EXPERIENCES OF UNDERGRADUATE UNIVERSITY STUDENTS' USE OF SMARTPHONES IN COLLEGE CLASSROOMS

by

SHI HUH SAMUEL SHAN

(Under the Direction of John Mativo)

ABSTRACT

Smartphones have become the most popular device utilized by college students in their classrooms due to their mobility and computer capabilities (Tamayo et al., 2024). Studies focus on the disruptive nature associated with smartphones (Das & Ahmed, 2023), but few investigate why college students continue to use smartphones in class when they perceive smartphones to be disruptive. The purpose of this qualitative interview study is to contribute to this area of research and better understand how an undergraduate university student perceives the use of smartphones in college classrooms.

A semi-structured interview was used with ten participants to better understand two key research questions: (1) How do undergraduate university students perceive the use of smartphones in a face-to-face college classroom? (2) What experiences and behaviors motivate undergraduate university students to use their smartphones in a face-to-face college classroom? Predetermined codes from the determinants of the Unified Theory of Technology Acceptance and Use of Technology 2 (Venkatesh et al., 2012) were used deductively to identify codes from participant responses, and data emerged inductively.

Codes that were identified from the determinants of UTAUT2 include: (1) usefulness, (2) ease of use, (3) social factors and influences, (4) external motivations, (5) facilitating conditions – perceived control, (6) habits, and (7) hedonistic motivations. Codes identified inductively include: (1) class size, (2) teaching methods, (3) distractions, (4) self-regulation, (5) boredom, (6) respect for teachers, (7) accountability and responsibility, and (8) smartphone policy. The significant outcome of coding revealed a central theme of class sizes.

Findings from this study indicated participants perceived they formed habits toward smartphone use in their daily lives which crossed into classrooms. Participants acknowledged they will use their smartphones in class when they get bored from disengaged teaching methods, and when conditions were favorable for use without being noticed. Participants agreed they self-regulate smartphone use when teaching methods were engaging and conditions were unfavorable to use smartphones without being noticed. Class size emerged as the central theme where all participants described usage in large, auditorium style classrooms compared to restricting use in small, more intimate classrooms where students formed closer, more personal relationships with teachers. As for smartphone policies, the general perception of all participants was they prefer smartphone use in college classrooms to be discouraged and not banned.

INDEX WORDS: Undergraduate University Classrooms, College Students, Smartphone Usage, Lived Experiences, Academic Purposes, Non-academic Purposes, Educational Technology, Higher Education Policies, Qualitative Research, Qualitative Interview

EXPERIENCES OF UNDERGRADUATE UNIVERSITY STUDENTS' USE OF SMARTPHONES IN COLLEGE CLASSROOMS

by

SHI HUH SAMUEL SHAN

B.S., Georgia State University, 2012

M.S., Georgia State University, 2015

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF EDUCATION

ATHENS, GEORGIA

2025

EXPERIENCES OF UNDERGRADUATE UNIVERSITY STUDENTS' USE OF SMARTPHONES IN COLLEGE CLASSROOMS

by

SHI HUH SAMUEL SHAN

Major Professor:	John Mativo
Committee:	Janette Hill
	Andrew Jackson

Electronic Version Approved:

Ron Walcott
Vice Provost for Graduate Education and Dean of the Graduate School
The University of Georgia
May 2025

ACKNOWLEDGEMENTS

First and foremost, I am very grateful for my family and the sacrifices they made along the way to help ensure I complete this professional goal. I would like to thank my program professor and committee chair, Dr. John Mativo, for his support and guidance throughout this process, I could not have completed this journey without his advisement. I am also forever indebted to my committee members, Dr. Janette Hill, and Dr. Andrew Jackson. Dr. Hill, I am forever grateful for the advisement you provided me in your qualitative course which opened my eyes to an area of research I avoided in the past. You were right, my research goals for this dissertation were well suited for qualitative study. Dr. Jackson, all your feedback was invaluable for completion of the writing portion of this dissertation. Thank you for taking so much time to review the submissions of my drafts.

I would also like to thank the department of Workforce Education at UGA and all the faculty who collaborated with me throughout my journey. I learned so much from all of you throughout my time in this program. Thank you, Melanie Peiper, for your administrative assistance. I also want to provide appreciation to all who assisted me in the TAP departments at GSU and UGA, your contributions were invaluable for completing this program of study. Lastly, I thank my colleagues in the department of Respiratory Therapy at GSU for their support in completing this professional goal.

TABLE OF CONTENTS

Page

LIST OF FIGURES viii

LIST OF TABLES ix

CHAPTER

1 INTRODUCTION 1

Introduction 1

Research Questions 4

Importance of Study 7

Statement of Problem 8

2 REVIEW OF LITERATURE 10

Introduction 10

Review of Research: Foundation of Educational Technology 11

Review of Research: Smartphones as Education Technology 14

Review of Research: Smartphones in the College Student Demographic 18

Review of Research: Smartphone Perception in Higher Education 22

Review of Research: Educational Technology Policies in College Classrooms 25

Conceptual Framework 29

3 METHODS 44

Introduction 44

Research Design 45

Research Questions 46
Participants 47
Procedure 47
Methods for Data Collection 48
Data Analysis 50
Limitations 56
Trustworthiness 58
Subjectivity Statement 62
4 PARTICIPANT PROFILES 65
Interview Responses 65
5 Results 77
Introduction 77
Discussion of Results 78
Codes Identified from UTAUT2 79
Codes Identified Inductively 96
Themes 112
Summary of Findings 125
6 CONCLUSIONS AND RECOMMENDATIONS 127
Conclusion 127
Future Research Recommendations 129
Implications for Practice 131
Personal Journey 133
REFERENCES 135

APPENDICES

A Interview Protocol and Interview questions 149

B Determinants of UTAUT2 used as a pre-set list of codes 152

LIST OF FIGURES

Page

Figure 1: Technology Acceptance Model (TAM) 30

Figure 2: Extension of Technology Acceptance Model (TAM2) 31

Figure 3: Theory of Reasoned Action (TRA) 32

Figure 4: Models of UTAUT and Determinants 33

Figure 5: Theory of Planned Behavior (TPB) 34

Figure 6: Innovation Diffusion Theory (IDT) 35

Figure 7: Motivational Model (MM) 36

Figure 8: Model of PC Utilization (MPCU) 37

Figure 9: Social Cognitive Theory (SCT) 38

Figure 10: Unified Theories of Acceptance and Use of Technology (UTAUT) 39

Figure 11: Unified Theories of Acceptance and Use of Technology (UTAUT) 39

Figure 12: Unified Theories of Acceptance and Use of Technology 2 (UTAUT2) 41

LIST OF TABLES

Page

Table 1: Codes from Determinants of UTAUT2 78

Table 2: Codes Identified Inductively.....97

Table 3: Prominent Codes Interconnected with Habitual Behavior in Classrooms.....114

CHAPTER 1

INTRODUCTION

Technology has developed exponentially over the past three decades to become an important part of people's lives (Joshi et al., 2022). Information and communication technologies are at the forefront of this technological growth. Today there is a more accessible web of information in the world than ever before. During the last decade, mobile technology has become the communication tool society has adopted the most due to their portability and affordability (Das & Ahmed, 2023; Tamayo et al., 2024). The smartphone could be viewed as a convergence between a phone and handheld computer, which society continues to adopt in place of traditional computers to access functions such as email applications, online banking, online shopping, and bill paying (Kibona & Rugina, 2015).

Mobile devices, including smartphones, are documented to be extremely influential to our children and students (Fernandez, 2018). The Pew Research Center and its Pew Internet and American Life Project has documented most Americans now own a cellphone of some kind, and smartphones contribute to most of that ownership (Project History, 2024). This evidence suggests smartphones have impacted all walks of American life and their usage should be investigated.

