a greater sense of belonging in the institution of learning (Tinto, 1987; Tinto & Russo, 1994; Zhoc et al., 2019). For the under-represented student to negotiate the transition to university, forming relationships with peers is seen as crucial to establishing a sense of belonging and identity (Timmis & Muñoz-Chereau, 2022). Gill (2021) claimed that peer support is the social factor that most positively impacts a student’s progression in academia. However, Ahn and Davis (2020) downplay the connection between out-of-class activities and academic success. Academic success is associated with the student making a connection between the content and context of the course (Gravett & Ajjawi, 2021). Korhonen et al. (2019) reported that first-year university students' sense of belonging is critical for developing identity and persistence. The authors call for instructors and students to participate in the educational process together to increase students' belonging. The focus is not on extra-curricular involvement but instead on an intra-curricular experience.

The relationship between the learner and instructor is essential to a student's sense of belonging. Xu et al. (2020) contended that the influence of the student-teacher relationship is critical to student engagement. Although Xe et al. (2020) research focused on using technology in an online discussion board, the student’s engagement was enhanced by technology and increased interaction with the instructor. Kuh (2009a; 2009b & 2016) repeatedly emphasized the importance of the role of the instructor in facilitating a student’s emotional engagement. Within the community of inquiry (CoI) framework for online learning and engagement, teaching presence is considered the foundation of cognitive and social presence (Garrison, 2011). However, technology, whether in the classroom or out, can only augment teaching presence by implementing sound pedagogical practices (Bond et al., 2020b). Instructors must engage with the students, creating a sense of belonging within the classroom (Allen et al., 2016). Students who sense belonging are likelier to engage and be more successful (Allen et al., 2016). Engagement and the sense of belonging and identity positively reinforce each other (Korhonen et al., 2019).

Wellbeing. Wellbeing was defined as "a dynamic state, in which the individual is able to develop their potential, work productively and creatively, build strong and positive relationships with others, and contribute to their community. It is enhanced when an individual is able to fulfill their personal and social goals and achieve a sense of purpose in society" (Field, 2009, p. 9). Field's (2009) definition of wellbeing aligns with Maslow's (1943) concept of self-actualization. Wellbeing is a holistic term, multi-dimensional, and a reflection of many aspects of a person's life. Therefore, Kahu's (2013) definition of wellbeing as an absence of stress is quite simplistic.

In psychology, wellness is derived from two traditions of thought, hedonic and eudaimonia (Glencross et al., 2019). Hedonic is subjective and is reflected in a happy life of enjoyment (Deci & Ryan, 2014). Hedonic is not merely the absence of negative affect or anxiety; it manifests a positive affect such as happiness (Glencross et al., 2019). Eudaimonia is subjective; however, it is expressed in terms of personal growth, purpose, and finding meaning in one's life (Glencross et al., 2019). In academia, wellbeing is linked to success, as it shields the opposing forces by enabling adaptive defense mechanisms (Glencross et al., 2019). Bowden et al. (2021) emphasized the critical nature of wellbeing as a measurement of a student's resiliency. Deci and Ryan (2014) reported that activities enhanced wellbeing, where the student had autonomy and success. Wellbeing is linked with intrinsic motivation (Deci & Ryan, 2014).

Emotional Engagement and the Nontraditional Community College Student

Little research has been conducted on the emotional engagement of community college students, let alone the subset of nontraditional adult students. Some researchers have identified the gap in research on emotional engagement at the community college level and have called for more. Jensen et al. (2020) called for further research on student engagement in the classroom. Chen and Starobin (2018), who examined general self-efficacy among community college students, endorsed research to explore self-efficacy among diverse student groups on the community college campus. Bickerstaff et al. (2017) call for further research to explore classroom experiences that enhance student confidence. Myran and Sylvester (2021) proclaimed that limited research explores self-efficacy in the community college setting. Gopalan and Brady (2020) called for more studies to investigate the sense of belonging at two-year colleges, especially among first-generation students and those who identify as an ethnic minority. Yet, none of these researchers on community college students isolated the nontraditional student subset. However, they did acknowledge the unique, nontraditional demographic of the community college student body.

Research studies on the emotional engagement of nontraditional adult students in higher education report mixed results. For example, McDonald et al. (2020) reported that nontraditional students had higher emotional engagement than traditional students. Nevertheless, while the participants in the non-traditional group were over 30 and had a gap in their educational trajectory, the students were enrolled at a four-year institution. They were all declared business majors, and the study did not identify the student's year in school. Studies like McDonald et al. (2020) and others (e.g., List & Nadasen, 2017; Lukszo & Hayes, 2020; Schwehm, 2017), which focus on students who have completed the community college and transferred to a four-year university, represent only a small-scale percentage of the community college student body. This study aims to understand the perception of students who have not yet obtained this level of education.

Lukszo and Hayes (2020) investigated community college transfer students and explored what they termed transfer student capital (TSC). TSC represents the student’s ability to negotiate to transfer to a four-year learning institution. The authors analyzed the sources of TSC that appeared to be the most useful to community college transfer students. The authors reported that family members and peers were the most common way TSC was procured. However, the faculty provided the critical key to building the self-efficacy needed to transfer. In exploring the variables that influence adult community college students to move to the university level, Schwehm (2017) concluded that the students perceived level of engagement in the community college classroom was the most influential predictor of academic self-efficacy and social adjustment at the university level. Although this study did not exclusively focus on adult learners, it highlighted the importance of classroom engagement over campus involvement.

Heilporn et al. (2021) identified that engagement strategies differ between undergraduate and graduate students in a blended classroom. Undergraduate students tended to be more emotionally engaged when using digital tools, while postgraduate students experienced heightened emotional engagement, sharing, and learning. Chacon-Diaz (2020) also noted a varied degree of engagement among students in implementing various active learning strategies in a face-to-face introductory science class. Heilporn et al. (2021) and Chacos-Diaz (2020) revealed that students at multiple stages of their educational trajectory will experience and respond to pedagogical strategies differently, underscoring the need for research at the community college level.

Self-Efficacy of Nontraditional Community College Students. Self-efficacy is a critical psychosocial construct needed for emotional engagement to occur. Tinto (2017), in his work on engagement in higher education, synthesized the motivation construct into a trilogy of self-efficacy, a sense of belonging, and perceived curriculum value. As noted earlier, there are limited studies on emotional engagement, including self-efficacy among nontraditional community college students (Bickerstaff et al., 2017). Studies have concluded that self-efficacy among nontraditional students is critical for engagement and persistence (Chen & Starobin, 2018). Studies have noted the mailability of self-efficacy and acknowledge that critical factors can affect students' levels of self-efficacy (Bickerstaff et al., 2017; Myran & Sylvester, 2021; Renirie, 2017). Numerous other studies present practices for enhancing self-efficacy and emotional engagement (Bickerstaff, 2017; Renirie, 2017; Samuel & Warner, 2021).

Chen and Starobin (2018) explored the general self-efficacy among community college students and reported that self-efficacy significantly influenced degree aspirations. Ryan (2019 & 2021) confirmed that self-efficacy is critical to community college students' success in English and composition courses. Jameson and Fusco (2014) compared the self-efficacy in math levels of traditional and nontraditional undergraduate students (four-year university). They concluded that adult learners (<25 years of age) self-reported lower levels of math self-efficacy and higher levels of math anxiety than their traditional peers. As a group, Reinhardt et al. (2018) claimed nontraditional adult students have low self-efficacy.

Goulão (2014) explored the relationship between self-efficacy and performance among first-year adult nontraditional undergraduate students. A significant correlation exists between students with high self-efficacy and high-performance scores in the online course. List and Nadasen (2017) found a similar correlation between self-efficacy and performance scores among community college students who had transferred to a four-year online university. Gill (2021), focusing on nontraditional first-year students who had transitioned to a university, revealed that these students have low self-efficacy and heightened anxiety during the initial transition period despite being optimistic about learning.

Other studies conclude that mature nontraditional students at the university level have higher levels of self-efficacy and less anxiety than their traditional peers (Erb & Drysdale, 2017). It is important to note that the Erb and Drysdale (2017) study participants were recruited from a top-ranked research-intensive university with selective admission criteria and represented all levels of years in school. Nevertheless, even in this study, the nontraditional adult students reported a significantly lower sense of belonging than traditional students. Spitzer (2000) also examined the self-efficacy of traditional and nontraditional students in a university setting and found self-efficacy to be equivalent in each group. However, the nontraditional group was found to have a higher GPA. The discrepancy in levels of self-efficacy found between nontraditional students at the university level and community college level highlights the need for further research at the community college level.

Myran & Sylvester (2021) investigated the influence of a STEM consortium on self-efficacy, designed to retain students enrolled in STEM courses. The authors reported that the self-reported self-efficacy levels increased in response to the consortium and that students from the most vulnerable populations reported the most significant increases. Samuel and Warner (2021) explored the influence of embedding growth mindset interventions within a community college statistics course on self-efficacy and anxiety. The results of their study indicated that students overall felt less stress and more confidence with the growth mindset interventions than in previous sections without the interventions. These studies demonstrated the fluidity of self-efficacy and emotions and suggested that self-efficacy can be influenced by classroom context and content.

Bickerstaff et al. (2017) emphasized that there was little research on how self-efficacy is shaped in the community college classroom. Their qualitative study explored community college students' descriptions of their confidence. The authors concluded that student confidence is fluid and changes because of "interactions with peers, faculty, and others" (Bickerstaff et al., 2021, p. 501). Bickerstaff et al. (2017) coined the term "experience of earned success" (p. 501) to describe interactions that enhanced students' confidence. First and foremost, the authors identified feedback as central to learners' success.

Evans et al. (2020) investigated math self-efficacy among beginning community college students who choose STEM majors. The authors concluded that math self-efficacy positively influenced STEM majors in their choice of majors. The study also concluded that the student's high school experiences highly influenced math self-efficacy at the community college level. Renirie (2017) identified strategies that institutions and instructors could implement to enhance adult learners' self-efficacy. A primary method presented was connecting the content to the real world and the personal experiences and problems of the learners. Renirie (2017) identified that for mature learners, the classroom is the crucial arena for involvement. This mature student group does not generally have time to engage in events and activities that are not directly related to their goal of obtaining a degree.

Reinhardt et al. (2018) examined the influence of instructor feedback on self-efficacy among adult students, specifically those of the Millennial generation. Feedback delivered promptly to students was reported to enhance their self-efficacy, while delaying feedback led to lower self-efficacy and a sense of belonging. Delayed feedback has the added disadvantage of increasing self-doubt. Clark (2012) also concluded that student feedback could boost self-efficacy and, as a result, performance. Clark (2012) calls for classrooms to increase student participation and formative assessment opportunities. Finally, Peaslee (2018) contended that faculty are in a unique position to influence a student's academic self-efficacy. The positive effect is produced by instructor confirmation behaviors such as eye contact, indicating that they appreciate students' questions or comments, verbal and written praise, smiling, knowing the students' names, and having an interactive teaching style.

Belonging, Emotions, and Wellbeing of Nontraditional Community College Students. As noted earlier, nontraditional students enrolled in large universities have been reported to have a lower sense of belonging than traditional students (Erb & Drysdale, 2017). The student’s understanding of belonging was negatively related to the student’s age. This discrepancy caused the researchers concern, despite the reported high motivation and self-efficacy levels among nontraditional students, as a sense of belonging has been linked to student retention rates (Erb & Drysdale, 2017). Erb and Drysdale (2017) also reported that the results of examining self-efficacy and belonging among nontraditional students were mixed. These discrepancies might be due partly to variations in academic stages and the context between studies. Along with Erb and Drysdale (2017), Gravett and Ajjawi (2021) called for further research on belonging among diverse student groups.

Gopalan and Brady (2020) used the results of a national longitudinal study to explore the sense of belonging among ethnic minorities and first-generation students. The national sample revealed that first-year college students, on average, “somewhat agree” that they feel like they belong at their learning institution. When investigated using various characteristics such as ethnicity and first-generation, these students reported a significantly lower sense of belonging at a four-year institution. Nevertheless, first-generation and ethnic minority students had a higher sense of belonging at two-year learning institutions.

Various other studies have added to the body of literature on nontraditional students and elements of emotional engagement. Baik et al. (2019) reported that part-time students, mature students over 25 years of age, and students who work more than 16 hours per week are less likely to feel a sense of belonging to the campus community. Gill (2021) concluded that students who lack confidence and have a lower sense of belonging in higher education are less likely to ask for help. Gill (2021) also confirmed that nontraditional students are reluctant to seek help. Phipps et al. (2015) report that community college students who participate in intramural sports have an elevated sense of community and belonging. Garza et al. (2021) explored community college English learners' persistence in their sense of belonging. While the authors concluded that there was a significant positive relationship between persistence and a sense of belonging within this subset, the results were not as conclusive as they had hypothesized. Hood et al. (2021) investigated community college students who prefer to work alone rather than participate in active group learning activities. The authors could correlate a student's level of social anxiety to low self-efficacy and negative academic engagement.

Tinto (2019), a seminal author in research on engagement, claimed that the emotional engagement element of a sense of belonging for the nontraditional student is the most crucial predictor of persistence (Tinto, 2019). For the adult learner, contextual engagement is significantly influenced by the context of the academic environment and the unique environment (Merriam et al., 2007). Nevertheless, despite the evidence of the influence of engagement on academic success, there is a shortage of research in the area of emotional engagement, belonging, wellness, or emotions within the community college arena.

Mobile Learning

The rise of technology is rapidly changing the face and design of higher education. Mobile technology use in the classroom is expanding and is expected to increase in the coming years (Balula et al., 2020). Instructors are required to create engaging learning environments to meet the demands of the traditional digital generation students (Bhati & Song, 2019). Technology must be systematically integrated into the classroom to enhance learning (Hilton, 2016). Higher education has generally responded enthusiastically to the digital age (Pepler, 2017). However, research investigating technology in education has been predominantly teacher-centric rather than learner (Pepler, 2017). Although m-learning might be considered trendy, technology use in the classroom must align with the learning objectives (Moore et al., 2018).

Defining Mobile Learning

There are a variety of terms used interchangeably with mobile learning. Basak et al. (2018) noted that electronic learning (e-learning), digital learning (d-learning), and mobile learning (m-learning) are often used indiscriminately in the literature. Others added technology-enhanced learning (Dunn & Kennedy, 2019) and mobile-assisted learning (Yilmaz, 2017). Basak et al. (2018) differentiated m-learning as not merely electric but mobile. They asserted that for a tool to be classified as m-learning, it must entail the domains of mobility: mobility of technology, mobility of learning, and mobility of the learner. Furthermore, Basak et al. (2018) contended that m-learning implies using a digital cellular phone. Although technology-enhanced education can include m-learning in the classroom, it most often incorporates out-of-classroom experiences such as social media, hyperlinks, web pages, and gamification apps (Dunn & Kennedy, 2019). This study will focus on m-learning in the classroom, understanding that most students will most often use their mobile phones but could alternatively use a laptop or tablet, per their preference.

Research Parameters for Mobile Learning

Mobile learning is a global phenomenon. Mobile technology is used in various disciplines to produce positive learning outcomes. Students from diverse demographic backgrounds, including grade levels, have been participants in studies on the effectiveness of m-learning. A variety of course designs and educational settings have been explored. Nevertheless, gaps in the research are evident, especially in the community college setting and among nontraditional adult students.

Diversity of Nations and Languages. M-learning in the classroom is a global phenomenon. M-learning has been studied and is utilized in Asian countries such as Taiwan (e.g., Dong et al., 2017), China (Fan et al., 2017), Singapore (Lee et al., 2019), Hong Kong (Cheng & Wang, 2019), Philippines, (Linsangan et al., 2017) and Korea (Kent, 2019), also in North America, including the United States (McCalpin et al., 2018) and Canada (Senecal et al., 2018). M-learning can be found throughout European classrooms, including in the United Kingdom (Khan et al., 2019), Australia (Sugden et al., 2021), and New Zealand (Owen & Licorish, 2020). Numerous European researchers have explored student participants in countries such as Germany (Schmidt et al., 2020), Spain (Diez-Pascual & Diaz, 2020), Portugal (Balula et al., 2020), France (Liu et al., 2019), Italy (Caserta et al., 2021), Switzerland (Sprenger & Schwaninger, 2021), Norway (Egelandsdal & Krumsvik, 2017b), Sweden, (Gustafsson & Ryve, 2021), Belgium (Moffarts & Combefis, 2020), and Ireland, (Arico, 2019). Numerous studies have also been conducted by educators in the Middle East, including Saudi Arabia (Alharbi & Meccawy, 2020), Turkey (Balta et al., 2017), Cyprus (Asiksoy, 2018), and Indonesia (Saleh et al., 2019). Additionally, studies have come from South Africa (Basitere & Ndeto Ivala, 2017) and Brazil (Coelho et al., 2020). Few research articles associated with South America have been found, possibly due to language translation or delayed computer access and infrastructure. M-learning has been implemented and studied in classrooms across the globe. Nevertheless, gaps in m-learning research continue to exist.

Diversity of Content. M-learning in the classroom is utilized across academic disciples. Research on m-learning in the classroom has explored engagement in courses such as nursing (e.g., Donnelly et al., 2016; Hampton et al., 2019; Li et al., 2018); biology (e.g., Chacon-Diaz, 2020; Djerdjian et al., 2020; Shea et al., 2020) kinesiology (e.g., Katz et al., 2017), foreign language learning (e.g., Yaros & Misak, 2021), vocational education (e.g., Hegarty et al., 2019), geography (e.g., Dong et al., 2017), chemistry (e.g., Diez-Pascual & Diaz, 2020), math/statistics (e.g., Cline & Huckaby, 2020; McCalpin et al., 2018) computer science (e.g., Aljaloud et al., 2019) and engineering (e.g., Balta et al., 2018; Khan et al., 2019; Xiangming & Song, 2018). M-learning utilization and research have not been limited to a specific discipline of study. Therefore, future research can continue to embrace diverse fields of study.

Diversity of Student Groups. Research has been conducted on m-learning engagement across a variety of student groups. Studies have investigated the use of m-learning with students with disabilities (Bruhn, 2017) and concluded that there is an unmet need to match technology and pedagogical strategies with student-specific needs. Dong et al. (2017) explored whether being an introvert or extrovert influenced m-learning technology engagement and reported that learning style had limited influence. Navarro (2020) investigated gender differences in engagement with m-learning technology and noted that some motivational learning styles were seen more often in male students with the use of technology. Other researchers reported an equitable enhanced engagement between genders (Peculea & Peculea, 2019). Although some studies on m-learning have focused on specific student groups, such as disabilities (Bruhn, 2017) and gender (Peculea & Peculea, 2019), the need for future research on underrepresented populations is critical. Ashtari and Taylor (2021) called explicitly for future studies to examine how underrepresented populations perceive learning, engagement, and technology in the classroom. Robinson (2019) specifically noted a gap in research on nontraditional students and technology integration in higher education. The perspective of the nontraditional student concerning technology in the classroom is a missing link in m-learning research.

Diversity of Course Design. There are various course designs in which m-learning is utilized, including traditional face-to-face courses, hybrid or blended formats, flipped design, and online or distance learning. Hybrid is a frequently explored course design model that can incorporate m-learning in the classroom. Sugden et al. (2021)

studied the utilization of various online learning activities, including interactive games, experiments, and formative learning. The authors concluded that gamified learning apps were least likely to facilitate deep learning or repeat use. The flipped classroom model, where the students are expected to come to class having already completed a specific learning assignment, is another arena where m-learning is utilized and researched. Lui et al. (2019) explored students' perception of the m-learning technology (Pear Deck™) and reported that students expressed increased motivation with m-learning.

Nevertheless, the authors noted an absence of significant difference between the control groups in learning achievements. Asiksoy and Sorakin (2018) also examined m-learning (Quizizz) in a flipped classroom model. They described students in the experimental group as reporting significantly lower anxiety levels in the classroom than in the control group who did not utilize m-learning. In contrast to Lui et al. (2019), Asiksoy and Sorakin (2018) reported a significant increase in learning achievement among the experimental group. Neither of the studies involving the flipped design reported the age demographics of the study participants. M-learning and engagement are frequently explored within the distance educational arena (e.g., Brown et al., 2022). The broad-ranging academic arenas and the diverse backgrounds of the learner population, including their technology aptitude, demand that educators approach teaching with technology with as much knowledge and understanding as possible. Many studies on m-learning explored student engagement in the online setting and course design (e.g., Cancino & Capredoni, 2020; Koomson, 2018; Liu & Correia, 2021). Students who enroll in an online course must accept that m-learning will be utilized at some level. However, students who enroll in a face-to-face classroom design may not have such preconceived feelings. Therefore, it is imperative to understand the students' perspective of m-learning in face-to-face course design.

Diversity of Grade Levels and Settings. Technology in education, particularly mobile learning, has been infused into today’s classrooms at all levels and settings. Research on mobile technology and engagement has included students in elementary (e.g., Hilton, 2017; Hsu & Harfield, 2018; Lindsay et al., 2016; Retalis et al., 2018), high school (e.g., Bond, 2020; Joyce-Gibbons et al., 2018; Karkoub & Abdulla, 2020; Perry & Steck, 2015), university (e.g., Beatson et al., 2020; Bond et al., 2020b; Diao & Hedberg, 2020; Dunn & Kennedy, 2019; Kim et al., 2020; Bass & Movahed, 2018) and graduate-level programs (e.g., Donnelly et al., 2016; Guarascio et al., 2017; Heilporn et al., 2021; Xiangming & Song, 2018). Pepler (2017) noted that technology in education is used in a wide variety of settings, including prisons, apprenticeships, and adult and community learning. Variations in student perspectives have been noted across grade levels. Yaros and Misak (2021) reported significant variance between first- and fourth-year student university students' attitudes and engagement in m-learning. Eichelberger and Imler (2016) noted significant differences in technology confidence between first-year traditional and nontraditional undergraduate students. Exploring age differences in learning from feedback, Simon and Gluck (2013) revealed that age was a significant determinant. Therefore, it is valuable to examine the perceptions of FYANTS on the influence of m-learning on emotional engagement.

M-Learning Research Gap in Community Colleges. Strikingly lacking is research at the community college level, which was collaborated on by Pepler (2017) and Djerdjian et al. (2020). Djerdjian et al. (2020) reported that only 3% of studies exploring education in biological sciences addressed the community college specifically. When m-learning and engagement research is conducted at the community college level, it often explores the relationship between engagement and distance learning (e.g., Robinson, 2019), or the studies do not compare students by traditional and nontraditional status (e.g., Symister et al., 2014). Several studies investigate the engagement patterns of community college students who have transferred to the university level (e.g., List & Nadasen, 2017; Schwehm, 2017). With community college transfer rates around 15% (List & Nadasen, 2017) and California Community Colleges reporting a 19% transfer rate within four years of starting (Johnson & Mejia, 2020), these studies on transfer students represent a weeded-out elite group of the community college student body.

M-Learning Research Gap Among Nontraditional Adult Students. Most m-learning studies focusing on use in higher education either do not consider the nontraditional students' perspective or address technology use in online learning. Some reference the students as the Net Generation (Flanigan & Kiewra, 2018), Generation Z (Hampton et al. (2019), digital natives (Uzunboylu et al., 2020), or digital age generations (Aslan, 2016; Bhati & Song, 2019), or even the millennial students (Reinhardt et al., 2018: Toothaker, 2018) ignoring the rising trend of mature nontraditional students entering or returning to higher education classrooms. Many studies do not include student demographics (Alioon & Delialioğlu, 2019) or compare students by year in school (Yaros

& Misak, 2021). This omission can lead to the assumption that all students, regardless of their background and circumstances, equally engage in m-learning activities.

Benefits to Engagement

There are many reported engagement benefits to using m-learning in the classroom. In a literary review, Florenthal (2019) summarized several noted benefits of m-learning in the classroom. Elements of enhanced behavioral engagement were mentioned, including increased student participation and improved class discussions. Florenthal (2019) identified several cognitive engagement benefits, including active learning, which leads to increased attention, application of knowledge, critical thinking, self-assessment, and enlightened content relevance. Active learning, as the term implies, places the student at the center of the experience rather than the instructor (Moore et al., 2018). Woxland et al. (2017) argued that a key benefit of m-learning is the decreased time an instructor spends in the authoritarian role; thus, the learner is guided toward self-directed learning (Yilmaz, 2017). The tool for independent inquiry is readily available and encouraged when m-learning is activated in the classroom (Diacopoulos & Crompton, 2020). Education empowers the mind, developing and creating a more vital, creative human being; nevertheless, technology provides the tool to utilize that knowledge (Uzunboylu et al., 2020). Andragogical implementation of m-learning has the potential to enhance behavioral and cognitive engagement in adult learners.

Many of the reported benefits of m-learning in Florenthal's (2019) study are potentially affiliated with the emotional domain of engagement. Florenthal (2019) identifies enjoyment, interest, and fun as positive descriptors of student perception of m-learning in the classroom. Anonymity and feedback were also frequently noted (Florenthal, 2019). Students reported that the anonymity of their responses via m-learning technology decreases their participatory anxiety (Carroll et al., 2018). Real-time feedback via m-learning technology enhanced learner attention and motivation to engage (Correia & Santos, 2017). Scholars have concluded that m-learning in the classroom has the potential to improve the behavioral, cognitive, and emotional engagement of the learner (Balula et al., 2020; Noel et al., 2015).

Infusing technology, including mobile technology, into higher education classrooms, helps prepare students for the job market and can enhance their technical competency. With the increasing expectation of digital competency by industry partners, technology is becoming more and more of a prerequisite for higher education (Bond et al., 2020a). Technology affects all aspects of the student's academic life (Bond et al., 2020a). In 2018, 90% of U.S. college students owned a smartphone (Yaros & Misak, 2021). Ideally, the technology used in the classroom would require minimal user support and training (Balula et al., 2020); however, the amount of support needed often is based on the degree of technology acceptance and utilization in the past. Most students have access to cellular phones (Pew Research Center, 2021), a form of technology requiring digital competency. While students can be brought to see mobile devices' value as learning instruments, they view cell phones more as a tool for entertainment and personal use (Woxland et al., 2017). Thus, students new to formal education must undergo a paradigm shift regarding the power and purpose of their mobile phones.

Drawbacks to Engagement

M-learning in the classroom has numerous drawbacks as well as benefits. Nonetheless, 25% of the studies reviewed by Florenthal (2019) failed to report any negative feedback on the technology used in the classroom. Reported drawbacks included disruptions, distraction to student learning, reliability, problems with technology, dislike of the approach, time limit pressure, elimination of discussion, and cheating. Access to reliable Wi-Fi and difficulty with technology, including the cost and other technical problems, were also reported as obstacles to students benefiting from the educational tool of m-learning. Undertakings that are susceptible to technical issues or not user-friendly become deterrents to engagement (Sugden et al., 2021).

Challenges in M-Learning Research

A significant challenge in studying technology in education is the plethora and variety of technology tools, management systems, software, and apps, as well as implementation methods. The abundance of technology tools used in m-learning created a challenge in discerning what aspect of the technology influences engagement, motivation, and other outcomes (Dunn & Kennedy, 2019). Additionally, Bedenlier et al.'s (2020) review of technology and engagement noted that the dimension of engagement least prevalent in the literature was affective engagement despite it being the area of highest reported disengagement. Determining the affective engagement of students during m-learning requires investigating the learning view through a qualitative methodology (Kahu, 2013). Although studies on the learner's perspective of m-learning are available, few researchers actually interacted with the students (Pepler, 2017).

M-Learning and SRS

A category of m-learning commonly utilized in the higher-education classroom is the student response system (SRS). SRSs technology is a type of interactive m-learning platform that collects student responses to formative assessments, then provides instant feedback to both the instructor and the learner (Cheng & Wang, 2019). The feedback can identify areas of weakness (Bordes et al., 2020; Egelandsdal & Krumsvik, 2017b; Fuller & Dawson, 2017; Sahin, 2019). SRSs were initially designed to engage students in the learning process (Bojinova & Oigara, 2013). Many instructors perceive SRS technology as a positive and powerful tool for conducting formative assessments (Egelandsdal & Krumsvik, 2017a; Gu & Yu, 2020; Ismail et al., 2019; Lin et al., 2020; Mubayrik, 2020a; Sahin, 2019). One of the most significant benefits of SRS-formative assessments is the immediate feedback provided to the students (Egelandsdal & Krumsvik, 2017a; Gu & Yu, 2020; Kapsalis et al., 2020; Ismail et al., 2019; Malicki, 2020; Mubayrik, 2020a; Sun & Hsieh, 2018). The feedback mechanism of SRS-formative assessments presents the learner with an opportunity for self-monitoring, self-regulation, and self-efficacy (Egelandsdal & Krumsvik, 2017a). Feedback is vital for building self-regulated learning (Walklet et al., 2016). SRS is a potent branch of m-learning technology.

Technological progress has opened the door for the development of numerous SRS instruments, modalities, and nomenclature. SRS technology has rapidly expanded and adapted due to technological advances (Sheng, 2019). SRSs are classified as either low-tech, using radiofrequency, handheld 'clickers,' or high-tech, using Wi-Fi and 'bringing your own device' (BYOD), such as a laptop, tablet, or smartphone (Liu, 2017).

‘Clickers’ has become the generalized term for all SRS, even when they fall within the high-tech sphere. Other names for SRS include classroom response systems (Cheng & Wang, 2019), personal response systems (Katsioudi & Kostareli, 2021), electronic response systems (Cakiroglu et al., 2018), instant response systems (Lee et al., 2019), and breaking away from academic terminology, audience response systems (Mays et al., 2020). M-learning in the classroom frequently takes the form of an SRS.

Types of SRS. Today's SRSs are complex and available from many vendors. Examples of commonly used SRS in the classroom include, but are not limited to, Socrative™, Poll Everywhere™, GoSoapBox™, Kahoot!™, Pear Deck™, Quizizz™, Top Hat™, Turing Point™, Unidoodle™, and Plickers™ (Peculea & Peculea, 2019; Robinson, 2018; Campillo-Ferrer et al., 2020). Currently held beliefs proclaim that “technology matters less than the pedagogy; it is the added value of the instructor that makes the technology successful” (Petto, 2019, p. 55). Although multiple SRSs platforms are available, they each provide a similar experience, including formative assessment, feedback, and perhaps gamification.

FAs. Formative assessment (FA) and immediate individual feedback are the primary benefits of SRS technology. FA is often defined in an instructor-centric way. For example, ‘the process by which we (*instructors*) make inferences about what the student knows, understands and can do” (McTighe, 2018, p. 16). Yet, Black and Wiliam (1998) defined FA as anything that provides feedback to the student or instructor that can be utilized to modify the learning process. This FA definition identifies a dual-centered perspective. Bloom (1968), a seminal author on course design and assessment, noted, “The great power of evaluation is in its concern for human betterment” (p. 9). Therefore, the purpose of FA is to learn, adapt and develop. Several authors called for a semantic adjustment and name alteration for the term formative assessment (Nichols et al., 2009), such as integrative assessment (Crisp, 2012) or assessment for learning (Moore, 2018; Peculea & Peculea, 2018; Stiggins & Chappuis, 2005). While acknowledging that FA can inform course design, this study will focus on FA as a tool for learning.

FA is a learning process. Shepard (2018) claimed FA should be conducted during the instructional stage of learning. Alternatively, Crisp (2012) placed FA in the learning planning and preparation stages. Both Moore (2018) and Peculea and Peculea (2018) promoted systematic, structured, and evaluated FA to produce data from which inferences about the learning process can be made. McTighe (2018) asserted that assessment practices should lead to enhanced learning. Authors contend that embedding formative assessments into the curriculum enhanced student engagement (Pospíšilová, 2017; Shepard et al., 2018). FA for learning is critical to the education process. M-learning SRSs were designed to enhance classroom learning and increase engagement during the instruction period. Nevertheless, as Cowie & Bell (1999) articulated, for students to learn from FA, they must act upon the feedback provided. Formative assessment must be followed by formative feedback.

FF. Formative feedback (FF) can empower engagement. Several researchers have noted the powerful influence of feedback on learning and engagement (Hattie & Timperley, 2007; Pospíšilová, 2017). Feedback is “information provided by an agent (e.g., teacher, peer, book, parent, self, experience) regarding aspects of one’s performance or understanding" (Hattie & Timperley, 2009, p. 102). Egelandsdal and Krumsvik (2017b) called for the utilization of the term "formative feedback" (p. 57) to delineate learner-centered feedback that can lead to enhanced understanding. Formative assessment and formative feedback (FA-FF) can act as a signpost from which students can measure their progress toward their academic goals (Moore, 2018). Therefore, FA must be linked to the desired student learning outcome (McTighe, 2018). Bandura (1987), within his social-cognitive perspective, contended that feedback and assessment were essential to a successful learning cycle. Crisp (2012) concurred, stating that feedback turns the learning cycle, and then emphasized the importance of timely feedback. FA-FF should act as a catalyst for engagement and learning (Black & Wiliam, 2009; Broadfoot, 2017). Yet, without m-learning, effective FA with immediate FF, especially in large classes, is challenging to provide (van der Nest, 2018). M-learning can offer a timely FA-FF learning experience.

SRS, FAs, and FF

The immediate feedback capability made possible through m-learning is a critical element of the SRS experience. Technology allows instructors to deliver content more efficiently to learners (Allen et al., 2016). The formative assessment component is the significant benefit of m-learning, particularly SRS technology (Kent, 2019a). Kay and LeSage (2009) highlighted the benefits of SRS in improving FA practices, especially in its ability to provide immediate, timely feedback to the students. M-learning SRS can enhance the effectiveness and efficiency of FA for learning. Utilizing the technology of the in-class response system, the instructor can design and experience creating opportunities for immediate, individual FF that correlate directly to the student's work (Gustafsson & Ryve, 2021). Gustafsson and Ryve (2021) used SRS technology to generate classroom discussion, an alternate form of FF, and a manifestation of engagement. Crisp (2012) noted that the content must be scaffolded for FA-FF to engage students in the learning process. Proponents of SRSs have claimed that m-learning technology can be used to scaffold and shape the students learning, which in turn enhances engagement (Al Mamun et al., 2020; Clark, 2012; Diacopoulos & Crompton, 2020; Digital Promise, 2016; Koretsky et al., 2018). With the immediate feedback made possible by m-learning, students can privately self-assess their learning.

M-learning technology, specifically SRS technology, provides students a platform to respond confidentially to FA. SRS is an interactive tool for students to participate anonymously in FA-FA (Woldemichael, 2018). The anonymous FF component of m-learning is associated with increased student engagement (Muir et al., 2020; Walklet et al., 2016). Multiple studies show students prefer the anonymous SRS-FA-FF to more visible response methods such as hand raising (Atas & Delialioglu, 2018; Bauer, 2020; Denkewicz, 2019; Mubayrik, 2020a; Sahin, 2019; Sheng et al., 2019; Walker et al., 2018). Using avatars can further protect students' primary during gamification and increase affective engagement (Alsubhi et al., 2020). Aricò's (2019) focus group interview revealed that students valued the anonymity that m-learning affords. Participants reported the anonymous response technology increased their honest engagement, stating, "You can tell the truth" (p. 8). When informed by sound pedagogical practices, SRS FA-FF can enhance engagement (Broadfoot, 2017; Schindler et al., 2017).

FAs, FF, and Andragogy

FA-FF aligns with current adult learning theory and best practices, such as self-regulated and relevant problem-based learning. Mubayrik (2020b) argued that contextual problem-based learning is essential for adult learners. Therefore, SRS-FA questions need to align the content with the real world. Doing so will enhance engagement (Mubayrik, 2020b). SRS offered FA-FF, which connects the course to the student's current life challenges and correlates with andragogical principles espoused by Knowles.

A current trend in adult learning is to shift responsibility for assessment and learning from the instructor to the learner (Ghahari & Farokhnia, 2018). FA-FF is a powerful driver of self-regulated learning, a defining characteristic of adult learning (Aricò, 2019; Crisp, 2012). Stiggins and Chappuis (2005) contended that as students were provided evidence of their progress, they “gain a sense of control” (p. 13) over their learning. Therefore, the learner can validate their efficacy through FA-FF (Mubayrik, 2020b). Scholars also called for learners to self-assess and noted this requires the learner to reflect on the learning process and set future goals (Boud, 2007; McTighe, 2018). Crisp (2012) also called for a learning analysis opportunity to facilitate engagement. Bacquet (2020) argued that students could only benefit from FA-FF when they self-reflect on what is needed to improve; they must develop a sense of self-assessment. Hattie and Timperley (2007) noted that reflection on the task process provides more practical information than focusing on objective data. Black and Wiliam (2009) encouraged instructors to challenge learners to self-reflect, while Peculea and Peculea (2019) encouraged students to heighten the effectiveness and efficiency of their learning strategies. The SRS FA-FF technology can augment active learning and critical thinking by providing the student with evidence for self-reflection.

Interestingly, when it comes to FA, making a mistake is a more robust learning experience than getting it right. Feijóo et al. (2021) argued that FA enhanced the learning experience most when "based on seeking success through failure" (p. 215). For this reason, Gustafsson & Ryve (2021) advocated including common student misconceptions as distractors or, conversely, including two correct answers to launch class discussion. Hattie and Timperley (2009) noted that FA-FF became a compelling learning strategy when it enabled students to reject inaccurate assumptions and beliefs. When FA-FF raises awareness of misunderstanding, it promotes self-monitoring (Egelandsdal & Krumsvik, 2017b). While seeing the error of their way is a powerful learning strategy, students need to feel safe making mistakes on the FA to receive the most from the experience.

Fear leads to disengagement. Therefore, measures must be implemented in the FA-FF process to curtail student anxiety. As Bloom (1968) warns, evaluation can be a two-edged sword; having the ability to do good and great harm. Yet, the nontraditional adult student's perception of the experience and its influence on emotional engagement remains uncharted territory.