There have been a growing number of studies that have both documented and explored the significance of mobile devices, including smartphones, to their use in learning environments (Das & Ahmed, 2023; Joshi et al., 2022; Tamayo et al., 2024). Most university students around the world carry smartphones during the university day, using them for

personal purposes (Tamayo et al., 2024). Pew research statistics (2024) showed that the college student demographic (ages 18-29) has a 100% cellphone ownership rate, and smartphones make up 96% of this share.

University students are zealous about the adoption of smartphones due to their affordability and mobility, and they are using their smartphones for communicating by voice, text, email, digital photographs, videos, and social media (Joshi et al., 2022; Tamayo et al., 2024). I teach college level courses in face-to-face university classrooms, and I can attest that the number of college students using their smartphones during class has increased over the last few years. Furthermore, smartphone social media apps provide the user with the ability to check their social media sites anywhere and anytime, and I have witnessed this behavior from students attending my courses.

Educational technology is also evolving, and new communication discoveries have impacted on the foundation in which teachers practice (Roberts, 2017). Examples of classroom technologies range from the invention and adoption of the first paper and pen (which led to printed textbooks) to the chalk board and the overhead projector, and currently, powerful software driven digital computing devices. A pen and a piece of paper are each a form of communication technology; however, the scope of this study will be focused on newer, more advanced forms including portable electronic computer-based technology such as smartphones. A smartphone could be considered an educational technology with many studies documenting their effective incorporation into pedagogy to engage student learning (Velayati, 2015).

Modern technological advancements such as smartphones have altered the interactions between teachers and students in classrooms from a didactic/teacher-centered approach

(passive learning environment) to a student-centered (active learning environment) and inquiry-guided approach (Roberts, 2017). I struggle with this transition from more traditional teaching approaches to modern technological approaches. I do not have the guidance or background to effectively incorporate a device such as a smartphone into my teaching practice. I only have my personal experience as an instructor to rely on, and my experience with students' smartphone use in my classrooms has been negative. I associate smartphone use in my classrooms as distractions, and I ban smartphones in my classroom policies.

My lack of understanding from the university students' point of view motivated me to explore college students' perceptions on the use of personal smartphones in undergraduate university classrooms. My inability to empathize with my students on this matter motivated me to investigate recent studies which documented college students and their use of smartphones in class. Many studies surveyed students' perceptions, and the findings demonstrated college students will use their smartphones in class regardless of classroom policy, but few provided details from the students' perspective on *why* (Das & Ahmed, 2023; Joshi et al., 2022; Tamayo et al., 2024).

The purpose of this study was to discover and understand why an individual college student will use their personal smartphone in class for academic and non-academic purposes. Additionally, this study investigated the experiences and behaviors which could motivate a college student to use their personal smartphone in the university classroom, while gaining a deeper understanding of their perspectives on how they view others using smartphones in class. Detailed findings from the students' perspective could contribute to a broader understanding of how college students feel about smartphone usage in class, which could assist me and other educators in how to regulate smartphone use in classes.

Students I have encountered in my classrooms seem to demonstrate a more positive perception on smartphone usage in class, and findings from recent studies are consistent with my assumption (Das & Ahmed, 2023). What was interesting and unexpected was that the research also indicates that college students were also aware of the potential negative effects of mobile devices that cause distractions in classrooms, but they still chose to use them (Das & Ahmed, 2023). Langan et al. (2016) analyzed the perceptions of university students through interviews and observations which revealed students' responses acknowledged the disruptive nature of smartphone use in classrooms; therefore, they understood not to use smartphones in classes. However, observations of those students revealed their actions did not align with their responses, they continued to use smartphones in classes. Studies also demonstrated that students perceived smartphones to be distracting in face-to-face learning; however, they perceived smartphones to be beneficial for information gathering and knowledge building in remote or self-directed learning (Das & Ahmed, 2023).

There seems to be a contradiction in how college students perceive the use of smartphones in class which required further investigation from their point of view. This study's focus was to discover and clarify this perspective from the students' vantage point.

Research Questions

The aim of this research was to answer the following questions:

1. How do undergraduate university students perceive the use of smartphones in a face-to-face college classroom?

2. What experiences and behaviors motivate undergraduate university students to use their smartphones in a face-to-face college classroom?

Students in modern educational settings are keen on up-to-date technology, and they recognize technology incorporated into teaching as a standard practice, not a unique experience (Eiland & Todd, 2019). Although research suggested technological advancements in classrooms demonstrated a more effective and efficient learning opportunity, some advancements (for example, smartphones) have shown to disrupt an educational environment (Das & Ahmed, 2023; Han & Yi, 2018; Joshi et al., 2022).

Teachers' perceptions on the use of smartphones in college classrooms are more negative and the findings from literature demonstrated an *unwelcome* perception (Das & Ahmed, 2023; Langan et al., 2016). The faculty found the students' use of mobile devices to be distracting to other students or to themselves in the classroom. Administrators and teachers are pivotal components of the college classroom setting but they are not included in this study. They mostly perceive smartphone use in classrooms to be a distraction and a hinderance to learning. Therefore, most teachers and administrators, even those who perceive cellphones as a positive force in engaging students, favor policy that may best define and limit cellphone use for effective implementation or use (Das & Ahmed, 2023; Rashid-Doubell et al., 2016)

Alternative mobile technologies that are comparable to smartphones which could facilitate or disrupt learning in college classrooms are laptops and tablets (Reisdorf et al., 2020). Tablets are comparable to smartphones, but tablets tend to be bulky and not carried as often to classrooms in comparison to smartphones which are compact and more portable (Pearson, 2015). Tablets are not used as frequently by college students because the preferred mobile technology college students depend on are laptops and smartphones. Laptops are accepted by college instructors in their classrooms due to the enhanced keyboard function which allows students to take notes more efficiently and gain access to digital information

(Reisdorf et al., 2020). However, smartphones are gaining ground on their popularity for usage in college classrooms as technological advances provide more comparable functions to laptops while maintaining the advantage of convenience, portability, and affordability (Poll, 2015).

Digital textbooks or e-textbooks have gained popularity in their adoption over the traditional hardback textbooks required by college professors. This trend has shifted college classroom practices to require a device capable of using the digital textbook (Raible & Denoyelles, 2017). The adoption of e-textbooks and other digital educational technologies has created pre-requisites for attending a college classroom which include the ownership of a portable computing device such as smartphones and laptops (Raible & Denoyelles, 2017). Colleges are currently requiring enrolling students to purchase and own a laptop or a computer-based device capable of completing digital or remote learning (Gonzales et al., 2018; Reisdorf et al., 2020; Van Deursen & Van Dijk, 2019). I also utilize digital textbooks in the courses I teach for the sake of saving the students from inflated costs associated with hardback textbooks. I have observed that the students in the courses I teach tend to use smartphones and laptops in class to access digital platforms.

Technology policies in classrooms can be defined as any set of rules regulating the use of wireless communication technologies in the classroom (Finn & Ledbetter, 2013). Studies revealed student performance suffered (regardless of type of policy) when a cellphone was used or available in class, while student performance significantly increased when cellphones were totally disallowed and unavailable to the student in class (Das & Ahmed, 2023; Lee et al., 2017). Many college instructors have a cellphone policy in place to regulate its use to limit distractions in class and they also focus usage for academic purposes (Morris & Sarapin,

2017). Morris and Sarapin (2017) revealed penalties varied and there was disorganization from university administrators which created confusion among students on what was regulated or unregulated use. The disorganization and the lack of guidance from university administrators also created confusion among college instructors on how to set the rules for cellphone use in class (Das & Ahmed, 2023). This study aims to explore and discover the students' voice on how to best set the rules for smartphone use in class.

Educational policy research noted a qualitative inquiry was well suited to discover the students' voice necessary in achieving social validity which could guide classroom policies involving digital technologies (Kozleski, 2017). Brantlinger et al. (2005) noted qualitative research was derived from experience and could produce knowledge about perspectives, settings, and techniques. Qualitative methods could help us understand the nature of classrooms as socially and culturally organized environments for learning (Erickson & Gutiérrez, 2002; Morningstar et al., 2015). Thus, we may better understand how classroom policies seem to work for some students, but not for others through a qualitative interview. Kozleski (2017) recommended a need for qualitative methods when examining policies because they may be the best choice for revealing the everyday activities of lived experiences in classrooms that often go unexamined.