Mobile Learning and Gamification

Gamification. Another potential benefit of m-learning is gamification. Kapsalis et al. (2020) identified SRS as a potential gamification educational tool. The purpose of gamification in education is to enhance student engagement and outcomes (Alsubhi et al., 2020). Gamification uses game-design elements, such as points, strategy, and chance, in a non-game context, such as the classroom, to enhance learning outcomes (Sanchez et al., 2020). Zainuddin et al. (2020) claimed the goal of gamification in academia is geared toward “facilitating learning, encouraging motivation and engagement, improving learner participation and lesson interactivity, and stimulating learners such that it leads to an expansion of their knowledge” (p. 1). This claim makes gamification out to be the magic bullet of education. Although m-learning and technology are considered appropriate strategies for providing interactive learning experiences (Muir et al., 2020), others raise a cautionary flag. Many gamification scholars advised that more research is required on the psychological implications of gamification, especially in underrepresented groups (Klebbers, 2018; Koivisto & Hamari, 2019; Sanchez et al., 2020). Owen and Licorish (2020) also cautioned that individual and situational factors would mitigate the effectiveness of gamification learning.

Potential Benefits. There is an implied understanding that games are fun (Sanchez et al., 2020). There is substantial evidence that most students enjoy FA gamification (Göksün & Gürsoy, 2019; Malicki et al., 2020; Sun & Hsieh, 2018; Wang et al., 2016). The gamification aspect of the SRS-formative assessments is considered by many to be the crucial element of increasing student engagement (Cameron & Bizo, 2019; Ismail et al., 2019; Kapsalis et al., 2020; Malicki et al., 2020; Wang et al., 2016). Wood (2020) advocated for using gamification to enhance the learning experience. Marcus (2021) supported using gamified SRS tools such as Kahoot!™ or Quizlet™ in online teaching to give the teacher and students a glimpse of how they were progressing, thus encouraging self-assessment. Cantero-Chinchilla et al. (2019) exclaimed that SRS-FA with Kahoot™! was positively received by students. Yet, nearly 10% of the participants disagreed with the statement that "using clickers is fun." A small percentage of students often responded negatively to SRS-FA gamification in the classroom (e.g., Cantero-Chinchilla et al., 2019; Gunduz & Akkoyunlu, 2020).

It is widely understood that when students actively engage in learning and get pleasure and value from what they are doing, they tend to achieve better outcomes (Kahu, 2013; Ryan & Deci, 2000). Motivation is associated with self-determination theory, built upon Bandura's social learning theory (Deci & Ryan, 2000). Self-determination infers that students make decisions about whether or not to act based on the perceived value of the task (Bandura, 1989). Motivation drives action (Ferrer et al., 2022). Motivation can be intrinsic, extrinsic, or both, leading to engagement (Ferreret al., 2022). Wang et al. (2016) explored students' motivation when using various forms of FA, including paper, Clicker, and Kahoot!™ (a gamified SRS). A significant difference was noted in student motivation to participate in Kahoot!™, yet no significant differences were observed in the students' motivation to learn more about the topic. Zainuddin et al. (2020) concluded that the high school students of their study experienced higher motivation in learning when participating in m-learning gamified FA, such as Quizizz™. Buil et al. (2019), as well as Cano et al. (2019), maintained that it is a given that gamification is a source of motivation. Other researchers have also concluded that FA presented through SRS with gamification elements increased student motivation (Kapsalis et al., 2020; Wang et al., 2016). However, Koivistor and Hamari (2019) cautioned that a novelty effect might be what motivated students to participate in gamified FA via SRS.

Gamification may lead to enhanced engagement. Many researchers have claimed that gamification improves engagement (Florenthal, 2019; Hung, 2017; Khan et al., 2017; Sanchez et al., 2020; Zainuddin et al., 2020). Khan et al. (2017) explored gamification engagement among students aged 12 to 15. Florenthal (2019) and Hung (2017) assessed traditional-aged university students' perceptions of gamification and engagement. Sanchez et al. (2020) also explored gamification at the university level, yet their study did not report age demographics. Zainuddin et al. (2020) explored gamification with online students. Again, a gap in m-learning research concerning nontraditional community college students is evident.

Most research on positive engagement with gamification is derived from the behavior domain, with little emphasis on affective. Researchers have claimed gamification engagement based on exam and quiz scores. Klabbers (2018) emphasized that gamification takes a behaviorist approach to performance improvement. For example, Kapsalis et al. (2020) confirmed that students' gamification performance scores were equal to those of those who used paper and pencil tests. They concluded that Kahoot!™ is an effective tool for formative assessment and enhances engagement. Diez-Pascual and Diaz (2020) investigated the use of Kahoot!™ in a university chemistry class noted a rise in student grades when it was implemented. However, the authors pointed out that the Kahoot!™ and exam questions were very similar. McAlpin et al. (2018) investigated engagement with the gamified SRS TopHat™ in a large foundation university course and statistically linked usage to a 4.98% increase in the final grade. Hung (2017) confirmed that a scant amount of research had been conducted on affective engagement with gamification.

Drawbacks and Limitations. Even though gamification has been introduced into many classes across disciplines, grade levels, and nations, little is known about the psychological influences such course design has on the individual student's learning (Sanchez et al., 2020). Sanchez et al. (2020) "strongly support the call for more scrutiny regarding antecedents and consequences of as well as psychological processes behind gamification." (p. 14). Gamification can potentially isolate students who already feel like imposters or heighten anxiety.

Not all students benefit equally from gamification. Richardson (2014) noted the disparity in perceptions towards SRS-formative assessments and gamification in marginalized groups. Sanchez et al. (2020) observed that some game elements only benefited higher-performing students. Funnell (2017) cautioned that younger students appreciate the aspect of fun associated with SRS-FA more than older learners. Gunduz & Akkoyunlu (2020) concluded that using gamification (Kahoot!™) is advisable in the flipped classroom, notwithstanding that there were several students (9.4%), albeit a relatively small group, who were put off by the practice and considered Kahoot!™ activities a waste of class time. Kapsalis et al. (2020) added the disclaimer that gamification should not be the only means of assessing student progress and learning, thereby acknowledging the limitations of gamified FA.

Gamification has the potential to increase anxiety. Perrotta and Bohan (2013) claimed all students expressed concern when introducing and implementing new technology. Dominquez et al. (2020) compared quiz results among groups of second-year university students that used competitive versus cooperative SRS gamification. The authors concluded that students in the competitive group scored significantly lower on course quizzes than in the collaborative group. No age or nontraditional demographic information was available. Wang and Tahir (2020) confirmed through their literature review that few studies have investigated how gamified SRS affects student anxiety levels. Of the two studies identified by Wang and Tahir (2020), the participants were enrolled in secondary education, and statistically significant lower anxiety levels were reported in both studies (Taran & Meral, 2018; Lee et al., 2019). Dimitrijevic & Devedzic (2021) explored research articles that utilized the technology acceptance model and analyzed them for an experience of use construct. The top two responses from the analyses were satisfaction and perceived enjoyment. Nevertheless, the third most common construct was anxiety. The authors determined that technology anxiety was the predominant factor in the anxiety, but competition with gamification was also indicated. While adult learners traditionally engage in problem-solving activities (Cameron & Bizo, 2019; Liu et al., 2017; Mubayrik, 2020; Weiss et al., 2020), they might also be alienated by the gamification and competitiveness of the environment.

M-Learning and Emotional Engagement

There is a considerable amount of research on technology and engagement in education. The study of engagement in technology-enhanced learning environments is a growing field (Bergdahl et al., 2020; Bower, 2019). Nevertheless, there continues to be a lack of consensus on the definition of engagement, especially in technology (Bergdahl et al., 2020). Additionally, the extensive literature review conducted by Bedenlier et al. (2020), involving primary research studies of engagement and educational technology, noted that affective engagement was rarely reported. Due to the confusion of terms, it is critical to use an established framework when researching engagement and technology. As Bedenlier et al. (2020) noted, most of the studies from their review did not reference a theoretical framework. Kahu and Nelson’s (2018) SEwEI frame this study. They identify motivation as an antecedent to engagement (Kahu & Nelson, 2018). Kahu and Nelson (2018) imbed the three primary domains of engagement, behavioral, cognitive, and emotional, at the heart of this framework, alongside the four psychological constructs of self-efficacy, emotion, belonging, and wellbeing. The following sections will address the antecedent of motivation and the psychological constructs related to emotional engagement and m-learning.

M-Learning and Engagement. Motivation is frequently referenced in m-learning, SRS, and gamification literature. Plass et al. (2015) maintained that motivation is gamification's most commonly cited characteristic. Motivation is an antecedent to engagement behavior (Bond et al., 2020b; Bond & Bedenlier, 2019; Kahu & Nelson, 2018). As an antecedent, motivation is not limited to stimulating emotional engagement (Bowden, 2021; Kahu & Nelson, 2018). Nevertheless, motivation is primarily considered an unobservable psychological or emotional response (Bond et al., 2020b). It is closely aligned with emotional engagement, especially wellbeing (Bowden, 2021). Bandura

(2001a) claimed in his social-cognitive learning theory that motivation influences self-efficacy. Motivation is a key component of the education environment because it promotes learner preparation, attendance, participation, persistence, and seeking answers by asking questions (DeGagne, 2011).

M-learning is reported to stimulate motivation in some students. For example, the study by Liu et al. (2019) investigated learning outcomes, motivation, self-efficacy, behavioral engagement, and the perceived ease and usefulness of the SRS-FA Pear Deck™. The study was conducted with English foreign language students in France and the participants. Post-experience motivation scores were significantly different between the SRS-FA and the control groups. Liu et al. (2019) concluded that SRS-FA positively influenced student motivation.

M-learning, especially SRS-FA-FF, contains many features identified as motivators for engagement. For digital natives, the mere presence of mobile technology has been linked to enhanced intrinsic motivation toward learning (Navarro et al., 2020). However, Onodipe and Ayadi (2020) warned that novelty was the primary motivator and that its potency declined with use. Feijóo et al. (2021) claimed that the rapid feedback of Kahoot!™ was what motivated students. In contrast, others argued that the fast pace required by Kahoot!™ responses triggered motivation (Peculea & Peculea, 2019). Kapsalis et al. (2020) identified the motivating factor in SRS as gamification. They maintained that gamification "improves students learning, motivation, and engagement" (p. 1343). They also (2020) associated gamification with engagement, its antecedence, and outcomes. Plass et al. (2015) explained that the most frequently cited reason for gamification is to engage learners, which the author linked to motivation. Campillo-Ferrer et al. (2020) extricated the competition of gamification as the element that creates a stimulating environment that motivates students' ambition for learning. A variety of factors can invigorate students' motivation to participate in m-learning.

The goal of m-learning is not solely to have the students participate but to motivate them to learn. Intrinsic motivation as an antecedent must fulfill a psychological need to transcend engagement (Ryan & Deci, 2000). Abraham Maslow’s hierarchy of needs theory was claimed to be a motivation theory by Navarro et al. (2020), again highlighting the concept of basic needs. The author continued by asserting that motivation must be linked to goal achievement. Furthermore, Navarro et al. (2020) reflected that when motivation is related to learning, the learner has an implied desire to improve their ability. Ryan and Deci (2000) contended that motivation and self-determination were intertwined. The authors put forth three components of motivation: affective-emotional reactions, belief about the benefits, and perceived personal competence.

Aricò (2019) declared that students became most motivated to engage in learning when the SRS revealed that they got a question wrong. The enhanced motivation to learn was especially observed in high-performance students. Aricò (2019) reflected that wrong answers motivated and drove the student to review and process, fostering an independent mindset and awareness of their learning process. Woldemichael (2018) maintained that SRS improved students’ attitudes toward the class and the content, motivating the students toward lifelong learning.

M-Learning and Self-Efficacy. Self-efficacy, the confidence in one's ability to accomplish a task, is critical for the gumption to begin a project and for sparking engagement. Low self-efficacy was linked to low performance (Arico, 2019). Self-efficacy is a significant contributor to the acceptance of m-learning (Robinson, 2019). M-learning with SRS programs has been studied to determine its ability to enhance self-efficacy in learners. Shyr et al. (2021) measured intrinsic motivation and self-efficacy in students who experienced SRS-FA using a blended questionnaire derived from Deci and Ryan (2000) and Wang and Lim (2007). The statistical results provided evidence of a strong correlation between the SRS-FA experience and increased intrinsic motivation and self-efficacy.

Similarly, the study by Liu et al. (2019) investigated learning outcomes, motivation, self-efficacy, behavioral engagement, and the perceived ease and usefulness of SRS-FA (Pear Deck™) among students in France enrolled in English as a foreign language course. Post-experience self-efficacy scores were significantly different between the SRS-FA and the control groups. Liu et al. (2019) concluded that SRS-FA positively influenced student self-efficacy.

Other studies link self-efficacy to m-learning and SRS programs; however, the discrepancies in definitions of engagement are evident. Bond et al. (2020a) conducted a literature review of 243 studies on student engagement and educational technology. The authors identified the studies' most reported student engagement indicators. The most commonly reported markers were participation, interaction, or involvement, all of which fall within the behavioral engagement domain (49%). The second most common indicator was achievement (44%), a cognitive engagement indicator as defined by Bond et al. (2020a). Kahu and Nelsons (2018) would have classified achievement as a consequence of engagement rather than an indicator of engagement. Ranked number three, four, eight, eight (tied), nine, and 10 in Bond et al.’s (2020a) research results were all affective indicators, such as positive interaction with teacher and peers, enjoyment, positive attitude about learning, interest, motivation, and enthusiasm. Confidence was also noted in the top 10 indicators, which Bond et al. (2020a) categorized within the behavioral domain. Again, Bond et al. (2020a) directly linked self-efficacy to behavioral engagement, while Kahu and Nelson (2018) preferred encapsulating self-efficacy within the metacontext of engagement. Therein, self-efficacy, a psychological construct, has the potency to influence all domains of engagement. Yet, these studies do not isolate the adult learners' perception.

One may ask what it is about m-learning and SRS programs that influence self-efficacy. Reinhardt et al. (2018) explored this question and the role of feedback among adult students. The authors concluded that goal-oriented, timely, and positive feedback significantly influenced the learner’s self-efficacy. Additionally, there is often a disconnect between the learners' and teachers’ perceptions of feedback. Reinhardt et al. (2018) study focused on feedback in the online setting.

Nevertheless, one of the significant advantages of using mobile technology, particularly student response systems, in the classroom is its ability to provide directed, timely feedback to the students. Sheng et al. (2019) also emphasized the empowering aspect of SRS-FA and the corresponding immediate feedback. Students can self-regulate their learning experience by identifying knowledge gaps and misperceptions, thus becoming cognizant of key concepts through review and emphasis. The question remains as to whether mobile technology feedback is perceived as positive or has an influence on the student's self-efficacy.

Some researchers imply that gamification is a significant component of SRS programming that leans toward enhanced self-efficacy. Feijoo et al. (2021) reported the results of an undergraduate student survey on the use of SRS (Kahoot!™, Socrative™, and Mentimeter™) in engineering classes in Peru and Spain as "promoted a mind shift" (p. 224) in attendance and sense of achievement. Students also reported "swapping shyness for active participation" (p. 224). However, these same students called for some sort of reward from the instructor for their engagement in SRS. This call for a bonus implies the SRS had only lit the short fuse of extrinsic motivation.

Studies of gamification have often focused on the young or digital native generations. In the mixed-methods study conducted by Shyr et al. (2021), the authors examined the effects of SRS (Kahoot!™ and Quizlet™) on learning performance, intrinsic motivation, and self-efficacy among junior high school students in a Taiwanese remedial math class. The results indicated that students who experienced Kahoot!™ performed significantly better and reported: "higher learning interests, choice, and group self-efficacy" (p. 1). In contrast, the group that experienced Quizlet reported a higher degree of learning interest, value, and choice than the control group (Shyr et al., 2021). While different students might prefer various programs, evidence of enhanced self-efficacy has been reported with m-learning in the classroom.

Nevertheless, there are warnings and potential challenges with gamification and self-efficacy, and not all students respond in the same way. Marcus (2021) declared that gamified FA should not be a graded assignment, and an explanation of content must be discussed after every question to facilitate a learning experience. Sanchez et al. (2020) explored classroom gamification using m-learning technology. The authors concluded that gamification is beneficial in increasing the self-efficacy of students who already have high self-efficacy but not those who have low self-efficacy.

Nontraditional students, as a whole, have a lower level of computer efficacy than traditional students (Hensen, 2014; Darney & Larwin, 2018; Robinson, 2019). Henson (2014) researched how technology-related factors affect the success of the nontraditional college student. Henson (2014) concluded that nontraditional students often had lower computer efficacy than traditional students. However, if the nontraditional student was employed in a job requiring computer use, they had higher computer efficacy and were more comfortable in online courses. Thus, the digital experience is related to the ability to engage (Jeno et al., 2021). However, Hanson (2014) explored m-learning as an online platform, not classroom learning.

Johnson et al. (2018) utilized a qualitative design to explore the adult learners' perspective on engagement in a hybrid postgraduate program. The findings from the study indicated that adult learners' computer and technology skills influenced their academic self-efficacy. The participants were over the age of 24 years, with a mean of 35. In the coding and sub-coding, the authors identified "personal engagement," which closely aligns with emotional engagement. Interestingly, the authors did not identify any positive response examples in emotional engagement with the content but had multiple negative instances. The terms used were “overwhelming, difficult, challenging, demanding, and different. The authors also identified positive examples of a sense of belonging due to the encouragement and motivation based on positive student and instruction relationships. Johnson et al. (2018) concluded that poor technology skills could lead to poor academic self-efficacy, yet when technology skills improve, so does self-efficacy. In this study of post-graduate students, it is evident students respond differently to the use of technology in learning. Nevertheless, this study involved m-learning outside the classroom with a hybrid design.

Studies of m-learning in the classroom have also demonstrated variation in student response. M-learning in the form of student response systems used in the classroom with first-year university students has been shown to enhance self-efficacy, especially among students from underrepresented demographic groups and those struggling with the content, according to Aricò (2019). Using m-learning and SRS programs, students were made aware of their skills. Aricò (2019) concurs that self-assessment is one of the most potent drivers of self-regulation, and SRS technology facilitates this self-assessment. Nevertheless, Aricò (2019) focus group interviews revealed that students identified as low performing, often reported a lower level of engagement and low self-efficacy. Thus, it is shown that at-risk groups of students are more likely to experience SRS technology differently. The influence on self-efficacy is also uncertain.

M-Learning and Emotions. The use of technology in the classroom can elicit a variety of emotional responses. D'Mello (2013) conducted a meta-analysis of the affective states found most frequently in technology-mediated learning: boredom, engagement/flow, confusion, curiosity, happiness, and frustration. Studies such as those conducted by Chan et al. (2019) suggested that fun is essential in using SRS-FA, which strengthens relationships between interactivity and learning performance. Thus, the emotional response to delight becomes the glue between behavioral and cognitive engagement.

DeGagne (2011) confirmed that learners reported the SRS was enjoyable in the study involving SRS and nursing students. The learners voiced that anonymity during SRS-FA decreased embarrassment and anxiety levels. The nursing students affirmed that SRS promotes a safe learning environment, stimulates motivation, and encourages autonomy and self-regulated learning. Schindler et al. (2017) concluded that digital gaming positively affects student emotional engagement, with student responses being reported as fun, interesting, and enjoyable. The study did not report the students' age or level of education, and they were focused on the type of technology rather than the student demographics.

Researchers utilized various terms to study the emotional response of students to m-learning. For example, Brazeal & Couch (2017) looked at the 'buy-in' of students to various types of FA, including pre-class just-in-time teaching and online textbook assignments, in-class SRS-FA, and in-class activities without SRS, and post-class online textbook and other homework assignments. Of the various types of FA, SRS-FA was reported to have the most ‘buy-in’ by students. Buy-in implied enjoyment and perceived value. Brazeal & Couch (2017) claimed that improving understanding of student buy-in to FA is essential. Buy-in has the potential to affect students’ degree of engagement and, subsequently, the efficacy and utility of the FA experience. Alharbi & Meccawy (2020) reported that students enjoyed the interplay of pictures, clues, and explanations with the SRS-FA (Socrative™). Carroll (2018) wrote that web-based SRS appeals to undergraduate students under 25. Interestingly, Carroll (2018) felt the need to qualify the student group.

Some studies focused on the pedagogical use of m-learning and its influence on emotion. Katsioudi and Kostareli (2021) noted that students who used SRS-FA in a sandwich-model classroom reported a significantly higher level of interest, motivation, and enjoyment than in non-SRS-FA classrooms. The sandwich model was described as a didactic approach to building a course with alternating and various lecture-driven and then student-driven activity learning experiences, such as an SRS experience. Additionally, students in the Sandwich SRS-FA group reported a more positive response regarding the lecturer’s ability to explain new terms and concepts clearly and encouraged participation. Katsioudi and Kostareli (2021) could not confirm that students' use of SRS-FA was preferred over other active learning strategies. Nevertheless, like many other researchers, students in Katsioudi and Kostareli’s (2021) study reported that m-learning with SRS was enjoyable.

M-Learning and Belonging. Research on m-learning online has highlighted the need for students to feel connected and receive feedback. Tai et al. (2019) concluded that the students' desire to receive feedback from the instructor often was the motivating factor in students' participation in the online discussion board. If the instructor feedback was absent, Tai et al. (2019) reported that the discussion board was perceived to be negatively correlated with engagement. Some participants expressed difficulty developing a sense of belonging without a physical space to connect. Xu et al. (2020) also focused on using technology in an online discussion board. Xu et al. (2020) contended that the influence of the student-teacher relationship is critical to student engagement, not the technology, but the increased interaction with the instructor. Tai et al. (2019) reported that students often struggled with a sense of belonging when participating in online or digital contexts. Students in a face-to-face class with back-and-forth discussions and immediate feedback from the instructor felt more connected with the content and the context.

Timmis & Muñoz-Chereau (2022) explored under-represented students' academic trajectories and the building of alternative identities through digital technology. Transitioning from one context to another always involves concepts of becoming, belonging, and modifying peer relationships (Timmis & Muñoz-Chereau, 2022). Digital technology can create a space where learners can feel a sense of belonging (Timmis & Muñoz-Chereau, 2022). The digital space can act as a ‘cultural pivot’ for both social and academic belonging (Timmis & Muñoz-Chereau, 2022). The participants in Timmis and Muñoz-Chereau (2022) study were second-year university students from diverse demographic groups, including age (over the age of 21). The participants were asked to focus on ways digital technology influenced their cognitive engagement, societal interaction, and sense of belonging to the university. The authors concluded that digital technology allowed students, especially those from under-represented backgrounds, the means to negotiate the identity transition associated with the university experience. The author acknowledges that the digital technology referenced in their research was a function of social processes more than academic processes (Timmis & Muñoz-Chereau, 2022). The authors also observed that online social networking exposed inequities, and many students of different ages and backgrounds chose not to participate and collaborate in online spaces. Although this study is not specific to m-learning, it highlights the differences between traditional and nontraditional students and those at risk.

Reasons a student may or may not access and utilize technology are numerous. Within Kahu and Nelson's (2018) framework, such explanations would fall within the structural and psychosocial influences and antecedents of engagement. The utilization of technology in the classroom cannot be the measurement of student engagement, according to Bond et al. (2020a) and Xu et al. (2020). Research that investigates technology engagement must focus on pedagogical methods of implementation, such as student-instructor relationships (Kahu, 2013; Xu et al., 2020).

Tai et al. (2019) asked university students studying education to conceptualize student engagement and identify factors that enhance or diminish engagement from the student's perspective. The participants were all mature students ranging in age from 33-69. The students ranked the relevance of a task or assignment as being most significantly associated with engagement, a lack of relevance, and the most significant deterrent to engagement. These mature students ranked feedback as a potent influencing factor in engagement. Relevance of content and convenience were the only two factors to supersede feedback. Feedback from the instructor was viewed as highly valuable, while peer feedback depended on the peer's preparation. Some researchers claim that human-human interactions are essential for generating emotional engagement (Halverson & Graham, 2018), and as a result, the authors advocated for a blended environment when utilizing technology. The mature participants of Tai et al.’s (2019) study noted that face-to-face or real-time synchronous online courses were preferential for receiving feedback over asynchronous courses. In this study, the often-unheard voice of the mature student resounds.

M-learning in the classroom can enhance belonging and connection to the content, their peers, and the instructor. M-learning technology can increase engagement between the student and the instructor and, inversely, the instructor and the student (Moore et al., 2018). In addition, students are more likely to answer questions and participate in discussions when m-learning is part of the learning environment (Cheng & Wang, 2019). Noel et al. (2015) claimed that mobile response systems enhanced all areas of engagement, including behavioral, cognitive, and emotional. Emotional engagement was measured using a student response survey based on indicators such as having a voice, being fun, and connectedness. The student sample was traditional upper-class undergraduate students enrolled in a face-to-face course at a university.

The mixed-methods study by Wood (2020) investigated the perceptions of third-year undergraduate students studying geography in the UK on their SRS-FA (Mentimeter™) experience. Students reported that SRS-FA made the class more exciting and interactive. Cheng and Wang (2019) noted that SRS technology reinforces the positive student-instructor relationship. The study by Li (2020) investigated the perceptions of students who experienced SRS-FA (Socrative™) and their attitudes toward the instructor. The instructor was perceived to be significantly more effective, prepared, and encouraging discussion and questions than the group that did not utilize SRS-FA.

Gamification appears to be able to enhance belonging. Several researchers advocate for SRS and gamification, claiming they increase social presence (Cameron & Bizo, 2019; Kapsalis et al., 2020; Sun & Hsieh, 2018). Campillo-Ferrer et al. (2020) contended that gamification in higher education radically altered the roles of the teacher and student. Sun and Hsieh (2018) reported that gamified m-learning significantly positively influenced the students' emotional engagement. Students reported m-learning as challenging, interactive, enjoyable, and fun. However, it is essential to note that Taiwanese junior high students enrolled in an English class with an average age of 13 years were the participants of Sun and Hsieh’s (2018) study.

The use of mobile devices as a learning tool is not universally accepted. Researchers warn of the potential limitations of technology. Aljaloud et al. (2019) studied SRS-FA use and perceived engagement with a group of 390 Saudi Arabian male undergraduate students. While the researchers stated that they collected demographic information on the group, they said demographics were not included in the study's findings. Therefore, there is no indication of the age of the student group within this study. Aljaloud et al. (2019) assessed the students' perceived effect of SRS-FA on engagement with questions such as, the SRS-FA “led to my opinions being taken into account in this class,…spurred interaction with faculty and peers that made me feel valued, and…improved the relationship I had with other students and teacher” (p. 91). Aljaloud et al. (2019) could not conclude that student interaction with peers and teachers through the SRS (via smartphone) enhanced student engagement; however, the SRS facilitated active collaborative learning, which was reported to improve student engagement. Aljaloud et al. (2019) speculate that the lack of engagement could be due to the use of smartphones as the SRS and referenced Lepp et al. (2014) as reporting that increased use of smartphones correlated to decreased academic performance. The study noted the difference between technology and implementation and highlighted the importance of sound pedagogical practices.

As noted earlier, in the literature review conducted by Bond et al. (2020) on student engagement and educational technology, the authors identified participation, interaction, or involvement (49%) as the primary indicator of engagement. Therefore, if a student is technologically adverse, they would be perceived as disengaged, whether or not they emotionally are. In developing and testing their conceptual framework on SRS-FA (clickers), Blasco-Arcas et al. (2013b) investigated the students’ overall impressions and benefits of SRS technology. The authors concluded that “interactivity with peers significantly influences collaborative learning and engagement” (p. 107). Engagement survey questions primarily focused on the affective domain (Blasco-Arcas et al., 2013b).

M-Learning and Wellbeing. Returning to the SEwEI framework, Kahu and Nelson (2018) reported wellbeing to be associated with the feeling of safety and decreased anxiety. Lepp et al. (2014) little research has explored the relationship between m-learning technology and wellbeing in life. Bojinova & Orgara (2013) lamented that they did not include questions about the level of anxiety in their study on students' use of clickers in a university setting. The cross-over study by Schmidt et al. (2020) investigated the correlation between student performance on summative assessments and SRS-FA (eduVote™) use in a graduate course on human genetics in Germany. The students who were reluctant to answer questions in a large group perceived SRS-FA as incredibly beneficial.

M-learning, including SRS programs, is considered within the realm of student-centered, active learning strategies. Brigati et al. (2020) reported that active learning strategies, including SRS-FA (clickers), cause anxiety in students. However, such techniques also enhanced student outcomes; thus, the authors advocated for their use. Brigati et al.'s (2020) study investigated students' adaptive and maladaptive coping mechanisms during active learning experiences in a university biology classroom. Brigati et al. (2020) demonstrated that the primary coping strategies for anxiety arising from SRS-FA were information seeking (54.8%) and problem-solving (24.3%), both considered to be positive adaptive coping mechanisms. Maladaptive coping mechanisms such as helplessness and escape were reported less often than when the instructor asked for a volunteer or called on students by name. It is acknowledged that all stress is negative; however, it must be manageable.

Many students view anonymous m-learning as less anxiety-producing than non-anonymous forms of assessment. Kent (2019a) claimed that SRS provides a means for students to experience assessment in a less intimidating and anxiety-producing environment than the traditional summative pencil-paper examination. Ghahari & Farokhnia (2018) noted the relevance of psychological safety when participating in peer assessment via m-learning. Alharbi & Meccawy (2020) reported that students in their study expressed decreased test anxiety with using SRS-FA (Socrative™) compared to pencil paper testing. Additionally, students identified that they could focus more because the screen only showed one question at a time. Using avatars can protect students' privacy during gamification (Alsubhi et al., 2020). The students in Alharbi and Mecawy's (2020) study also reported that the instant feedback and the displayed final score helped decrease their anxiety.

Alharbi & Meccawy (2020) introduced SRS with Socrative™ to 35 female students (between the ages of 18 and 20) who had never used mobile phones for assessment purposes before the study. Before the study, 51% of the students reported a preference for paper-based formative assessments. However, after their initial exposure, the students developed a 77% preference for mobile-based formative testing. The students reported decreased test anxiety and an appreciation for the anonymity features of m-learning.

Riden et al. (2020) studied the use of m-learning in the form of student response systems in the classroom to increase participation in students with emotional disorders. Although the study focused on elementary and secondary education students with special needs, parallels can be made to nontraditional students who often feel increased classroom anxiety. Walker et al. (2018) noted that students in a higher educational introductory course evaluated m-learning in student response systems more favorably than in class discussions.

M-learning tools can influence a student's wellbeing in both positive and negative ways. Glencross et al. (2019) investigated the self-efficacy, belonging, wellbeing, and emotion of a tertiary preparation program at a regional university. The authors concluded that gamification resulted in a sense of wellbeing and more positive emotions than before the implementation of the game. Jeno et al. (2021) also espoused the ability of digital technology to augment wellbeing by facilitating engagement with others and enhancing active learning experiences. However, there is a potential for negative wellbeing due to comparison, anti-social behavior, and fear (Jeno et al., 2021). Instructors need to understand the potential challenges with m-learning in the classroom.

While anonymity is viewed as a positive characteristic of SRS technology, it can also be an enormous obstacle to learning. Carrol et al. (2018) noted that with open-ended questions, the SRS technology could be used as a platform for offensive language, trolling, and distracting silliness. 60% of the student respondents in Carroll et al. (2018) survey felt the SRS created an environment that was either unsafe or offensive. One student commented that the best thing about the SRS was "getting to make jokes behind a mask" (Carroll et al., 2018, p. 10), while another student announced that the worst thing about the SRS was "people being silly" (Carroll et al., 2018 p. 10).

SRS can create a safe learning environment. Cantero-Chinchilla et al. (2019) reported a non-verified observation regarding the background music within Kahoot!™ It appeared that the students were more relaxed when the music played than when it was disabled. In contrast, Kapsalis et al. (2020) emphasize that gamification in education creates a safe and active learning environment. With gamification, students may engage in problem-solving skills and learn from their mistakes without inflicting real damage. Marcus (2021) declared that gamified FA should not be graded, thus decreasing anxiety and enhancing engagement and wellbeing. DeGagne (2011) confirmed that learners reported the SRS was enjoyable in studies involving SRS and nursing students. The learners voiced that anonymity during SRS-FA decreased embarrassment and anxiety levels. The nursing students affirmed that SRS promotes a safe learning environment, stimulates motivation, and encourages autonomy and self-regulated learning.

M-Learning and Emotional Disengagement. Although there are numerous reports on the benefits of m-learning and SRS applications on emotional engagement, there are also inferences to disengagement and frustration. Kay & LeSage (2009) identified three main areas of dissatisfaction with SRS; technology-based, teacher-based, and student-based challenges. Student dissatisfaction with SRS included resistance to learning methods and expectations, confusion over underproductive discussions, opposition to attendance being administered via clickers, and instant negative feedback. Teacher-based challenges often arose when students perceived the teacher was unprepared to utilize the technology. Technology issues range from poor Wi-Fi to low battery life.

Diez-Pascual & Diaz (2020) confirmed that SRS-FA could be stressful for students with technology issues. Peculea & Peculea (2019) noted that the primary challenge with SRS-FA was technological issues, for instance, a dropped internet connection or slow browser response. Alharbi & Meccawy (2020) reported adverse emotional reactions to Socrative™, primarily from technical issues. Students said problems with internet access, long log-in time, low battery life, and increased screen time are a deterrent to using SRS-FA. The authors provided workarounds for these challenges, such as telling students to charge their phones and sign in to Socrative at the beginning of class (Alharbi & Meccawy 2020).

A few faculty are reluctant to use m-learning in the classroom. Sarvary & Gifford (2017) claim that the primary reason faculty do not transition to BYOD SRS technology is fear of distraction. Green et al. (2018) warned that instructors using SRS-FA could become frustrated if the technology is overwhelming for them and recommended practice and time to become influential users of the tool. Green et al. (2018) declared that SRS tools are effective instruments in implementing the paradigm shift from a sage on the stage to a facilitator. Lowe et al. (2019) warned instructors that "data collection must begin with thoughtful and well-written questions that effectively solicit the data desired by the instructor. Feedback is paramount for success.

Sheng et al. (2021) noted that students were concerned about the added cost of SRS technology. It was also pointed out that many institutions do not promote a single software or system but rather allow individual faculty members to choose the SRS system that works best for them. This smorgasbord approach resulted in students purchasing numerous SRS apps on their devices or purchasing the low-tech clicker. Ault & Horn (2018) viewed SRS as "less stigmatizing" (p. 208), more accessible and portable than other forms of assistant devices used in the classroom.

In research conducted by Hung (2017), students were interviewed on their perception of the use of bring-your-own-device (BYODs) in the classroom. While the traditional students, aged 20 – 22 years of age, all felt comfortable using their device, expressing such statements as “convenient” and “ease of use” (p. 990). Nevertheless, the students voiced concerns about potential technical issues with BYOD used as SRS and expected the instructor to be prepared with a contingency plan. (Lowe et al., 2019). Librarians can deploy technology, such as online polls or clickers (also known as audience response systems (ARS). However, this does not solve other problems, such as clickers not being available for a given class or students forgetting or not owning a laptop or smartphone. Additionally, asking students to use mobile devices can lead to connectivity and distraction issues (Stowell, 2015). Knowing what technology is available to students on a classroom and individual level can be challenging outside a library teaching space or computer classroom.

Sheng et al., 2019, identified several student perceived limitations in using SRS-FA. The most frequently cited was a technical difficulty among the students and the instructors. Additional constraints were expressed in cost, disruption of class flow with too many questions, use of SRS-FA as a graded assignment, and inappropriate questions either too hard, too easy, or trivial. McLoone et al. (2019) were content to report that 80% of the students in their first year of study in a bachelor of electrical engineering course found the SRS Unidoodle™ legible on their smartphones. This leaves one to wonder about the other 20% of the class who were left behind. Woods (2020) advocated that technology must be integrated with pedagogical practice. Although no tool will be a one-size-fits-all, understanding why a student finds SRS technology counterproductive is essential for instructors and course designers.

M-Learning and Andragogy

This study aims to explore the FYNTS perception of m-learning on emotional engagement. Throughout the literature, references and innuendos to andragogical principles have been presented. Adult learners thrive best when learning is self-directed, draws upon past experiences, is based on actual and current life problems, activities, and internal motivators, and answers the question of why. Knowles (1968 & 1984) presented six principles of andragogy. M-learning in the classroom has been suggested as having met each of Knowles' (1984) six principles of andragogy. Wiggins and McTighe (2006) put forth nine learning principles that all teachers should be accountable for implementing. The seventh principle is "Learners attain understanding only through regular reflection, self-assessment, and self-adjustment as they apply prior learning to new situations and tasks through assessments that demand reflection and transfer" (Wiggins & McTighe, 2006, p. 27). While Wiggins and McTighe (2006) were not exclusively directing their remarks to high education instructors, they addressed concepts of professional development that must also adhere to best teaching practices.

M-learning has been shown to assist with self-directed learning. Bandura (2001) emphasized the value of the Internet as a tool for self-controlled learning. Carroll et al. (2018) used Bandura's social learning theory as the framework for studying students' experiences using Gosoapbox™, a web-based SRS. Bandura (2001) has asserted that the Internet can be an effective tool for self-directed learning. According to Bandura (1977) and confirmed by Knowles (1980), adult learners increase self-efficacy in the context of autonomy. To this end, many authors advocate for a flipped classroom pedagogical style to enhance self-directed learning (Yilmaz, 2017). It is in this role that m-learning in the classroom shines. The pedagogical approach to collaborative learning is closely tied to Bandura's (1977) social learning theory (Kulikovskikh et al., 2017). Collaborative learning allows the student to incorporate past experiences into the present.