Importance of Study

There has been a growing emphasis on research that has both documented and explored the importance of mobile devices, including smartphones, to their use in higher education learning environments due to increasingly rapid adoption of smartphones in the college student demographic (Das & Ahmed, 2023; Joshi et al., 2022). Smartphones have become the most popular device utilized by university students in classrooms due to their mobility and

capabilities to connect to the internet, check emails, text, connect to social media, etc. (Tamayo et al., 2024). The number of college students using their cellphones during class has increased over the last few years due to computerlike enhancements which the smartphone currently offers (Joshi et al., 2022). This classroom trend has motivated researchers to investigate the disruptive nature of mobile technologies in university classrooms. Research has documented both positive and negative impacts in higher education classroom environments.

Statement of Problem

Many studies focus on the disruptive nature and negative impacts associated with mobile technologies in university classrooms (Das & Ahmed, 2023; Joshi et al., 2022; Tamayo et al., 2024), but few investigate the phenomena of why university students continue to use smartphones in classrooms when they perceive smartphones to be disruptive. Many studies quantify data to describe smartphone adaptation in college classrooms, but few explore the lived experiences of university students pertaining to why they use smartphones in college classrooms (Tamayo et al., 2024).

This study hopes to add to existing literature from the college students' perspective by conducting a qualitative study focused on the discovery of how university students experience smartphone use in undergraduate college classrooms. The results of this study could contribute to existing research by providing a greater understanding of how college students perceive the use of portable mobile devices such as smartphones described in their own words. The student perspective could contribute to higher education teaching practices. Findings from this study could also provide more effective ways to formulate university-wide smartphone policies and appease college teachers, while allowing for the students' voice to be

heard and included in policy formation through a qualitative inquiry. Further, the results of this study could identify an area of need for future research.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

There is substantial research on the presence and use of smartphones in the student demographic and how its presence and usage have impacted higher education classrooms. Most documented studies include a focus toward quantitative studies which demonstrated either a disruptive nature of smartphone presence or the need to adopt its use for improved engagement of learners. While previous studies offer valuable insight into the smartphones' impact in college classrooms, and how to effectively incorporate or limit their use, there is a limited body of knowledge which exists regarding the students' voice and how they perceive their presence.

The search strategy for this study started with establishing a literature review component outline, which guided the keywords used in search databases. Keywords included, but were not limited to smartphone(s), college, university, education, technology, policies, classroom(s), UTAUT, student(s), teacher(s), online, motivation, distraction, engagement, perception, perspective, impact, digital, academic, integrity, qualitative, and behavior. Sources of information included peer-reviewed journal articles, books, government statistics, theses, and dissertations. Over 150 sources, dating from the 1960s to the present, were identified with relevant material. The majority were published from 2015 to 2024. Recent published studies (2024) consistently cited works dating back to 2015 when perceptions of college students' use of smartphones in class were documented. Older sources were included to provide the reader with a perspective of the longevity and history of the topic. A subset of the sources retrieved, as listed

in the references section of this dissertation, were identified as the most relevant sources for this study and provide the foundation of the literature review.

Chapter 2 provides an extensive review of literature and research related to the presence of smartphones in higher education classrooms. The chapter will be divided into sections that include (a) the foundation of educational technologies and smartphones as an educational technology, (b) smartphones and its use and presence in the college student demographic, (c) perception of smartphones documented by students and educators, (d) higher education policies and college students' perception of policies, (e) qualitative inquiry in the area of smartphone research in higher education, and (f) the conceptual framework.

Foundation of Educational Technology

A lecture or the transfer of verbal communication is considered the simplest form of teaching methods (Matiru et al., 1995) which date back to ancient times such as Socrates. Lectures are teacher centered instruction which is currently the default method of teaching used in most universities' classrooms. Research noted this method was carried over from early teaching environments where printed textbooks were not available for students to reference in class, thus note taking from the lecturer became the popular method of instruction (Matiru et al., 1995). The methods in which information is communicated from teacher to student are at the forefront of educational technology, and educational technology has altered the interaction between teachers and students in class (Roberts, 2017).

Historically, classroom technologies have been adopted by teachers as tools to facilitate or communicate learning and enhance the interaction with learners (Luppicini, 2005). Examples of classroom technologies range from the invention and adoption of the first paper and pen (which lead to printed textbooks) to the chalk board and the overhead projector, and currently,

powerful software driven digital computing devices. Classic examples of classroom technologies such as a pen and paper allowed students to record what was communicated in a teacher-centered, passive learning environment. New, computer-based classroom technologies such as smartphones have shifted the focus in classroom environments towards students which could promote an active learning environment, and their presence should be investigated (Roberts, 2017). A pen and a piece of paper are each a form of communication technology; however, the scope of this study will be focused on newer, more advanced forms including portable electronic computer-based technology such as smartphones (Roberts, 2017).

The general definition of technology refers to, *methods, systems, and devices which are the result of scientific knowledge being used for practical purposes* (Collins English Dictionary, 2025). Merriam-Webster dictionary (2025) defines the meaning of technology as *the practical application of knowledge especially in a particular area*. The current definition of Educational Technology, as defined by the Definition and Terminology Committee of the Association for Educational Communications and Technology (AECT) is, "the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Januszewski & Molenda, 2013, p. 1). In summary, any process or tool which facilitates learning and improves performance can be established as an educational technology. New educational technological advancements could shift some of the focus from a traditional teacher-centered approach to a more balanced teacher and student-centered approach (Roberts, 2017).

The expansion of educational technology in higher education classrooms has promoted speed in obtaining information, convenience to collaboration, and adaptive engagement among learners (Martin et al., 2020). Modern college classrooms feature digital computer-based

technologies which include enhanced audio and video tools, collaborative tools (for example, Dropbox & Google Docs) and learning management systems (for example, ELC & iCollege). The use of classroom computers to gain internet access with digital projectors were the most common forms of technological equipment used to deliver instruction in face-to-face college classrooms (Martin et al., 2020). This form of classroom technology which features audio and visual tools has been noted by studies to drive a teacher-centered approach, and is currently the default, most popular method of college classroom practice (Martin et al., 2020).

Learning management systems (LMS) have also become a common form of educational technology utilized in modern college classrooms (Martin et al., 2020). LMS are designed to enhance the traditional teacher-centered lectures delivered in college classrooms and shift some focus of instruction and learning to a student-centered approach (Martin et al., 2020). LMS created a smart learning environment with added online software features used to support various instruction, learning, and assessment activities. These added features to LMS promote a more student-centered approach (Tinmaz & Lee, 2020). Educause (2014) study noted 99 percent of post-secondary institutions have a learning management system in place, and 85 percent of faculty use it to some extent (Dahlstrom et al., 2014). Martin et al. (2020) reported that college professors surveyed in the study rated learning management systems as the highest in terms of importance and competence in using technology.

Digital textbooks or e-textbooks have gained popularity in their adoption over the traditional hardback textbooks required by college professors. This trend has shifted college classroom practices to require a device capable of using the digital textbook. A survey conducted by Raible & Denoyelles (2017) reported 66 percent (out of 1474) of the college students polled responded they previously completed a course using a digital textbook (55 percent of the courses

required the digital textbook). Monaghan et al. (2011) noted 52.9 percent of college professors stated they required their students to have a laptop computer to complete and engage in a digital learning environment. Additionally, it was found that 100 percent of the responding colleges used electronic course management systems, 88.8 percent used some form of an audience response system, and 80 percent incorporated some form of electronic quizzing or testing software. The results of these findings suggest the everyday college student must have access to some type of portable computing device to succeed. The adoption of e-textbooks and other digital educational technologies has created pre-requisites for attending a college classroom which includes the ownership of a portable computing device such as smartphones.