M-learning in the classroom through formative assessments can support problem-based learning. The framing of the problems towards real, current issues can be a motivating factor for student engagement. DeGagne (2011) claimed that learners are inclined to be more motivated when they are engaged in the content relative to their interests. DeGagne (2011) later noted that immediate feedback facilitates the learner's ability to see the correlation between theoretical content and its application in practice. Hampton et al. (2019) confirmed that when instructors individualize, personalize and connect to the students' lives, engagement is intensified. In the study by Khan et al. (2019), the authors reported that 95% of the students preferred to have SRS-FA questions at appropriate intervals to test their knowledge (5% were unsure). While adult learners traditionally engage in problem-solving activities (Cameron & Bizo, 2019; Liu et al., 2017; Mubayrik, 2020; Weiss et al., 2020), they might also be alienated by the gamification and competitiveness of the environment. Shy et al. (2021) acclaimed m-learning as promoting intrinsic motivation and self-efficacy.

For m-learning to benefit the learner, they must be able to access and use the technology. M-learning-associated research involving adult learners has focused on usability (Mubayrik, 2020). Liu et al. (2017) identified two variables for measuring student technology acceptance, usefulness, and useability. Cancino and Capredoni (2020) also explored the perceptions of private university students on the usability of m-learning SRS (Socrative™). While the students acknowledged a generally positive perception of the technology's usability, they were indifferent regarding the technology's influence on engagement. Thus, usability cannot be the only variable in engagement and m-learning, especially among adult learners. Andragogical principles must be implemented to enhance engagement.

M-Learning and FYNTS

Emotional engagement, in conjunction with m-learning in the classroom, has been demonstrated to vary among student groups, including nontraditional ones. Tinto (2019) and others have identified the first year of higher education as a critical time for the evolution of a student's emotional engagement, sense of belonging, and self-efficacy (Kahu & Picton, 2019; van der Meer et al., 2018). Richardson (2014) noted the disparity in perceptions towards SRS-formative assessments and gamification in marginalized groups. Peculea & Peculea (2019) studied students' perception of Kahoot!™ as a formative assessment and learning tool. The researchers identified gender differences in perceptions but did not account for age differences in the participants. Nicol et al. (2018) concluded that "Technology itself may play a role in fostering a student's motivation to engage in the material, but it may also hinder it depending upon individual differences" (p 260).

The study conducted by Li (2020) investigated the perceptions of students in a university calculus course in Hong Kong towards SRS-FA (Socrative) and their preferred mode of communication (instant messaging or conversation). Students who liked instant messaging generally had a more positive response to SRS-FA. This study validates the presence of situational antecedents. McLoone et al. (2019) surveyed students in Ireland and Australia. The results presented significant variation between the two groups. The authors were unable to account for the differences. Gomez-Carrasco et al. (2019) studied the motivation of Kahoot!™ in a teacher training program and noted a significant difference among genders.

Darney and Larwin (2018) compared the technology self-efficacy of traditional and nontraditional Appalachia students enrolled in post-secondary medical-based, career technical training programs. Age, greater than 35 years, was used as the determining factor to differentiate between traditional and nontraditional students. The authors concluded that there was a significant difference between the level of technology self-efficacy between the younger and older students. If there is a difference in self-efficacy, a known psychological construct of engagement, it stands to reason that engagement will also differ.

There is evidence that nontraditional students do experience enhanced engagement from m-learning. Lai (2020) investigated older adults' decisions to use mobile technology in learning. Lai (2020) noted that smartphone and computer technology use worldwide among the older adult population is increasing. For many older adults, a smartphone is a primary tool to access the internet (Tsai et al., 2015). The

Lai (2020) study participants were all over the age of 55 with varying educational backgrounds and attended an adult school computer class. Lai (2020) concluded that 64.3% of participants intended to use a mobile phone as a learning tool. The predominant motivators for doing so were social influence, performance expectations, and facilitating conditions. Lai's (2020) study demonstrates the importance of the adult learner recognizing the benefits of mobile technology in enhancing behavioral engagement.

Ashtari & Taylor (2021) examined the impact of Kahoot!™, a game-based SRS, on students' perception of learning. In assessing age as a moderator effect on the relationship between motivation and student’s perception of learning, Ashtari and Taylor (2021) call for future studies to examine how underrepresented populations perceive learning, engagement, and technology in the classroom.

M-learning was designed with the traditional, digital native student in mind. Hampton et al. (2019) highlighted the differences between Generation Z students and millennials. The authors noted that Generation Z students tend to embrace diversity, respect authority, have a shorter attention span, and are motivated by instant gratification. The difference between the two generations is evident. Uzunboylu et al. (2020) contend that digital native learners are bored with old technology and want a more exciting learning environment. They call gamification an essential tool for increasing the interest of digital natives in the learning process.

M-learning has potential challenges and drawbacks, especially for the nontraditional adult student. Nontraditional students may lack experience using technology in the classroom and be disadvantaged in learning because of insufficient technology skills (Lowell & Morris, (2019). FYANTS have been reported to have higher anxiety with technology use than traditional students (Rabourn et al., 2018). Nontraditional students are often unprepared for online learning (Digital Promise, 2016), which may also apply to m-learning in the classroom. Implementing m-learning in the classroom will require support and scaffolding for the FYANTS (Digital Promise, 2016). Struggle with technology instead of the course content results in a student being more likely to drop the course and feel emotionally disengaged from a course (Goldsmith et al., 2006).

There is a universal call for more research among nontraditional students and the use of technology, including the influence of technology on engagement. Robinson (2019) used the technology acceptance model to examine nontraditional students' acceptance of online learning technology. Robinson (2019) noted a gap in the research on nontraditional students’ acceptance of technology in higher education. The technology acceptance model focuses on pedagogical strategies to enhance students’ acceptance of technology (Robinson, 2019). It does not measure or reflect engagement. Nevertheless, the model aims to improve the technology user's attitude and perceived usefulness. In the study by Robinson (2019), mood and perceived usefulness of the technology were significant factors in student acceptance of the technology.

Sanchez et al. (2020) call for further research on the use of gamification in the classroom and its influence on students’ emotional engagement. The results of their research highlight that not all students may benefit from gamification and m-learning, and studies investigating individual differences should be designed and conducted.

Robinson (2019) called for further studies to examine technology acceptance by nontraditional community college students in areas of self-efficacy, noting there is little research on technology use among traditional and non-traditional students (Robinson, 2019).

Brazeal & Couch (2017) noted that studies on clickers focused on student perceptions have neglected to include demographics other than gender. Brazeal & Couch (2017) call for studies that analyze various characteristics and demographics concerning perception and learning outcomes. Brazeal & Couch's (2017) study included gender, race, generation status (first generation), high school location (rural or urban), chosen major, and class rank (year in school). Nevertheless, they did not include age as a demographic category.

One study has been conducted on m-learning SRS-FA at the community college level. The study by Djerjian et al. (2020) investigated the use of peer instruction with and without SRS-FA among community college biology students. The average age of the students in the study was 25.7 years, with a range of 19-54. Exam scores between the two groups were analyzed, and the MANOVA test revealed no significant difference between the clicker and written response groups. This study demonstrates that SRS-FA was not a detriment to the class.

There has been scant research into the influence of mobile technology on engagement among community college students, let alone first-year nontraditional adult students (Ke & Kwak, 2013; Pratt, 2017; Robinson, 2020). What research has been done of late has focused on technology in online learning and not mobile learning in the classroom (Robinson, 2020). Nontraditional students are at higher risk of discontinuity in academic skills and limited exposure to the technology used in education (Pratt, 2017; Robinson, 2020). Schinske et al. (2017) noted that although almost half of the undergraduates in higher education are enrolled in a community college, there is scant research addressing community college students.

Researchers have suggested more studies are needed on students from diverse and underrepresented groups. Darney and Larwin (2018) called for more studies on technology self-efficacy between diversified groups. Hegarty and Thompson (2019) noted that further research is needed on the influence of technology in the classroom on engagement. Johnson et al. (2018) call for semi-structured interviews to better align contextual effects on adult learners' engagement. Djerdjian et al. (2020) claimed that most studies investigating the efficacy of active learning strategies in higher education had been conducted at four-year colleges and universities. The purpose of this study is to explore one such underrepresented group, the first-year, adult, nontraditional community college student.

Educators must be aware of the influence of pedagogy practices on their students. DeGagne (2011) contended that educators must be sensitive and aware of the behavioral and affective changes that pedagogical strategies make to learners. DeGagne (2011) affirmed that there is not one technology or pedagogical approach that is "best for all learning situations" (p. 35). Cheung et al. (2018) reminded instructors adopting SRS that computer knowledge, efficacy, and anxiety are considerable prognosticators of student engagement.

There is a gap in the studies on SRS and adult learning as demographics. Many studies on the perception and effect of SRS-formative assessments neglect to account for the age of the learner in the study's demographics (Cameron & Bizo, 2019; Chan & Ko, 2019; Fan & Song, 2020; Göksün & Gürsoy, 2019; Hashim et al., 2018; Kapsalis et al., 2020; Peculea & Peculea 2019; Wan et al., 2017; Wang et al., 2016). While other studies only include traditional adult (age 18 – 22) higher-educational participants in the demographics (Fuller & Dawson, 2017; Sheng et al., 2019; Sun & Hsieh, 2018; Walker et al., 2018; Wan et al., 2017).

Summary and Conclusions

This literature review began with an overview of thye (SEwEI conceptual framework by Kahu and Nelson, as well as engagement antecedents and consequences. Analysis was followed by a review of current research regarding nontraditional students, andragogy, emotional engagement along with the four primary psychosocial constructs, and m-learning, specifically in-class SRS. This review repeatedly highlighted the gap in research regarding FYNTS, especially at the community college level.

The SEwEI framework was used to diagram the complexity of engagement and depict it as a process with multiple mediating factors, including situation and psychological antecedence. M-learning is the use of mobile technology in the pursuit of education. SRS frequently involve applying m-learning in the classroom, as they can provide formative assessments with immediate feedback, with or without gamification.

Pedagogical practices have changed with the emergence of technology and m-learning (Cabrera-Solano et al., 2020). Andragogy must also adapt. Implementing appropriate active learning strategies associated with m-learning is necessary for enhancing learning outcomes and promoting retention (Cabrera-Solano et al., 2020). Additional studies endorse investigating how mobile learning contributes to self-efficacy, self-regulation, and self-monitoring. Self-regulation is highly influenced by level of self-efficacy (Al Mamum et al., 2020). Learners' attitudes regarding m-learning strategies influence and alter effectiveness of experiences (Richardson et al., 2015). This study's potential findings will provide instructors with information regarding how nontraditional adult learners perceive mobile learning in the classroom and influences emotional engagement. This research was used to address a gap in research involving nontraditional adult learners, emotional engagement, and m-learning technology.

In Chapter 3, the methodology for this study is presented, as well as alternative research approaches and reasons why they were not employed. This basic qualitative study was focused on FYNTS' perceptions of m-learning in the classroom and their influence on emotional engagement. Understanding FYNTS' perspectives can facilitate emotional engagement and support faculty in terms of enhancing student-learning experiences using m-learning in the classroom. The purpose of Chapter 3 was to detail how the qualitative design was appropriate for answering research questions and describing the research design and strategy. My role as the researcher during data collection procedures is discussed. This is followed by an explanation of the population, sample, and data collection and analysis plan.

Chapter 3: Research Method

The purpose of the qualitative study was to explore perceptions of FYNTS regarding mobile technology integration in face-to-face community college classroom sand how it influences learners' sense of emotional engagement. Using semi-structured interviews, I explored This topic. Although research has been conducted on m-learning in the classroom, there is a gap in literature regarding nontraditional students and emotional engagement, especially at the community college level. Understanding nontraditional students' perspective can aid instructors in developing course designs that facilitate enhanced emotional engagement and being better prepared to teach dynamic groups of students in community colleges.

In this chapter, I address the basic qualitative design and rationale for the study. My role as the researcher and research methodology are also presented. I address participant selection, instrumentation, procedures for recruitment, participation, and data collection, as well as the data analysis plan. I also address how I ensured the study's trustworthiness by describing credibility, dependability, confirmability, and transferability. Lastly, I discuss potential bias and ethical considerations related to this study. I conclude the chapter with a summary of the research method.

Research Design and Rationale

The research design for this study was a basic qualitative approach, with semi-structured interviews as primary collection tool. The basic qualitative design allows for exploration of the students' perceptions. This study included one research question with four sub questions.

RQ: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotional engagement?

SQ1: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their self-efficacy?

SQ2: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotions?

SQ3: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their sense of belonging?

SQ4: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their wellbeing?

These research questions are grounded in the SEwEI by Kahu and Nelson. According to Kahu and Nelson (2018), four psychosocial constructs of the SEwEI are emotion, self-efficacy, belonging, and wellbeing, along with three domains of engagement: behavioral, emotional, and cognitive. This research was focused on the emotional domain of student engagement.

Table 1

Alignment of Research Questions and Subquestions with the Conceptual Framework

Research questions	Component of SEwEI
RQ1: What are the first-year nontraditional students' (FYNTS') perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotional engagement?	Emotional engagement within the educational interface
SQ1: What are the FYNTS's perceptions of how mobile technology integration in a community college face-to-face classroom affects their self-efficacy?	Psychosocial construct self-efficacy
SQ2: What are the FYNTS's perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotions?	Psychosocial construct emotions
SQ3: What are the FYNTS's perceptions of how mobile technology integration in a community college face-to-face classroom affects their sense of belonging?	Psychosocial construct belonging
SQ4: What are the FYNTS's perceptions of how mobile technology integration in a community college face-to-face classroom affects their wellbeing?	Psychosocial construct wellbeing

Phenomenon of Interest

The SEwEI was used to provide a foundation for exploring FYNTS' perceptions of mobile technology integration in face-to-face classrooms.

Research Tradition

A basic qualitative method was used to explore this topic. Qualitative research is used when statistical or numeric data are insufficient to capture participants' experiences or feelings (Austin & Sutton, 2014). As I aimed to explore perceptions of FYNTS, the qualitative research method was appropriate. Little research has been presented on this topic.

Denzin and Lincoln (2018) noted qualitative research involves studying topics in their natural setting. Qualitative research involves addressing meaning of phenomena according to participants (Denzin & Lincoln, 2018).

The design of a study must align with the research question(s). There are three general points of interest in a qualitative design: first, interpreting the participants' experience; second, exploring how the participant constructs their world; and third, discovering the meaning the participant attaches to the experience (Merriam & Tisdell, 2016). The overall points of interest align with the research design and implementation, as evident in the research tool. The basic qualitative design allowed for exploring the perceptions of FYNT community college students through interviews related to m-learning in the classroom and emotional engagement.

While medieval philosophers acknowledged qualitative research, subjective qualitative exploration was perceived to be second-rate and unscientific (Mohajan, 2018). Mohajan (2018) called the early 1900's the traditional age of qualitative research. During that time, the positivist paradigm attempted to employ scientific inquiry associated with quantitative methods in qualitative research. Qualitative research became more evident in literature during the 1960s and entered into the "golden age of qualitative research" (Mohajan, 2018, p. 27). Then in the 1970s, a surge of qualitative perspectives and designs immerge, such as feminism and phenomenology (Mohajan, 2018). The future period, which Mohajan (2018) designates as 2010 forward, is responding to the evidence-based practice movement, which the author contends is the new criterion for social science inquiry.

I used a qualitative research methodology with a basic qualitative design for this study. Qualitative methods, like basic qualitative design, are used to explore and understand an individual's beliefs, experiences, perceptions, attitudes, and interactions (Patton, 2015). A basic qualitative research design is appropriate when the research needs a detailed narrative about an individual's beliefs and behaviors (Creswell, 2013).

Thompson Burdine et al. (2020) observed that interpretive description, a form of basic/generic qualitative method, is being utilized more frequently in present studies. Qualitative education research is often based on interpretive or basic qualitative design (Merriam & Grenier, 2019). More specifically, qualitative educational research aims to improve practices (Merriam, 2009). Merriam and Tisdell (2016) acknowledge the struggle researchers have had with the nomenclature of basic qualitative design. Terms such as generic, basic, and interpretive have been used interchangeably within the literature (Merriam & Tisdell, 2016).

A quantitative research design would have been inappropriate for this study for several reasons. First, quantitative research uses numbers and statistical analysis to seek to understand a phenomenon (Cox, 2020). The research questions in this study are not based on numeric data but the detailed emotional experience of the FYNTS in a classroom with m-learning. Second, quantitative research requires a design that includes a hypothesis to be accepted or rejected (Creswell & Creswell, 2018). This study explored the perceptions of the FYNTS and experiences. As such, it does not call for a hypothesis but rather an in-depth understanding of the phenomenon. Thirdly, a quantitative design requires variables, a measurable characteristic, which can be empirically tested (Cox, 2020). Again, the focus of this study was not on variables or causality. Instead, this study seeks to understand the perceptions of FYNTS on m-learning in the classroom.

Rationale for Chosen Tradition

The research purpose and questions must be linked to the research methodology (Butin, 2010). To the point that the research questions and purpose often define the qualitative design (Creswell et al., 2007; Korstjens & Moser, 2017; Kalu, 2019). There are numerous qualitative research designs (Merriam & Tisdell, 2016). Percy et al. (2015) claimed that when none of the standard, more focused approaches align with the research question, the basic qualitative inquiry approach is often appropriate. Basic qualitative studies explore perceptions, perspectives, and ideology (Creswell & Poth, 2018). While I considered other qualitative methods, this study's research questions, and purpose best align with a basic qualitative design with an interpretative description. The research question did not align with ethnography, case study, grounded theory, or phenomenology methods of inquiry.

This study sought to understand the FYNTS' perspective of m-learning integration in a face-to-face classroom on their emotional engagement. This research question did not align with the ethnography method. Ethnography is derived from an anthropologist's perspective (Merriam & Tisdell, 2016) and seeks to investigate a group's culture, practices, and beliefs (Percy et al., 2015). For something to be considered cultural, it must be "shared by a significant number of the members" and have the potential to be "passed on to new group members" (D'Andrade, 1992, p. 230). In ethnography, the researcher is expected to immerse themselves in an unfamiliar setting (Creswell & Poth, 2018). As a former community college student and a current tenured faculty member of a community college, the setting for this study is one with which I am very familiar. Babbie (2017) noted that ethnography studies only seek to describe, not to explain. Furthermore, in ethnography, the research does not focus on the unit of analysis (Percy et al., 2015), such as the FYNTS. Thus, ethnography was not an appropriate design for this study.

The case study research design is also derived from anthropology, sociology, and psychology disciplines (Merriam & Tisdell, 2016). A case study must be bounded (Merriam & Tisdell, 2016; Schoch, 2020) and examines a social phenomenon from a single instance (Babbie, 2017). The unit of analysis for this study is the FYNTS experience, and there are an indefinite number of potential learners and perceptions of m-learning. This research study was not bounded, or limited to one case, and therefore does not align with the case study method.

The grounded theory design focuses on generating and building theory from the data (Babbie, 2017; Crawford, 2020; Merriam & Tisdell, 2016). This study aimed to understand the perspective of the FYNTS regarding m-learning and emotional engagement; it is not to build theory. While this study uses the SEWEI conceptual framework, the purpose is not to challenge, modify or defend the framework presented by Kahu and Nelson (2018). Therefore, the grounded theory design did not align with this research study.

All qualitative research is at some level phenomenological, as it explores the individual's experiences (Merriam & Grenier, 2019). The phenomenology design specifically explores the "lived experience" of everyday, ordinary human life (Merriam & Grenier, 2019; Percy et al., 2015; Thompson Burdine et al., 2020), in contrast to recalling the past experiences of the participants (Merriam & Tisdell, 2016). Phenomenology uses a pre-reflective conscious to focus on the feelings of the experience or the "inner essence of cognitive processing" (Merriam & Tisdell, 2016, p. 77). Phenomenology arose from the philosophy discipline (Dawidowicz, 2020; Thompson Burdine et al., 2020). Thompson Burdine et al. (2020) claimed that qualitative approaches derived from other disciples cannot always meet the nuanced needs required in educational research. Dawidowicz (2020) noted that "phenomenology entails collecting, and analysis of people's perceptions related to a specific, definable phenomenon" (p. 217). Yet, Dawidowicz (2020) warns that not all studies are appropriate for the phenomenology design. The author declared that research questions ask, "how and why people do what they do or how they feel or interact with a phenomenon" (Dawidowicz, 2020, p. 219). While this study asked how participants feel about a phenomenon, the focus is not solely on the student's feelings but on the events of the m-learning phenomenon. Therefore, the phenomenology method does not align with this study.

As this study's research questions do not align with other qualitative methods of inquiry, a basic interpretive description method was chosen. Merriam and Tisdell (2016) declared basic qualitative method focused on three themes. One, how the participant interpreted their experience; two, how they reacted to the experience; and three, what meaning they gave to the experience. Merriam and Tisdell (2016) summarized qualitative research by stating, "All qualitative research is interested in how meaning is constructed, how people make sense of their lives and worlds. The primary goal of a basic qualitative study is to uncover and interpret these meanings" (p. 25). Additionally, Mohajan (2018) noted that "qualitative research is a form of social action that stresses on the way of people *(sic)* interpret and make sense of their experiences to understand the social reality of individuals" (p. 2). Thus, the basic qualitative design not only aligns with the research questions of this study but also with the mission of Walden University and the goal of enhancing positive social change.

Role of the Researcher

In qualitative research, the researchers are the primary instrument used in data collection (Crawford, 2020). My role in this study included recruiting the participants, conducting the semi-structured interviews, transcribing, coding, and analyzing the data, and working towards conclusions. Additionally, I was responsible for ensuring trustworthiness in this qualitative study, including dependability, credibility, transferability, and confirmability. My critical role as a researcher required that I disclose relevant aspects that qualify me to conduct this research and reveal potential biases. Finally, as a qualitative researcher, I am responsible for being a non-biased observer and listener to ensure accurate documentation of each participant's perspective.

I am a nontraditional student. My first years in higher education were as a traditional student, yet I did have a gap in the continuity of my undergraduate education of six months. I finished my undergraduate degree at that time. Later in life, I pursued further credentialing and formal education after a significant gap in time had passed since my undergraduate days. I then met numerous characteristics of a nontraditional student. Additionally, I have over twenty-two years of experience as an instructor in the community college setting, and I am currently a tenured professor in a health careers program. I have also spent time as an academic chair. Many of the students who I have taught have been first-year nontraditional students. I have used mobile learning technology and applications in the classroom. I have observed that some nontraditional students appear apprehensive or disengaged when using m-learning, while others smile and appear happy and excited. This inconsistent response to the use of m-learning in the classroom is what prompted this research study.

I implemented several strategies to manage potential biases based on my experiences, including reflexivity, peer debriefing, and member checking. Reflexivity is critical reflection and acknowledgment of prior experiences, assumptions, and beliefs that might influence the research outcomes (Crawford, 2020; Hiller & Vears, 2016). To remain transparent, I used a reflective journal to manage any personal biases. I also participated in frequent peer debriefings with qualified colleagues who were not involved with the study, including my research committee. A goal of peer debriefing is to identify research biases that might influence the discussion and conclusions (Crawford, 2020). I also used member checking as a form of triangulation. Member checking solicits participants' feedback on the study's data and conclusions (Crawford, 2020). Therefore, I provided all participants with a summary of their interviews. I requested feedback on the accuracy of the transcription and its intent. Additionally, I gave the participants a description of my analysis from their interview. I again requested feedback and clarification from them, as recommended by experts such as Thompson Burdine et al. (2020) and Crawford (2020).

From my experiences as a nontraditional community college student, a student participating in classes where m-learning was presented, and as an instructor who has utilized m-learning, my research role in this study is that of a participant observer. Nevertheless, to limit the influence of my experience on the research and to be a non-biased observer, the participants selected for this study did not include any former or current students. Additionally, participants were not currently enrolled in any health career programs over which I have some supervisory role. These stipulations attempted to ensure that no instructor relationship power influences the participants' responses or data analysis. Throughout the study, data collection, and analysis, I was mindful of my role as the researcher and did not interject my understanding of the phenomenon as a student or educator. To maintain self-awareness throughout the study, I bracketed my beliefs. I observed and analyzed the data through the lens of a researcher, not a participant.

I am responsible for documenting the accuracy of the participant's perceptions. My role required careful documentation of interviews and field notes as research data. Meticulous documentation guided the accurate interpretation of inductive analysis (Patton, 2015; Rubin and Rubin, 2021). I gave the participants a gift card valued at fifty dollars for their participation in the study. The gift card compensated the participants for their time and expressed my gratitude.

Methodology

This section will describe the methodology for this basic qualitative design study. The participant selection logic, instrumentation, and recruitment procedures will be explained. This section will conclude with the data collection plan.

Participant Selection Logic

The following section will explain the participant sampling logic for this research study. Sampling logic requires establishing criteria for choosing participants and identifying a strategy for confirming that the participants meet the requirements (Crawford, 2020). Additionally, in-depth qualitative interviewing involves participants with knowledge or experience of the phenomenon of interest (Rubin & Rubin, 2021). The logic for selecting participants in this study will include the target population who meet the criteria of the phenomenon of interest. I collected data for this qualitative study by interviewing first-year nontraditional community college students from a rural region in the California Community College. I used purposeful sampling to select 15 FYNTS. As noted by Patton (2015), small sample sizes are appropriate for basic qualitative studies as the purpose is to obtain rich, detailed data that is credible.

Inclusion Criteria

A qualitative study's target population comprises individuals who share specific characteristics (Creswell et al., 2007; Drost, 2011). The target population for this study was first-year nontraditional community college students enrolled in a face-to-face course that utilizes mobile learning in the classroom. The selected participants had not been enrolled in any classes I have taught and were not enrolled in any of the programs that are a part of the division in which I am chair. These stipulations were enacted to diminish the possibility of bias or undue influence on the participants.

The criteria for 'first-year' was a student who has successfully completed less than 30 semester units of higher education. 'Successfully completed' was defined as receiving a letter grade of C or higher. The 'nontraditional student' criteria was a student 25 years of age or older. The participants had to be currently enrolled or enrolled within the past 12 months in a face-to-face rural California Community College course that utilized m-learning. For this study, m-learning was limited to cellular phone use as prompted by the instructor during the scheduled time period of the class. These criteria were confirmed through participant self-disclosure using an interest survey instrument (see Appendix A). The information to be collected from the target population is their perceptions of the influence of m-learning on their emotional engagement.

Sampling Strategy

Nonprobability purposive sampling was used in this study. Purposive sampling, also known as judgment sampling or purposeful selection, involves selecting participants based on the characteristics and needs of the study (Babbie, 2017; Cox, 2020). As Merriam and Tisdell (2016) noted, probability sampling is inappropriate for qualitative design. Therefore, I sought to find individuals who could and were willing to provide information from their experiences and meet the criterion of the study. As the researcher, I reached out to instructors known to use m-learning in face-to-face community college classes and provided their students with an interest survey. With approval from institutions, interest surveys were distributed in areas where students could see them.

Prospective participants were vetted using the brief interest survey to ensure they met the selection criteria.

The minimum sample size for this study was 10 nontraditional first-year students. Merriam and Tisdell (2016) recommend not setting a definitive sample size; instead, the sample size should be determined based on intellectual judgment and data saturation. Furthermore, saturation can only be determined during data collection (Merriam & Tisdell, 2016; Patton, 2015; Rubin & Rubin, 2021). Crawford (2020) noted that saturation is determined when no new information is being yielded and when there are no unexplained phenomena.

Nevertheless, Thompson Burdine et al. (2020) claimed that saturation is not the objective of interpretive description design (an alternative nomenclature for basic qualitative). The authors noted that the learner's experiences could potentially be infinite in applied and practice disciplines like education. It is recommended, therefore, that the focus for determining the participant size be to obtain "a deeper understanding of participant perspective while recognizing that variation in perceptions and outliers may exist" (Thompson Burdine et al., 2020, p. 340). Bloomberg and Volpe (2008) confirm that the "logic of purposive sampling lies in selecting information-rich cases, with the object of yielding insight and understanding of the phenomenon under investigation" (p. 68). Therefore, I determined the sample size on two criteria. One, the gleaning of a deep and rich understanding of the FYNTS's perceptions of m-learning in the classroom, and two, the research question and sub-questions had been thoroughly answered. Dawidowicz (2020) observed that phenomenology's sample size is often between eight and 12.

Nevertheless, while the goal for this study was 10 or more, the study ultimately had 15 participants.

Instrumentation

The researcher is the primary instrument in qualitative studies, especially those that use interviews (Rubin & Rubin, 2021). In qualitative research, there are three available data sources: interviews, observations, documents, and artifacts (Merriam & Grenier, 2019). I used a semi-structured interview style and allowed the participant the freedom to speak unreservedly about the topic. The primary data collection instrument for this basic qualitative study was an interview guide (See Appendix B). Before utilization, the interview questions were reviewed and approved by my dissertation chair and the Institutional Review Board (IRB). The interview guide ensures that the same lines of inquiry are followed with each participant interviewed (Patton, 2015). The interview guide and questions guided the semi-structured interview (See Appendix A).

The beginning script acted as a guide to ensure that all the relevant themes were discussed consistently and systematically. The interview guide was crafted from the literature and the conceptual framework. The interview guide consisted primarily of open-ended questions, clarifying and expanding follow-up questions, and probes. Qualitative research ideally explores the why and how of phenomenology through open-ended questions (Pratt et al., 2022). The interview questions were developed using recognized theory in qualitative interviewing methods and in alignment with Kahu and Nelson's (2018) SEWEI conceptual framework.

The purpose of the interview was to develop a deeper understanding of the research question. At the end of the interview, the guide included a question asking the participants to identify how many of the 10 nontraditional characteristics they meet on the list. Participants were not asked to disclose which aspects they meet, only the number out of 10. The guide concluded by scripting the member-checking procedures and providing the participant with contact information. Lastly, the guide allowed me to express my gratitude to the participant and thank them for their time.

Procedures for Recruitment, Participation, and Data Collection

The dissertation committee approved the proposal for this study, and the Walden University IRB also approved the study before participants were recruited (IRB approval number 05-24-23-1023106). Additionally, approval from the community college district from which participants were recruited was also obtained. After all approvals were obtained, participants were recruited through flyers, email, social media, and snowball sampling. Snowballing involves asking participants to recommend others who might meet the sampling requirements and be interested in participating (Smith & Shinebourne, 2021). Faculty were requested to allow me to announce the study in classes that were known to use m-learning in the classroom. The faculty who were approached were not under my direct supervision or within my academic discipline division. The faculty were instructed not to provide any incentives for participation. The recruitment literature detained the sample strategy and requirements. Also, the flyer summarized the study's purpose, the requirements for the participants, and contact information. Participants were asked to self-identify to ensure that they met the selection criteria to be eligible to participate in the study.

Once I received approval from Walden University's IRB and the community college district, I started recruiting participants from a community college in the area; I actively recruited students for this study. I posted recruitment fliers around various community colleges. Recruitment emails were also sent to faculty requesting that they allow me to announce the study and distribute fliers to students.

Upon initial contact with the potential participant, an informed consent form was presented to them to allow the participant to decide whether to participate in the study. The consent form also described each potential participant's ethical and procedural process. During this initial contact, the participants were assured that their participation was voluntary and that they may withdraw at any time. Additionally, they were assured that their identity and privacy would be held in the strictest of confidence.

Each potential participant completed an informed consent form and declaration of agreement to participate in the study. By agreeing to participate, the participant agreed to engage in a one-time interview and, if needed, a follow-up email conversation. A participant incentive of a $50 gift card was offered to those selected to participate in the study. The offer of payment was not substantial and is customary in many research studies that require volunteers. The gift card was also an expression of gratitude for the participants' time and effort.

A basic qualitative design calls for direct and unfiltered data collection methods such as interviewing and surveys (Merriam & Tisdell, 2016). Data collection was obtained from in-depth semi-structured interviews with first-year nontraditional community college students who are currently or have recently been enrolled in a face-to-face class that integrated m-learning in the classroom. Data collection associated with the basic qualitative design uses primary methods and a "generalized approach to data analysis" (Biddix, 2018). Data was collected from one synchronous interview lasting no more than one hour. The Interview Guide (see Appendix A) provides the interview questions and potential follow-up questions.

The interview questions aligned with both the research questions and the conceptual framework. If a participant provided limited information during the interview, I inserted a request for expansion, such as, "Can you give me an example?" "What more can you tell me about that?" "Can you explain that further?" I used these prompts and others specific to each main question to produce greater detail and a richer data source.

I availed myself of face-to-face meetings on campus or video conferencing via Zoom or Microsoft Teams, per the participants' preference. All of the participants choose to do the interview via Zoom. Virtual discussions occur via Zoom video conferencing.

I collected the data using a responsive interview technique. I used active listening techniques to respond to nonverbal cues and ensure data collection accuracy. All interviews were recorded for transcription purposes. Before starting the discussion and recording, the participants were alerted to the need to record the interview and asked for their consent. The interview was recorded using Zoom software, which can be stored in a password-protected file on my personal computer. Two forms of recording the interview were utilized, when possible, to ensure a backup recording. For the interview, I used

Zoom transcription and voice-to-text features in Google™ Documents to generate a transcript of the interview. I also used a handheld recorder with password protection. The transcript was reviewed, edited, and corrected. After the interview transcription was complete, a summary was created with notes on their emotional engagement. A copy was emailed to each participant for review to ensure their responses represent the thoughts they wished to share in response to the questions posed. Participants were asked to respond back with any concerns, corrections, additions, or questions they had regarding the transcription.

The steps of the data collection process were as follows. Students interested in participating in the study were presented with an intake and standard informed consent form. The intake form included the sampling parameters, the purpose of the study, and requested the preferred contact method. The potential participants were provided written assurance that participation is voluntary and that all responses will be kept confidential. The consent form included a notation that the interview would be recorded and anticipated to last less than one hour. The interview was to occur only once with each participant; unless any data is unclear, a follow-up interview would be scheduled. From the intake forms, students selected to participate were contacted via their preferred method of choice (e.g., email, phone). When participants were notified of their selection for the study, they were allowed to coordinate the time, date, and place of the interview, and participants were presented with the main interview questions.

Data Analysis Plan

Qualitative data analysis is derived from non-numeric data (Crawford, 2020). The data gleaned from this study was analyzed using inductive analysis. The basic interpretive design called for inductive analysis to identify patterns and themes (Merriam & Grenier, 2019). The analysis presented rich descriptive findings that align with the literature and conceptual framework (Merriam & Grenier, 2019). The data analysis began during the interview process for this basic qualitative study. Following the completion of the interview, the interviews were transcribed and summarized the interview. Each transcript was coded and marked based on relevant concepts, themes, and examples. After completing all of the interviews and the first coding of the individual interviews, the data was analyzed across all interviews by finding and grouping excerpts with the same coding. The coding was sorted and resorted within each grouping, comparing and differentiating subgroups and writing summary statements arising from each sorting. After weighing each version of the groupings and integrating the descriptions from the text descriptions, a complete picture was visible. The concepts and themes generated by the coding and grouping were constantly tested and examined from different perspectives. These were grouped and underwent first and second coding. The coded data was identified, sorted, weighted, and integrated with the data, as Rubin and Rubin (2021) suggested.

I utilized computer programs to help organize and retrieve coded data. However, as Rubin and Rubin (2021) maintained, determining what codes are essential and relevant cannot be outsourced to artificial intelligence. The initial plan was to use Microsoft Word and Excel™ to facilitate the first and second coding of the transcripts. I added MAXQDA plus (2020 edition) to the software analysis. I constantly referred to the research questions and conceptual framework throughout the coding and data analysis process to ensure alignment. Lastly, I remained open and expectant to the possibility of additional categories, codes, and themes emerging from the data.

Trustworthiness

Within qualitative research, the issue of trustworthiness is a priority concern. The top criteria for trustworthiness are credibility, dependability, confirmability, and transferability (Korstjens & Moser, 2018; Patton, 2015). Credibility is aligned with internal validity in quantitative research and seeks to ensure truth and correct interpretation of the data (Korstjens & Moser, 2018). Dependability is the stability of the findings through time, and transferability is the idea that the results can be applied to other settings or contexts (Korstjens & Moser, 2018). Therefore, I implemented several strategies to manage potential biases based on my own experiences and establish trustworthiness in this study, including reflexivity, peer debriefing, and member checking.

Credibility

Reflexivity is critical reflection and acknowledgment of prior experiences, assumptions, and beliefs that might influence the research outcomes (Crawford, 2020; Hiller & Vears, 2016). I used a reflective journal to manage personal biases and ensure credibility to remain transparent. I also participated in frequent peer debriefings with qualified colleagues who were not involved with the study, including my research committee. A goal of peer debriefing is to identify research biases that might influence the discussion and conclusions (Crawford, 2020).

Member checking is recommended to ensure credibility (Korstjens & Moser, 2018). Member checking is also a form of triangulation. I provided all participants with a summary of their interview and requested feedback on the summary's accuracy and intent. Additionally, I gave the participants a summary of my analysis from their interview and again requested feedback and clarification from them, as Thompson Burdine et al. (2020) recommended. Prolonged engagement also adds to credibility (Korstjens & Moser, 2018). I encouraged participants to support their statements with examples and asked follow-up questions in the interview process to draw out rich descriptive data and thus enhance credibility.

Dependability

Dependability and confirmability in qualitative research can be enhanced by utilizing an audit trail strategy (Korstjens & Moser, 2018). I ensured transparency during the research process by describing and following the steps taken. This transparency applied to the proposal, the data collection, data analysis, and the reporting of the findings process. Persistent observation also enforced dependability and credibility (Korstjens & Moser, 2018). The data was read, reread, analyzed, and reanalyzed during the first and second coding to facilitate persistent observation and trustworthiness. In addition, the interview guide included a step-by-step log of the research process. An audit trail, in the form of a journal, was also used to enhance dependability (Merriam & Tisdell, 2016). Therefore, I keep a journal throughout the data collection process and record notes and observations during the coding process, thus recording the inductive and extrapolated reasoning to codes and themes.

Confirmability

Confirmability in qualitative research is equivalent to objectivity in quantitative research (Ravitch & Carl, 2016). Nevertheless, the subjective nature of qualitative research prevents objectivity, yet the finding must be confirmable. Reflexivity is a systematic assessment of my role as a researcher that can ensure confirmability (Ravitch & Carl, 2016). When interviewing participants, I did not insert my opinion, share my experiences, or interject any interpretation. When analyzing the data, I utilized the transcripts alone. My thoughts and personal experiences were not incorporated into the data analysis or reported findings. Detailed descriptions of the participants' perceptions that align with each research question also provided evidence of confirmability. Lastly, I constantly reviewed my research design for any evidence of bias and had it approved by Walden’s IRB.

Transferability

Transferability signifies the external validity of the findings. External validity takes trustworthiness to a new level, looking at the relationship between the study results and potential application to other situations (Merriam & Tisdell, 2016). However, as explained by Merriam and Tisdell (2016), applicability is up to the reader of the study, not the researcher. To establish transferability, I utilized rich, descriptive data and provided detailed illustrative findings of the data. I presented quotes from the participant interviews within the data results. Another strategy to increase transferability is increasing the participants' variability within the selection criteria. The variability in the participants' demographics and nontraditional status represented a variety of participants. However, Saldana (2016) noted that transferability is limited in qualitative designs.

Ethical Procedures

Ethical considerations are critical to the research process. The researcher is accountable for ensuring the confidentiality of the participants within their study and protecting them from malfeasance. Additionally, the research must maintain the integrity and trustworthiness of the study outcomes while managing and coping with roadblocks and research challenges (Creswell, 2013). According to the rules presented by Walden University, I submitted this research proposal to Walden University's IRB for permission to recruit and interview FYNT community college students. The IRB protocols and ethical standards ensured the rights and welfare of human research subjects. I did not begin recruiting or interviewing participants until the IRB was obtained.

After the participants voluntarily agreed to participate, I provided them with a standard study consent form. To those who agreed to the study, a date, time, and method for the interview was scheduled. Building a relationship of trust is critical to collecting rich, high-quality data (Merriam & Tisdell, 2016). All information obtained by the participants was strictly protected. The names of all participants have been kept confidential, and any potentially identifying information has been removed from the transcripts and data analysis. I used pseudonyms to protect their identity. I used private application accounts to conduct and or record interviews that are password protected. I used my password-locked computer to safeguard all saved data. All retained data or documents that pertain to this study will be destroyed or deleted after five years.

The perceived risks to participating in this study are minimal. Nevertheless, the potential for emotional and psychological distress from answering the questions might arise. The institution participants are enrolled in has free access to counseling on campus and online mental health services if needed. If warranted, the students will be reminded of these resources. Participants might be concerned about reprisal from instructors. Again, the data was gleaned of all identifying information, and the anonymity of participants in the study was strictly maintained. No participant was enrolled in any course where I was their instructor. None of the instructors who have integrated m-learning technology in the classroom were under my direct supervision. The voluntary participants were not under my control, and I assured them that no repercussions would occur regardless of their participation or contribution to the study. Before publication, the participants can change their statements, withdraw from the study, or have their contributions wiped from the research and data analysis.

Summary

Chapter 3 includes information about the basic qualitative research design for this study. Research questions and the conceptual framework were presented. Students' emotional engagement within the educational interface was the phenomenon of interest. The tradition of qualitative research and rationale for the chosen tradition were addressed. I have described my role as the researcher. The methodology was detailed, including participant selection logic, inclusion criteria, instrumentation, sampling strategies, and procedures for recruitment and participation. Data collection and data analysis plans were also presented. The chapter included a discussion about how I ensured trustworthiness, including credibility, dependability, confirmability, and transferability, while maintaining ethical procedures. Chapter 4 includes a presentation of results.

Chapter 4: Results

The purpose of this basic qualitative study was to explore FYNTS' perceptions about how mobile technology integrated into face-to-face community college classrooms affects their emotional engagement. The research question and subquestions for this study were:

RQ: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotional engagement?

SQ1: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their self-efficacy?

SQ2: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotions?

SQ3: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their sense of belonging?

SQ4: What are FYNTS' perceptions of how mobile technology integration in a community college face-to-face classroom affects their wellbeing?

I used Kahu and Nelson's SEwEI framework. This chapter includes a discussion of the setting and data collection process, adverse reactions, data analysis, and analysis results, as well as evidence of trustworthiness. The chapter concludes with a summary of results.

Setting

The participating institution is a public community college located in rural California in the U.S. The participating institution is accredited by the Accrediting Commission for Community and Junior Colleges of the Western Association of Schools and Colleges. The student population is under 4,000, with over 23% of the student body who are 25 years or older. The school uses semester-based academic years, and currently, the highest degree offered is an associate's degree, with options for numerous career and technical certificates.

Consistent with most community colleges, the participating institution saw a dramatic drop in student enrollment during and after the COVID-19 pandemic. Attendance at the participating institution dropped approximately 24% from fall 2019 to fall 2021. Nevertheless, fall 2023 showed a 19.4% increase from fall 2021 and a near return to prepandemic numbers. Older students constitute a higher percentage of the part-time student body and have been slower to return to the classroom postpandemic.

Demographics

There were 15 participants in this study. All 15 participants disclosed that they met study requirements, were 25 or older, had less than 30 successfully completed units, and were currently enrolled in a face-to-face community college course where the instructor engaged in m-learning activities (see Table 2). Participants provided information about their gender and identified the number of nontraditional characteristics that applied to them. This number was recorded as nontraditional status and was measured out of a total of 10. Nontraditional status numbers ranged from four to nine, with an average of 6.07 (see Table 3). There were five male and 10 female participants. Participants were also asked to identify what types of m-learning activities they participated in while enrolled in face-to-face community college classrooms. They identified 15 different m-learning activities, with taking pictures being mentioned most often at 10 times (see Table 4). However, if both Kahoot! and the unknown games were combined, the number of students who experienced gamification through m-learning was also 10. The shortest interview was 15:43 minutes, and the longest was 35:55. The average interview time was 23:59 minutes.

Table 2

Demographics of Participants

Synonyms Participants	Gender	Nontraditional Status (out of 10)	Length of Interview	Type of m-learning in the classroom
Leslie	Female	6	15:43	Taking pictures, Kahoot!™
Jeff	Male	5	21:52	Canvas™ (LMS)
Becca	Female	9	27:17	Take pictures, calculator, Canvas™ (LMS), unknown program
Evalyn	Female	6	19:56	Google™ search, submit .pdf files
Clark	Male	4	20:17	Kahoot!™, unknown game
Rachel	Female	6	29:30	Kahoot!™, taking pictures, navigating EBSCO
Nora	Female	7	25:06	Google™ search, Canvas™ (LMS), taking pictures
Thayne	Male	5	35:55	Google™ search, e-books
Emily	Female	8	28:57	Taking roll, Kahoot!™, Google™ search, taking pictures
D.J.	Male	6	30:12	Kahoot!™, taking roll, Canvas™ (LMS)
Hyrum	Male	5	27:29	Google™ search, Kahoot!™, unknown game, taking pictures, Excel™
Raquel	Female	4	23:28	Google™ search, calculator, Canvas™ (LMS), taking pictures
Marie	Female	9	28:18	Kahoot!™, taking pictures, contacting peers
Betty	Female	6	19:24	Taking pictures, YouTube™ videos, Canvas™ (LMS), unknown game
Willamina	Female	5	23:59	Dictionary.com, taking pictures
Total	5M/10F			
Average		$\bar{X}$ 6.07	$\bar{X}$ 25:09	

Table 3

Nontraditional Student Characteristics

#	Nontraditional Student Characteristics
1	25 years of age or over
2	Did not attend college right after high school
3	Did not finish high school
4	Complete high school with a GED
5	Worked full-time (35+ hours/week) while attending school
6	Attended college part-time for at least part of the academic year
7	Had a gap in your college attendance
8	Financially independent (you are not supported financially by a parent or guardian)
9	Have a dependent other than a spouse
10	A single parent

Note: Characteristics derived in part from Horn & Carroll (1966).

Table 4

M-Learning Experiences

Type of M-Learning Experience	Number of Student Participants
1. Calculator	2
2. Canvas™ (LMS)	6
3. Contacting peers	1
4. Dictionary.com	1
5. E-books	1
6. Excel™	1
7. Gamification (Unknown)	3
8. Google™ search	6
9. Kahoot!™	7
10. Navigate library resources	1
11. Submit .pdf files	1
12. Take pictures	10
13. Taking roll	2
14. Unknown program outside of Canvas™	1
15. YouTube™ videos	1

Data Collection

Approval from the IRB for conducting this study was obtained on May 24, 2023, with IRB approval. The summer term for the approved institution began on May 15, 2023; however, many summer classes did not begin until June. I began recruiting participants immediately by distributing the flyer across campus. I posted the flyer in many common areas, such as the library and cafeteria, and on the notification bulletin boards around campus. I did not post flyers in the areas assigned explicitly to Health Careers courses to avoid a conflict of interest. I then emailed all faculty teaching a summer face-to-face class and asked if I could make an announcement in their class regarding the study. I was invited into 11 distinct classrooms and made those announcements between June 12 and 19. The first interview occurred on June 15, 2023, and I completed five interviews during the summer session. When the fall semester began on August 19, 2023, I confirmed that the flyers were still posted. During week two of the fall semester, I posted the flyer outside the doors of classrooms. I again emailed faculty teaching face-to-face classes and requested a time to announce the study in their course. With support from my colleagues, I made 21 announcements in 21 different classes across various disciplines. I completed the 10 final interviews on September 18, 2023. On September 19, after the last interview, I removed all the flyers posted on campus and canceled any planned class visits.

A total of 15 participants volunteered and completed the semi-structured interviews. After receiving and reviewing the IRB-approved consent form, all the participants consented to the interview via email or text. As the interview began, I thanked each participant and asked them to confirm that they met the study's criteria, all declaring that they met the requirements. I then asked each participant if they approved of recording the interview, and again, all gave verbal consent. I asked all the questions from the interview guide and listened carefully to their responses. I recorded any notes or feelings immediately into my data collection notebook. I prompted for further information or clarification as needed. After the interview, I thanked the participants and gave them a token of gratitude.

The interviews were all conducted via Zoom and Microsoft Media Player using my personal computer, which is password-protected. A handheld digital voice recorder with password protection was also used as a backup. All the interviews were conducted privately and were free of interruption or observation on the interviewer's end. With the Zoom translation, I listened to each recording to validate the accuracy of the transcription. Corrections to the transcription were made while re-listening to the recording. All identifiable data was removed to ensure the confidentiality of the participants. A clean copy of each transcription was saved to my personal computer.

As the demographic table (Table 2) noted, the first interview only took 15:43 minutes. The short interview was partly due to the IRB committee's suggestion that the interview questions would take more than 1 hour to complete. Therefore, in the first interview, I did as the IRB suggested and blended the various m-learning activities into one question instead of addressing them individually. After the first interview, it became apparent that condensing all the m-learning activities into one question did not glean the rich data I hoped to get from the interviews. The questions were not changed from the

IRB approval; however, they were repeated and focused on each type of m-learning activity the participant had identified. The longest interview was 35:55 minutes using the expanded interview question format, well within the 1-hour time limit initially set for the interview. Therefore, there was no variation from the IRB-approved plan other than the breaking apart of the questions. During the interview, one student was interrupted, but the student agreed to continue the interview after the interruption. The Zoom technology froze for approximately 15 seconds during another interview, but the interview continued without losing content. Each participant was sent a summary of the interview for review and feedback as part of the membership checking. None of the participants made any corrections or addendums to the summary.

Data Analysis

The analysis process for this basic qualitative study followed the proposed plan of inductive analysis of identifying patterns and themes, as recommended by Merriam and Grenier (2019). The analysis began during the interviews, as I took notes and considered themes. After each interview, the interviews were transcribed, summarized, and reread at least three times. Each transcript was coded separately and marked based on relevant categories, themes, and examples, all with the conceptual framework, research question, and sub-questions in mind. As suggested by Saldana (2016), I used open coding and relied heavily on in vivo coding as part of the first coding. I used various colored highlighters to represent the four research sub-questions and identify demographic information and potential examples and quotes. I coded similar words, patterns, and ideas. I grouped the coding into chunks based on the research sub-questions. These initial codes allowed me to break up and chunk the data into distinct codes, as advised by Sandana (2016).

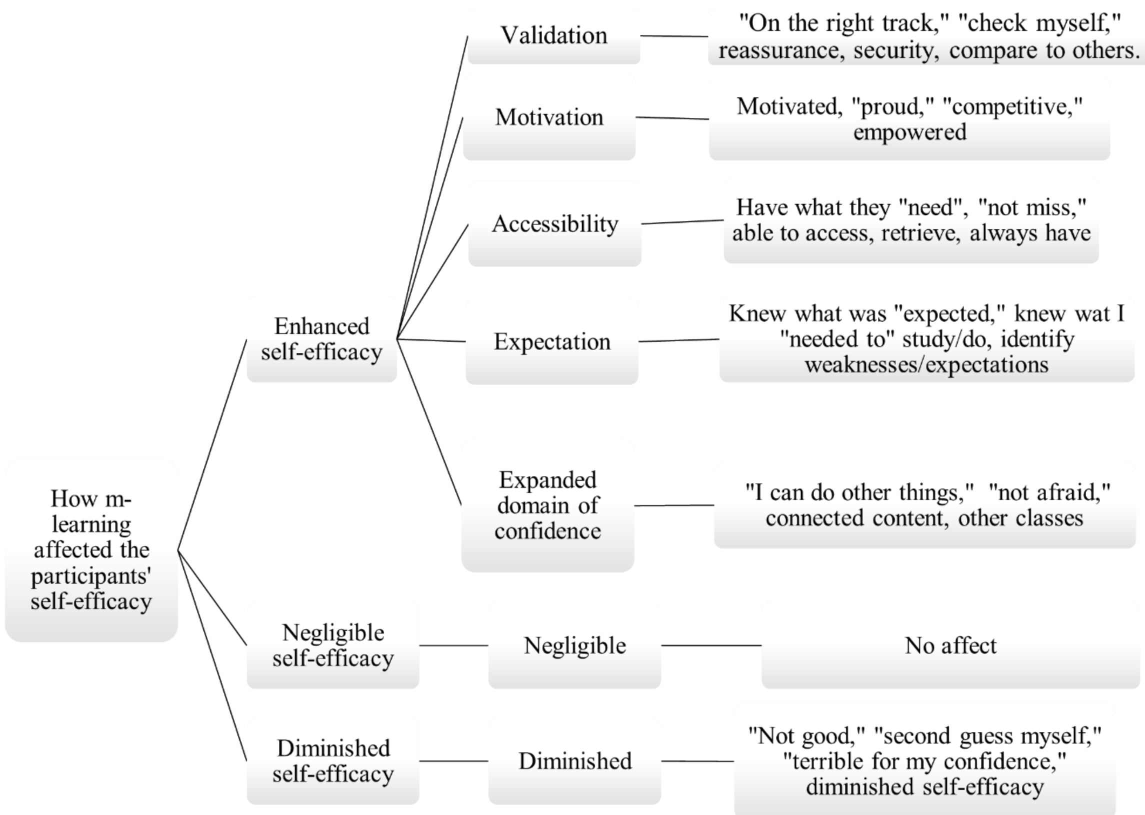
As I began to analyze the data across all 15 interviews, I utilized MAXQDA Plus 2022, a computer software program for qualitative data analysis. I uploaded the 15 clean transcriptions of the interviews into the MAXQDA software installed on my personal computer. All data from MAXQDA is saved in my personal computer files. Using the first coding information, I assigned those codes to the transcripts, again one transcript at a time. The MAXQDA software allowed me to see coding groups across the different transcripts. I could group, compare, and differentiate subgroups using this technology. The MAXQDA program allowed me to arrange the data and coding; however, as Rubin and Rubin (2021) maintained, determining the codes and relevancy cannot be outsourced to artificial intelligence. A summary of the groupings was then composed. The codes, groupings, and categories were constantly tested and examined from different perspectives during data analysis. As Rubin and Rubin (2021) recommended, the coded data was labeled, arranged, and systematically integrated. The use of MAXQDA maximized the ability to remain open and expectance of unique codes, categories, and themes. My original proposal was to utilize Microsoft Word™ and Excel™ to facilitate the first and second coding. I did find Microsoft Word™ to be a valuable tool; however, Excel™ was less helpful than planned and utilized only minimally.

Self-Efficacy

The coding for research SQ1 focused on how mobile technology integrated into the community college face-to-face classroom affected the FYNTS's self-efficacy. All 15 participants responded to the interview question regarding how m-learning technologies affect their self-efficacy. All 15 participants acknowledged that m-learning positively affected their self-efficacy. Nevertheless, several students noted that some m-learning activities did not affect their self-efficacy, and some believed that m-learning diminished their self-efficacy in some situations. The themes identified through inductive data analysis for self-efficacy include enhanced self-efficacy, negligible self-efficacy, and diminished self-efficacy (see Figure 3). The categories that arose from the data for the theme of enhanced self-efficacy were validation, motivation, accessibility, expectation awareness, and expanded domain of confidence. The categories identified with m-learning not positively influencing self-efficacy include negligible and diminished.

Figure 3

Themes, Categories, and Codes for how M-Learning Affects Participants' Self-Efficacy

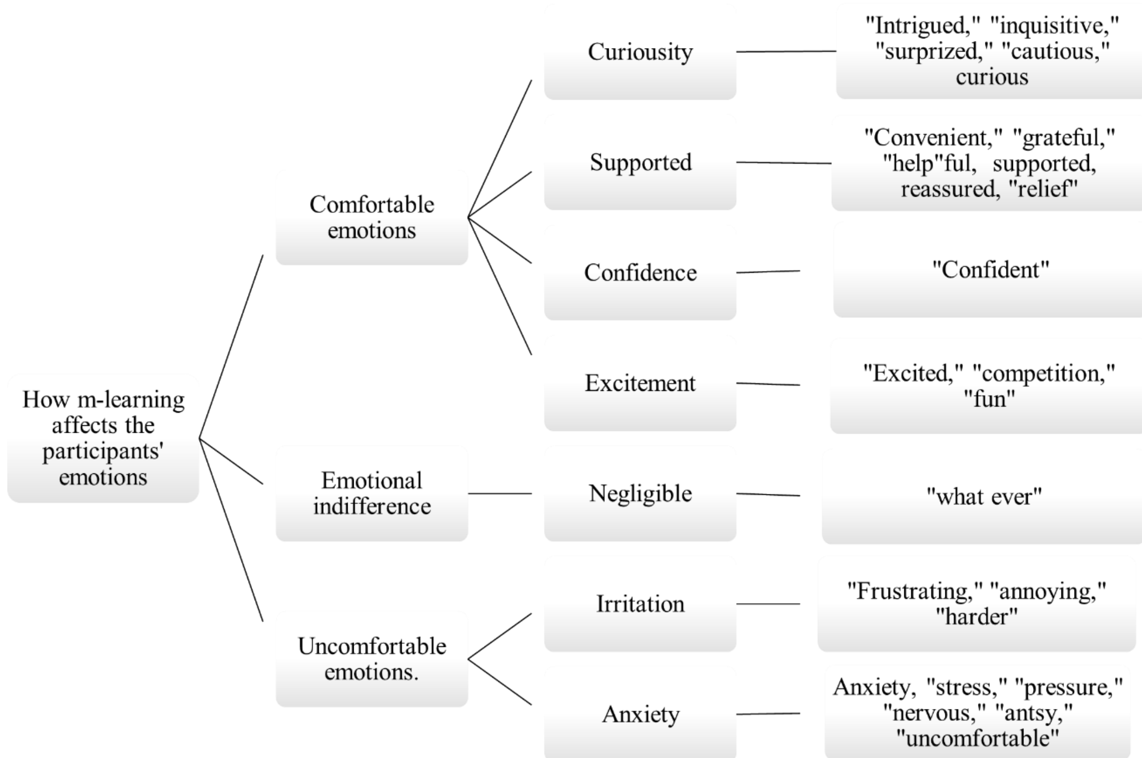


Emotions

The coding for research SQ2 focused on how mobile technology integrated into the community college face-to-face classroom affected FYNTS's emotions. All 15 participants responded to the interview question regarding how m-learning technology affects their emotions. All 15 participants acknowledged that m-learning positively affected their emotions. Several participants described emotional changes over time and exposure to the m-learning activities. The themes identified through inductive data analysis for emotions include comfortable emotions, emotional indifference, and uncomfortable emotions (see Figure 4). The categories from the data for the theme of comfortable emotions include curiosity, supported, confidence, and excitement. The category that emerged from the date for the theme of emotional indifference was negligible. The categories that arose from the data for the theme of uncomfortable emotions were irritation and anxiety.

Figure 4

Themes, Categories, and Codes for how M-Learning Affects Participants' Emotions



Sense of Belonging

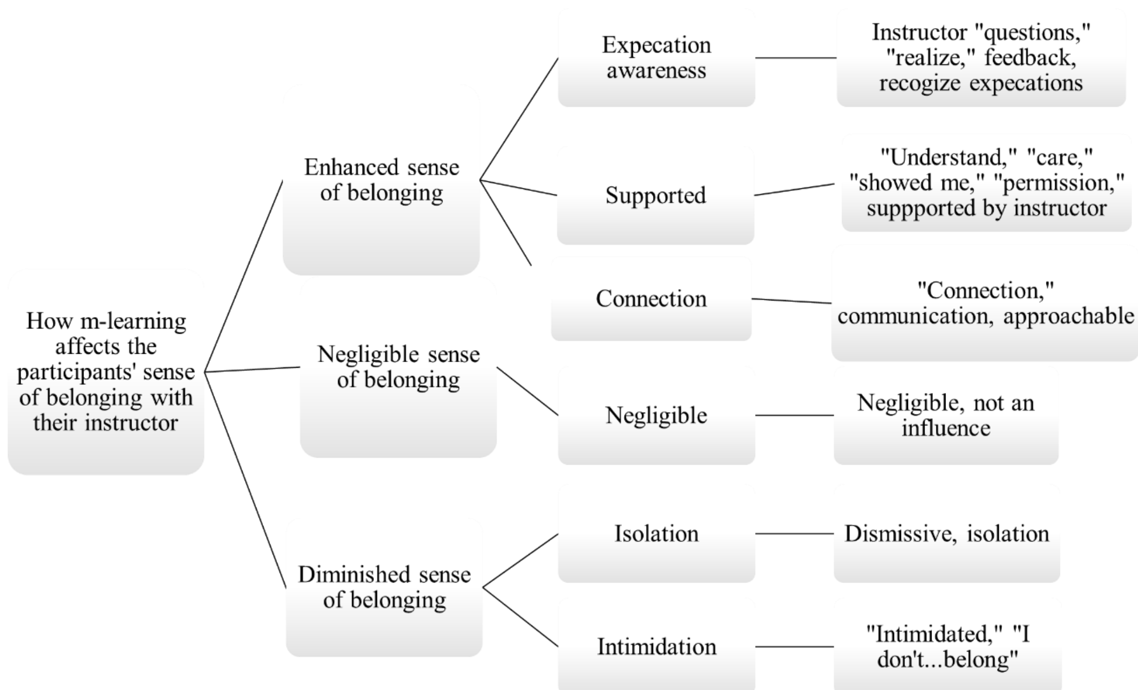
The coding for research SQ3 focused on how mobile technology integrated into the community college face-to-face classroom affected the FYNTS's sense of belonging. Utilizing the conceptual framework of Kahu and Nelson (2018), the psychosocial construct of sense of belonging was approached from four directions: sense of belonging with the instructor, sense of belonging with their peers, sense of belonging with the campus, and sense of belonging with the content. During the interview, participants were asked how m-learning affected their sense of belonging in the four domains. While the themes were similar across the four domains, the presented categories had significant variations. To maintain the trustworthiness of the data analysis, the four domains of sense of belonging were analyzed separately and then as a whole.

Instructor

The coding for this segment focused on how m-learning integrated into the community college face-to-face classroom affected the FYNTS's sense of belonging with their instructor. All 15 participants responded to the interview question regarding how m-learning technology affects their sense of belonging with the instructor. Two participants perceived that m-learning could not affect their sense of belonging with an instructor, no matter the technology. In contrast, the other 13 participants shared that some form of m-learning enhanced their sense of belonging with the instructor. The themes identified through inductive data analysis for how m-learning affects the participants' sense of belonging with the instructor include an enhanced sense of belonging, a negligible sense of belonging, and a diminished sense of belonging (see Figure 5). The categories for enhanced sense of belonging were identified as expectation awareness, connection, and support. The categories for the non-enhanced sense of belonging included negligibility, isolation, and intimidation.

Figure 5

Themes, Categories, and Codes for how M-Learning Affects Participants' Sense of Belonging with Their Instructor

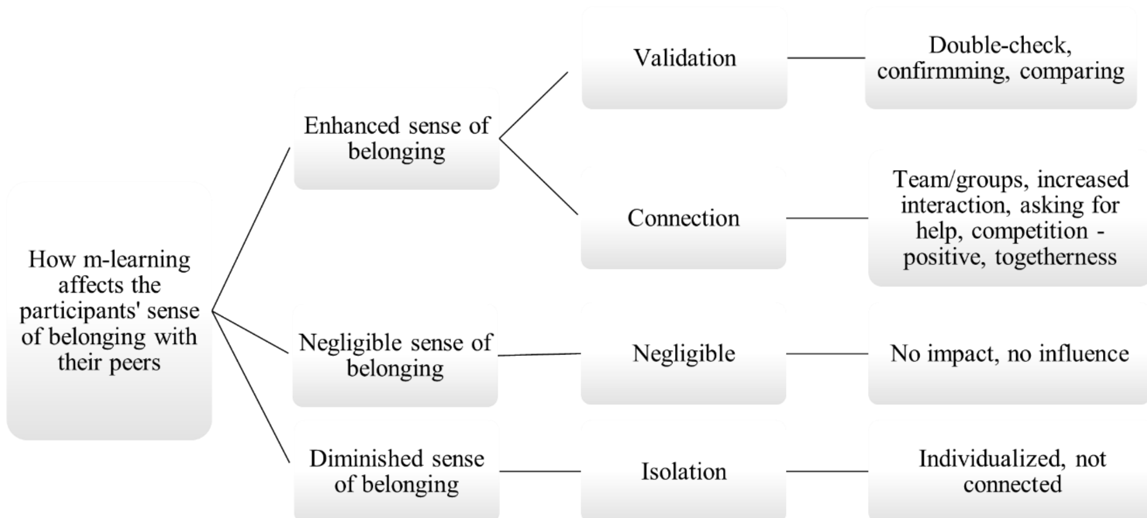


Peers

The coding for this segment focused on how m-learning integrated in the community college face-to-face classroom affects the FYNTS's sense of belonging with their peers. All 15 participants responded to the interview question regarding how m-learning technology affects their sense of belonging with their peers. One participant perceived that m-learning could not affect their sense of belonging with their peers. Another participant perceived m-learning to diminish their sense of belonging with their peers. In contrast, the other 13 participants expressed that at least some forms of m-learning did enhance their sense of belonging with their peers. However, the participants also identified some m-learning activities that had a negligible effect on their sense of belonging with their peers and even a few instances where m-learning diminished their sense of belonging with their peers. The themes identified through inductive data analysis for how m-learning affects the participants' sense of belonging with their peers include an enhanced sense of belonging, a negligible sense of belonging, and a diminished sense of belonging (see Figure 6). The categories for enhanced sense of belonging with peers were identified as validation and connection. The categories for the non-enhanced sense of belonging with peers included negligible and isolation.

Figure 6

Themes, Categories, and Codes for how M-Learning Affects Participants' Sense of Belonging with Their Peers

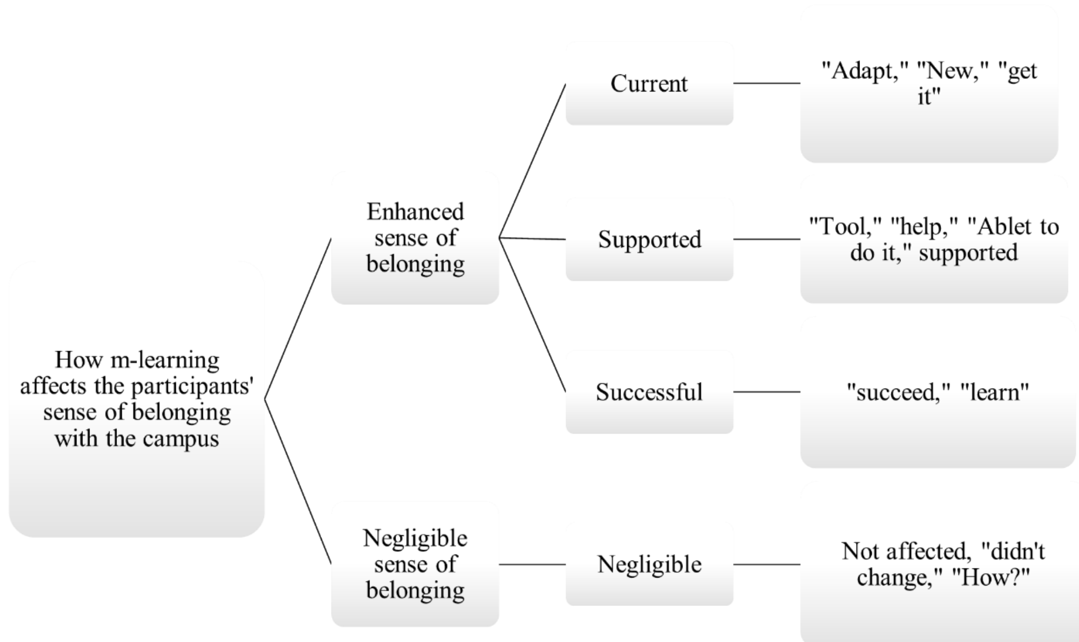


Campus

The coding for this segment focused on how m-learning integrated in the community college face-to-face classroom influenced the FYNTS's sense of belonging with the campus. All 15 participants responded to the interview question regarding how m-learning technology affected their sense of belonging to the campus. None of the participants felt that m-learning had a negative or diminished effect on their sense of belonging to the campus. The themes identified through inductive data analysis of the sense of belonging with the campus include an enhanced and negligible sense of belonging (see Figure 7). The categories for the theme of enhanced sense of belonging included quality education, support, and success.

Figure 7

Themes, Categories, and Codes for how M-Learning Affects Participants' Sense of Belonging with the Campus

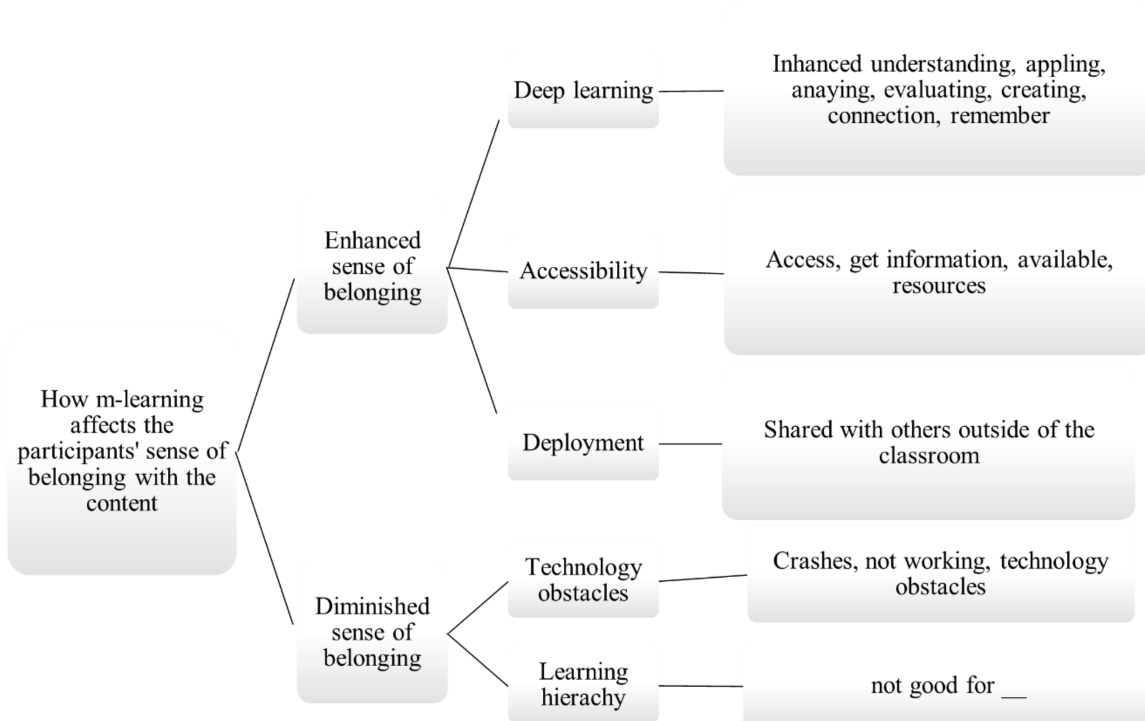


Content

The coding for this segment focused on how m-learning integrated in the community college face-to-face classroom affected the FYNTS's sense of belonging with the content. All 15 participants responded to the interview question regarding how m-learning technology affected their sense of belonging with the content. All the participants acknowledge that m-learning enhanced their sense of belonging with the content and course material; nevertheless, a few presented some limitations in connecting m-learning to the content. The themes identified through inductive data analysis for an enhanced sense of belonging with the content include enhanced and diminished sense of belonging (see Figure 8). The categories for an enhanced sense of belonging included deep learning, accessibility, and deployment. The categories for a diminished sense of belonging with the content included technology obstacles and learning hierarchy.

Figure 8

Themes, Categories, and Codes for how M-Learning Affects Participants' Sense of Belonging with Content

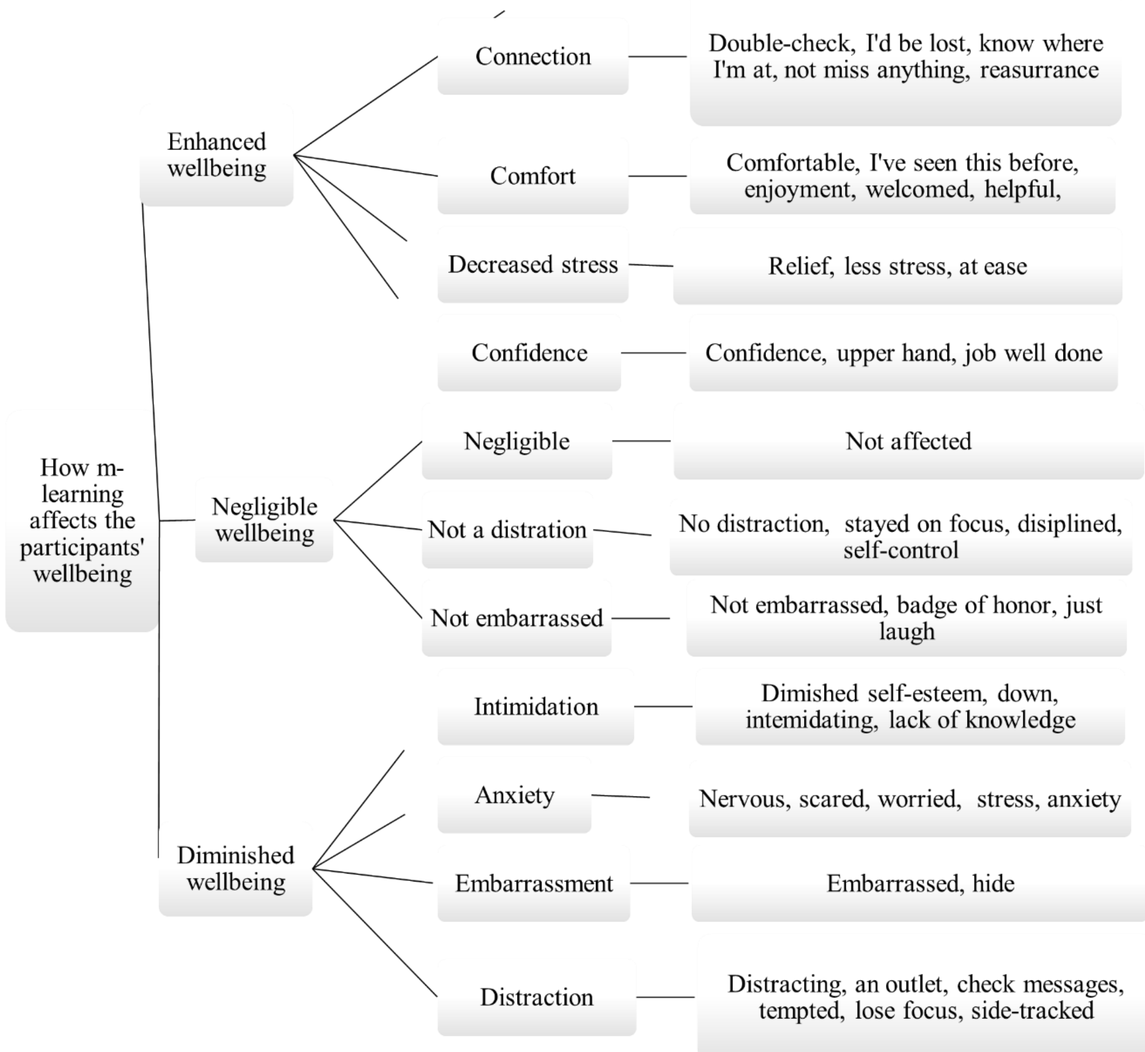


Wellbeing

The coding for research SQ4 focused on how mobile technology integrated in the community college face-to-face classroom affected the FYNTS's wellbeing. All 15 participants responded to the interview question regarding how m-learning technology affected their wellbeing. All 15 participants acknowledge that some m-learning positively affected their wellbeing. Nevertheless, several students noted that some forms of m-learning diminished their wellbeing. Additionally, several participants revealed why the use of m-learning did not have a diminished effect on their wellbeing or was not a distraction or an embarrassment. These codes were placed in the negligible theme as the participants claimed that a diminished wellbeing response did not occur. The themes identified through inductive data analysis for wellbeing include enhanced wellbeing, negligible, and diminished wellbeing (see Figure 9). The categories drawn from the data for enhanced wellbeing include connection, comfort, decreased stress, and confidence. The categories for diminished wellbeing included intimidation, anxiety, embarrassment, and distraction.