Smartphones as Educational Technology

Martin et al., (2020) suggested that there was an exponential growth in mobile learning where mobile computer-based devices such as smartphones were gaining popularity in use, and this phenomenon requires further investigation. The growing trend in the acceptance and use of computer-based mobile technologies (such as smartphones) has sparked investigation into their use in college classrooms. The modern smartphone is essentially a more affordable and portable handheld computer, and studies have shown the college student demographic also viewed and used their smartphones in a similar fashion (Jackson, 2018). Therefore, it could be assumed college students use their smartphones to access LMS in and out of class. The most common and most utilized mobile devices in college classrooms are laptops, smartphones, and tablets (Reisdorf et al., 2020). Studies demonstrated computer-based mobile devices increased student engagement, collaboration, communication, and self-directed studies (Ferreira et al., 2015). Therefore, a mobile computing device such as a smartphone could be considered educational technology.

Modern technological advancements in communication (multi-media) could alter the interactions between teachers and students in classrooms from a didactic/teacher-centered approach (passive learning environment) to a student-centered (active learning environment) and inquiry-guided approach (Roberts, 2017). A smartphone is an example of modern-day computing and communication technology which research has documented as an important discovery within the college demographic. Such technological discoveries have invaded higher education classrooms, and they could alter the interaction between the lecturer and the learner; therefore, their presence should be examined (Fernandez, 2018).

Information and communication technologies are at the forefront of technological growth in recent times (Roztocki et al., 2019). Today, due to the enhancement and high use of the internet, there is a more accessible web of information than ever before. Research has documented modern times as the *information age* (Kosta et al., 2017). Mobile technology has been leading the growth of information and communication technology (Velayati, 2015). Mobile devices or cellphones are one of the fastest growing technologies globally and these devices have been adopted immensely by the younger generations, and they are documented to be extremely influential in their daily lives (Fernandez, 2018).

The Pew Research Center and its Pew Internet and American Life Project has been tracking Internet use and cellphone activities of Americans for the last two decades (Mobile Fact Sheet, 2024). Most Americans (97 percent) now own a cellphone of some kind. The share of Americans that owned smartphones from this study was 85 percent, up from just 35 percent in the Pew Research Center's first survey of smartphone ownership conducted in 2011. This empirical evidence suggests smartphones have impacted all walks of American life and their usage should be investigated.

Smartphones are becoming a more integrated part of society due to their ease of use (Jackson, 2018). “There is a growing number of people who are smartphone dependent, relying exclusively on smartphones for internet access rather than more expensive devices such as laptops and tablets” (Schindler et al., 2017, p. 2). “The smartphone represents a convergence between phone and handheld computer and is the pinnacle of mobile phone development” (Kibona & Rugina, 2015, p. 673). A smartphone is defined as *a cellphone that includes additional software functions such as e-mail or an Internet browser* (Merriam-Webster Dictionary, 2025). The newest generation of smartphones are increasingly viewed and used as handheld computers rather than as phones, due to their powerful computer capabilities, expanded memory and battery life, larger screens, and application development.

The first smartphone was created by IBM in 1992 and released to the public in 1994. It was called the Simon Personal Communicator, and the design was not compact, and operations were not streamlined as current versions, but the device still incorporated many features that became staples of the newest sleek versions (Jackson, 2018). It was not until the year 2000 that the smartphone allowed access to the Internet wirelessly. One of the most impactful years for the smartphone evolution was 2007. It was Steve Jobs and the team at Macworld who introduced the very first iPhone, which gave consumers the ability to use phones as they would a desktop computer (Jackson, 2018).

Alternative mobile technologies that are comparable to smartphones which could facilitate learning in college classrooms are laptops and tablets (Ditzler et al., 2016; Reisdorf et al., 2020). A tablet (iPad is an example and the most popular form of a tablet) is a portable device that provides a mobile source for information, textbooks, interactive media, and educational tools through downloadable applications (Pearson, 2015). Tablets are comparable to

smartphones, but tablets tend to be bulky and not carried as often to classrooms in comparison to smartphones which are compact and more portable (Pearson, 2015). Tablets are not used as frequently by college students because the preferred mobile technology college students depend on are laptops and smartphones. Tablets will be omitted from this study and the rationale for the omission will be discussed in the limitations section in the next chapter..

A laptop is a portable computer with all its computing functionalities which are comparable to smartphones but is more widely accepted and utilized in college classrooms compared to smartphones (Reisdorf et al., 2020). Laptops are more accepted by college instructors in their classrooms due to the enhanced keyboard function which allowed students to take notes more efficiently and gain access to digital information (Reisdorf et al., 2020). According to the Pearson (2015) survey, 89 percent of the college students owned and used laptops in class. This result makes the laptop the most utilized mobile technology in college classrooms; however, smartphones are gaining ground on their popularity for usage in college classrooms as technological advances provide more comparable functions to laptops while maintaining the advantage of convenience, portability, and affordability (Pearson Poll, 2015).

Laptops are also widely accepted in college classrooms because colleges are currently requiring enrolling students to purchase and own a laptop due to the importance higher education institutions placed on the ability for the students to access information which they believed would drive greater performance (Reisdorf et al., 2020). Studies suggested higher education institutions recognized the importance of Wi-Fi and portable computers for students to succeed in their studies (Van Deursen & Van Dijk, 2019). Laptops will be omitted from this study due to its documented acceptance in college classrooms and the rationale for the omission will be discussed in the limitations section in the next chapter..

Smartphones in the College Student Demographic

The current generation of children, adolescents, teenagers, and young adults have access to different types of mass communication tools such as smartphones, computers, tablets, and the internet. “They are influenced significantly by new communication and information technology” (Rajeev & Jobilal, 2015, p. 11). Cellphones have been transformed from a technological tool to social media, and the student demographic is highly dependent on smartphones (Das & Ahmed, 2023; Tamayo et al., 2024). The Pew research statistics (2024) documented 45 percent of teens say they are online on a near-constant basis

There has also been a growing emphasis on research that has both documented and explored the significance of mobile devices, including smartphones, to their use in educational environments due to the increasingly rapid adoption of smartphones in the college student demographic (Jesse, 2015). The Pew research statistics (2024) noted that the college student demographic (ages 18-29) has a 100 percent cellphone ownership rate and smartphones make up 96 percent of this share. A study conducted by Xiumei et al. (2024) documented a 100% (593 participants) smartphone ownership rate of all college students who participated in the mixed method study. The results of this study demonstrated college students’ dependency on smartphones, and this phenomenon could be translated into the university classroom. The study revealed every participant used cellphones daily, and only 11.3% of the participants acknowledged usage under 3 hours per day and 58.7% of the participants acknowledged usage of greater than 7 hours per day.

The number of college students using their smartphones during class has increased over the last few years. Eighty percent of students admitted to using a cellphone at least once in class (Jesse, 2015). Furthermore, smartphone social media apps provide the user with the ability to

check their social media sites anywhere and anytime. Advancements to smartphones have equaled the computing capabilities of smartphones to laptops, and new smartphones are more affordable and portable with more features. For example, larger screen sizes and enhanced keyboard function which has resulted in increased ownership and usage in college classrooms (Das & Ahmed, 2023; Esmaeili et al., 2015; Jesse, 2015).

Smartphones have become the most popular method of accessing the internet for college students, and this behavior also translated into the college classroom (Das & Ahmed, 2023; Tamayo et al., 2024). Studies documented that college students are dependent on their smartphones as educational technology for both academic and non-academic usages, and their presence in college classrooms should be investigated (Das & Ahmed, 2023; Joshi et al., 2022; Langan et al., 2016; Tamayo et al., 2024). Although the use of educational technology is designed to enhance learning, it can also create a disruption in the classroom.

Studies revealed a misuse of technology in modern classrooms which could cause distractions and cognitive overload among learners (Chen et al., 2015; Das & Ahmed, 2023; Tamayo et al., 2024). Both teachers and students recognize the disruptive nature of smartphones in classrooms, but college students continue to use smartphones for non-academic purposes while attending class (Chan et al., 2015; Das & Ahmed, 2023; Langan et al., 2016; Tamayo et al., 2024). A Study conducted by McCoy (2016) surveyed college students in twenty-six different states. Respondents reported that they used their smartphones for non-academic purposes an average of 11.7 times per day in class.

University classrooms are heavily governed by normative expectations of the college classroom and classrooms are among the least acceptable places for mobile phone use (Campbell, 2006). Many public settings are both public and private spaces. “Individuals in these

surroundings can socially negotiate symbolic fences to establish their own territories for personal use" (Ling, 2004, p. 125). Classrooms are different from other public environments because they tend not to allow for privacy in a comparable manner. Therefore, "the classroom is generally more weighted toward the public end of the public-private spectrum, making it less appropriate for cellphone use" (Campbell, 2006, p. 289). In addition, "class tends to be a group-focused social gathering where a heightened sense of moral responsibility for one's actions seem to develop" (Goffman, 1963, p. 89). Public spaces are usually filled with background noise where normative expectations differ from the classroom where background noise is absent (Campbell, 2006).

Studies also noted the adaptation of smartphone use in college classrooms could have a positive impact on facilitating learning. A study conducted by Ferreira et al. (2015) reported that the proper use of smartphones could support collaboration and lead to increased motivation and engagement for the students. Smartphone use in the college student demographic for academic purposes can be defined as using a smartphone with all its functionalities for course related materials and class activities which positively impact student learning (Das & Ahmed, 2023; Ferreira et al., 2015).

Smartphones positively impact student learning in classrooms by improving engagement which motivated students to increase participation and collaboration in class activities and spark discussions (Das & Ahmed, 2023; Ferreira et al., 2015). Studies identified the following uses of smartphones for academic purposes which positively impact student learning in the classroom: multimedia access (for example, watching TED Talks), communication tool (for example, emails and texting other students), capture tool (for example, taking photos of written notes or recording lectures), representational tool (for example, ELC or iCollege), analytical tool (for example,

Google Sheets), information gathering tool (for example, internet and checking grades), and task managing tool (for example, Calendar and registration) (Coffin et al., 2015).

The negative impact of smartphone use in the college student demographic has been a focal point in educational research. Smartphones are mostly perceived to be a distraction and a hinderance to learning; therefore, most teachers and administrators, even those who perceive smartphones as a positive force in engaging students, favor policy that may best define and limit smartphone use (Chan et al., 2015; Das & Ahmed, 2023; Langan et al., 2016). Smartphone use for non-academic purposes can be defined as using a smartphone with all its capabilities for non-course related materials and non-class activities which negatively impact the student learning environment (Han & Yi, 2018).

Negative impacts associated with smartphone usage which hinders student learning in classrooms are centered around distractions created with its use (Langan et al, 2016). Studies identified the following personal usages of smartphones for nonacademic purposes which negatively impact student learning in the classroom: using and answering personal phone calls, checking and answering text messages, checking and answering emails, surfing the web (for example: shopping and reading news), listening to music, playing games, checking material in another course, checking and posting on social media (for example: Facebook, Instagram, Twitter), and distractions from other students who use smartphones in class (Joshi et al., 2022; Tamayo et al., 2024).

Academic dishonesty is another negative impact which is gaining prevalence from smartphone use in college classrooms (Bain & Bhatnagar, 2015; Thomas & O'Bannon, 2015). History demonstrated academic dishonesty has always been prevalent in college classrooms (Stiles et al., 2018). Stiles et al. (2018) conducted a thirty-year follow up study of academic

dishonesty or college cheating. The results documented a high incidence of academic dishonesty even before the invention of the smartphone. Four data points revealed 46.84 percent of surveyed college students engaged in cheating in 2014, 57.4 percent in 2004, 61.2 percent in 1994, and 54.1 percent in 1984. Technological advancements such as smartphones have supported new ways to support students in academic dishonesty (Bain, 2015; O'Bannon & Thomas, 2015).

Studies documented college students used smartphones to participate in cheating (Morris & Sarapin, 2020). Smartphones with cameras could be used to take photos of exams or take pictures of students without their consent. Teachers are now reporting instances of inappropriate cellphone use such as sending text messages during class and exams and using a camera phone to take pictures of an exam to help another student cheat (Beuschel, 2013). A recent study conducted by Totten et al. (2015) found one-third of high school students admitted using their cellphones to cheat, and 65 percent of them said others in their school used their phones to cheat. Furthermore, 36 percent of the students admitted storing information on their phones to use during a test; 27 percent texted a friend for test answers; 19 percent took pictures of tests to send their friends; and 30 percent searched the Internet for answers during an exam. These results demonstrate students in all levels of education could be tempted to use smartphones to engage in academic dishonesty.

Smartphone Perception in Higher Education

Studies revealed some positive impacts associated with smartphone use in college classrooms, but teachers' perceptions on the use of smartphones in college classrooms are more negative. Langan et al. (2016) examined the perceptions of teachers in the university classroom. The findings demonstrated an *unwelcome* perception for the faculty who participated in the study. The faculty found the students' use of mobile devices to be distracting to other students

and /or to themselves in the classroom. Chan et al. (2015) examined educators' perception on the use of mobile devices and this study concluded that teachers found smartphones to be useful learning tools, yet they were aware of the distractions that negatively impact student learning. The faculty in this research found mobile devices to be powerful tools in self-directed learning but disruptive for face-to-face learning. Research noted they generally have a negative perception of smartphone use in face-to-face instruction (Das & Ahmed, 2023; Joshi et al., 2022; Langan et al., 2016; Tamayo et al., 2024).

Although educators' perspectives are an important factor in the classroom dynamic, the aim of this research is focused on the students' perspectives in hopes of providing clarification to why they continue to use smartphones in classrooms when they perceive smartphone use as a distraction. Detailed data examined from the students' words could help clarify the contradictory behavior of their smartphone usage in classrooms. Teachers and administrators will be excluded from this study and the rationale for the omission will be discussed in the limitations section in the next chapter.

Students' perceptions on the use of smartphones in college classrooms are more favorable compared to the teachers' perceptions. Positive students' perceptions of smartphone use in class were convenience and accessibility of smartphones for information gathering, knowledge building, collaborative communication, and information sharing (Das & Ahmed, 2023; Joshi et al., 2022; Rashid-Doubell et al. 2016; Tamayo et al., 2024). Students' perceptions also revealed a negative perspective. Langan et al. (2016) analyzed the perceptions of university students with the use of personal technologies in classrooms. The observations and interviews from this study suggested negative implications of smartphone use from the students' perspective. Students perceived smartphone use in class to be distracting and disrespectful, but they still generated

excuses to use them. Students gauged subjectively for themselves when it was appropriate to use their cell phones in class. Students gauged for themselves on whether they were causing a distraction, and they freely used mobile devices when they felt they were not causing one (Langan et al., 2016).

Chan et al. (2015) explored the perception of mobile device usage of students in a university setting. Participants of this study perceived smartphones to be useful and a powerful tool for collaborative knowledge building, but they perceived smartphones to be distracting in face-to-face learning. Rashid-Doubell et al. (2016) explored students' perceptions on the use of cellphones in the classroom. Students reported mobile devices helped them gather information and build their knowledge, but they worried about surface learning and distractions. Students from this research feared the disruptive nature of their personal mobile devices so they did not use them while in the classroom setting.

Das and Ahmed (2023) conducted a study focused on college students' perceptions of smartphone use. The study revealed students perceived smartphones to be critical for use in virtual classrooms, but disruptive in face to face-to-face classrooms. Students from this study perceived smartphones to be good substitutes for personal computers and laptops in remote learning, or for gathering information. Students from this study informed researchers that they were unable to limit their use in face-to-face instruction. The study concluded that both teachers and students support smartphone use for information gathering and remote learning, but policies and training should be established on proper use in face-to-face instruction.