Figure 9

Themes, Categories, and Codes for how M-Learning Affects Participants' Wellbeing



Discrepant Cases

Discrepant cases or discrepant case analysis is the strategy of seeking data that challenges the expectation or predominant findings (Merriam & Tisdell, 2016). Merriam and Grenier (2018) noted that identifying discrepant cases is a form of validating data saturation. To address discrepant responses, I included all responses and codes to each question by each participant. Generally, the results of this study demonstrate that FYNTSs perceive m-learning to enhance their emotional engagement. However, the nuances and discrepancies in the generalization provide real insight into emotional engagement.

Results

In this section, I will report the results of the study. During the data coding process, 12 themes and 39 categories were identified (see Table 5). The themes and categories were allocated into the four sub-question areas of focus. The 12 themes are similar across the four sub-questions, and several of the categories overlap across themes. The categories repeated across themes and sub-questions included accessibility, anxiety, confidence, expectation awareness, intimidation, negligible, and validation. The following will be a summary of the findings for each of the research sub-questions. Examples from the interviews will be used to illustrate each category. Themes and categories across all research sub-questions

Table 5

Themes and Categories for Subquestions

Sub-questions	Themes	Categories
SQ1: What are the FYNTS's perceptions of how mobile technology integration in a community college face-to-face classroom affects their self-efficacy?	1. Enhanced self-efficacy 2. Negligible self-efficacy 3. Diminished self-efficacy	1. Validation* 2. Motivation 3. Accessibility* 4. Expectations awareness* 5. Expanded domain of confidence 6. Negligible* 7. Diminished
SQ2: What are the FYNTS's perceptions of how mobile technology integration in a community college face-to-face classroom affects their emotions?	4. Comfortable emotions 5. Emotional indifference 6. Uncomfortable emotions	8. Curiosity 9. Supported* 10. Confidence* 11. Excitement 12. Negligible* 13. Irritation 14. Anxiety*
SQ3: What are the FYNTS's perceptions of how mobile technology integration in a community college face-to-face classroom affects their sense of belonging?	7. Enhanced sense of belonging 8. Negligible sense of belonging 9. Diminished sense of belonging	15. Expectation awareness* 16. Connection 17. Supported* 18. Current 19. Successful 20. Validation* 21. Deep learning 22. Accessibility* 23. Deployment 24. Negligible* 25. Isolation 26. Intimidation* 27. Technology obstacles *28.* Learning hierarchy
SQ4: What are the FYNTS's perceptions of how mobile technology integration in a community college face-to-face classroom affects their wellbeing?	10. Enhanced wellbeing 11. Negligible wellbeing 12. Diminished wellbeing	29. Security 30. Comfortable 31. Decreased stress 32. Confidence* 33. Negligible* 34. Not a distraction 35. Not embarrassed 36. Intimidation* 37. Anxiety* 38. Embarrassment 39. Distraction

Note. Categories with an asterisk (*) are repeated among sub-questions.

Self-Efficacy

The research SQ1 focused on how mobile technology integrated in the community college face-to-face classroom affected the FYNTS's self-efficacy. Three themes arose from the data regarding how m-learning affects the FYNTSs' self-efficacy: enhanced self-efficacy, negligible self-efficacy, and diminished self-efficacy. The theme of enhanced self-efficacy was derived from five categories: validation, motivation, accessibility, expectation awareness, and expanded domain of confidence. The two non-enhancing self-efficacy themes arose from the categories of negligible and diminished.

Enhanced Self-Efficacy

As noted, all the participants affirmed that m-learning positively affected their self-efficacy. Nevertheless, the reasoning for the enhanced self-efficacy varied among the participants and the different types of m-learning activities (see Table 6). Some participants felt that the m-learning activities validated their effort and learning. Some participants noted that m-learning had motivated and empowered their self-efficacy. Most participants acknowledged that their self-efficacy was enhanced because they had ready access to the learning material. Other participants reported how m-learning affected their self-efficacy by identifying and highlighting class expectations. Several participants acknowledged that the increased self-efficacy resulting from m-leaning in one classroom enhanced their self-efficacy in other classes and situations.

Table 6

Enhanced Self-Efficacy: Categories, Participants, and Types of M-Learning

Category (# of participants)	Participant	Type of m-learning
Validation (5)	Leslie	Photos
	Rachel	Navigate EBSCO™
	Nora	Google™ search
	Thayne	E-books
	Betty	Gamification
Motivation (5)	Evalyn	.pdf file
	Clark	Kahoot!™
	Emily	Photos, Kahoot!™, Google™ search,
	D.J.	QR roll
	Betty	Kahoot!™ Photos
Accessibility (8)	Jeff	Canvas™
	Becca	Photos
	Evalyn	Photos, Google™ search
	Thayne	E-books
	Hyrum	Google™, Excel™
	Raquel	Calculator
	Marie	Photos
	Willamina	Photos
Expectation Awareness (4)	Clark	Kahoot™
	Rachel	Kahoot™, Photos
	D.J.	Kahoot™
	Marie	Kahoot!™
Expanded domain of confidence (6)	Hyrum	Excel™
	D.J.	Canvas™
	Thayne	E-books, Google™ search
	Nora	Photos, Google™ search
	Rachel	Navigate EBSCO™
	Evalyn	.PDF file

Validation. Five participants explained that their enhanced self-efficacy was partly due to the feeling that m-learning provides reassurance and validation to their learning and efforts. Leslie disclosed during her interview that she had a vision impairment. She explained her enhanced self-efficacy from taking pictures as follows. "My notetaking skills aren't the greatest. So, a picture of something makes it so much easier so that I have more focus on what's most important. I feel like I'm more successful with my phone." For Leslie, having the pictures decreased the struggle of notetaking; she felt validated that her method of taking notes was effective because it allowed her to focus on the vital material.

Rachel already had experience navigating EBSCO from a previous class, but having the instructor review the steps confirmed what she thought she knew, giving her a "little bit of a boost of confidence." Nora appreciated the extra support and backup information that having Google™ search available gave her. She said,

> Sometimes, you have ideas, but then you need to know if you're on the right track… Sometimes you read what other writers write, and you're like, oh wait, maybe this is a different perspective I can see. (Nora)

Betty experienced enhanced self-efficacy when she could complete an assigned gamification program in class when others did not.

> I felt more confident in the material and the fact that we were able to complete it when not everybody in our area was able to complete it without having the instructor kind of coax them through. It made me feel really confident. (Betty)

With Betty, Nora, and Rachel, enhanced self-efficacy occurred when they were reassured that they were on the right track.

Thayne acknowledged that he already had a reasonably high level of self-efficacy and was often willing to speak out in class and share ideas. However, with access to e-books, he can validate his thoughts before speaking out. Thayne explained,

> My memory can be a little spotty. It's generally pretty good, but that can also make me a little bit unreliable. I can be confidently wrong about stuff very, very easily. So, having that resource (e-books) there and being able to go back and check myself. It basically means that I don't have to be confidently wrong; I can be confidently right! (Thayne)

Thayne was able to validate his thoughts with the resources he had. These five student participants perceived that m-learning gave them the needed validation to enhance their self-confidence.

Motivation. Five participants identified m-learning as enhancing their self-efficacy by motivating or encouraging them. Evalyn noted that when she was first asked to convert her document to a .pdf file before submitting it to the professor, her confidence was shaken, "that kind of made me second guess myself." However, after asking for help and searching online for how to do it, she figured out how to submit a .pdf file. Because of that, Evalyn stated, "Since I can do that, I feel like I can do other things too, that I didn't think I could before." Evalyn expressed a sense of achievement; she was also confident that she could do hard things in the future.

Betty expressed great pride in her ability to take a picture through a microscope slide. When asked if taking pictures affected her self-efficacy, Betty replied,

> It did, actually. I took my photos, and then some people printed them out. I chose to just go to Walgreens and have them printed like photos… We had to cut them out and put them on our lab paper. And so afterward, when we were turning them in, mine looked so pretty, and I was just so proud of myself that I did a good job. (Betty)

Both Evalyn and Betty were motivated by their sense of pride and accomplishment.

Clark and D.J. both admitted that playing Kahoot!™ motivated them by bringing out their competitive side. D.J. stated, "I just felt like, yeah, it motivated me, just because I'm competitive, and I don't like to lose. So, for sure, it was like, oh, man, I need this, you know." Clark expressed frustration with gamification if the material in the game was not a review of previous material but rather an introduction to the material. However, when asked if doing poorly on a game that introduced class content caused him to pay more attention, he reluctantly admitted, "I guess," with a cringe and a grimacing facial expression. Clark expressed how m-learning activity, especially gamification, affected him. Clark stated, "It really matters on how they use the app or the Kahoot!™."

Emily had a unique view of how m-learning motivated her and enhanced her self-efficacy. Emily felt empowered by m-learning activities, which enhanced her self-efficacy. Emily stated:

> It's kind of like the professor is instilling, letting you know that you're in charge of this. It's up to you to get this done. And, just, basically the same concept of

> coming back to college when you're in college; it's nothing like being in high school. So, they're giving you more liberty. And it's up to you how you're going to use it. So, it's giving students straight out of high school more of a sense of adulthood. And then, for me, it's not taking anything away; it's helping me embrace it. (Emily)

Emily's expression of a sense of empowerment motivated her and enhanced her self-efficacy.

Accessibility. Nine participants mentioned that having ready access to the course resources through m-learning was a factor in their feelings of enhanced self-efficacy. The accessibility and validation categories are closely related but have significant differences. While validation was the need for the participant to be reassured that they were on the right course, accessibility was a reassurance that they had the material needed to be successful.

Five of the nine participants, whose comments fell within the accessibility category, mentioned photos. Becca disclosed that she, too, had vision limitations and acknowledged that taking pictures of the board in class helps her. She stated,

> It helps me with my confidence. It actually gives me more because I can take care of what I need to take care of to get my stuff written down and like not miss out on anything in the class because I can't see it on the board. (Becca)

Evalyn, while not having a vision limitation, also expressed increased self-efficacy due to having the pictures from class backed up on her phone. Evalyn stated, "I feel like you have a support. Kind of like you have things that are backing up in your phone, you know, like reassurance that you didn't miss something or maybe go back to it." Marie noted that photos taken in class "just goes straight to like what we need… The picture itself just has a lot of little information that we needed." Willamina added to the accessibility category by explaining that having the information on her phone allowed her to study whenever she had a few minutes. Willamina explained,

> I would say that it did have a huge influence (on self-efficacy). Huge on convenience. If I, you know, have 10, 15 minutes to study, and I'm able to just do it right then and there, wherever I am. That builds confidence when it comes to test-taking. So, you know, 10, 15 minutes make the biggest difference sometimes. (Willamina)

Hyrum notes that photos, access to Google™, and even Excel™ "make(s) everything so much easier in terms of just being confident of what you prepared or confident in what you brought to class." Jeff relayed that Canvas™ was a tool that could provide ready access to the content and enhance self-efficacy.

Raquel admitted that sometimes she misplaces things like her calculator for math class, but she always has her phone as a backup, thus enhancing her self-efficacy. Raquel explained her boost in self-efficacy,

> Especially the calculator, it helps me be more confident. Just because I know sometimes, I misplace things. I'm kind of busy, and you know, and so if my calculator, I don't know where it's at a the moment, I know where my phone's at, so I can always pull that out to help me with my homework. So, that makes me

> pretty confident, knowing that I have another tool to use when it comes to homework and class if I need it. (Raquel)

Thayne related a time in class when the topic of power was being discussed. Thayne remembered having read about Max Stirner in the past and felt the information was "very relevant to the discussion of power." Thayne brought that past information into the discussion with m-learning technology, specifically e-books and Google™ search. Thayne explained,

> So I went back, and I was able to pull up material that I had, that I didn't touch in years… I was able to go back and kind of diverge that and put it in context with past experiences." (Thayne)

Thus, we see that the participants felt that accessibility, having access to the materials of the course and even past information, enhanced their self-efficacy in the class.

Expectation Awareness. Knowing what the professor expects or what they need to do to be successful was mentioned by four participants as an example of how m-leaning enhanced their self-efficacy. The most frequent modality of m-learning referenced in the accessibility category was Kahoot!™, which four participants mentioned. Raquel explained her rationale for feeling m-learning, specifically Kahoot!™, affected her self-efficacy.

> In some cases, it did (enhance self-efficacy). It made me confident that I, you know, that I knew that I knew the material and that I was gonna do well on the test coming up, and in some cases, it kind of like, made me think, oh, I probably

> need to study a little bit more for this… I knew the areas that I needed to focus more on. (Raquel)

Raquel also explained how taking pictures helped her to understand the expectations of the class. Raquel stated,

> As far as just knowing what he was expecting, you knew what the actual assignment was. So, I wasn't just, kind of, just trying to come up with something off the top of my head…I knew exactly what he was wanting. (Raquel)

Even though Clark didn't do as well as he hoped to on the Kahoot!™ game, he acknowledged that "I was able to make notes of the stuff that I had no clue on, so that helped me out there." D.J. also noted that losing at Kahoot!™ helped to identify areas of needed improvement. D.J. said, "Sometimes I'm like, man, I don't know the material. I need to study harder." Marie reflected that Kahoot!™ provided examples of what might be on the exam. Marie stated,

> Yes, it (Kahoot!™) really did (enhance self-efficacy) because, like, you know, the questions. If they were on the test like we, we kind of got like a feel of like, what other questions can be on there. So, it helped out, like study. (Marie)

Thus, we see that the use of m-learning, as represented by these participants, can signal to the students and expand awareness of course expectations.

Expanded Domain of Confidence. Six participants noted that their self-efficacy in the one m-learning class expanded and enhanced their self-efficacy in other courses. Raquel, for example, indicated that she had to use EBSCO navigation in different classes, and her confidence has expanded into those other courses. "I used that for a lot of stuff in all my classes" (Raquel). D.J. stated, "Yeah, definitely," when asked if using Canvas™ in one class enhanced his self-efficacy in other classes. Hyrum addressed the challenge of coming back to school and taking math classes. When asked if his enhanced self-efficacy has expanded to other classes, he stated, "Most definitely. Especially doing like math again. Yeah, it's been a while. Yeah, it is definitely, cause I'm like, if I can get through this, everything else will be so much easier." (Hyrum). In response to the same question, Thayne replied while reflecting on the value of e-books, "Oh, yeah, totally. Because not, if there is a topic that comes up in class, I can go back and read about it." Evalyn has a similar reply, "I feel like I can do other things, too, that I didn't think I could do before." Nora's expanded domain of confidence was a little different than the other participants in this category. For her, her enhanced self-efficacy empowered her to advocate for herself. She stated, "I wasn't afraid to ask for or suggest to other professors if we were allowed to have our phones out just for that information."

Negligible and Diminished Self-Efficacy

While all the participants claimed that some form of m-learning enhanced their self-efficacy, there were few examples of participants who felt m-learning negligibly affected their self-efficacy (see Table 7). Betty was the only participant who stated "no" or "no effect" when asked if a specific type of m-learning affects her self-efficacy; nevertheless, she said gamification and photos enhanced it. The two types Betty felt didn't affect her self-efficacy in that class were watching videos and looking at Canvas™. All the other participants responded with m-learning, affecting them with either enhanced or diminished self-efficacy. Negligible or diminished self-efficacy categories, participants, and type of m-learning.

Table 7

Negligible and Diminished Self-Efficacy: Categories, Participants, and Type of M-Learning

Category (# of participants)	Participant	Type of m-learning
Negligible (1)	Betty	Videos, Canvas™
Diminished (3)	Jeff	Canvas™
	Becca	Unknown program
	Evalyn	.pdf file

Three participants expressed that a specific type of m-learning diminished their self-efficacy. Jeff voiced concern that the ease of access might ultimately harm his ability to retain and utilize the information presented via m-learning. Jeff stated, "I know that the assignment is now going to be easier, but I know in the long run that's not good for me because I'm just regurgitating information." Evalyn, who was asked to convert her document into a .pdf file, acknowledged that being asked to do this "really made me second guess myself, to be honest. Because I got a little bit worried that I wouldn't have been able to do it in time, or maybe I wouldn't have done it right." Ultimately, Evalyn learned this new skill, and afterward, her self-efficacy shot up.

On the other hand, Becca suffered greatly due to the m-learning program she was expected to do. Becca states, "It did terrible for my confidence in algebra, totally. I dreaded it. To the point, I dreaded that class. I just couldn't figure it out." It is important to note that Becca had an enhancing self-efficacy experience in a different class that utilized m-learning.

Emotions

Research SQ2 focuses on how mobile technology integrated in the community college face-to-face classroom affects the FYNTS's self-efficacy. A broad spectrum of emotions related to m-learning were expressed by the participants relative to a variety of m-learning activities. Three themes arose from the data regarding how m-learning affected the participants' emotions. The emotions expressed can be categorized as comfortable and uncomfortable. One participant claimed emotional indifference.

Comfortable Emotions

Four categories were evident within the theme of comfortable emotions. These categories include curiosity, supported, confidence, and excitement (see Table 8).

Table 8

Comfortable Emotion: Categories, Participants, and Type of M-Learning

Category (# of participants)	Participant	Type of m-learning
Curiosity (6)	Nora	Google™ search
	Hyrum	Google™ search
	Rachel	Taking pictures
	D.J.	Kahoot!™
	Raquel	Google™ search, Canvas™
	Willamina	Dictionary.com, Taking pictures
Supported (10)	Nora	Google™ search
	Willamina	Dictionary.com, Taking pictures
	Rachel	Taking pictures
	Raquel	Calculator
	Marie	Taking pictures
	Becca	Taking pictures
	Jeff	Canvas™
	D.J.	Kahoot!™, Canvas™
	Clark	Kahoot!™
	Hyrum	Cellphone in general (Google™ search, Kahoot!™, Excel™, Taking pictures)
Confident (5)	Rachel	Cellphones in general (Kahoot!™,
	Emily	Taking pictures)
		Cellphones in general (Kahoot!™,
	Evalyn	Google™ search, QR roll, taking
	Hyrum	pictures)
	Betty	Google™ search, converting file type
		Google™ search, taking pictures
		Taking pictures
Excitement (10)	Emily	Cellphones in general
	Raquel	Taking pictures
	Becca	Converting file types
	Leslie	Cellphones in general
	Jeff	Cellphones in general
	Willamina	Cellphones in general
	Nora	Cellphones in general
	Thayne	Cellphones in general
	Hyrum	Kahoot!™
	Rachel	Kahoot!™

Curiosity. A category identified through inductive analysis of the participants' transcripts for the theme of comfortable emotions was curiosity. The in vivo codes for curiosity included “intrigued,” “cautious,” “inquisitive,” “surprised,” and “confused.” Six participants referenced a sense of curiosity when asked to utilize m-learning, especially the first time. When Nora was asked what emotional response she had when she was first asked to get out her phone in a face-to-face college class, she replied, "Intrigued." Hyrum responded to the same question with questions and thoughts such as " maybe cautious, or like, can I argue this? Is there a counterargument to it? It is like debatable in class?" M-learning for Hyrum allowed him to explore and become interested in the subject. Rachel was curious when first asked to take out her phone, "Why is he wanting us to take a picture? What does he want us to take pictures of?... But I guess it was just more of, like, kind of, inquisitive. Why does he want us to take a picture?"

D.J., too, was "surprised" when he was first asked to get out his phone and play Kahoot!™ "Yeah, it's kind of a surprise, a little bit of a shock. And I was just glad, I'm pretty glad I had my phone actually at the time." Similarly, Raquel admitted,

> "I was kind of, like, confused. Like, just because we were always told, don't have our phones in school. And I graduated high school back in 20xx, so it's been a little while since I've been back, and so when he asked us to look it up, I kinda just sat there for a moment and looked around, and everyone pulled out their phone. So, I was kinda like, okay, I guess it's okay. So, then I pulled mine out and started looking things up." (Raquel)

Willamina also found it surprising that she could take her phone out and use it. She said, "So, I wasn't used to being told, hey, you could take your phone out, especially in college. You expect it to be a lot more strict."

Supported. A category identified through inductive analysis of the participants' transcripts for the theme of comfortable emotions was supported. The in vivo codes for supported included "convenience," "gratitude," and help." Ten participants felt supported when asked to describe their emotional response to m-learning activities. Nora explained using the Google™ search engine in class: "Our phone is very convenient… It's a tool that we can use to our benefit." Nora repeated that sentiment when asked about taking pictures in class. Nora said, "I feel like it was easy, convenient." Willamina also used "convenient" when expressing how m-leaning supported her. She also noted that "I need to keep my phone charged." Rachel told of a situation where she forgot what assignment was due in a class. Rachel explained,

> "There were a couple of times where I thought, I would think to myself, Oh, I know I have to do something for my __ class. I know I do. But what? And then I would remember that I had those pictures in there. And I thought, oh yeah, that's right. So, it was kind of like, well, I'm glad that he had us do that… It's kind of just happy that he had us do that." (Rachel)

Raquel had another experience that demonstrated the support provided by m-learning. Raquel was unable to purchase a scientific calculator early in the semester.

> So, the fact that I can pull up my phone and it still be okay for this week. It kind of made me a little bit okay. Like it settled my nerves a little bit for not having the actual calculator yet. (Raquel)

Many of the participants expressed gratitude for being able to use their phones in class and to participate in m-learning. Becca was the most effusive in her appreciation, saying, “Because I can. Yeah, I need that. So yeah, it was like, thank you if I could say it out loud, like, Thank you! Thank you! That's helping me. And I love it so." Rachel expressed her gratitude for her instructor, stating she was "grateful" and "glad he took the time to show us how to do that." Marie expressed her gratitude for taking pictures: "It really helps out." "I really appreciate it."

Other participants reflected on how they felt that m-learning supported them by making the class fun and easier or by providing a gauge for them to know where they stood in the class. Becca had difficulty pinpointing the exact reason for her feelings when she said, "I like it. I'm more interested in it, like, I don't know. Just something about his class… Everything is more engaging." Jeff perceived m-learning as making the continent easier to understand, "Oh, cool! This is going to be a go easier than I thought it would be, because I have everything, all the information. I can just look it up." D.J. felt m-learning was a tool to help students grasp ideas. D.J. explained it by stating, "Anything they could do to help us grasp what they're trying to teach us, I think, is going to be good." Clark disclosed that m-learning supported learning the content by recalling when they say, "Let’s play Kahoot!™ real quick. Okay, you know, it's a fun little activity." Rachel perceived gamification through Kahoot!™ as a tool to help her know how she is doing in the course. Rachel explained, Kahoot!™ "Is like a gauge… you know where you need to study more." Hyrum noted that using a phone in class is a great support, “I’m familiar with it. I feel good with it." There are multiple ways that the participants perceive m-learning to support their academic pursuits.

Confidence. Confident was a category identified through inductive analysis of the participants’ transcripts for the theme of comfortable emotions. The in vivo code for confident was “confident.” Five of the participants referenced increased confidence as an emotional response to m-learning. Rachel came right out and said, I feel more “confident.” Emily and Evalyn had mixed emotions of excitement and confidence when she said, “Now I’m excited because not I get to actually know what I’m doing, and I’m more capable of it” (Emily). Knowing that you are capable is a form of confidence. Hyrum stated, “I felt good because, you know, it’s, again, it’s something I’ve used pretty much since becoming an adult.” Betty described a situation where she noticed the instructor did not have to give her extra help, making her feel more confident.

> It made me feel like I wasn’t as different from the students, you know, fell classmates. I was able to do exactly what they were doing, not losing course, trying to figure it out. I was on tasks just like they were. As so, yeah, it made me feel like I was a classmate, just like they were…I became a lot more confident. And I noticed that he wasn’t checking, you know. He was checking some students more than others, and I was one of the ones that he wasn’t checking as frequently. He knew I was getting it. (Betty)

Excitement. A category identified through inductive analysis of the participants' transcripts for the theme of comfortable emotions was excitement. The in vivo codes for excitement included "excited" and "eager." Ten of the participants revealed that they felt excitement concerning m-learning in the classroom. Codes for excitement included "excited," "competitive," "awesome," and "eager." As noted above, Emily had mixed feelings of excitement and confidence. She went on to explain more about why she was excited,

> Because when I was in school, we weren't allowed to use phones; we weren't allowed to do any of it. And then, now, it's something that you're basically required to do. And so, it was exciting. Just because I thought, okay, what else are we going to do? (Emily)

Raquel was asked to take a picture through a microscope slide. She expressed excitement and elaborated by explaining, "I wasn't quite sure how it was going to work at first because of the microscope, but when he told us how to do it, and I was, it was really exciting. I thought it was really fun." Even Becca, who ultimately developed a bad taste for the math program she was using, expressed her initial excitement: "In the beginning, I was kind of excited because I thought it would be easier." Leslie, Jeff, and Willamina each stated that m-learning was "exciting." Nora and Willamina added "eager" to their description. While Thayne summed it up as "Awesome."

Both Hyrum and Rachel talked about how the competitiveness of gamification is exciting. Hyrum noted that Kahoot!™ "It's competitive. There's a desire to compete." He further described it as "fun" and "adventurous." Rachel admitted to having mixed emotions with the competition. She talked about playing Kahoot!™ in class, "We're really competitive with each other. So, we wanted to be on the leaderboard. It's a little bit nervous at first, but I was excited at the same time."

Emotional Indifference

A category identified through inductive analysis of the participants' transcripts for the theme of emotional indifference was indifference. The in vivo code for indifference was "whatever." Only one participant, D.J., claimed emotional indifference when asked to play Kahoot!™ D.J. stated, "I'm older. So, it's like whatever to me." However, later in the interview, D.J. explained that when the teacher says, get out your phone, he thinks, "Oh cool, we get a break, you know, just making learning fun." So, while D.J. did express emotional indifference at the beginning of the interview, his perception changed the more he thought about the experiences.

Uncomfortable Emotions

Two uncomfortable emotional categories were identified from the data and coding. Irritation and anxiety were associated with a variety of modalities and factors (see Table 9). Many of the statements made by the participants regarding uncomfortable emotions happened when the student was first exposed to the m-learning activity or when the m-learning was hampered from meeting the instructor's objective.

Table 9

Uncomfortable Emotions: Categories, Participants, and Types of M-Learning

Category (# of participants)	Participants	Types of m-learning
Irritation (3)	Thayne	Google™ search – cracked screen
	Betty	YouTube™ videos, gamification
	Becca	Unknown program
Anxiety (7)	Becca	Unknown program
	Marie	QR roll, Wi-Fi access
	Hyrum	Excel™
	Rachel	Kahoot!™
	Betty	Pictures
	Emily	Google™ search
	Evalyn	.pdf files

Irritation. A category identified through inductive analysis of the participants' transcripts for the theme of uncomfortable emotions was irritation. The in vivo codes for irritation included "frustrating," "annoying," and "harder." Thayne revealed that because his phone was damaged, with a cracked screen, "it could be a little frustrating at times." Therefore, Thayne's irritation was not at the m-learning software or content but rather his personal device.

Betty expressed frustration and irritation at being disturbed by text messages while trying to watch a YouTube™ video: "It was kind of annoying because I was focused on class." Therefore, Betty's irritation at the YouTube™ video in class was partly related to her perception that the activity was a distraction from the course's main objectives. Betty and her lab partner also struggled when the game they were asked to play was about content they had yet to receive. Betty explained,

> My lab partner and I both agree that it was kind of annoying because it was something that we hadn't discussed beforehand. So, it was kind of trying to figure out the content of what the game would involve. So, it yeah, I was frustrated initially, trying to figure out how to play the game because that was a little bit difficult. But the good thing is my lab partner is 19, and I'm 39. And so, we are both on the same page. (Betty)

While Betty described this situation as "annoying," she also received enhanced satisfaction and a sense of belonging with her lab partner.

Becca was the one participant who repeatedly expressed negative sentiments regarding m-learning. Early in the semester, she thought using m-learning for her class would help her and make things easier. However, Becca reported

> I think at some point; it made it harder because I was really… having to do the worksheet on my phone; it was way harder. It was way harder because you have to use your phone; it's just this little size. (Becca)

As the class progressed, Becca explained, "It went downhill. I got to where I just kind of dreaded it because it was just such a pain… I kind of dreaded going." Becca's irritation and exasperation with the way the program worked on her phone was leading her toward anxiety.

Anxiety. A category identified through inductive analysis of the participants' transcripts for the theme of uncomfortable emotions was anxiety. The in vivo codes for anxiety included "dread," "trouble," "antsy," "pressure," "nervous," "uncomfortable," and "stressed." Apart from Becca, the participants who expressed anxiety over m-learning noted it was when they were first asked to participate. Marie even used the word hopeful in describing her anxiety with using m-learning, stating, “Hopefully, I can get in, because I have struggled like signing in and staying on the Wi-Fi, or I have trouble just with anything, period.” She also expressed concern because “I didn’t have any other tool. I just had my phone.” Marie demonstrated anxiety due to the potential of technical difficulties in the past of getting on the Wi-Fi and the lack of backup resources. Hyrum noted that working on Excel™ “It can be a little antsy” because if you make a mistake, you have to start all over. Marie said of Kahoot!™ “I felt a little pressure; it was kind of like a test.” Rachel also experienced Kahoot!™ induced anxiety, “Sometimes I would feel like nervous a little bit if I didn’t really know, if I wasn’t too sure about the material that we had went over.” Betty noted that “I was nervous initially, that I wouldn’t get the kind of photos that he was looking for and that I would struggle.” Becca said she felt “stressed out because I was, like, seeing something else that I got to figure out how to do.” Nevertheless, both Betty and Becca were able to push through and complete their assignments and were proud of the outcome. Emily portrayed a growth mindset when she talked about her anxiety about downloading a new app,

> I felt like I knew that I had to get out of my comfort zone. So, if I wanted to, it was either embrace it or disregard it. And I knew that if I’m making the effort to come back to school, I might as well embrace every change that’s coming my way as uncomfortable as certain things might be. I’m not gonna learn if I just stay still. (Emily)

When transferring her file to a .pfd file, Evalyn noted that she likes to be prepared for class and not leave things to the last minute. While the instructor told her he would show her how to convert her document to a .pdf, he planned to show them how to do it on the assignment's due date. Evalyn explained, "I get like, oh, I need to get prepared… I try to prepare for everything because, like going back to school, I want to make sure to do it right."

Sense of Belonging

The research SQ3 focused on how mobile technology in a community college, face-to-face classroom affected the FYNTs' sense of belonging. For this research study, a sense of belonging was approached from four different spheres of influence: a sense of belonging with the instructor, their peers, the campus, and the content. During the interview, participants were asked to reflect and describe their perceptions of how m-learning affected their sense of belonging in each sphere. Three themes arose from the inductive data analysis: an enhanced sense of belonging, a negligible sense of belonging, and a diminished sense of belonging. Fourteen categories spread across the four spheres of influence were discovered; however, not every sphere contained the same categories. The results of the findings are presented in the following sections.

Instructor

Thirteen of the FYNTS participants acknowledged that m-learning activities enhanced their sense of belonging to the instructor. The three categories that arose from the inductive analysis of the coding were expectation awareness, supported, and connection (see Table 10). The results, specific coding, and examples for each category are presented in the following three sections.

Table 10

Enhanced Sense of Belonging with the Instructor: Categories, Participants, and Type of M-Learning

Category (# of participants)	Participants	M-learning
Expectation awareness (6)	Emily	QR code roll
	Marie	Kahoot!™, pictures
	Rachel	Kahoot!™
	Becca	Pictures
	Hyrum	Google™ search
	Raquel	Google™ search
Supported (8)	Thayne	e-books
	Emily	Google™ search
	Becca	Canvas™, pictures
	Marie	Peer contact information
	Raquel	Calculator, pictures
	Leslie	Pictures
	Emily	Pictures
	Willamina	Phones in general
Connection (8)	Rachel	Pictures
	Betty	Pictures
	Hyrum	Kahoot!™
	Becca	Pictures
	Leslie	Kahoot!™
	Evalyn	Google™ search
	D.J.	Canvas™
	Nora	Google™ search, Canvas™

Expectation Awareness. A category identified through inductive analysis of the participants' transcripts for the theme of enhanced sense of belonging with the instructor was expectation awareness. Two general codes for expectation awareness were recognizing expectations and feedback. The in vivo codes for expectation awareness included “realized,” “knew what he wanted,” and instructor “questions.” Using m-learning, the students could recognize what the instructor perceived as the vital information and requirements for success. In addition, m-learning provided a means for receiving feedback from the instructor on how they were meeting the instructor's expectations. The two codes for recognizing expectations were recognize expectations and feedback. Six participants responded to the question of whether m-learning affects your sense of belonging with the instructor in the affirmative, referring to recognition of expectations and feedback.

When the instructor utilized the QR code roll system, Emily recognized that she needed to attend class and was motivated to do so. Emily said, "It made me realize that I have to be there." Marie and Rachel recognized that when the instructor utilized Kahoot!™, the instructor was generating the questions and signaling key concepts. Marie said it this way, "The instructor’s the one that basically puts out the questions… I feel connected because I know what she's looking for, like in a test or quiz." Likewise, Rachel noted, "We were responding to the questions that she had prepared for us." Marie expressed similar feelings regarding the taking of pictures through the microscope. Marie showed the instructor the image she got, "and if we got it right or not like he's able to tell us. I know exactly what he wants." Marie's phrase, “exactly what he wants,” demonstrates that recognition of expectations helped the participants feel and enhanced the sense of belonging with the instructor. Becca, who took pictures of the instructor’s PowerPoint slides due to a vision limitation, felt an enhanced sense of belonging when the instructor would clarify and let the students know which slides were critical and which were not. Becca explained, "He'll even tell you, 'You don't need to take a picture of this.'"

Feedback was another code for recognizing expectations. When Hyrum was researching on his phone, the instructor provided feedback to the student, such as, "Let me show you how to find better resources." Raquel, who was also researching on her phone, noted, "We (the instructor and student) start communicating back and forth like, ‘read this and this on that you said.’" While Raquel utilized the word communicating, in this phrase, it was coded as feedback due to the addition of the words “back and forth” followed by the feedback from the instructor to read other things.

Support. Feeling supported was the second category derived from the inductive analysis of the participants' transcripts in response to the questions on the sense of belonging with the instructor. In vivo coding for supported included “understand,” “cared,” “showed me,” and “permission.” The category of supported also appears in the theme of comfortable emotions associated with research SQ2. Eight of the 15 participants perceived that m-learning activities demonstrated supportiveness, helpfulness, caring, and understanding by the instructor and thus enhanced their sense of belonging with their instructor. Utilizing the words caring or understanding alone was not enough to code for supported. The caring or understanding needed to be associated with the instructor's feeling or demonstration of support.

Thayne, a re-entry student, identified the cost of textbooks as one reason he was unsuccessful in his "first go-around." Thayne clarified, "I had to buy extremely expensive textbooks." But with e-books, "I don't have to worry about that, and my professors actually understand that… These folks get it!" Thayne felt supported by the instructors who use e-books, feeling that they understood the students' needs and cared enough to find cheaper alternatives.

Emily was asked to do a research project, and the instructor asked the students to research careers and apply the information to their lives. Emily felt that the teacher's student-focused research topic "made me feel like she actually cared about us, not just what she had to do for the class." Emily felt supported in her learning when the instructor used m-learning and student-focused activities. Becca also felt like the instructor cared for and supported her learning when the instructor showed the class how to navigate Canvas™. "It made me feel like he cared enough to show us how to navigate… he took the time to show us how."

Marie also felt supported by her instructors when they asked them to get contact information from their peers in the class. "They tell us to like study with partners and to just find different ways to study better." Marie felt supported by her instructor when he provided suggestions on how to be more successful in the course. Marie continued saying, "I feel like it does (enhance a sense of belonging with the instructor) because we're doing like they told us, kind of like taking their advice." For Raquel, the instructor took the time to personally show her how to use the calculator on her phone, "So that was really helpful and made me feel like, okay, she's not upset that I don't have my calculator yet. She's trying to show me how to do it on my phone. So, I could still do it right and get the correct answer." Raquel felt the instructors' demonstration of understanding and personal teaching provided her the support she needed to be successful and enhanced a sense of belonging with the instructor. Willamina also expressed an increased sense of belonging with the instructor by them just saying, “Hey, you know you have this information at your fingertips.”

Four of the participants commented on how taking pictures supported them in their learning and connected that to the instructor as caring and understanding. Raquel was surprised when the instructor announced they could take pictures of the PowerPoint slides, and she repeated several times during the interview that she was authorized to take pictures. “He's (the instructor) giving me permission to do it, so I feel good. And he asked us to do that!" The idea of being able to take pictures in class is new for Raquel. Raquel continued, "So when he's like, pull out your phone and take a picture of this if you need it, it makes me feel a little bit better… I feel good."

Leslie had disclosed that she had severe visual impairment. Being able to take pictures of the board was very helpful. "I feel like it's easier just having to take that picture… instead of me accidentally writing it down wrong." Leslie made this statement to answer the question of whether m-learning affected her sense of engagement with this instructor. Rachel concluded that the instructor’s encouragement of taking pictures of the board was linked to their desire to support the students' learning, "He was wanting to make sure that we would remember." Emily noted that the instructor’s understanding of the diversity of learning speeds and allowing picture taking of the board was a way of showing support in her learning. "It kind of showed empathy, as far as she understands what we don't all write at the same pace." When taking pictures through the microscope, Becca noted that the instructor supported their efforts. Becca said, "He was more than willing to help you, and he's willing to work with you." The feeling of caring and support by the instructor was a frequent theme in an enhanced sense of belonging with the instructor.