Tamayo et al. (2024) investigated the perception of smartphone use in the college student demographic. The study noted the use of smartphones to be perceived as problematic in face-to-face instruction and the use of smartphones in class were associated with negative outcomes. The

researchers concluded that smartphone use became an addictive behavior which contributed to poor academic performance in the college student demographic. Joshi et al. (2022) documented smartphone use in young adults negatively impacted academic achievement. Students were seen by educators as unable to self-regulate their smartphone use in classrooms which resulted in lower performance. Students perceived that they could not control, or limit smartphone use in class.

A study conducted by Al-Furaih & Al-Awidi (2021) also documented fear of missing out (FOMO) from the college student perspective while attending face-to-face lectures. Students from this study demonstrated they felt they could not resist checking their smartphones during class to keep up with notifications from social media applications. This behavior resulted in attention distraction and learning disengagement.

Educational Technology Policies in College Classrooms

University administrators, faculty, and students are aware of both the positive and negative impacts from the use of smartphones in college classrooms (Das & Ahmed, 2023). Teachers mostly perceive cellphone use in classrooms to be a distraction and a hinderance to learning; therefore, most teachers and administrators, even those who perceive smartphones as a positive force in engaging students, favor policy that may best define and limit cellphone use (Das & Ahmed, 2023; Joshi et al., 2022; Tamayo et al., 2024;). Students have a more positive outlook on cellphone usage in class, but they are also aware of the potential negative effects of mobile devices that cause distractions in classrooms. Therefore, college students suggested clear guidelines with ground rules on mobile device usage (Chan et al., 2015; Rashid-Doubell et al., 2016).

Studies recommend implementation of clear guidelines and policies which support the use of smartphones for academic purposes and regulate its use for non-academic purposes. A study conducted by Morris & Sarapin (2017) demonstrated a policy which controlled smartphone use in class could be effective in promoting an engaging learning environment while limiting the distractions. Students in modern educational settings are keen on up-to-date technology and recognize technology incorporated into teaching as a standard practice, not a unique experience (Eiland & Todd, 2019). Although research suggested technological advancements in classrooms demonstrated a more effective and efficient learning opportunity, some advancements, for example, smartphones, have shown to disrupt an educational environment (Han & Yi, 2018).

Technology policies in classrooms can be defined as any set of rules regulating the use of wireless communication technologies in the classroom (Finn & Ledbetter, 2013). Ledbetter and Finn (2013) studied technology policies in classrooms and categorized policies into three separate groups: encouraging policies (using technology for academic purposes), discouraging policies (forbidding technology use for nonacademic purposes), and laissez-faire policies (teacher has no formal policy regarding how students use technology in the classroom). Lee et al. (2017) evaluated these types of policies, and the authors concluded mobile communication technology use has increased in classrooms and policies which govern their use should be adopted, but they also cautioned against adopting smartphone use into classrooms. The students' attention can be compromised in even a short 20-minute lecture because of mobile phone distraction. The results from Lee et al. (2017) revealed student performance suffered (regardless of type of policy) when a cellphone was used or available in class, while student performance significantly increased when cellphones were totally disallowed and unavailable to the student in class.

Many college instructors have a cellphone policy in place to regulate its use to limit distractions in class and focus usage for academic purposes. A nationwide study in the United States conducted by Morris & Sarapin (2017) noted 77.7 percent of the faculty surveyed had a mobile phone policy and 88 percent of those faculty who had a policy listed the policy on their syllabus. Of those instructors who had policies, only 54.1 percent reported their policy was effective in controlling unregulated use, and only 54.6 percent imposed penalties when students broke the rules. Although 45.9 percent of faculty reported cellphone policies were ineffective and 56.8 percent mentioned smartphones were a distraction and they created a hindrance to learning, 73.9 percent of the instructors allowed smartphone use for classroom activities. The participants mentioned encouragement from the university and college administrators to implement mobile device use to engage students as the primary reason for the high prevalence of class use. The faculty also noted a lack of experience and lack of resources and guidance from administrators for effective implementation. For those who did not have a policy, those participants believed college students were adults and should be able to regulate themselves in class (Morris & Sarapin, 2017).

Morris and Sarapin (2017) also revealed penalties varied and there was disorganization from university administrators which created confusion among students on what was regulated or unregulated use. The disorganization and the lack of guidance from university administrators also created confusion among college instructors on how to set the rules for cellphone use in class. Morris and Sarapin (2017) documented 91.6 percent of the respondents reported they created cellphone policies themselves, while 2.4 percent had policies created from their department or college and 0 percent from the university administrators. The mobile phone policies submitted by the participants in this study identified thirteen categories of policies with

86 percent of them covering 3 types: discouraging, encouraging, and laissez-faire. This result supports the results of the study from Ledbetter and Finn (2013).

Literature suggests faculty favor a university-wide policy while students prefer policies to be solely determined by the course instructor (Baker et al., 2012). Baker et al. (2012) reported two thirds of the students preferred instructors to set the rules on cellphone use, and they believed the rules should be created democratically between the instructors and students. Shuter et al. (2017) reported American students valued individual rights and desired a voice in their classes. Students from this study concluded they preferred cellphone policies to be clear and discussed in class, included in the syllabus, and involved in class activities. Morris and Sarapin (2017) reported faculty believed creating cellphone policies collaboratively with students may be an effective way to gain and understand the students' perspective to ensure compliance. Faculty in this study supported a university-wide policy, but 87 percent of respondents believed they lacked the necessary experience with mobile phone use from the student perspective to implement an effective policy.

Educational policy research noted a qualitative inquiry was well suited to discover the students' voice necessary to achieve social validity which could guide classroom policies involving digital technologies (Kozleski, 2017). Brantlinger et al. (2005) noted qualitative research is derived from experience and could produce knowledge about perspectives, settings, and techniques. Furthermore, qualitative research is particularly well suited to the study of educational treatments which are situated and dynamically interactive. Qualitative methods could help us understand the nature of classrooms as socially and culturally organized environments for learning (Erickson & Gutiérrez, 2002; Morningstar et al., 2015). Thus, we may better understand how classroom policies seem to work for some students, but not for others through a

qualitative interview. Kozleski (2017) recommended a need for qualitative methods when examining policies because they may be the best choice for revealing the everyday activities of life in classrooms that often go unexamined.

Conceptual Framework

The conceptual framework from which the data was collected and analyzed in this study utilized methods which were both inductive and deductive. A Qualitative interview was used inductively to explore, understand, and discover how an individual undergraduate university student experienced smartphone uses in their everyday life which focused on the college classroom environment. This study incorporated research questions and interview questions which guided the theoretical framework. High-quality qualitative research begins with a question or set of questions that help guide the researcher (Ritchie et al., 2013). Themes identified from the emerging data contributed to the framework. As a result, early design decisions were revisited as themes and important codes emerged from the data.

Deductive data collection and analysis were also utilized to confirm and evaluate whether data were consistent with prior assumptions or theories (Thomas, 2006). This study utilized the Unified Theory of Technology Acceptance and use of Technology 2 (UTAUT2) which evaluated or confirmed existing theories on behavioral intent and use of mobile technology (smartphones) in college classrooms. A pre-set list of codes generated from the determinants of UTAUT2 was used to extract themes from participants' responses. The author of this study is not an expert in the field of behavioral or psychological research; therefore, deductive analysis with the reference of the UTAUT2 was incorporated to guide discussion of data in this area. UTAUT 2 is a well-established theoretical framework which could increase validity to the findings and provide credibility which will promote trustworthiness (Merriam, 1995). Merriam (1995) suggested when

a researcher discovers a phenomenon in an interview and correlates it to previous studies, the researcher can be confident that the participants are being truthful in disclosing their reality. Appendix B provides an outline of how the pre-set list of codes were utilized.

The UTAUT2 (Venkatesh et al, 2012) is a combination of theories derived from the Technology Acceptance Model (TAM) (Davis, 1989). The TAM was considered the simplest and most widely used theory in explaining informational technology (IT) (Surendran, 2012). The TAM considered perceived usefulness (U) and perceived ease of use (E) of a specific informational technology which generated an attitude and behavioral intention to system use by an individual. Figure 1 provides an illustration of the model.

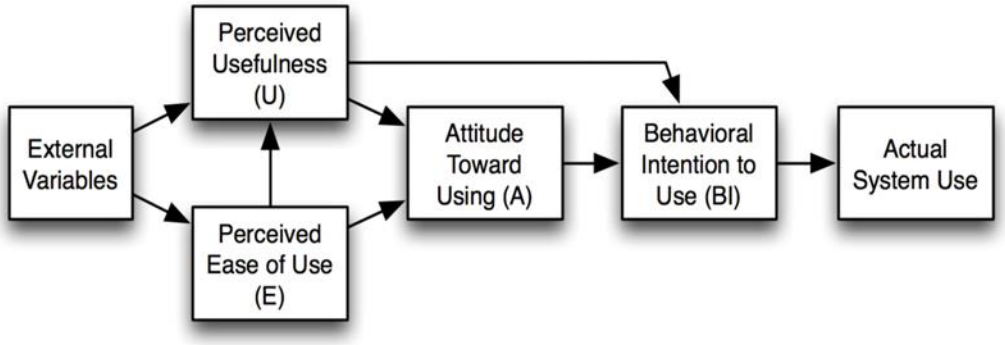

Figure 1: Technology Acceptance Model (Davis, 1989)

Although the TAM was widely used in IT research, it is considered generalized, and there were many limitations. TAM lacked predictors to address the use of IT in business, university, and organizational context (Ajibabe, 2018). TAM was mainly conceptualized for an individual perception and purpose, and ignored social processes and behaviors (Ajibade, 2018). The TAM lacked subjective normative beliefs and motivations which could build individual experiences which contribute to system usage. TAM could predict attitude and intent but was limited on

predicting actual usage. TAM alone will not be an effective instrument to answer the research questions and address the problem of this study.

TAM2 was an extension of the TAM adopted by Venkatesh & Davis (2000) which addressed limitations to subjective norms and motivations. Figure 2 provides an illustration of TAM2.

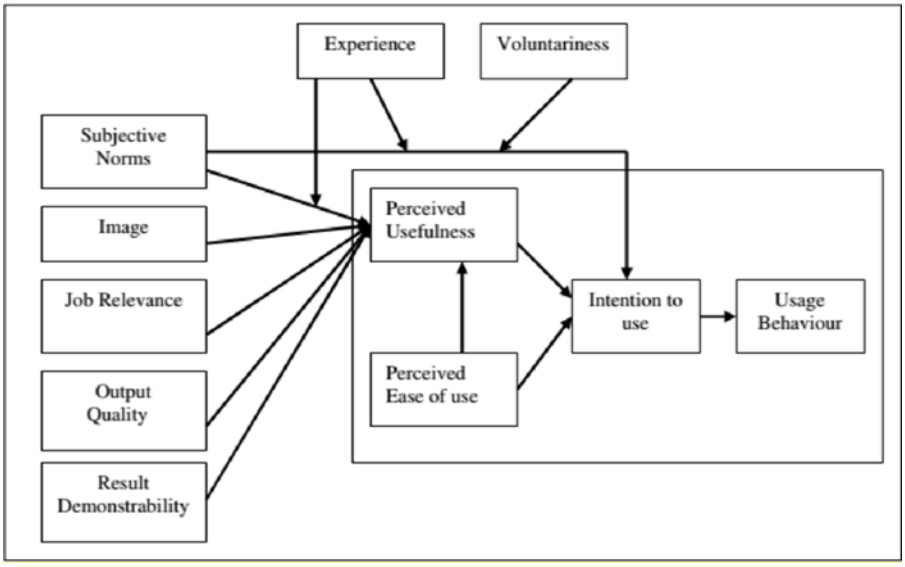

Figure 2: Extension of Technology Acceptance Model (TAM2). Source: Venkatesh & Davis (2000)

Venkatesh and Davis (2000) addressed the major limitations of the TAM by including additional key determinants of the TAM's perceived usefulness and usage intention constructs. These additions allowed for an understanding of how the effect of these determinants changed with increasing users' experience over time with the target system. This extension became known as the TAM2. They incorporated the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975).

The TRA described behavioral intention and how, along with an individual's pre-existing attitudes, these intentions could predict their behaviors (Fishbein & Ajzen, 1975). A person's behavior could be affected or influenced, not only by their attitude or perceptions, but also by their expectations, or the anticipated outcomes that the behavior was likely to provide or lead to. The TRA suggested that behavioral intention was shaped by the individual's attitude, their normative beliefs and motivation, and perceived behavioral control of the individual. The major limitation to the TRA was the theory predicted behavioral intention but did not predict behavioral action (Sharma & Kanekar, 2007). Implementation of intention was usually not guaranteed; some behaviors were not voluntary. Figure 3 illustrates TRA.

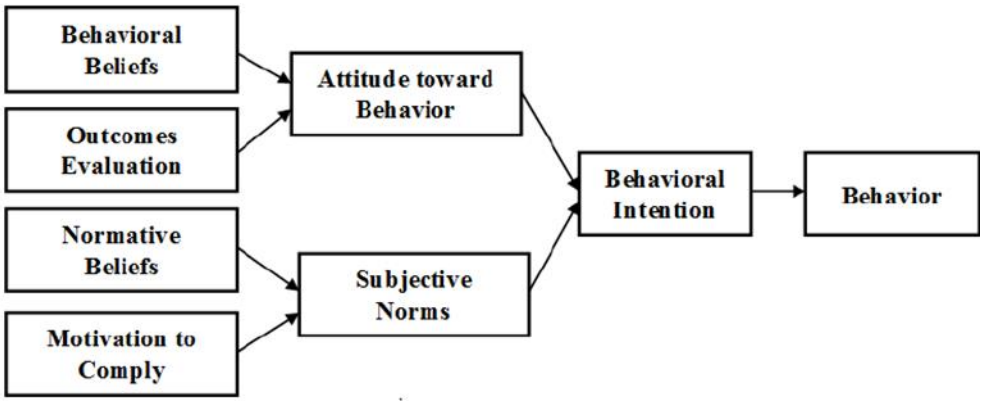

Figure 3: Theory of Reasoned Action (Fishbein & Ajzen, 1975)

TAM could be easier to apply to studies involving informational technology, but it only supplied general information on users' opinions about a system (Ajibade, 2018). The incorporation of the TRA to the TAM (TAM2) provided more specific information to clarify responses from the participants, but it still lacked the ability to predict or determine behavioral action or usage (Venkatesh & Davis, 2000). Venkatesh et al. (2003) extended TAM2 with a review of theories mostly associated with predicting behavioral intension and IT usage. This synthesis unified eight theories/models which resulted in the Unified Theory of Acceptance and

Use of Technology (UTAUT). Figure 4 illustrates the theories and how those theories integrated into the constructs of the UTAUT. UTAUT integrated the following theories: TAM, TAM2, TRA, theory of planned behavior (TPB), innovation diffusion theory (IDT), the motivational model (MM), the model of PC utilization (MPCU) and social cognitive theory (SCT).