Connection. M-learning affecting connection or communication is the final category identified in enhanced sense of belonging with the instructor. The two general codes for the category of connection were communication and connection, with “connection” being a common in vivo code. Eight of the 15 participants perceived that m-learning activities facilitated connection and communication with the instructor and thus enhanced their sense of belonging with their instructor.

Several participants directly reference m-learning as enhancing their connection with the instructors and thus feeling an enhanced sense of belonging with their instructor. Rachel stated that by taking pictures, "I felt like it was more connection with him and that he was trying to connect with us." Betty, who also took pictures, almost repeated exactly what Rachel had said. Betty explained, "I did feel connected. I was doing exactly what he wanted." D.J. reflected that Canvas™ “had the option to reach out to your teacher.” D.J. felt that without Canvas™, he would be “lost.”

Hyrum acknowledged that Kahoot!™ built a connection and a sense of belonging with the instructor. "I feel like it's more connected." In one class, Hyrum reported that the Kahoot!™ game was sometimes created by someone outside of the class, and the "teacher will take it with us. So it's kind of fun, because we kind of compete against the teacher." This competition with the instructor helped build a fun relationship with the instructor.

Becca explained that taking pictures helped her feel more at ease with the instructor, which in turn helped her feel at ease asking him questions. Becca noted, "It makes me feel a little bit more comfortable… I can ask him if I need help with something." Leslie indicated that m-learning activities such as Kahoot!™ and taking pictures of the board helped to build learning relationships. "I feel like it's more of a positive engagement between the professor and the students." Evalyn enjoyed the discussions after she presented the information that she obtained from her Google™ searches. She explained, "I feel like he (the instructor) liked my feedback." Becca, Leslie, and Evalyn felt an increased connection and sense of belonging with their instructor when m-learning was embedded into the learning environment.

Three students reported m-learning as increasing their access and communication with their instructor. While doing researching and sharing out in class, Nora noted that Canvas™ helped "your able to communicate with the instructor with that information." D.J. also recognized and commented on the use of the Canvas™ phone app and how "It has the option to reach out to your teachers."

When using the QR roll, Emily explained some of the expanded uses of the downloaded application on her phone. "That app, we would also communicate freely with the professor over any of our assignments."

Negligible

A second theme identified from the data regarding how m-learning affected the participant's sense of belonging to the instructor was negligible (see Table 11). The In Vivo code for negligible included “No.” Two participants, Jeff and Clark, perceived that m-learning could not affect their sense of belonging with an instructor. Jeff stated, "I don't see how, or I don't feel that technology could admit that out of me… I feel like that's just done through human connection by talking." With similar views, Clark expressed nearly the same sentiment: "Connecting to people is personal. It is back and forth. Playing these games doesn't build connections; it's just like taking a quiz." Clark, in this case, was referring specifically to Kahoot!™

Table 11

Negligible and Diminished Sense of Belonging with the Instructor: Categories, Participants, and M-Learning Type

Theme	Category	Participants	M-learning
Negligible Sense of belonging with instructor	Negligible (8)	Jeff	All types
		Clark	All types
		Nora	Checking calendar, pictures
		Willamina	Pictures
		Thayne	Google™ search
		Emily	QR code roll, Kahoot!™
		D.J.	QR code roll, Kahoot!™
		Betty	YouTube™ video
Diminished	Isolation (1)	Hyrum	Excel™
	Intimidation (1)	Becca	Unknown program

Additionally, six participants identified some types of m-learning that did not affect their sense of belonging with the instructor. The m-learning activities noted by these eight participants were checking their calendar (Nora), taking pictures (Nora and Willamina), doing research (Thayne), utilizing the QR code roll (Emily and D.J.), playing Kahoot!™ (Emily and D.J.), and watching YouTube™ (Betty) videos. It should be noted that although these six participants identified a specific m-learning activity that did not enhance their sense of belonging with the instructor, they agreed that it also did not diminish their sense of belonging with the instructor.

Although several participants mentioned Kahoot!™ as negligibly affecting their sense of belonging with the instructor, that was not the universal reply. Several of the seven participants who played Kahoot!™ in the classroom stated that playing Kahoot!™ enhanced their sense of belonging with the instructor. For example, Rachel stated, "You knew that he was wanting to make sure that we would remember." Similarly, Marie remarked, "I feel like I connected because I know what she's looking for, like in a test or quiz."

Diminished

A third theme identified from the data was how m-learning diminished the participants' sense of belonging with the instructor. Two codes were identified while conducting an inductive analysis of the participants' data: isolation and intimidation. Two students who had otherwise specified m-learning as having enhanced their sense of belonging with the instructor identified a specific m-learning program that diminished their sense of belonging with the instructor.

Isolation. The category of isolation was identified through inductive analysis. The codes for isolation were dismissive, diminished, and isolating. Hyrum noted that when doing Excel™, the instructor would say, "If you need help, I'll come and assist you." Hyrum felt this statement diminished his sense of belonging with the instructor because he could do the assignment and interpreted the instructor's comment to mean, "I'm here for the people who don't have it." Thus, we see in this example that it was not the m-learning technology that was necessary the catalyst for the sense of isolation, but rather the pedagogy in which the instructor used the m-learning activity.

Intimidation. A second code for the theme of a diminished sense of belonging with the instructor is intimidation. The general code and in vivo code was “intimidation.” Becca also reported a diminished sense of belonging associated with m-learning. She was using her phone to access a program outside the campus-wide LMS. She felt that the program did not work on her small phone screen. Becca stated, "I didn't really feel like I belonged because I'm… older than everybody else… I was really intimidated… I didn't really have a sense of belonging." She identified using the cell phone as exacerbating the situation. In this case, Becca’s intimidation with the m-learning technology spiraled out, affecting her sense of belonging to the instructor and escalating her insecurities.

Enhanced Sense of Belonging with Peers

The inductive analysis of the data revealed two categories for the theme of an enhanced sense of belonging with peers: validation and connection (see Table 12). The code validation expressed the need for a student to confirm with a peer that their actions or thoughts were correct. Originally, the coding was separated into teams/groups, increasing interactions, communication, and competition. However, further analysis confirmed that these three codes were all part of the category connection. Connection is a category already presented within the enhanced sense of belonging with the instructor. The categories of negligible sense of belonging and diminished sense of belonging are also repeated in the themes of negligible and diminished sense of belonging with the instructor. Overlapping categories within the research sub-question of the sense of belonging provide validation to the data analysis. Thirteen participants identified some form of m-learning as enhancing their sense of belonging with their peers.

Table 12

Enhanced Sense of Belonging with Peers: Categories, Participants, and M-Learning Type

Category	Participant	M-learning
Validation (8)	Nora	Google™ search
	Marie	Kahoot!™, pictures
	Betty	Pictures
	Rachel	Kahoot!™
	Thayne	E-books
	Evalyn	Google™ search
	Becca	Unknown app
	Willamina	Dictionary.com app
Connection (9)	Nora	Google™ search
	Hyrum	Kahoot!™, Google™ search
	Marie	Kahoot!™, Contact information
	Leslie	Kahoot!™
	Rachel	Kahoot!™
	Emily	QR roll
	Raquel	Calculator, pictures
	D.J.	QR roll
	Betty	Pictures

Validation. A category identified through inductive analysis of the participants' transcripts for the theme of an enhanced sense of belonging with their peers was validation. Two general codes for validation were reassurance and validation. The in vivo codes for validation included "compare," "double-check," and "confirm." At least eight participants mentioned talking with their peers and seeing if they got the same answer when asked about a sense of belonging with their peers regarding m-learning. Some in vivo examples of validation from the data include:

Nora noted that when conducting in class Google™ searches on her phone, she often checked with a peer to see if they got the same data. "Usually, when you're in class, and you’re trying to search with somebody, you always double-check with the person next to you to see if they got that same information."

Marie gave two examples of receiving validation from her peers. The first was when playing Kahoot!™ “If one of us got one wrong, or the other got it right, like, we could kind of like communicate like how they know it right; or how we thought it was correct, but we got it wrong.” Marie expressed similar feelings about taking pictures through a microscope. "I had a little difficulty taking the pictures (through a microscope). I got help from them (peers). And then, like, I kind of seen… their pictures, seen how theirs came out verse mine."

Betty was also asked to take pictures through a microscope slide. In referencing her lab partner, Betty said, "We were comparing and working side by side." While admitting Kahoot!™ is competitive, Rachel also explained that after they answered the questions, she and her lab partner would turn to each other and ask, "What did you put?" Again, their classmates' validation of their own work enhanced their sense of belonging with their peers. It was as if they were checking to see if they belonged as much as if they had the correct answer.

Thayne noted that searching his e-book or Google™ to confirm thoughts made it possible to "better refer to terminology" when participating in discussions. In Thayne’s case, he was validating his thoughts and ideas before sharing them out in a class discussion. M-learning helped him be more confident in ‘being correct” in his answers and responses.

At the end of the week, the class discussed the week's topics, and some classmates referenced Evalyn's earlier comments and Google™ research. "They actually talked about my opinions and how they're always interested to hear my opinion." Evalyn felt validated when her peers referenced her comments and research in the re-cap class discussion at the end of the week.

While utilizing an unknown app outside of Canvas™ on her phone, Becca observed that everyone was doing the same thing and, therefore, "I could get help from that person sitting next to me, and they were more than willing to help me out." Becca felt validated by seeing everyone doing the same thing and struggling in the same ways. This validation gave her the confidence to check with the person sitting next to her to see how she was doing and ultimately ask for help. Willamina also turned to her peers for validation and conformation when looking up unknown words on dictionary.com.

Connection. A second category identified through inductive analysis of the participants’ transcripts for the theme of enhanced sense of belonging with their peers was connection. The general code was connection with numerous in vivo codes such as included, “connected,” “interact,” “talk,” “collaborate,” “reach out,” “team,” and “not alone.” Nine participants disclosed that m-learning positively affected their sense of belonging with their peers by facilitating connection. Relationship building and connection were accomplished in a variety of ways. Some m-learning activities facilitated increased interaction and communication between peers, while other applications helped to ease the feelings of isolation through icebreaker activities. Some of the m-learning was used to assign teams or groups or make forming teams or groups outside of class possible. Friendly competition was also perceived as a beneficial outcome of m-learning, associated with an increased sense of belonging among peers.

Nora explained how she turned to the person next to her during a Google™ search to see if they got the same information (validation). Nora then stated how she felt afterward,

> So, I feel like it did change my sense of belonging cause you feel more connected to the person next to you. You may not even talk to them (beyond that), but for that moment, you just like, 'Hey, did you search it up?' (Nora)

This experience resulted in increased communication with Nora's classmates and peers after the initial Google™ search activity and validation.

Hyrum perceived that m-learning, specifically Kahoot!™, enhanced engagement among peers, noting that "it's a change for even the shy students to interact." Hyrum also observed that the interactions were more meaningful when the students could use their phones to search for information when participating in class discussions. Hyrum stated he felt an enhanced sense of belonging with peers because they were actively engaged and "actually connective because we're feeding off of each other."

Marie, Leslie, and Rachel experienced increased peer-to-peer communication after using Kahoot!™ in the classroom. Rachel stated, "It definitely made us talk more to each other." Leslie felt like a funny game of Kahoot!™ initiated peer-to-peer connection. "It was so funny… it was more like an icebreaker."

Asking for help from a peer with m-learning also appeared to be a catalyst for increased communication among peers and enhanced the participants' sense of belonging with their peers. Emily, who was asked to download the QR roll app, explained that the app enabled her to communicate with her peers when she needed help. Emily stated, "It helped me talk to my peers more because I needed help…I knew that I could reach out to one of my peers." Increased communication builds connection.

After Raquel received help using her phone as a scientific calculator, her "partner that sits next to me came in a little bit later, so she was asking how to do it… and I'm showing her how to do it." Raquel noted that this act of helping her peer, "me and her have kind of become friends in the classroom." In another class where Raquel was taking pictures of the board, Raquel asked the girl sitting next to her "if she could send me a picture because I didn't get that slide." And that event is "how we kind of started talking." For Raquel, asking for help fostered a classroom friendship and increased peer communication.

Emily explained that the instructor could also use the app used by the instructor for taking roll to place the students in attendance into groups. According to Emily, she felt this "showed connection." Additionally, the app allowed students to communicate with one another, "it helped me talk to my peers more…I feel like it brought us together." Emily continued, "I feel like it just kind of included me in what the younger generation is doing and getting to get caught up more, and I don't feel left out." Emily’s comment demonstrates a connection to her peers.

D.J. reacted similarly when he was asked to use the QR roll app. D.J. also explained that the app was sometimes used to put the class into teams based on who was in attendance that day. D.J. reported the following.

> Cause sometimes they would put us in groups, like be a team… And then, so, you'd kind of, collaborate with some of your peers. And yeah, for sure, bond a little bit more doing it like that when we're in a team. (D.J.)

Marie explained that this time, she has gotten peer contact information as encouraged by the instructor, which has made a significant difference in her learning success. She feels a great connection with her peers and is involved in multiple study groups that meet on campus. In response to the question, does m-learning affect your sense of belonging with peers? Marie replied, "We're really into this like we wanna actually study… so yeah, definitely teamwork!" As if to confirm this, right after Marie made the above comment, she was interrupted during the interview by a peer asking her if she wanted to join them for a study group. She stated she would be right there as soon as she finished with what she was doing.

Betty explained her feelings about taking pictures through a microscope. "I felt as a group… When I was taking the photos, me and my partner were doing the same thing, so we were comparing and working side by side… I felt like me and my lab partner we're working together, and so it didn't feel like I was alone." Eliminating the feeling of isolationism and imposter syndrome are critical elements of an enhanced sense of belonging with peers and building connections.

Several students felt that competition through m-learning was a way to build connections and enhance their sense of belonging with their peers. Nora noted that even searching for information could also get competitive in a positive way, "For that moment, you just like, Hey, did you search it up?" Hyrum and Rachel noted that Kahoot!™ could be competitive and enhance connection. Hyrum stated, "It's kind of fun because we are competing against your class." Rachel acknowledged, "We would get competitive with each other."

Negligible Sense of Belonging with Peers

The inductive analysis of the data revealed one category for the theme of a negligible sense of belonging with peers: negligible (see Table 13). The general code for negligible was negligible with the in vivo code of “how?” Two participants perceived m-learning as negligibly affecting their sense of belonging with peers.

Table 13

Negligible and Diminished Sense of Belonging with Peers: Categories, Participants, and M-Learning Type

Category	Participant	M-learning
Negligible (2)	Jeff	Canvas™
	Nora	Checking calendar
Diminished (2)	Hyrum	Excel™
	Clark	Kahoot!™

Jeff admitted to being confused by the question, "Did your use of m-learning in a face-to-face classroom affect your sense of belonging with your peers?" Jeff said:

> I don't think I really understand this question because I don't see how, or I don't feel that technology could emit that out of me like to connect with someone. I feel like that's just done through human connection, by talking. (Jeff)

Jeff did not believe that technology diminished his sense of belonging, "I saw it as a tool," he said.

As noted above, most participants identified m-learning activities as enhancing their sense of belonging with their peers. Nevertheless, one participant, Nora, acknowledges that checking her calendar for dates and taking pictures was "more of an individual thing than actually connecting with others."

Diminished Sense of Belonging with Peers

The inductive analysis of the data revealed one category for the theme diminished sense of belonging with peers; diminished (see Table 20). The general code for diminished was diminished with the in vivo code of “disconnect” and “don’t talk.” Two participants perceived m-learning as diminishing their sense of belonging with peers.

Hyrum identified a disconnect and lack of interaction when doing assignments on Excel™. Hyrum expressed it this way, "It is kind of a disconnect because it's more like, this is just your assignment; make sure you have it down just for the future of this class." Hyrum compared the experience of using Excel™ to when he was doing Google™ searches in a classroom because "this is actually connecting because we're feeding off each other."

One participant, Clark, identified m-learning as diminishing his sense of belonging with his peers. The m-learning he utilized in the classroom was Kahoot!™ and another form of gamification. Clark expressed his diminished sense of belonging with his peers: "You were competitive. You don't talk to anyone; they might take your answer." Neither Jeff nor Clark expressed any perceived enhanced benefit to m-learning in the classroom on a sense of belonging to peers.

Enhanced Sense of Belonging with the Campus

The inductive analysis of the data revealed three categories for the theme of an enhanced sense of belonging with the campus: quality education, supported, and successful (see Table 14). Interestingly, when the students responded to the question about how or if m-learning affected their sense of belonging to the campus, the participants did not mention specific types of m-learning. Instead, they grouped all m-learning into one category. The general feeling was that the participants felt that using their phones on campus enhanced their sense of belonging to the campus. Supported is a category already presenting within the theme of an enhanced sense of belonging with the instructor and comfortable emotions. Overlapping categories within the research sub-question of the sense of belonging provided validation to the data analysis. Eleven of the FYNTS participants acknowledged that m-learning activities enhanced their sense of belonging to the campus.

Table 14

Enhanced Sense of Belonging with Campus: Categories and Participants

Category	Participant
Current (4)	Nora
	Raquel
	Thayne
	Leslie
Supported (10)	Thayne
	Jeff
	Rachel
	Raquel
	Nora
	Marie
	Emily
	Betty
	Willamina
	Hyrum
Successful (3)	Rachel
	Nora
	Emily

Current. One of the primary missions of a community college is to provide a quality education to the students who attend the campus. Four of the participants discussed how implementing m-learning enhanced their sense of belonging to the campus by increasing their perception of the campus as up-to-date and current in its educational practices. In vivo coding for current included “adapt,” “new,” and “these folks get it!”

One participant, Nora, noted that seeing professors change and adapt to the new technology, including m-learning, enhanced their sense of belonging to the campus. Nora said, "You're able to see that professors are… in with technology and know how to adapt to new generations coming in."

Several students referenced past college experiences and noted that there has been a significant change in attitude regarding the use of m-learning in the classroom. Raquel said, "The fact that the campus and the teachers are okay with us pulling them out (phones) to do appropriate things with them, of course, it makes me feel good." Raquel also said, "It makes the (learning) environment more friendly and welcoming." Thayne also referenced the difference between the current campus and his past experience in a previously 'no m-learning in the classroom campus' environment, stating that phones and e-books are "awesome tools." He followed that statement up with, "These folks get it!" Leslie noted that technology is used all over campus now. "Ever since I've been at the college, it's been all about Canvas™." Leslie continued by stating, "I feel like that's, you know, connecting me more to the school."

Supported. A second category identified from the data is how m-learning enhanced the students' sense of belonging to the campus by providing needed support services for the FYNTS. Ten of the participants discussed how implementing m-learning enhanced their sense of belonging to the campus by increasing their perception of being supported in their academic goals. The general code of supported included in vivo codes such as "tool," "help," "able to do," and "easier."

Thayne referred to m-learning as an "awesome tool." Six participants referred to the various m-learning activities as a "tool" (Jeff, Rachel, Raquel, Nora, Thayne, Marie). Even Jeff, who could not envision how a tool could increase a person's sense of belonging, referenced m-learning as a "tool" six different times. Emily feels imposter syndrome and a lack of a sense of belonging as she returns to college. However, m-learning changed that lack of connection to an enhanced sense of belonging to campus. Emily made the following statement:

> I feel like coming in, I didn't feel confident and just trying to belong while sitting next to someone that's 10 years younger than me. I didn't feel like I would be able to survive… And just everything that way that it's (m-learning) been incorporated, I feel like it helped me grow, not just intellectually, but socially and even emotionally. (Emily)

Betty expressed similar sentiments when asked about how m-learning affected her sense of campus belonging. Betty said,

> It made me feel like I wasn't as different from… my fellow classmates. I was able to do exactly what they were doing… I was on tasks just they were. So yeah, it made me feel like I was a classmate, just like they were. (Betty)

Willamina added, "To be told it was okay, to go ahead to use that (phone), I felt like I was gonna be alright. After so long."

Several participants referenced other support services associated with m-learning that enhanced their sense of belonging to the campus, such as the library, the computer commons, and providing a place to gather and meet for study groups. Marie described how she spends much time on campus studying and getting together with others. M-learning enhanced her sense of belonging with her peers, making it possible to communicate with them outside of the class, which has led to increased belonging to the campus. The campus facilitates getting together, making it "easier" with study time and reserving study rooms. Marie also connected support services to an enhanced sense of belonging. She said, "If I'm having issues or any sort like that, I can go to, like, the computer commons or the library, and I can get their help."

Hyrum sounded like a marketing director when she said, "I feel like it (m-learning) would actually bring more students in because it's like, hey, you can do it from your phone. You can just use something you're using every day." Hyrum expressed his sense of belonging to the campus and encouraged others to attend this institution because of their acceptance and use of m-learning as a support for learners' success.

Successfe. The third category identified from the data and coding is the participants' enhanced sense of belonging to the campus when they perceive m-learning as fostering their feelings of being successful. Three of the participants discussed how implementing m-learning enhanced their sense of belonging to the campus by increasing their perception of the campus as an institution where they could be successful. The in vivo codes for successful included "succeed," "learn," and "technology." One of the ways m-learning supports student success is by exposing the student to and providing an opportunity to learn new technology.

Rachel explained how m-learning is helping her success and enhance her connection to the campus.

> Most of the campus uses technology now… especially since after COVID, everything is online, even if you're in person, it's all online, regardless. So, I feel like that's, you know, connecting me more to the school… That's just what the school uses. (Rachel)

Nora added, "I feel like you learn characteristics and other tools that help you succeed, not just in class, but in other areas. Then you are more confident and involved around other people." Emily provided a similar comment when she said, "It's important to embrace it (m-learning), especially for people my age coming back, to help them maybe just learn how to use technology."

Negligible Sense of Belonging with the Campus

The inductive analysis of the data revealed one category for the theme of a negligible sense of belonging with the campus; negligible (see Table 15). The categories of negligible sense of belonging are also repeated in the themes of negligible sense of belonging with the instructor and peers. The general code for negligible was negligible with the in vivo code of "how?" "no," and "didn't change."

Table 15

Negligible Sense of Belonging with the Campus: Categories and Participants

Category	Participants
Negligible (5)	Jeff
	Clark
	Becca
	D.J.
	Rachel

Five participants struggled to find a connection between m-learning and their sense of connection to the campus. Clark replied to how m-learning affected his sense of connection to the campus with the following, "What?! How could using a phone do that?" Jeff stated, "I don't feel like there's any connection there." While Becca replied, "I don't know that it had anything either way on that one," in response to the same questions. One participant made a statement that might be interpreted as a diminished sense of belonging to the campus when D.J. stated, "I often feel like we're all kink of sheep doing through the system."

Conversely, one participant, Rachel, declared, "It didn't change my connection with the campus" when asked how m-learnings affected her sense of belonging. The participant then went on to say, "I'm already proud to be a community college student." The student's connection to the campus and sense of belonging was not adversely affected by m-learning. Their pride in being a community college student was already so high they did not feel that even though m-learning had enhanced their sense of belonging to their instructor and to their peers, it did not enhance their already high sense of belonging to the campus.

Content

Three categories were identified while undergoing the first and second coding of the data for the theme of an enhanced sense of belonging to the content: deep learning, accessibility, and deployment (see Table 16). Deep learning includes the following in vivo codes: "new information," "understand" (content), "learned more," "connect back," "stuck," "solidify," and "remember." Accessibility includes the following in vivo codes: "look back," "refer back," and "going back," as well as the general code of access to content. Deployment included the following in vivo codes, "share," "show," "teach," and "explain," with a general code of share.

Table 16

Enhanced Sense of Belonging with the Content: Categories, Participants, and Type of M-Learning

Category	Participant	M-learning
Deep learning (8)	Nora	Google™ search, pictures,
	Leslie	Canvas™
	Evalyn	Phones in general
	Thayne	Google™ search
	D.J.	E-books, Google™ search
	Rachel	Kahoot!™
	Clark	Google™ search, Kahoot!™
	Marie	Kahoot™, pictures
Accessibility (5)	Thayne	E-books
	Jeff	Phones in general
	Becca	Phones in general
	Raquel	Pictures
	Leslie	Pictures
Deployment (7)	Thayne	E-books
	Willamina	Pictures
	D.J.	Phones in general
	Hyrum	Phones in general
	Raquel	Pictures
	Emily	Phones in general
	Betty	Phones in general

Deep Learning. The category deep learning, or according to Bloom (1968) higher order learning, included codes that reflected the participants' perception of enhanced learning or the gaining of new knowledge. Eight of the participants discussed how they perceived the implementation of m-learning enhanced their sense of belonging to the content by providing opportunities for deep learning. Nora, who participated in Google™ searches, took pictures and accessed Canvas™ on her phone, summing up her feelings about m-learning and sense of belonging to the content as follows.

> Oh yeah, definitely, especially in the area where you're searching information. You know you're getting new information. You're able to take notes on that. Write it down, and help you with your assignment. So, it helps you understand the learning material that you're having to deal with. Sometimes it can be very confusing. (Nora)

As Leslie said succinctly, "We learned more." Leslie and Nora perceived m-learning as an integral part of the learning process. Evalyn mentioned a critical aspect of deep learning: reflecting, connecting, and applying the content to the question at hand. Evalyn perceived m-leaning as helping her "connect it (learning) back to what I was doing."

Thayne perceived that having e-books and Google™ searches enhanced his higher-order learning and sense of belonging to the content. "You're able to work through it and see how that connects back to the discussions in class." Here, Thayne emphasizes the deep learning of working it through and connecting and applying.

Marie and D.J. believed that Kahoot!™ helped him retain, recall, and apply new knowledge. He described taking a test and recognizing the value of Kahoot!™

> Yeah, just cause, I literally remember, like taking a test and then be like, Oh, this was on the Kahoot!™, and it kind of hit me, so it like it stuck to me, so I could say that it helped with the test. (D.J.)

Kahu (2013) suggested that higher-order learning requires participation, interaction, time, and effort. All the cognitive skills that Kahu (2013) mentioned were reflected in D.J.'s experience of playing Kahoot!™ and taking the test later.

Rachel reflected that her performing Google™ searches helped the material stick. "I feel like it solidified it. What may be what we're kind of shaky on, some of the material, and so it kind of reinforces it." As for Kahoot!™ Rachel perceived gamification as a tool to enhance memory. Rachel said it "just kind of helps me to remember." Clark, who did not feel technology could enhance his sense of belonging to the instructor, peers or campus, acknowledged that m-learning, if utilized correctly, could be good for studying and reviewing, and thus enhance his sense of belonging to the content. While remembering is considered the lowered level of high-order learning, it is still a critical learning step. (Bloom, 1968; Brown et al., 2022).

Accessibility. Having ready access to the material was crucial for some participants. Thayne perceived that having e-books on his phone enhanced his sense of belonging to the content. "Yeah, of course, you're gonna feel more engaged with the content because there it is, right in front of you." Thayne also sensed the value of being able to "Refer back to the textbook" when he needed to refresh his memory. Referring back is only possible when the tools are accessible. Jeff also perceived that easy access to the information connected him to the content. Jeff noted, "It made it easier to get the information, unlimited resources."

Becca had a "dreadful" time in one of her classes that utilized m-learning. The program that they were to use didn't fit on her small phone screen. It made learning the content "way harder." However, the teacher provided access to some videos, and Becca perceived these as accessible and helpful. Despite her "painful" experience in this class, she stated her feelings,

> It (m-learning) did help me connect with it (the content). Because, like I said if, I could just do it right and figure it out on my phone. So, Khan Academy… it would help me by explaining it a little bit better than even the teacher was doing for me. (Becca)

Becca perceived herself as a computer geek and felt comfortable using her phone in various learning activities. However, her experience with this program and one course made her doubt her abilities. Nevertheless, she recognized how m-learning enhanced her sense of belonging to the content, even with all that frustration and self-doubt.

Raquel recognized that she didn't always stay engaged during the lecture. However, by having access to the pictures she took of the board, she could review the material. Raquel described it as follows.

> Because sometimes, like when they're doing lectures, they can be kind of long. So, we don't always remember everything. So, going back to the pictures of the slides that I've taken. It's kind of like, okay. Now, like reading it over myself, I can kind of remember things that the teacher has told me prior. (Raquel)

Leslie also perceived the value of having access to and going back to the pictures she took in class. Leslie stated, "I can look back at that photo instead of trying to search through all my notes. I have that photo. So that really, I think that really makes me more connected to the school and the course."

Deployment. Knowles (1980) affirmed that adult learners learn best when the material applies to their current life experience. Therefore, I often added a follow-up question to those who indicated that m-learning had enhanced their sense of belonging to the content. I asked the participants if they had ever shared the information that they had learned in their courses with others.

Thayne reported sharing information he learned about political cartoons with his girlfriend. The girlfriend is enrolled in a different class and is “trying to understand conflict theory.” Thayne claimed he could better help her understand conflict theory using his e-books. When asked if he would have been able to discuss conflict theory with his girlfriend if he did not have the e-books, he replied, “No! No, I think I probably would have gone to the, you know, old Soviet thing, you know, Bolshevik, like that classic kind of discussion, you know, just baby’s first conflict theory.”

Willamina, who took pictures in class, could share what she was learning on her phone with a neighbor with a common interest. Willamina reported, “My neighbor, who actually went to school. She’s an art major. So, she asked me what I was studying, and I was showing her all the stuff.” In the interview, when Willamina was asked if she would have shared what she was learning in school with her neighbor if she had not taken the pictures, her reply was, “Probably not, because I wouldn’t be carrying the textbook around.”

D.J. also could share what he learned in one of his agriculture courses with his neighbors to help them on their farms. D.J. described it thus:

> Yeah. Because well, one of my classes was *agriculture*, and I live in a farming area. We’re all farmers around her. We grow our own chili’s, tomatoes, watermelons, corn, like every year. We always have a crop of something… Some stuff that I learned in science…I showed my friends. (D.J.)

D.J. teaching what he was learning in school and then utilizing that knowledge to create a productive garden represents the highest level of learning in Bloom's (1968) taxonomy, create.

Hyrum claimed to be selective in what he shares with others about what he learns. "But if it is something interesting… a controversial topic, Hey like, oh, that's interesting, like look more into that." Raquel shared her cell phone pictures she took through a microscope with her sister and friends. Raquel explained, "Yeah, actually, for my *science* class, we got to take pictures of the cells through like the microscope, and that was really cool. So, I was like showing my sister and showing my friends." Raquel and Hyrum were deploying the learning they received.

When asked if she ever shared what she's done on her phone with others, Emily stated that she has shared it with her children, "It's exciting for me, and then I feel I see them get excited for me." Betty also shared what she learned with her children. Betty reported:

> Yeah, I shared them with my kids. They were interested. And I explained it to them. That's a good thing – a study tactic I have. I will just talk to them about anything, and you know, just talking about it, getting it repetitive, and explaining anything. So, I was able to share this, and they asked questions. They think it's the coolest thing that their mom's in school right now. (Betty)

Emily and Betty sharing the information they have learned with their children demonstrates that they perceive a connection or sense of belonging to the content as they bring it into their homes.

Limitations to Sense of Belonging with the Content

All the participants perceive m-learning as a tool that enhances their sense of belonging to the content. Even Becca, who was so disheartened by the one class she was taking and the program on her phone that was too small, had something positive to say about how m-learning in that classroom affected and enhanced her sense of belonging to the content.

Nevertheless, while all the participants perceived m-learning as a tool that enhanced their sense of belonging to the content, two participants noted some limitations to m-learning's ability to enhance a sense of belonging to the content (see Table 17). While two discrepancy cases are small, they are critical for establishing trustworthiness in this research study. The two categories for the theme limitation to a sense of belonging include technology breaks and learning hierarchy. The in vivo code for technology breaks was crash. The code for learning hierarchy was "good for___ not good for ___."

Table 17

Limitations to Sense of Belonging with the Content: Categories, Participants, and M-Learning Type

Category	Participant	M-learning
Technology breaks (1)	Hyrum	Unknown program
Learning Hierarchy (1)	Clark	Kahoot!™

Technology Breaks. Glitches, crashes, and drops are something commonplace in using technology. However, when one is dependent on that technology to fulfill goals, experiencing a dropped connection can be very stressful. Hyrum notes that one of the unknown gamification programs was not as reliable as he had hoped. Hyrum explains:

> Sometimes, one of the apps we use is so, well, it's still a work in progress. But sometimes there's moments where like it will crash and he (the instructor) will be like, Hey the app's not really working today guys. (Hyrum)

Breaks in the technology, whether from Wi-Fi loss or a poorly supported program, can limit the sense of belonging to the content.

Learning Hierarchy. As Haring and Eaton (1978) defined, the learning hierarchy contains four stages of learning: acquisition, fluency, maintenance, and generalization. According to Jimenez et al. (2021), the acquisition stage is when the student is just beginning to learn the skill or knowledge set, and they cannot perform with high levels of accuracy. The goal of this stage is to perform the skill accurately but not necessarily rapidly. The purpose of fluency is to have the student retain the skill knowledge and begin to combine it with other skills. Clark expressed frustration in a class where the instructor used Kahoot!™ to introduce the material. In this situation, Clark became frustrated and disengaged. Clark stated, "You feel like you can't ask the teacher." From this experience, Clark perceived that Kahoot!™ had a limited ability to enhance a sense of belonging to the content. Clark declared that he believes Kahoot!™ and other gamification: "It's good for studying, you know, its really good for studying, but not good for learning." In this context, Clark was using the term study to mean the learning hierarchy stage of fluency. At the same time, Clark used the term learning to refer to knowledge acquisition.

Wellbeing

The research SQ4 focused on how mobile technology integrated in the community college face-to-face classroom affected the FYNTS's wellbeing. Three themes arose from the data regarding how m-learning affects the participants' wellbeing; enhanced wellbeing, negligible wellbeing, and diminished wellbeing. The sub-questions on how m-learning affected the participants' wellbeing produced the most diverse array of categories, 11 in total. Nevertheless, as noted previously, there is some overlap in the categories among the sub-questions. For example, wellbeing contains the categories of connection, confidence, intimidation, and anxiety, all of which are categories in other sub-question data analyses.

Enhanced Wellbeing

Three categories were evident within the theme of enhanced wellbeing. These categories include secure, comfortable, and confidence (see Table 18).

Table 18

Enhanced Wellbeing: Categories, Participants, and Type of M-Learning

Category	Participant	M-learning
Security (5)	Nora	Phone in general
	D.J.	Canvas™
	Becca	Pictures
	Raquel	Canvas™
	Emily	Phone in general
Comfortable (7)	Nora	Pictures, phones in general
	Thayne	Phones in general, e-books
	Hyrum	Kahoot!™
	Marie	Kahoot!™
	Leslie	Pictures
	Jeff	Canvas™, Phone in general
	Raquel	Kahoot!™, Pictures
Confidence (5)	Willamina	Phones in general
	Nora	Pictures
	D.J.	Kahoot!™
	Clark	Kahoot!™
	Rachel	Kahoot!™

Security. A category identified through inductive analysis of the participants' transcripts for the theme of enhanced wellbeing was secure. The in vivo codes for secure included "double-check," "I'd be lost," and "not miss." Five participants perceived that m-learning affected their wellbeing by creating a feeling of being secure. Access to their phones in the academic setting helped them feel assured that they had what they needed and connected to the learning environment.

Nora explained that m-learning helped to eliminate confusion and uncertainty and thus provided her with a sense of security. Nora explained:

> I feel like it (m-learning) influenced it (wellbeing) in a positive way. It made me feel that if I had confusion or if I wasn't certain about something, I could always

> double-check on the phone and then just ask the professor because you always want to make sure, especially in college, that you're getting the right information. (Nora)

The in vivo code of "double-check" is clear in Nora's explanation. Nora's need to "make sure" is also repeated in other participants. Later, Nora associated "convenient" with her enhanced sense of wellbeing with m-learning in the classroom. Emily noted that having a phone in class doesn't "suppress" anything. She was referencing the past when teachers would take her phone away. Emily was more secure because she had her phone.

D.J. mentioned multiple times in his interview how helpful and critical Canvas™, the campus LMS, was to his wellbeing. D.J. declared that "if I didn't have Canvas™, I'd be lost a lot of the times… I like to know where I'm at." D.J., like Nora, needed to be assured that they had what they needed and that they were on the right track. Becca noted that having things on her phone meant she would "Not miss out on anything in the class." Raquel approached security from a different direction but with the same outcome. Raquel noted that sometimes the teachers even ask them to "double-check" Canvas™ to ensure it is set correctly. This double-check with the instructor on expectations made her feel more secure and enhanced her wellbeing.

Comfort. A category identified through inductive analysis of the participants' transcripts for the theme of enhanced wellbeing was comfortable. The in vivo codes for comfortable included "ease," "comfortable," "relief," "fun," and "less stress." Seven participants noted that they perceived m-learning to enhance their wellbeing by affecting their comfort level.

Nora explained her feelings about wellbeing and comfortability: "I feel like this semester has definitely influenced my wellbeing to be able to have it (cell phone) out." Thayne's statement about wellbeing had an in vivo code of ease when he stated, "It definitely put me at ease." Nora, who took a picture of her note card for a presentation, expressed her wellbeing as being comfortable when she stated, "I feel like that was fun. I feel like it was easy."

Marie's transcript was also in vivo coded for easy in her response to wellbeing and comfort. Marie discussed how Kahoot!™ helped her to feel more comfortable in taking tests because the gamification used in class helped her prepare for the exam. Marie stated, "Yes because it really did help out. And I realized that a lot of those questions she did have on quizzes or test, so it made it a lot easier for me. So it really did help out."

Rachel also found Kahoot!™ to be less stressful. Rachel explained,

> It definitely made me have less stress… She would put in the Kahoot!™ questions that would be directly from the test. So, it would kind of show us what maybe where we needed to study, or you know, pretty much what was gonna be on the test. (Rachel)

Hyrum also reflected on how Kahoot!™ eased the stress of exams by preparing him to understand how the teacher framed the questions.

> I would definitely say, for some of the quizzes that we took… Because some of the ways the questions were worded on the actual quiz, like, we're kind of like trick questions. But we've been doing trick questions all semester through the Kahoot!™ And so, it's kind of like, okay, I've seen this before. I'm comfortable

> with this word play or word lingo, whatever you want to call it. And it's like, Okay, I don't have to play twenty question like I've seen these enough. I know what they're really asking for, even though it's said a different way. (Hyrum)

Like Marie and Rachel, Hyrum recognized Kahoot!™ as a benefit and, as a result, felt more “comfortable” in preparing and taking exams.

Raquel admitted that taking the picture through a microscope was a challenge, but then she was shown how, and “after that, I felt more comfortable in the classroom.” Leslie, who admitted to a vision disability, was asked if taking pictures in the classroom was “stressful.” Leslie replied that being able to take photos with her phone, “In no way was it stressful! … It’s less stressful…. Especially since I’m so bad at losing things. I won’t lose my notes because they’re digital.” Jeff summed it up with, “I felt a lot of relief”

Confidence. The final category identified through inductive analysis of the participants’ transcripts for the theme of enhanced wellbeing was confident. Confidence is also a category found in the theme of comfortable emotions. The in vivo codes for confident included “confident,” “reassured,” and “I had the upper hand.” Five of the participants noted that they perceived m-learning to enhance their wellbeing by enhancing their confidence, with four participants stating “confidence” in their interview.

Willamina reflected on her perceptions of m-learning and how it affected her wellbeing. She explained how utilizing her cell phone as a tool for learning enhanced her confidence and wellbeing. Willamina said,

> I think it did, especially the first semester. Like I said, it's been a long time since I was in school, and to be told the very first couple of classes to pull out my phone, it was like a whole new world. And I went from nervous because I know everyone's so much younger than me, to, you know, feeling kind of like I had the upper hand.

Nora could have a picture of her notecard on her phone during an oral presentation. "It gave me a boost of confidence and like a reassurance that I could know that something was gonna go right."

D.J., Clark, and Rachel expressed an increase in confidence when they played Kahoot!™ in the classroom, especially when they did well. Rachel explained her perceptions of m-learning and gamification on her wellbeing. Rachel stated, "You just feel like you're confident about what you need to do, and you're confident about what you need to study." Clark got excited just thinking about his past experiences playing Kahoot!™. His voice got higher and faster as he explained what would happen when it was time to play Kahoot!™ in the classroom. Clark said, "I'm gonna get competitive now. My confidence peaks a bit more because I think, like, do it! I'm ready to play and see what I can do." D.J. acknowledged that an increase in confidence with Kahoot!™ sometimes depends on the results of the game. D.J. explained his perceived enhanced wellbeing from playing Kahoot!™ as "I guess so… I guess it just depended on how much I studied… But then, if I'm doing good and hitting all the right answers, then I feel well. Obviously, I'm feeling better about myself, and I'm more confident."

Negligible Wellbeing

Three categories were evident within the theme of negligible wellbeing. These categories include negligible, not a distraction, and not an embarrassment (see Table 19). The categories were determined from the first and second coding of the participants' transcripts. The interview question for this theme was, “How do you perceive m-learning in a face-to-face class has affected your wellbeing?” Two follow-up questions were often asked, including, “Did you perceive m-learning to be a distraction to you in the classroom?” and “Did you feel embarrassed to use your phone in the classroom for any reason?”

Table 19

Negligible Wellbeing: Categories, Participants, and Type of M-Learning

Category	Participant	M-learning
Negligible (2)	Betty	Phones in general
	Rachel	Navigate EBSCO
Not a distraction (7)	Nora	Phones in general
	Thayne	Phones in general
	Hyrum	Phones in general
	Raquel	Phones in general
	Marie	Phones in general
	Jeff	Phones in general
	Rachel	Phones in general
Not an embarrassment (4)	Emily	Phones in general
	Raquel	Phones in general
	Marie	Phones in general
	Willamina	Phones in general

A category identified through inductive analysis of the participants’ transcripts for the theme of negligible wellbeing was negligible. The in vivo code for negligible was “I don't think." Two participants noted that they perceived m-learning to negligibly affect their wellbeing.

Betty did not express any feelings of enhanced wellbeing associated with using her cell phone in class. Betty answered the interview question regarding wellbeing and wellbeing with, "I really don't think so. I mean, I did it because I had to do it, and I felt accomplished afterwards. But it was a job well done."

As previously noted, Rachel perceived Kahoot!™ as an m-learning tool that enhanced her wellbeing, especially in the category of confidence. Nevertheless, when it came to navigating EBSCO, she expressed indifference to how it affected her wellbeing. Rachel stated, "I don't think it influenced either way. Maybe it helped a little bit, but like I said, I already kind of knew how to do that portion of it. So, I don't think it influenced it either way."

Distractions. A second category identified through inductive analysis of the participants' transcripts for the theme of negligible wellbeing was not a distraction. The in vivo code for not a distraction was "no." Seven of the participants noted that they perceived m-learning not to be a distraction and, thus, affecting their wellbeing negligible. Several participants indicated how they prevented the phone from becoming a distraction.

When asked if her cell phone was ever a distraction, Nora replied, "No… I have it face down when I'm not using it… I always have it on silent as well." Thayne responded with a different tactic, "Not really, I was focused on the activity." Raquel shared her method for distraction prevention, “No, not really… because I just tell myself when I’m in school, I’m there to learn.” Hyrum, Marie, Jeff, and Rachel said, “No.”

Embarrassment. A third category identified through inductive analysis of the participants’ transcripts for the theme of negligible wellbeing was not embarrassed. The in vivo code for not embarrassing was “no.” Four participants, Emily, Raquel, Marie, and Willamina, all noted that they perceived using their phones in class was not embarrassing and, thus, negligibly affected their wellbeing.

Diminished Wellbeing

Four categories were evident within the theme of diminished wellbeing. These categories include intimidation, anxiety, embarrassment, and distraction (see Table 25). The categories were determined from the first and second coding of the participants' transcripts. The interview question for this theme was, “How do you perceive m-learning in a face-to-face class has affected your wellbeing?” Two follow-up questions were often asked, including, “Did you perceive m-learning to be a distraction to you in the classroom?” and “Did you feel embarrassed to use your phone in the classroom for any reason?”

Table 20

Diminished Wellbeing: Categories, Participants, and Type of M-Learning

Category	Participant	M-learning
Intimidation (2)	Emily	Canvas™
	Becca	Unknown program
Stress (3)	Hyrum	Excel™
	Clark	Kahoot!™
	Evalyn	Formatting a .pdf file
Embarrassment (2)	Thayne	Phone in general
	D.J.	Phone in general
Distraction (5)	Emily	Phone in general
	D.J.	Phone in general
	Marie	Phone in general
	Betty	Phone in general
	Becca	Phone in general

Intimidation. A category identified through inductive analysis of the participants' transcripts for the theme of diminished wellbeing was intimidation. The in vivo codes for intimidation were "intimidation" and decreased "self-esteem." Two participants noted that they perceived m-learning diminished their wellbeing through intimidation.

Emily reported that her first semester was very intimidating, with returning to school and learning all the new technology. Emily stated of Canvas™, "I'm not tech savvy at all, so it can be intimidating… Last semester was my first semester, and even so, it was really intimidating. So, I had to ask how to use this and how to use that."

Becca was asked to use a program on her phone that was intended for a computer screen. Becca relates how this experience diminished her wellbeing through intimidation. Becca said of the unknown program,

> I don't know, the words, like, my self-esteem, like, would play into that. It would like hurt it. It just made it worse because I always have my problems with it anyway. But it just kind of, it like, added to it. (Becca)

Both Becca and Emily felt some intimidation from the m-learning technology.

Stress. A second category identified through inductive analysis of the participants' transcripts for the theme of diminished wellbeing was stressful. The in vivo code for stressful was "stress." Three participants noted that they perceived m-learning diminished their wellbeing through increased stress.

Hyrum noted, mainly when working with Excel™, that there were times when his stress would increase. Hyrum stated:

> There were moments of stressfulness. I was like, I can't do this. But then there are other days where it's almost like, Okah, I've got this, like I feel comfortable with this, or I've seen this before. (Hyrum)

While acknowledging the stress of working on Excel™, Hyrum was also able to perceive that, at times, it enhanced his wellbeing and comfort level.

Evalyn noted that she knew how to do most of the assignments, but then she had to convert her document to a .pdf file and did not know how to do that. She explains the situation as follows:

> But then, when I had to convert it, I had no idea how to do that. So, it was a big stressor. I'd rather had just turned in a paper…So that initially was very stressful. And I really did not like that he wanted to wait to literally the day before it's due to show us. And I was like, I rather have already had it done, and it turned in by

> then, you. I don't want to wait, and I didn't like that he was making us wait. So, I was very anxious about that, like I'd rather have just known. (Evalyn)

For Evalyn, the stress came from waiting to learn how to do the assignment. Evalyn explained that she had researched how to convert the file to a .pdf file online and then went to the library to try it. There, she was able to ask for help from the computer center. With the waiting to learn how out of the way, her stress diminished.

Clark reported that Kahoot!™ could be stressful, but when asked to elaborate, he amended his statement to be that Kahoot!™ is only "Minorly stressful" when you are not doing well. However, when the interviewer asked for clarification, Clark reported, "It's a good stress, you know that, for us to push you to be better and learn more." Therefore, while it was uncomfortable, Clark recognized that a little push was helpful.

Embarrassment. A third category identified through inductive analysis of the participants' transcripts for the theme of diminished wellbeing was embarrassed. Two participants noted that they perceived m-learning diminishing their wellbeing through embarrassment.

Thayne was asked if he was embarrassed to get his phone out because it was cracked. He replied, "A little bit, yeah. But I mean, at the end of the day, it's kinda like you can kind of wear it like a badge of honor. It's really about how you deal. You can laugh about it." D.J. also admitted to being embarrassed by his cracked screen in class but still uses it anyway. "It was kind of embarrassing, but I wasn't like showing everyone. Look at my cracked phone, but I kind of had it hid."

Distraction. The last category, identified through inductive analysis of the participants' transcripts for the theme of diminished wellbeing, was distracting. The in vivo code for distraction was "distracting," "tempted," and "annoying." Three participants noted that they perceived m-learning diminished their wellbeing through distraction.

Emily at first downplayed the phone's ability to distract her in class but then noted that it can be distracting if she gets a text message. Emily responded to whether cell phones in the class distract her with, "Not necessarily. I guess I can if I get a text message and I am tempted to read it and reply. But I feel like that can be said about anything." On the other hand, D.J. wholeheartedly agreed that cell phones distract him. D.J. stated,

> Yeah, 100%. Cause I'll look. I'm not gonna just look at my phone. I'm going to do the little slide thing. And I'm gonna look at my text messages and see what's up on Facebook…Yeah, the phone's a distraction, 100%. (D.J.)

D.J. admitted that for him, phones are a distraction.

Marie also recognized cell phones in the class as being a distraction. "I'm gonna be honest, at first, yes. Because you know, you see all these like notifications you get. So, it does get distracting." Betty expressed frustration at having her learning interrupted with the cell phone when she has to get the phone out to play Kahoot!™ she is faced with numerous messages from her family. Betty noted,

> Honestly, it was kind of annoying because I was focused on class and picking up my phone. I have three kids, so I automatically had the text alerts, I had Facebook alerts. And it was hard not to look at those things with my phone open and doing

things, especially having text messages come through. Yeah, it just made me lose focus." (Betty)

Becca was the only participant to admit that she was "very distracted" when her peers were off-task and on their phones.

Evidence of Trustworthiness

Trustworthiness was a priority for me as I strived to maintain the integrity of this study. Korstjen and Moser (2018) noted that trustworthiness in qualitative research is achieved by ensuring credibility, dependability, confirmability, and transferability. I implemented several strategies to manage potential biases based on my experience, including reflexivity, peer debriefing, and member checking.

Credibility

Throughout this study, I have utilized a reflective journal to manage personal biases, ensure credibility, and uphold transparency. I have kept all notes and thoughts written down in one location so that they can be quickly reviewed. During the interview process, I encouraged the participants to support their statements with examples and asked follow-up questions to draw out rich descriptive data and enhance credibility. I also participated in frequent peer debriefings with qualified colleagues not involved with the study, including my research committee. The utilization of MAXQDA, a qualitative data analysis program, also assisted in visualizing themes and categories that I had not expected or foreseen. Per the IRB review, I was asked not to provide the participants with the interview transcript but only the summary. The proposed credibility strategy presented in Chapter 3 was followed, apart from not sending the whole transcript to the participants but only the summary.

Dependability

The researcher must follow an audit trail strategy to increase dependability and confirmability in qualitative research (Korstjens & Moser, 208). I have maintained transparency by adhering to my proposed data collection plan, analysis, and reporting. Korstjens and Moser (2018) also recommended repetitive observation to enhance dependability and credibility. Therefore, I have read, reread, analyzed, and reanalyzed the data during the first and second coding to enhance trustworthiness. I also utilized the interview guide. As Merriam and Tisdell (2016) suggested, my reflective journal also augmented dependability. My reflective journal has been kept throughout the process, and I have recorded notes, thoughts, and impressions to facilitate the inductive analysis from codes to categories to themes. The proposed credibility strategy presented in Chapter 3 was implemented as outlined without adjustment.

Confirmability

Confirmability in qualitative research translates to objectivity (Ravitch & Carl, 2016). While qualitative research is subjective, confirmability can be accomplished in some ways. I utilized reflexivity to ensure confirmability. When I interviewed the participants, I did not insert my opinion, share my experiences, or interject any interpretations. I did ask for clarification and encouraged explanations and examples of their statements. While analyzing the data, I only utilized the transcripts, not my summaries. My thoughts and personal experiences were not factored into the data analysis or reported findings, as evidenced by the many unexpected results and outcomes that were brought to light in this study. Additionally, the participants' perceptions, comments, and ideas were aligned with each research sub-question. The coding used in this study was peer-reviewed by both a qualified colleague not associated with this study, and the chair of my doctoral committee to ensure the reliability of the analysis. Both experts confirmed the coding, categories, and themes that I derived from the data as valid. Lastly, I constantly reviewed my research design for any evidence of bias and found none. The proposed confirmability strategy presented in Chapter 3 was implemented as outlined without adjustment.

Transferability

As the researcher, it is my responsibility to afford the best opportunity for transferability. To that end, I gleaned rich, descriptive data from the participants and provided detailed illustrated findings of the data. I have presented quotes from the participants’ interviews within the data results. The variability of participants’ experiences, backgrounds, nontraditional characteristics, and perceptions can also enhance transferability. This variation of participants is reflected in the demographic data. Transferability was sustained by a detailed illustration of the study setting. Additionally, purposeful sampling also helped reinforce the transferability of the research findings to other students. Transferability in qualitative research designs is limited (Saldana, 2016). The responsibility of transferring the data presented in any qualitative study and applying it to other students and groups is, as Merriam and Tisdel (2016) noted, up to the reader of the study. Nonetheless, the proposed transferability strategy presented in Chapter 3 was implemented as outlined without adjustment and provided multiple points of supported transferability.

Summary

Four subquestions were explored to address FYNTS' perceptions of how m-learning integrating in a community college face-to-face classroom affected their emotional engagement. Three themes were detailed for SQ1, along with seven categories. Key findings were that FYNTs predominantly felt enhanced self-efficacy as a result of m-learning through validation, motivation, accessibility, expectations awareness, and expanded domain of confidence. In some unique cases, m-learning diminished self-efficacy.

key findings for SQ2 were that FYNTs predominantly perceived comfortable emotions as a result of m-learning, such as curiosity, support, confidence, and excitement. A minority of discrepant cases revealed m-learning had the potential to lead to uncomfortable emotions such as irritation and anxiety.

SQ3 was evaluated using four different spheres of influence: sense of belonging with instructors, peers, the campus, and content. Three themes were detailed, along with 14 categories. Key findings were that FYNTs predominantly perceived m-learning to enhance their sense of belonging. A minority of discrepant cases revealed m-learning could diminish FYNTS' sense of belonging by evoking feelings of isolation and intimidation, as well as introducing technology obstacles and ineffective learning hierarchies.

Three themes were detailed, along with 11 categories for SQ4. Key findings were that FYNTs perceived m-learning as enhancing their wellbeing in terms of security, comfort, decreased stress, and confidence. A marginal amount of discrepant cases revealed m-learning had the potential to diminish FYNTS' wellbeing by evoking feelings of intimidation, anxiety, embarrassment, and distractions.

Chapter 4 included information about data collection and analysis. Setting and participant demographics were presented. Data were disseminated via four psychosocial construct areas of focus: self-efficacy, emotions, sense of belonging, and wellbeing. Results and supporting evidence were also provided. In Chapter 5, conclusions are discussed.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this basic qualitative study was to explore FYNTS' perceptions of how mobile technology integration in face-to-face community college classrooms affects their emotional engagement. Using semi-structured interviews, 15 participants were asked to share their perceptions regarding this topic. Kahu and Nelson's SEwEI framework was used to design this study to focus on emotional engagement. Findings from the study indicated FYNTS' perceptions of mobile technology integration in community college face-to-face classrooms can affect their self-efficacy, emotions, sense of belonging, and wellbeing. While t perceptions regarding this topic, generally, participants perceived m-learning activities as triggering comfortable emotions and enhancing their self-efficacy, sense of belonging, and wellbeing, thus enhancing their emotional engagement. Participants alluded to the idea that m-learning activities alone are not determining factors for enhanced emotional engagement.

Interpretation of the Findings

As noted in Chapter 2, while extensive research has been done on mobile learning and engagement, there is a gap in scholarly literature regarding perceptions of FYNTS at the community college level about m-learnings and its effects on emotional engagement. As such, there is limited research to compare to this study. Therefore, findings of this study neither confirm nor dispute prior research. Findings enhance literature on mobile learning and emotional engagement as well as mobile technology and FYNTS in higher education.

Perceptions of FYNTSs on how M-Learning Affects Self-Efficacy

Kahu and Nelson's SEwEI was used as the conceptual framework for this study. The framework illustrates how multifaceted relationships between students and educational institutions influence engagement. It includes four key psychosocial constructs that are critical to facilitating engagement, which are self-efficacy, emotions, belonging, and wellbeing. Kahu and Nelson (2019) claimed self-efficacy affects student behaviors, motivation, learning, self-regulation, and level of engagement. Self-efficacy and engagement have a reciprocal relationship in that as a student's self-efficacy increases, their level of engagement increases, which in turn increases their self-efficacy (Kahu & Nelson, 2018).

In this study, all participants affirmed they perceived m-learning in a community college face-to-face class enhanced their self-efficacy. They perceived using m-learning as validating, motivating, led to increased accessibility for support systems, helped them meet expectations, and expanded their domain of confidence to other areas. One student in this study identified two specific m-learning activities that she did not perceive as enhancing or diminishing her self-efficacy. Three students expressed perceived diminished self-efficacy due to some m-learning activities. However, these three students found other types of m-learning to enhance their self-efficacy. As self-efficacy predicts academic success, it is critical to understand m-learning's potential effect on FYNTS' self-efficacy.

Enhanced Self-Efficacy

There was an overwhelming response from all 15 participants that m-learning activities enhanced their self-efficacy. These participants perceived that m-learning activities led to feedback, motivated them, broadened their ability to access content material, clarified expectations, and expanded their confidence domain into other areas of their lives. Various m-learning activities were associated with perceptions of enhanced self-efficacy.

Five participants perceived m-learning as validating, confirming, or reassuring. According to Rachel, these boosts of confidence were an antecedent to enhanced self-efficacy. Peaslee (2018) noted there is a relationship between faculty feedback and community college students' self-efficacy, especially among female students. Four participants who perceived m-learning as enhancing their self-efficacy by validating their efforts self-identified as female. One reported benefit of m-learning is receiving immediate feedback and ready access to information (Alharbi & Meccawy, 2020; Cancino & Capredoni, 2020; Garip et al., 2020; Hussain & Wilby, 2019). Mastery experiences lead to enhanced self-efficacy (Bandura, 1989; Zientek et al., 2019). Students are confident when they compare their answers with their peers and encourage positive interaction. Thus, students' use of m-learning can lead to timely feedback that can enhance self-efficacy.

Five participants perceived m-learning as motivating and thus enhanced their self-efficacy. Some participants were motivated by their success, and others by competition. Emily felt empowered by the instructor's use of m-learning in the classroom. According to Jenert et al. (2017), student emotions and self-efficacy are part of motivation. List and Nadasen (2017) reported nontraditional transfer students in online universities had higher motivation compared to traditional students. Bond and Bedenlier (2019) emphasized motivation leads to engagement and is an internal psychosocial influencer. M-learning can influence emotional engagement and enhance self-efficacy (Bond & Bedenlier, 2019; Owusu-Agyeman & Fourie-Malherbe, 2018).

Nine participants perceived various m-learning activities and resources enhanced their self-efficacy by making course content more accessible and available to them. Wong et al. (2019) reported students perceive m-learning as increasing their immediate access to information. Students greatly appreciate the ability to participate in courses at their convenience (Janssen et al., 2014). Nontraditional students, especially those with intense lives, have gravitated towards online learning because of its flexibility (Ellis, 2019). Enhanced self-efficacy with m-learning occurs when FYNTS perceive content as accessible and flexible.

Four participants perceived m-learning enhanced their self-efficacy by informing them about expectations for courses. Rachel said taking pictures with her phone helped her identify expectations and enhance her self-efficacy. Gamification in the classroom increases self-efficacy for university students (Sanchez et al., 2020). Additionally, neural pathways strengthen when information is recalled in different formats (Sanchez et al., 2020). Gamification quizzing can be an effective instructional tool and enhance self-efficacy (Sanchez et al., 2020).

Six participants perceived that various m-learning activities and resources enhanced their self-efficacy in the class where they experienced m-learning. Those experiences expanded and transferred into other domains, including other classes. As stated by Evalyn, “I feel like I can do other things, too, that I didn’t think I could do before.” Soh and Ho (2014), in their study of m-learning, identified flexibility and accessibility of learning material to support understanding and transferability of the learning. Farrell and Brunton (2020), who utilized the SEwEI conceptual framework of Kahu and Nelson (2018), noted that many students’ self-efficacy grew as the online course progressed. Some students were able to transfer their self-efficacy into other areas. The results of Farrell and Brunton (2020) support the findings of this study of the perceptions of FYNTS regarding m-learning capacity to facilitate expanded and transference of self-efficacy. Thus, this study of FYNTS participants aligns with current research that m-learning can enhance self-efficacy and, as a result, increase the emotional engagement of FYNTS.

Negligible Self-Efficacy

As noted above, all the FYNTS participants perceived that some forms of m-learning positively affected their self-efficacy. One student, Betty, identified two types of m-learning activities that she felt did not negatively or positively influence her self-efficacy, specifically watching videos and accessing Canvas™ in class. In contrast, Betty perceived that taking pictures and playing an unnamed game increased her self-efficacy. Betty reflected that the difference between the two types of tasks was that watching videos and accessing Canvas™, in her mind, were passive activities. At the same time, taking pictures and playing games were active learning. Several studies have concluded that effective m-learning pedagogy calls for active learning (Ada, 2018; Kim et al., 2020; Wu et al., 2019). As evidenced by Betty's perceptions, not all types of m-learning are perceived as active or influential on self-efficacy.

Diminished Self-Efficacy

It is critical to examine the discrepancy cases of a study, not only because they ensure saturation in a study (Merriam & Grenier, 2018) but also because they often provide unique insight. The predominant finding of this study on FYNTS perceptions of the effect of m-learning was that it enhanced self-efficacy and thus enhanced their emotional engagement. Nevertheless, three of the FYNTS participants in this study reported some perceived diminished self-efficacy when participating in specific m-learning activities.

Jeff expressed fear that the ease of learning with Canvas™ was impacting his long-term learning. M-learning and engagement aim to increase higher-order thinking (Kim et al., 2020). Nevertheless, m-learning activities require evidence-based pedagogical practices to create an active learning environment (Diao & Hedberg, 2020). Jeff did perceive other m-learning activities as increasing his self-efficacy. It is critical, therefore, to consider pedagogical practice as a potential factor for diminished self-efficacy.

Becca was asked to use an unknown program on her phone as the primary teaching tool for learning math. She acknowledged that math was not a subject she felt comfortable in, even before the class started. Her initial reaction to m-learning was positive, thinking the unknown program would be helpful. However, she reported the m-learning program was difficult to utilize on a phone. Wong et al. (2019) argued that the perceived usefulness of m-learning by the student is highest in the early stages of the course. Ultimately, Becca believed that the m-learning program utilized in this math class "did terrible things for (her) confidence." Becca dreaded going to class and felt she could not figure it out. Because Becca perceived m-learning in other classes to add to her self-efficacy, the diminished self-efficacy is not linked to the concept of m-learning but maybe to the specific program or the pedagogical practices of the instructor.

Becca admitted that she has math anxiety but was hopeful when she realized that m-learning would be used in the classroom. She considered herself a "computer geek" and "technology cool" (Becca). Bandura (1989) outlined four sources of self-efficacy: mastery experiences, vicarious experiences, social persuasion, and affective state. Zientek et al. (2019) concluded in their study on sources of students' self-efficacy in a community college math course that mastery experiences were the primary source of influencing a student's math self-efficacy. However, all sources were observed to be influencers. Becca could not succeed in the math program, which limited her ability to have mastery experiences that might have augmented her self-efficacy. Nevertheless, it must also be acknowledged that her self-reported math anxiety was also a potential contributing factor. Thus, the m-learning activities must be accessible to all students on all devices.

At first, Evalyn was overwhelmed by the assignment that required her to convert her Google™ search findings from her phone to a .pdf format. She was further stressed when the instructor would not give instructions on how to accomplish the reformatting until the day the assignment was due. Evalyn repeated numerous times that doing the Google™ search was not tricky nor diminished her self-efficacy; the file conversion process unsettled her. Evalyn demonstrated a growth mindset as she responded to her stress. She conducted a Google™ search on how to convert files. She went to the campus library and resource center and asked for help and information on completing the task. After gathering the needed information, Evalyn attempted to convert the files independently and thus successfully completed the assignment well before the due date. As a result, Evalyn's initial diminished self-efficacy was transformed into better self-efficacy with expanded domains of confidence. Given the outcome, it is difficult to conclude that m-learning negatively affected Evalyn's self-efficacy. Nevertheless, it was her perception that being asked to do a task that she did not know how to do without being given the tools to do so in a timely way had a diminishing effect on her self-efficacy. Evalyn's perceptions inform pedagogical practices rather than act as a warning against m-learning activities.

Perceptions of FYNTS on how M-Learning Affects Emotions

The second psychosocial construct of Kahu and Nelson's (2018) SEwEI conceptual framework is emotion. The authors of the SEwEI confirmed that emotions are subjective, situational, and dynamic. Additionally, they stimulate that FYNTS are more at risk of having negative emotions towards technology, including anxiety and frustration, which may impair student engagement and success (Kahu & Nelson, 2018). Nevertheless, in this study, all 15 FYNTS participants affirmed that they perceived that using m-learning in a community college face-to-face class elicited comfortable emotions. The participants perceived using m-learning as an antecedent to feelings of curiosity, support, confidence, and excitement. One student, D.J., stated that he perceived that Kahoot!™ did not elicit an emotional response; nevertheless, later in the interview, he stated that Kahoot!™ was “fun” (D.J.). In this study, eight students expressed a perceived uncomfortable or negative emotion, including irritation and anxiety, with some m-learning activities. However, it is essential to note that these same eight students found other types of m-learning to prompt comfortable emotions.

Comfortable Emotions

There was an overwhelming response from the 15 FYNTS participants in this study that m-learning activities trigger comfortable emotions, as all 15 participants stated some form of m-learning caused comfortable emotions. These FYNTS participants perceived that m-learning activities triggered comfortable emotions such as curiosity, being supported, increased confidence, and excitement. Various m-learning activities were associated with the perception of comfortable emotions.

Six of the FYNTS participants perceived m-learning as an antecedent to positive feelings of curiosity, intrigue, and surprise. Multiple participants noted that m-learning was a surprise or different from how education was when they were last in school. The pedagogical transition to acceptance of cell phones in the classroom and actively encouraging students to use them was not only a surprise to the students but also sparked their curiosity and intrigue. D’Mello’s (2013) meta-analysis of emotions associated with learning and technology identified curiosity as one of the most frequently affective states. When students’ expectations are surpassed, feelings of surprise and joy are triggered, which can result in effective emotional engagement (Bowden et al., 2021). Creating curiosity is a cognitive engagement strategy (Halverson & Graham, 2019).

Ten of the FYNTS participants perceived various m-learning activities as directly linked to their comfortable feeling of being supported and the emotional response of excitement; this category was the most universal in this study. Sugden et al. (2021) noted that students in an online psychology course perceived activities that heightened feelings of being supported as the most beneficial to learning. Instructors must establish an environment that generates feelings of security in the student (Yarbrough, 2018). Four of the FYNTS participants specifically noted that they perceived using various m-learning activities as connected to a comfortable feeling of confidence. Ten of the FYNTS participants perceived various m-learning activities as an antecedent to their comfortable feeling of being excited. Various m-learning activities in combination with constructive pedagogical practices can lead to affirmative emotional responses in the FYNTS.

Emotional Indifference

As noted above, all 15 FYNTS participants expressed positive emotional responses to some form of m-learning. Interestingly, one student expressed early in the interview that he was indifferent emotionally to playing Kahoot!™ in the classroom. He replied, “Whatever,” when asked to describe his emotional affect when the teacher initiated Kahoot!™, D.J. explained, “I’m older.” However, later in the interview, D.J. acknowledged that he got “excited” when playing Kahoot!™

Uncomfortable Emotions

Again, all the FYNTS participants perceived that some forms of m-learning facilitated a comfortable emotional response. However, eight participants also noted that some forms of m-learning or m-learning activities caused uncomfortable emotional responses. The students' perceptions of why the m-learning activity or program led to uncomfortable emotions varied. Nevertheless, two categories were identified: irritation and anxiety.

Three of the FYNTS participants perceived m-learning activities as triggers for the uncomfortable feelings of irritation, frustration, and annoyance. Thayne was annoyed because his phone screen was cracked, and he could not see. Becca was annoyed because the math program was not sized for a phone screen. Betty felt that watching a YouTube™ video in class was not the best use of class time and became annoyed. She also expressed annoyance at a gamification program that was clunking and challenging to utilize. Again, Betty's frustration stemmed from a perceived lack of utility of these m-learning activities. Betty's frustration and annoyance align with the study by Kah et al. (2016), in which they concluded that students who experience emotions of isolation during m-learning are likely to be skewed away from emotional engagement and perceive m-learning as a waste of time.

Seven of the FYNTS participants perceived various m-learning activities as antecedents for the uncomfortable feelings of anxiety, stress, pressure, nervousness, and dread. Several of the students noted that their anxiety was triggered by fear of technology failure, such as "staying on the WI-FI" (Marie), not knowing how to use the phone for the assignment (Becca), or mis-keying an answer (Thayne). Others noted that gamification was sometimes anxiety-producing.

While seven FYNTS participants perceived some forms of m-learning as antecedents for feelings of anxiety, many of these same students expressed that they had overcome their anxiety and were successful in the m-learning activity. Emily said she "knew" that in going to college, she would have to "get out of my comfort zone" (Emily). These seven students who perceived that they felt anxious all demonstrated a growth mindset in the way they responded to their anxiety.

Perceptions of FYNTSs on How M-Learning Affects Sense of Belonging

The third psychosocial construct of Kahu and Nelson's (2018) SEwEI conceptual framework is a sense of belonging. A sense of belonging in education is portrayed as the students' connectedness to the campus, instructor, and peers (Kahu & Nelson, 2018). A positive sense of belonging can influence retention and engagement (Kahu & Nelson, 2018). Conversely, isolation can increase stress and interfere with emotional engagement (Kahu & Nelson, 2018). In this study, all 15 FYNTS participants affirmed that m-learning in a community college face-to-face class enhanced their sense of belonging. In alignment with Kahu and Nelson's (2018) SEwEI conceptual framework, a sense of belonging was explored from four domains: the instructor, their peers, the campus, and the content.

The participants perceived using m-learning increased their sense of belonging to their instructor by facilitating expectation awareness and feeling supported and connected. The participants perceived using m-learning heightened their sense of belonging to their peers by facilitating connection and receiving validation. The participants perceived that using m-learning increased their sense of belonging to the campus by eliciting feelings of the campus as a current and up-to-date institution and a place where they can be supported and successful. The participants perceived using m-learning augmented their sense of belonging to the content by facilitating deep learning, making the content accessible, and sharing the content with others. A few students perceived that m-learning had a negligible effect on the student's sense of belonging. In this study, three FYNTSs expressed a perceived diminished sense of belonging. The participants expressed feelings of isolation, intimidation, and concerns about technology breaks and the application of learning hierarchy principles.

Enhanced Sense of Belonging

In alignment with the conceptual framework of Kahu and Nelson (2018) and later works by Kahu, sense of belonging was explored from four domains: a sense of belonging with their instructor, their peers, the campus and the subject content matter (Kahu, 2013; Kahu et al., 2019; Kahu et al., 2022; Kahu & Picton, 2019; Kahu & Picton, 2022; Picton et al., 2017). A sense of belonging with their peers was perceived as the most critical, followed by a connection to the instructor (Kahu et al., 2019). Additionally, belonging appears to be a trailhead for the pathway to a student's emotional engagement and results in a cascading influence on self-efficacy, emotions, and wellbeing (Kahu et al., 2019).

Again, there was an overwhelming response from the 15 FYNTS participants in this study that m-learning activities enhanced their sense of belonging, as all 15 stated some form of m-learning improved their sense of belonging in at least one of the four domains of connection. Nevertheless, not all FYNTS participants perceived m-learning as the antecedent for a developed sense of belonging in each of the four domains. Thirteen FYNTS participants perceived m-learning heightened their sense of belonging with the instructor and peers. Eleven FYNTS participants perceived that m-learning boosted their sense of belonging to the campus. All 15 FYNTS participants perceived that m-learning heightened their sense of belonging with the course content.

Instructors. Six of the FYNTS participants perceived m-learning as facilitating an enhanced sense of belonging with the instructor by providing expectation awareness and receiving feedback. Garza et al. (2021) concluded from their analysis of the Community College Survey of Student Engagement that a sense of belonging with the instructor was most improved when the instructor provided prompt feedback. The results of this study support the findings of Garza et al. (2021) and vice versa.

Eight of the FYNTS participants perceived m-learning as facilitating an enriched sense of belonging with the instructor by eliciting a feeling of being supported, understood, and cared for. Heilporn et al. (2021) explored best practices of teaching strategies used to augment engagement in a blended learning classroom in higher education. The authors reported that clear communication, building relationships of trust, and using various digital tools worked best with undergraduate-level students. Pedagogical best practices for enriching emotional engagement, including a sense of belonging, aim to create a supportive environment with the instructor based on trust (Heilporn et al., 2021).

Eight of the FYNTS participants perceived m-learning as facilitating an enhanced sense of belonging with the instructor by facilitating connection. Heilporn et al. (2021) noted that several instructors used icebreakers to develop a sense of belonging. Leslie and Becca mentioned how their instructors used m-learning as an icebreaker and perceived it as increasing their emotional engagement. Hyrum noted a time when an instructor participated in the Kahoot!™ game along with the class, and he perceived this as significantly improving his sense of belonging with the instructor.

Peers. Eight of the FYNTS participants perceived m-learning as affecting an enhanced sense of belonging with their peers by providing opportunities for validation, double-checks, and comparisons. As noted above, a sense of belonging with peers is often the most crucial variable of emotional engagement (Garza et al., 2021; Kahu et al., 2019). Farrell and Brunton (2020) explored the perceptions of student engagement with online learning, utilizing Kahu and Nelson's (2013) conceptual framework. Farrell and Brunton (2020) noted that peer communities provided reassurance, encouragement, and classification. Ferrel and Brunton (2020) concluded that interactions within the online peer community "engendered feelings of belonging and support" (p. 15). Similarly, m-learning activities that supported peer-to-peer interactions were identified as building community and increasing a sense of belonging in this study of FYNTS's perceptions regarding m-learning's effect on emotional engagement.

Nine FYNTS participants perceived m-learning as facilitating an enhanced sense of belonging with their peers by providing opportunities to connect. Rachel noted that utilizing m-learning activities in the face-to-face classroom was the catalyst for making friends. Having peers with whom you could share, confirm, double check, and compare experiences gave the FYNTS the validation needed to feel they belonged in the classroom and amplified their sense of belonging with their peers. Picton et al. (2017) explored friendship in first-year students' university experiences and reported a significant correlation between having a friend in the classroom and a sense of belonging. Zhoc et al. (2019) also reported a high correlation between social engagement with peers and a magnified sense of belonging to the campus. Thus, while each of the four domains of sense of belonging were explored individually in this study, it appears they have a dynamic relationship among each domain.

Campus. Four of the FYNTS participants perceived m-learning as facilitating an enhanced sense of belonging with the campus by providing current technology opportunities for the students. Ten of the FYNTS participants perceived m-learning as facilitating an enhanced sense of belonging with the campus by providing support. Three of the FYNTS participants perceived m-learning as facilitating an enhanced sense of belonging with the campus by providing them with opportunities to be successful. Gopalan and Brady (2020) observed a difference in the sense of belonging between racial-ethnic minorities and first-generation students and those of more traditional students. These nontraditional student groups felt a diminished sense of belonging at 4-year institutions and a higher sense of belonging at 2-year campuses. As 11 of the FYNTS participants felt m-learning contributed to their sense of belonging to the campus, the FYNTS participant group reflected a high sense of belonging.

Content. Eight of the FYNTS participants perceived m-learning as facilitating an enhanced sense of belonging with the course content by providing an opportunity to participate in deep learning. Hegarty and Thompson (2019) noted that m-learning provided students with frequent feedback and opportunities to interact with peers and their instructors, creating favorable conditions for deep learning. Sugden et al. (2021) noted that having access and the flexibility to study in various places with an online class increased the opportunity for deep learning. Schindler et al. (2017) proposed that students may not engage in deep learning unless the instructor encourages them. Tsai et al. (2019) reported that students instructed to utilize the m-learning activity for deep learning perceived the m-learning tool more satisfactorily. Thus, m-learning combined with evidence-based active learning strategies can generate a prime environment for deep learning, strengthened emotional engagement, and a stronger sense of belonging.

Five of the FYNTS participants perceived m-learning as facilitating an enhanced sense of belonging with the course content by making the content more accessible and available to them. Yaros and Misak (2021) noted that m-learning can add to a feeling of “connected learning” (p. 218) because of the phone's ability to provide immediate access to information. Hegarty and Thompson (2019) also reported built-up engagement among students who felt that m-learning increased their access to information. Brunton et al. (2021) noted that having access and the flexibility to study in various places with an online class increased the opportunity for deep learning.

Seven of the FYNTS participants perceived m-learning as facilitating an enhanced sense of belonging with the course content, as evidenced by their sharing the things they learned while using m-learning with others. These seven FYNTSs reported sharing their pictures, what they learned in class, or the course readings with others outside the classroom. Most of the FYNTS participants disclosed that they shared the content with their family members or significant others, others reported sharing with friends, and one participant explained that the material he learned using m-learning in one class, he was able to carry into another class and share with a completely different set of students. Transference of knowledge indicates an increased connection to the course content and reflects a confirming sense of belonging with the new knowledge.

Negligible Sense of Belonging

Eight of the FYNTS participants perceived some forms of m-learning as not affecting their sense of belonging with the course content. Two participants, Jeff and Clark, perceived that m-learning and technology could not lift their sense of belonging to "people" (Jeff). The other six students who perceived m-learning as not affecting their sense of belonging to the instructor identified a specific type of m-learning that could not elicit that response, not all m-learning.

Diminished Sense of Belonging

A lack of emotional engagement in a course could result from a diminished sense of belonging. Kahu and Nelson (2018) emphasized the four psychosocial constructs as interrelated to all aspects of engagement. In this study, the focus was on the emotional domain of engagement. While all 15 FYNTS participants perceived an enhanced sense of belonging in some form, a handful expressed a diminished sense of belonging in specific instances. In most situations, the diminishing effect was due to the pedagogical practices of the instructor rather than the m-learning application.

Instructors. Two of the FYNTS participants perceived one form of m-learning as diminishing their sense of belonging with their instructor. While working on Excel™ in the classroom, Hyrum did not have any questions for the instructor, and as such, the instructor did not interact with him but instead focused their time on the students with questions. Hyrum perceived this behavior by the instructor as isolating and negatively affecting his sense of belonging. While Hyrum did express frustration with the Excel™ program, it was the way the instructor interacted, or lack thereof, not the m-learning application, that led to the feeling of isolation. Becca also expressed a diminished sense of belonging with her instructor when using an unknown program on her phone in her math class.

Peer. Two of the FYNTS participants perceived one form of m-learning as diminishing their sense of belonging with their peers. Hyrum felt using Excel™ in class was not a group or peer activity and, as such, diminished peer interaction, which Hyrum believed to be the antecedent for a sense of belonging with peers. Clark reacted similarly to Kahoot!™, stating, “You were competitive. You don’t talk to anyone; they might take your answer” (Clark). Clark stated that it was his perception that technology cannot build a sense of belonging with people; face-to-face interaction is required.

Campus. None of the FYNTS participants perceived m-learning as diminishing their sense of belonging to the campus.

Content. Two of the FYNTS participants perceived some circumstances where m-learning had limitations in enhancing their sense of belonging with the content. Students revealed that they perceived technological glitches, such as down WI-FI, poorly designed programs, or cracked phone screens, can limit their sense of belonging to the content. Mitzner et al. (2010) noted in their study on older adults and technology that most negative attitudes revolved around reliability concerns.

Clark noted that m-learning, specifically Kahoot!™, a gamification quizzing program, was suitable for “studying” but could be frustrating if used for “learning.” Upon further questioning, Clark clarified that he perceived the word “studying” to imply reviewing content material, while “learning” referred to first-time exposure to the content. Clark’s perception aligns with the work of Haring and Eaton (1978), who identified four stages of learning: acquisition (in Clark’s terms, “learning”), fluency (in Clark’s terms, “studying”), maintenance, and generalization. In Clark’s experience, it was not the m-learning that was the defining factor in his diminished sense of belonging to the content, but rather how the instructor utilized the m-learning. Sanchez et al. (2020) confirm that gamification quizzing is most beneficial when used to strengthen neural pathways and improve retention from repeat retrieval.

Perceptions of FYNTS on how M-Learning Affects Wellbeing

The fourth psychosocial construct of Kahu and Nelson’s (2018) SEwEI conceptual framework is wellbeing. Kahu and Nelson (2018) defined wellbeing as the opposite of stress. The FYNTS participants had difficulty grasping the difference between wellbeing and their emotional response to m-learning. Ryan and Deci (2001) provided more clarification on the definition of wellbeing by describing it as the "optimal experience" (p. 141) and stating that it is associated with the psychological state of functioning at your fullest potential. In education, wellbeing is the student's most optimal psychological state for learning. Stress, the opposite of wellbeing, is an inhibitor of engagement (Kahu & Nelson, 2018).

In this study, 13 FYNTS participants affirmed that they perceived that using m-learning in a community college face-to-face class enhanced their wellbeing. The participants perceived using m-learning strengthened their wellbeing by facilitating security, comfort, and confidence. Two students perceived that m-learning had a negligible effect on their wellbeing. Additionally, nine students affirmed that m-learning was not a distraction or an embarrassment to them. In this study, nine FYNTS participants perceived m-learning as diminishing wellbeing, the psychosocial construct with the most reported negative perceptions. These participants expressed feelings of intimidation, stress, embarrassment, and distraction.

Enhanced Wellbeing

Thirteen of the FYNTS participants perceived m-learning as facilitating enhanced wellbeing. Feelings of security, comfortability, and confidence evidenced an increased wellbeing. Five of the FYNTS participants perceived m-learning as facilitating enhanced wellbeing by eliciting feelings of security. Yarbrough (2018) linked wellbeing and security and recommended that instructors create learning activities that stimulate such feelings. Tinto (2019), whose seminal work could arguably be the catalyst for the extensive research on engagement, also linked security with wellbeing, as did Ryan and

Deci (2001). At the same time, Karmelita (2020) noted that insecurities among nontraditional students are often related to past educational experiences.

Seven of the FYNTS participants perceived m-learning as facilitating enhanced wellbeing by producing a feeling of being comfortable. Picton et al. (2017) concluded that friendship supported learning, especially among first-year students. Additionally, the authors noted a link in first-year students' perceptions of wellbeing and comfort. Hegarty and Thompson (2019) reported on students' perceptions of m-learning and shared that it was easy and comfortable. Huisman and Valster (2021) noted that the use of m-learning was reported to be positive by the students; nevertheless, they encouraged instructors to ensure that students were comfortable with any interface used and not to assume that students were intuitive in m-learning use. Perry and Steck (2015) also warned of the steep learning curve associated with m-learning, even when the students are already familiar with the type of device being utilized. Retalis et al. (2018) concluded that students who are more comfortable with mobile devices are more likely to have a positive experience with m-learning. Therefore, to ensure comfort among students participating in m-learning activities, it is critical to implement sound pedagogical practices along with the m-learning activity.

Five of the FYNTS participants perceived m-learning as facilitating enhanced wellbeing by triggering a feeling of confidence. When students can use devices they are already familiar with during m-learning activities, they often experience feelings of autonomy and confidence (Hegarty & Thompson, 2019). Retalis et al.(2018) claim that as students become more confident with the m-learning technology, their self-efficacy also increases. Other studies support the reciprocity noted among the four psychosocial domains of emotional engagement.

Negligible Wellbeing

Two of the FYNTS participants perceived m-learning as not diminishing or enhancing their wellbeing, which is categorized as negligible wellbeing. During the interview process, a recurring theme mentioned by the FYNTS participants was cell phones as a distraction. Both Jeff and Becca referred to the potential of cell phones as a distraction. “It's very distracting,” Becca stated. Thayne also noted that he was embarrassed by his phone being cracked. Based on the coding, follow-up questions regarding the FYNTS participants’ level of distraction or embarrassment due to m-learning were added. As a result, 10 of the FYNTS participants stated that they did not perceive m-learning as marring their wellbeing regarding distractions and embarrassment.

Diminished Wellbeing

Nine of the FYNTS participants perceived m-learning as triggering feelings of diminished wellbeing while using m-learning. Feelings of diminished wellbeing included intimidation, stress, embarrassment, and distraction. Halverson and Graham (2019) identified negative emotions associated with emotional disengagement, boredom, frustration, and anxiety. Strain and D’Mello (2015) note that boredom and frustration were especially detrimental to learning engagement with technology. The categories of diminished wellbeing align closely with Halverson and Graham's (2019) emotions of disengagement. In this study, the FYNTS participants who reported uncomfortable emotions also reported disengagement.

Two of the FYNTS participants perceived m-learning as diminishing their wellbeing by eliciting a feeling of intimidation. Becca did not perceive the unknown m-learning program in her math course to be cell phone friendly because of the “little size” of the phone screen. “It didn’t work!” (Becca). Becca reported that m-learning in this class diminished her self-efficacy, caused uncomfortable emotional responses, and diminished her sense of belonging with the instructor. Becca also expressed feelings of diminished wellbeing, stating that she felt “dread” and “I just couldn’t get the help I needed with it” (Becca). Emily also reported feeling “intimidated” because she was “not tech savvy at all” (Emily).

Two of the FYNTS participants perceived some forms of m-learning as diminishing their wellbeing by eliciting a feeling of stress and anxiety. Remembering that Kahu and Nelson (2018) defined wellbeing as the opposite of stress, students who report a perception of stress during m-learning activities are experiencing diminished wellbeing and emotional disengagement. Two of the FYNTS participants perceived aspects of m-learning as diminishing their wellbeing by drawing out a feeling of embarrassment due to the state of their phone.

Five of the FYNTS participants perceived having their phones out and accessible as diminishing their wellbeing by causing them to be distracted. Students distracted by their phones due to m-learning most likely experience decreased learning (Maker-Ainur & Teodorescu, 2023; Ma et al., 2020). While the five FYNTS participants perceived m-learning as a potential distraction, three noted that they believed it was worth it, stating that the advantages outweighed the disadvantages.

Limitations of the Study

A basic qualitative study has several limitations due to the humanistic nature of the study. As warned by Merriam and Tisdell (2016), a researcher may be tempted to generalize and make assumptions that exceed the study's boundaries. There are also the issues of bias and the subjectiveness of the coding process. I have over 24 years of experience teaching in a face-to-face community college, with many of the students being FYNTSs. For at least the last 15 years, I have integrated m-learning into the classroom learning experience. I have used m-learning gamification, polling, Google™ searches, and Canvas™, and encouraged students to take pictures as needed and to obtain contact information with their peers. To minimize bias and remain transparent, I participated in reflexivity, used a reflection journal, and frequently participated in peer debriefing. I adhered to the research design as proposed in Chapter 3. The conclusions of this study were based on the 15 FYNTS participants' recorded interviews, not on my experiences or opinions.

Additionally, I used extensive In Vivo coding and incorporated it into the analysis process. As a point of interest, the data analysis differed significantly from my projected outcomes. Additionally, I followed the proposed interview guide and the approved IRB.

A limitation in the participant selection process occurred due to the timing of the IRB approval. I received approval to recruit participants during the partnering campus's final week of the summer semester. Therefore, I had to delay recruitment until the third week of the summer term. The summer term at the campus has relatively few courses, most of which are online. Although I contacted every face-to-face instructor and visited

20 classes, I only received five volunteers to participate in the study. For many of these students, this was their first college course after a gap of several years. In the fall, I waited until the third week of the semester and began the recruitment process again. This time, I obtained an additional 10 FYNTS participants for the study. Therefore, the interviews were conducted at different times during the overall study period. Several fall participants reported barely making the first-year credit requirement of less than 30 completed units. In contrast, several summer term participants noted that this was their first college class. As the number of units was not part of the demographics of the interview process, other than less than 30 completed, there might be some correlation between the amount of exposure to m-learning.

In addition, the timing of enrollment (e.g., summer term versus fall term) might reflect different student characteristics or attitudes toward m-learning. Investigating the percentage of nontraditional students (25 years or older) enrolled in the participating institution in the fall versus the summer term revealed a variation in the student body. During the fall 2022 term, the percentage of students 25 years of age and older was 23.1%, and the percentage during the summer 2022 term was 26.2%. Additionally, the percentage of first-time students 25 years and older enrolled in the fall of 2022 was 13.6%, and those enrolled in the summer of 2022 was 7.1% (Rural California Community College, 2023). The data presented here demonstrates a potential differentiation between the student body demographics between fall and summer terms. Thus, interviewing students in both terms could potentially influence the outcomes of this study regarding attitudes toward m-learning.

Another limitation during the data collection process was the interview question regarding wellbeing. Several participants struggled with defining the term ‘wellbeing’ and had to be provided additional definitions. All participants were provided the pre-scripted definition, and those who asked received a more elaborate definition. The data gleaned from the interviewees who required further definitions provided pertinent insight into the study and was viable for coding. However, in providing additional definitions of the term ‘wellbeing,’ the added interpretation might have resulted in inconsistent or varying results.

A further limitation during the data collection process was the duration of the interviews and the drawing out of rich descriptive data. While I encouraged participants to support their statements with examples and asked numerous follow-up questions, the interviews were shorter than anticipated. To draw out a more robust and descriptive perception from the participants, I asked them to answer the questions regarding each type of m-learning they reported to have been exposed to. Nevertheless, the interviews continued to be shorter than the 1-hour anticipated duration. The shorter-than-projected interviews might have resulted in a limited depth of insight, especially in understanding the nuanced perceptions of the FYNTS participants toward m-learning.

A potential limitation during the data analysis process regarding member checking: I sent a summary of the interview and my analysis from their interview. I only received feedback from two participants, who confirmed they agreed with the summary and analysis; none of the others replied. As a qualitative study, the small sample size and limited geographic diversity might result in a lack of transferability. Nevertheless, the sample size was sufficient for qualitative research. As noted earlier, member checking was conducted to ensure accurate information and triangulation. Some potential reasons for the low member checking response rate might be the participants not checking their school emails, not recognizing the incoming text message address, or feeling redundancy or lacking the necessity for the process. As FYNTS, the participants may have limited experience with research methodology and thus not recognize the critical nature of member checking. With the low response rate to the member-checking process, the validation of this study was potentially compromised.

Recommendations

There remains a dearth of scholarly literature on the perceptions of nontraditional students at the community college level. Community colleges' student bodies often have a high percentage of nontraditional students. FYNTS frequently choose a community college as their initial starting point for higher education. Reentry students, who are also more frequently nontraditional, begin their journey for higher education at traditionally two-year institutions. More research must be conducted with this demographic in mind. In this section, I will discuss recommendations regarding m-learning integration into the face-to-face classroom where FYNTSs might attend.

This study contained limited demographic information explicitly concerning nontraditional status. While the FYNTS participants self-disclosed the number of nontraditional characteristics related to them, the number of characteristics was only used to ensure diversity in the sample. Examples of under-explored demographic subgroups within the FYNTS status might include part-time status, full-time status, reentry students, returning students, students with dependents, gender, ethnicity, financial aid recipients or grant recipients, first-generation status, veteran status, or any of the nontraditional status demographics presented in this study. A study exploring the correlation between these nontraditional subgroups and perceptions of the affective influence of m-learning on emotional engagement would benefit from a mixed-method research model. Further research that correlates perceptions of FYNTS based on the degree of nontraditional status could further add to the body of literature on the perceptions of nontraditional students.

The FYNTS participants in this study reported 15 different types of m-learning experiences. This study did not attempt to correlate the type of m-learning activity to the participants' perceptions of affect on emotional engagement other than to report which type of m-learning activity was referenced with each response. Extensive research has been done on the perception of specific types of gamification programs such as clickers and Kahoot!™. Nevertheless, further studies that focus on specific types of m-learning, including taking photos, e-books, and watching videos, are warranted, especially those that narrow their focus on nontraditional students' perceptions.

The focus on engagement in educational research is primarily due to the findings that strengthened engagement leads to increased retention and success. It is therefore recommended that further studies explore the correlation between students' perceptions of the influence of m-learning on emotional engagements and student retention and success.

It was noted numerous times that the instructors' pedagogical practices during m-learning contributed to the FYNTS participants' perception of how m-learning affected their emotional engagement. This study has shown that m-learning as a tool should be studied in tandem with applied pedagogical practices. The m-learning tool can prompt comfortable or uncomfortable emotions, depending on how it is presented and implemented in the classroom. Therefore, it is recommended that further research be conducted on m-learning instructor practices and the perceptions of these practices on FYNTSs.

With the inclusion of over 15 different types of m-learning in this study, it would be well to consider technological access among nontraditional students. It is therefore recommended that further studies be conducted on how technological accessibility and digital literacy impact the emotional engagement of m-learning among FYNTSs. Several students in this study reported that they considered themselves competent with cell phone utilization but were uncomfortable using it within the educational interface. Exploring the FYNTS's digital literacy could augment the literature on the perceptions and experiences of nontraditional students.

Based on the limitations of this study, further research on this subject should include more demographic information. Potential demographic information to incorporate into future studies might include the number of units completed when the participant first started higher education, the term in which the participant was interviewed (spring, summer, fall, etc.), the specific nontraditional characteristics of the participant, and the type of m-learning utilized. A study that correlated these characteristics would best be analyzed using a mixed-method research design.

Additionally, the definitions of terms utilized, such as self-efficacy and wellbeing, should be clearly defined and consistently presented to the participants.

Implications

This research study on the FYNTS's perceptions of how m-learning integrated with a community college face-to-face classroom affects their emotional engagement presents several implications for positive social change, both at the individual and organizational levels. First, the study exposed 12 themes and 27 categories regarding the perception of FYNTS towards m-learning in a face-to-face classroom and how it affects emotional engagement. The themes and categories lead to identifying factors influencing the FYNTS attitudes towards the use, usefulness, and limitations of m-learning in the face-to-face classroom. The 15 FYNTS participants' contributions to this qualitative study are meaningful as they provided deep, rich descriptions that lead to an immersed understanding of the topic.

The second contribution of this study is that it adds to the body of research on the perceptions of FYNTS towards m-learning and emotional engagement. The initial pretext for this study was concern that FYNTSs enrolled at a community college did not perceive m-learning as facilitating their emotional engagement but rather that m-learning was triggering disengagement. Providing inclusive educational experiences to all demographic groups is critical for ensuring accessible learning to a diverse population. Such insight and understanding of the FYNTS's perceptions of m-learning could inform the future development of m-learning tools specifically tailored to the needs and preferences of the nontraditional student in mind. Additionally, the increased awareness of the FYNTS's perceptions can inform educators in choosing which m-learning tool to integrate into the classroom and course learning materials.

Therefore, thirdly and unexpectedly for this researcher, the results from this study confirmed previous research and findings from other studies on m-learning and emotional engagement without regard to their nontraditional, first-year, or community college status (Beatson et al., 2020; France et al., 2021; Liu & Correia, 2021). Such studies confirmed that m-learning is perceived in a primarily positive light by students in higher education. Nevertheless, the primary factor in the students' perception of m-learning is the instructor's pedagogy more than the m-learning tool itself. As this study demonstrated, m-learning programs or devices not designed for cell phones and not thoroughly vetted for practical use on multiple devices were more likely to cause negative emotional responses. Therefore, m-learning programs, which have been widely tested for accessibility, may be an inclusive tool for engagement if combined with sound pedagogical practices. Pedagogy training for educators related to m-learning integration with diverse student populations can be provided through various professional development formats, including workshops, mentoring, advancement courses, conferences, seminars, and webinars.

As pedagogical approaches have been shown to influence significantly the FYNTS's emotional engagement with m-learning, it is critical to provide educators with training on integrating m-learning into the educational interface most effectively. Considering the diverse backgrounds, needs, and experiences of the FYNTS, the training for instructors must include inclusive integration practices. Even within the student subgroup of nontraditional students, there was a variation in what m-learning activities led to enhanced emotional engagement. M-learning is not a one-size-fits-all, and as with any teaching tool, it must be aligned with the desired learning outcome and tailored to meet the individual student's needs. Many higher education instructors receive minimal training in pedagogical practices, and even fewer have obtained training on implementing m-learning in the classroom (Budwig & Johnson Alexander, 2020; Postareff et al., 2007). Thus, psychosocial pedagogical techniques must be implemented in classrooms to engage the nontraditional community college student (Griffin, 2020).

Lastly, a potential implication of this study is to provide faculty, administration, and other key stakeholders with a deeper understanding of the perceptions of FYNTSs regarding the m-learning tools utilized in community college classrooms. Accordingly, instructors can provide a more accessible learning experience, theoretically boosting emotional engagement. As this study demonstrates, many students face barriers when utilizing m-learning in the classroom. As this study demonstrates, instructors can benefit from understanding the need to provide timely instruction on performing the expected m-learning tasks and not wait until the due date to explain how to accomplish the assignment (see Evalyn). Additionally, software programs that are not assessed to be effective on multiple types of m-learning devices can cause intimidation, "dread" (Becca), and anxiety (Hyrum) in students. From this insight, instructors should be encouraged to integrate only vetted m-learning programs into their courses. Another barrier to m-learning reported in this study was cracked screens or damaged phones (Thayne). Instructors need to provide accommodation for students who do not have functioning cell phones. Thus, an increased awareness of the FYNTS's perceptions of m-learning can guide the instructor's pedagogical practices.

Enlightening instructors on the positive influence of m-learning in the classroom on the FYNTS's self-efficacy, emotions, sense of belonging, and wellbeing, may encourage reluctant presenters to embrace cell phone access in the classroom. Educating instructors that FYNTSs often have an increased sense of comfort and security when they can have their cell phones accessible in class may also convert hesitant teachers to try m-learning as an educational tool. Cell phones are not just a distraction and tool for cheating but can be an instrument for learning, connection, and enhanced emotional engagement. Enhanced emotional engagement is a known precursor for student retention and success.

Again, this study demonstrates that the application strategy of m-learning technology is the most frequent influencer for the enriched emotional engagement of the FYNTS. For example, personal interactions between the student and instructor are critical to enhancing a sense of belonging in students. Instructors need to provide positive feedback to students who can accomplish the m-learning tasks without help and provide assistance and help to those who are struggling. Not doing so can lead students to feel isolated from the class (see Hyrum). Encouraging students to utilize m-learning technology in peer-to-peer discussions can validate their learning and enhance their confidence (Willamina). Pedagogy drives the potential for enhanced emotional engagement.

Through a deeper understanding of the perceptions of the nontraditional student, faculty can better prepare and implement inclusive pedagogical practices that can promote and enhance the student's learning experience by augmenting their emotional engagement with m-learning. The analysis of the participants' interviews provided insight into the best pedagogical practices for the use of m-learning in a class with nontraditional students. Based on the evidence presented in this study, rapid feedback, multiple points of connection and interaction, ready access to information, a time for reflection during peer discussion, and supportive gamification are all examples of ways that m-learning can enhance the emotional engagement of FYNTS'.

The outcomes of this study may be used to guide stakeholder's understanding of the application of m-learning in the face-to-face classroom and inform policies and purchasing of m-learning technology applications. The findings in this study can influence broader educational policies, such as discouraging anti-cell phone policies in the classroom and promoting active learning strategies, including m-learning, to enhance the emotional engagement of all students, including nontraditional students. Findings may be used to expand institutional strategies for technology integration, including increased resources and information on utilizing cell phones and m-learning in the educational experience and providing and encouraging professional development on m-learning pedagogical practices. Funding allocation is also an area that could be influenced by this study, with stakeholders allotting increased funding for technology development, especially designs with the FYNTS perceptions in mind. Additionally, stakeholders should consider investing in campus, district, or state-wide m-learning platforms that boost emotional engagement among diverse student communities.

Conclusion

The problem addressed in this study is the lack of research into the FYNTS's perception of m-learning in a face-to-face community college classroom and how it affected emotional engagement. The number of FYNTSs who initially seek community college to achieve their educational goals is increasing. To the point that nontraditional students represent a high percentage of the community college student body (Community College League of California, 2019; Griffin, 2020; Juszkiewicz, 2020; United States Department of Education, National Center for Educational Statistics, 2019; Pratt, 2017; Rabourn et al., 2018). Unfortunately, FYNTSs are considered a high-risk group for disengagement (Bean & Metzner, 1985; Brewer & Yucedag-Ozcan, 2013; Ellis, 2019; Hunter-Johnson, 2017; Juszkiewicz, 2020; Shapiro et al., 2017). Engagement dynamic influences learners' academic success (Kahu, 2013; Kahu & Nelson, 2018). Adding to the educational interface is m-learning and other forms of technology, which have become integrated into many classrooms, including at the community college level (Kenyon et al., 2019). Thus, academic stakeholders must understand the unique perceptions of FYNTSs on topics that can sway or modify their academic success.

The purpose of this qualitative study is to explore the FYNTSs' perceptions of how mobile technology integration in the face-to-face community college classroom affects their emotional engagement. Understanding the perceptions of these at-risk students can facilitate the use of m-learning pedagogical practices in the classroom. To accomplish this purpose, I utilized the conceptual framework of Kahu and Nelson's (2018) SEWIE as the guiding configuration to explore FYNTS' perceptions of m-learning and how it affects emotional engagement. A semi-structured interview was conducted to gain rich data on the FYNTS participants' perceptions of how m-learning in a face-to-face community college classroom affects emotional engagement.

The key findings of this study revealed that the FYNTS participants often perceived the utilization of m-learning in a community college face-to-face classroom as positively affecting emotional engagement. All of the participants of this study reported that some forms and instances of m-learning triggered comfortable emotions, heightening their sense of belonging with their instructor, peers, the campus, and the content, or augmented their self-efficacy and wellbeing. Nevertheless, several of these same FYNTS participants reported diminishing emotional engagement during m-learning activities with different instructors, m-learning activities, or circumstances. As mentioned several times by the FYNTS participants, m-learning is a tool. Since m-learning is only a tool, it must be employed with sound, evidence-based practices if it is to enhance the emotional engagement of the FYNTS and influence student retention and success (Chien et al., 2016; France et al., 2021; Schindler et al., 2017; Weiss, 2020).

The results of this study help to understand the FYNST's perceptions of m-learning in a face-to-face community college classroom and how it affected emotional engagement. As qualitative research is used in the initial stages of phenomenon exploration (Crawford, 2020), this study addresses a gap in the literature. It provides a groundwork for future scientific literature on the perceptions of FYNTS on m-learning and emotional engagement. The outcomes of this study have added to the body of research on the perceptions of FYNTS towards m-learning and emotional engagement.

Moreover, the results of this study confirmed previous research and findings on the potentially positive include of m-learning on emotional engagement (Beatson et al., 2020; France et al., 2021; Liu & Correia, 2021).

This study presents factors contributing to the FYNTS attitudes regarding the use, usefulness, and limitations of how m-learning affects their emotional engagement in the face-to-face classroom. The results of this study help to understand why some FYNTS perceive m-learning as leading to enhanced emotional engagement and, at other times, leading to disengagement. By understanding the FYNTS perceptions of m-learning on emotional engagement, stakeholders will be more aware of how implementing m-learning in the face-to-face classroom can enhance the emotional engagement of all students, including FYNTSs. Evidence-based pedagogical practices linked with m-learning tools must be implemented to boost emotional engagement positively. Any tool that is managed incorrectly can produce disastrous results. Providing inclusive educational experiences to all demographic groups is critical for ensuring accessible learning to a diverse population.

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Appendix A: Interest Survey Instrument

Are you interested in being in a research study whose purpose is to explore the perceptions of first-year nontraditional students on m-learning in the classroom and its influence on emotional engagement?

Criteria for participation: (Can you answer "yes" to each of the following questions?)

1. Are you currently enrolled in a community college class, or have you been enrolled in the last 23 months?
2. Are you 25 years of age or older?
3. Have you successfully completed less than 30 semester units in college?
4. Are you currently enrolled (or enrolled in the past six months) in a face-to-face course where the instructor asked the class to "get out your cell phones" as part of the learning experience?

If you answered YES to all the above questions and are willing to participate in a one-time, less than one-hour recorded interview, please complete the contact information and return it to contact Elizabeth Keele at XXX-XXX-XXXX (text messages ok) or email elizabeth.keele@waldenu.edu. I can answer Yes to each of the above questions. I am willing to participate in a one-time recorded interview on my perception of assigned cell phone use in the classroom.

Name: ____

Preferred contact method:

Email address: ____

Cell phone number: ___________________________________

Appendix B: Interview Guide

Interview Introduction

Participant #______________________

Date: _______________________

Time started: ______________________

Time ended: _______________________

Interview conducted via:____

Interview Introduction:

Hello ______________________________, Thank you so much for volunteering and being willing to participate in this study. I want to ensure your privacy. (If via Zoom or Microsoft Teams) Are you in a location where you are comfortable conducting this interview? (If in person) Is this place comfortable for you to conduct this interview?

As a reminder, I will be recording this interview to ensure I capture your exact words. With your permission, may I start the recording? Thank you.

Start Recording

I am Elizabeth Keele, an Ed.D. student at Walden University interviewing participant number _____________.

I look forward to learning about your perceptions of cell phone use in a community college classroom and its influence on your emotional engagement. As we begin, I would like to review the parameters for your participation.

You have provided consent to participate in this study, and I have that consent here. This is your consent, correct? (Present the participant with a copy of the consent form.) By agreeing to participate, you agree to participate in a one-time, individual interview and, if needed, a follow-up email conversation. This interview should last less than one hour. This study is voluntary, and you may choose to refuse to answer a question or withdraw from the study at any time. There are no significant risks or benefits to being in the study. However, your participation will contribute to the body of knowledge regarding how nontraditional first-year students perceive m-learning influences emotional engagement in a community college classroom.

As I mentioned in the consent, I am recording our conversation to avoid missing anything. The recording will not be published or made available to anyone other than myself. During the interview, I may also take notes and ask follow-up questions. In a few days, I will provide you with a transcription (via email), so you can ensure it is accurate and that I got everything right.

Also, as noted in the consent, your name and personal identifying information will remain confidential and will not be published. This is very important to me, and I will be diligent in maintaining your confidentiality and anonymity.

Do you have any questions before we begin?

Interview Questions – Confirmation of Inclusion Criteria

To ensure that you meet the parameters of this study, I would like to confirm the following:

1. Are you currently enrolled in a community college class, or have you been enrolled in the last 23 months?
2. Have you been in a community college classroom where the instructor requested that you, as a student, use your cell phone as part of a learning activity?
3. Have you successfully completed less than 30 units of higher education courses?
4. Are you over the age of 25?

Thank you.

Interview Questions – Beginning

I will ask questions about your experiences and perceptions in this interview. Please know that this interview has no "wrong" or "right" answers. I am searching for honest and heartfelt responses to these questions. I am attempting to understand how first-year, nontraditional community college students perceive m-learning implementation in the classroom influences emotional engagement. I know that is a mouthful! Basically, I want to understand how using a cell phone as a learning tool influences your academic emotional engagement. Where possible, please answer the questions with as much detail as you feel comfortable; share a story or example that illustrates your message and answer. I will encourage you to answer the questions fully by asking follow-up questions, pausing, and allowing time for you to respond. I will also use verbal and non-verbal cues to encourage further discussion and explanation. Please do not misinterpret my head nodding or verbal encouragers as affirmation or disagreement with your answers.

To get started, I would like to know about your cell phone use. *These questions are not designed to collect demographic information but to provide context for the interview and help the participant acclimate to the format and topic.*

1. Do you own a "smart" cell phone?
2. What kinds of things do you use your cell phone for?
3. How often do you use your cell phone for schoolwork?
4. How do you use your cell phone for learning or schoolwork?
5. Do you take your cell phone with you to class?
6. Do you take any other mobile devices with you to your college classes? This could be a tablet, laptop, or student response system (clicker).
7. Do you take these devices to all your classes or just some?
8. Would you consider yourself to be technology savvy?
    a. That is interesting – why do you think that?
9. You mentioned that you have been in a community college classroom, where the instructor requested that you, as a student, "pull out your cell phone" and participate in a learning activity. Can you please share some examples of what learning activities you were asked to join and your general feeling about each activity?
    a. Probing questions:

b. Some examples of applications you might have been asked to participate in include Kahoot™, Quizizz™, Poll everywhere™, Socrative™, and Duoling™, just to name a few. Have you ever been asked to engage in these? Which ones?

Interview Questions – Guiding Research Questions

1. You mentioned that you have been asked to participate in ___________________(identify an application or m-learning strategies the participant mentioned above). Please describe how, if at all, you participated (engaged) in the cell phone activity. (*Emotional engagement*)
    a. Why did you participate in the way you did?
    b. How would you describe the intensity of your emotional engagement (participation)?
    c. How would you describe your enthusiasm to participate in the cell phone activity?
2. When the instructor asked you to participate in ________________, did this affect your sense of belonging in the class? To make sure we are all on the same page here, a sense of belonging is a feeling of connection with others; this could include the staff, instructors, other students, the area of study, or even the college.
    a. How did m-learning affect your sense of belonging?
    b. Can you give an example of how it affected your sense of belonging and connection?
    c. Did you socialize with your peers in the classroom?

d. What did you talk about?

e. How did it affect your connection to your peers or classmates? How? Can you give an example, please?

f. How did it affect your connection to the instructor? How? Can you give an example, please?

g. Did m-learning affect your feelings of connection to the content or subject matter? How? Can you give an example, please?

h. Did m-learning affect your feelings of connection to others outside of the classroom? Who and how?

i. Did this m-learning activity affect your feelings of connection to the college campus? How? What part specifically? Can you give an example, please?

3. Please think back to when you were asked to participate in ________________________(see above application of -m-learning strategy). How did you respond emotionally when the teacher asked you to get your cell phone or another mobile device out? Please describe… To ensure we are all on the same page here, emotions or emotional responses would be a description of your feelings and personal emotional experience. (*Emotions*)

   a. Can you describe for me your emotions or emotional response while you were participating (or not participating) in the activity? Please elaborate.

   b. Did your response change over time?

   c. Can you describe for me your emotions or emotional response after the cell phone activity concluded? Please explain.

4. When the instructor asked you to participate in ________________, how did this affect your confidence in your ability to succeed in the class? To make sure we are all on the same page here, confidence is a belief in your ability to be successful.
   a. Are you saying it did not influence your confidence level?
   b. How did the m-learning activity influence your confidence level outside of the classroom?
   c. How did the m-learning activity influence your confidence level in other classes you might be taking or going to take?
5. When the instructor asked you to participate in ________________, did this affect your wellbeing? Again, to ensure we are all on the same page, wellbeing is the opposite of stress. Wellbeing is a state where you can work productively and creatively, build strong relationships, and contribute. It is that feeling you get when you are motivated to succeed.
   a. How did m-learning affect your wellbeing?
   b. Did the influence of using the cell phone on wellbeing change over time?

Repeat questions, inserting the different modalities and applications of cell phone use.

Interview Questions – Nontraditional Demographics Continuum

A significant part of this study involves the concept of nontraditional students. I would like to ask you to review the following list of potential nontraditional characteristics and tell me how many of these characteristics apply to you. I do not need to know which ones, just the number that you respond yes to. I would happily explain any "characteristics" – some of these terms are confusing.

1. Are you 25 years of age or over?
2. Did you not attend college right after high school? (You did not enter college in the same calendar year you finished high school)?
3. Did you either not finish high school
4. Did you complete high school with a GED (or another similar high school certificate)?
5. Do you work full-time (35+ hours/week) while attending school?
6. Did you attend college part-time for at least part of the academic year?
7. Did you have a gap in your college attendance (meaning you started and then stopped attending college for a semester)?
8. Are you considered financially independent concerning financial aid eligibility? (You are not supported financially by a parent or guardian)?
9. Do you have a dependent other than a spouse (such as a child or dependent adult for whom you are the primary caregiver)?
10. Are you a single parent?

Interview Closing

1. Ask any clarification or follow-up questions as needed.

2. Is there anything else you would like to add about m-learning in the community college setting and its influence on your academic and emotional engagement that I did not ask?

Interview Conclusion

Thank you so much for your willingness to take the time to talk with me about your perceptions and experiences. Your perceptions have provided me insight into your emotional engagement during m-learning activities.

(Face-to-face interview) Here is a gift card to thank you for your time and assistance in this project. (Video conferencing) I want to send you a gift card to thank you for participating. Can I send it via email?

Within the next two weeks, I will email you a copy of the summary of this interview for you to review. The follow-up email may also include a few clarifying questions. You may contact me by email or phone if you have any questions about the process or results.

Again, thank you for participating in my study and sharing your encounters with m-learning with me.

Stop Recording.

Appendix C: Permission to use SEwEI Framework Figure

Request to utilize conceptual framework graphic

1

EK

Ella Kahu <E.R.Kahu@massey.ac.nz>

To: Elizabeth Keele

Wed 8/31/2022 12:43 AM

Framework of student engag...
15 MB

Hi Elizabeth

Sounds like a valuable project – it is always good when I hear of my work being used to further important topics.

You are more than welcome to use the image of the framework and I have attached a good quality TIFF file which may be useful.

All the best with your doctoral studies

Ella

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