Model name	Determinants (UTAUT)			
	Performance Expectancy (PE)	Effort Expectancy (EE)	Social Influence (SI)	Facilitating Conditions (FC)
TAM	Perceived usefulness	Perceived ease of use	-	-
TAM2	Perceived usefulness	Perceived ease of use	Subjective norm	-
TRA	-	-	Subjective norm	-
TPB/DPTB	-	-	Subjective norm	Perceived behavioral control
C-TAM-TPB	Perceived usefulness	-	Subjective norm	Perceived behavioral control
MPCU	Job-fit	Complexity	Social factors	Facilitating conditions
IDT	Relative advantage	ease of use	Image	Compatibility
MM	Extrinsic motivation	-	-	-
SCT	Outcome expectations	-	-	-

Figure 4: Synthesis of Theories and Determinants of the Unified Theory of Acceptance and Use of Technology. Sourced from Phichitchaisopa & Naenna (2013)

The Theory of Planned Behavior (TPB) which was an enhancement to the TRA (Ajzen, 1985, 1987, 1991), reinforced and built upon the assumptions of the TRA. TPB maintained what the TRA predicted about human behavior being governed by one's attitudes and behavioral intentions characterized by the presence of social norms and the exercise of voluntary control; however, it incorporated several additions that allowed for greater accuracy and reliability in understanding one's attitudes and predicting actual behavior. TPB included an internal and external control to perceived behavioral controls. What made the TPB more acceptable than the TRA, was how it included factors that are out of the person's control (Ajzen, 1991). The TPB

was incorporated in the UTAUT by Venkatesh et al (2003) to contribute to the social influence (subjective norm) and facilitating conditions (perceived control) determinants (Phichitchaisopa & Naenna, 2013). Beliefs and perceived power led to perceived control which further increased intention to perform a behavior. Figure 5 illustrates TPB.

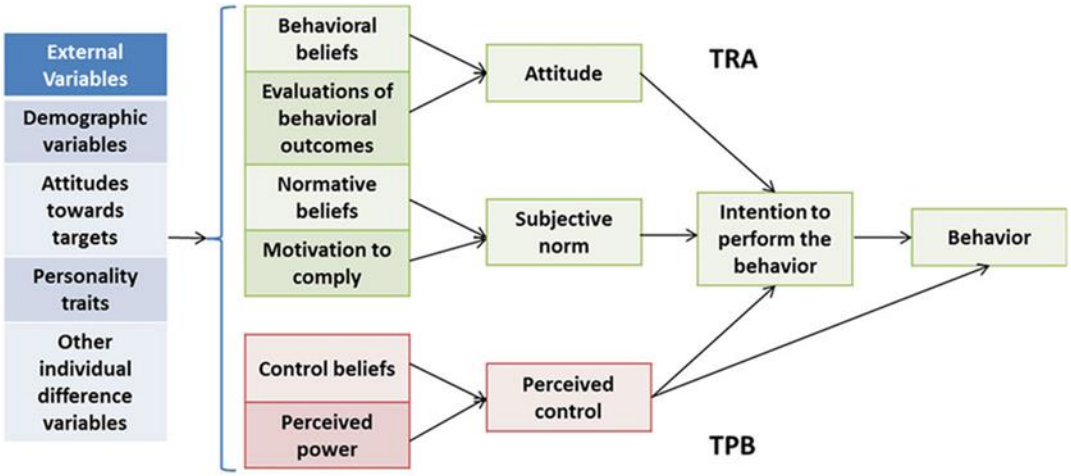

Figure 5: Theory of Planned Behavior (Ajzen, 1991)

The Innovation Diffusion Theory (IDT) has remained one of the common theories to predict the diffusion of innovations in a social system (Wani & Ali, 2015). The IDT was introduced in 1962, and refined by Rogers (1995, 2003). The IDT focuses on understanding how, why and at what rate innovative ideas and technologies spread (adoption) in a social system (Rogers, 1962). Rogers listed five attributes which determine between 49 and 87 percent of the variation in adoption of new innovations. Figure 6 illustrates the attributes. Relative advantage refers to the idea that a user will adopt an innovation once the user discovers a new idea, product or service the user perceives to be better than the existing model. Complexity refers to the degree of ease of use or understanding of the innovation which leads to adaptation. Trialability refers to the degree of evaluating an innovation. Observability refers to the visibility of the innovation used in public or by others. Compatibility is the extent to which innovation adoption is consistent

or compatible with the users' needs. The IDT was incorporated into the UTAUT framework by Venkatesh et al (2003) and contributed to all four determinants which predict behavioral intentions which could lead to behavioral use (Phichitchaisopa & Naenna, 2013). Figure 6 illustrates IDT's contribution to UTAUT.

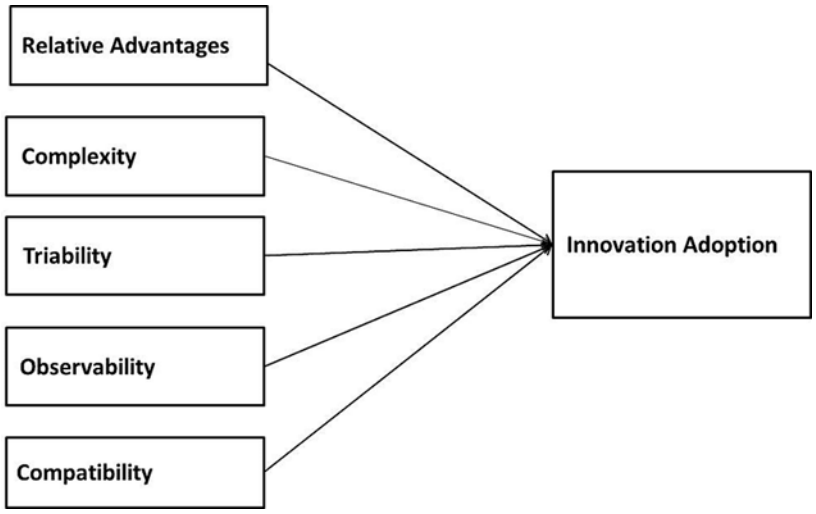

Figure 6: The Innovation Diffusion Theory (Rogers, 1962, 1995, 2003)

The Motivational Model (MM) predicted system use which was determined by both intrinsic and extrinsic motivation (Igbaria et al., 1996). Extrinsic motivation was defined as the perception that users will want to perform an activity because it was perceived to be instrumental in achieving valued outcomes that were distinct from the activity itself. The intrinsic motivation was defined as the perception that users will want to perform an activity for no apparent reinforcement other than the process of performing the activity. The MM proposed that perceived usefulness and social pressure were extrinsic motivation, and perceived enjoyment was intrinsic motivation. Perceived ease of use could impact on perceived enjoyment and perceived usefulness. The MM also incorporated task importance as a moderator of ease of use. Therefore, the perceived ease of use influenced both perceived usefulness and perceived enjoyment. The

MM contributed to the external motivating factors used in the UTAUT, the internal motivating factors were omitted. Figure 7 illustrates MM's contribution to UTAUT.

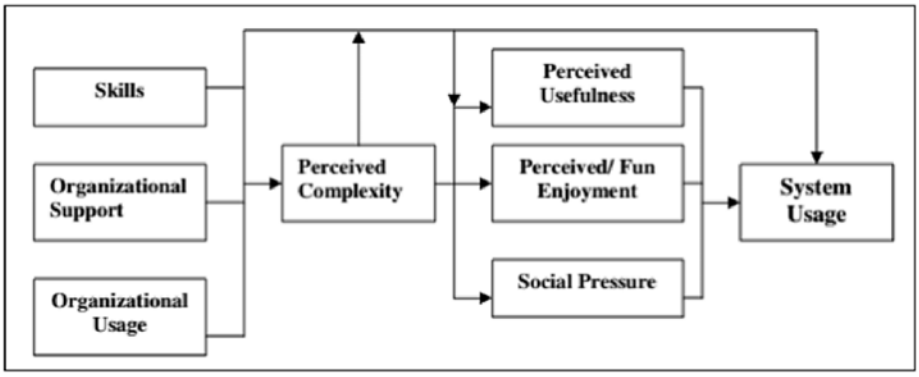

Figure 7: The Motivational Model (Igbaria et al., 1996)

The Model of PC Utilization fits the IT perspective to predict individual acceptance and personal computer (PC) utilization (Thompson et al., 1991). Since the MPCU model assessed the actual behavior for personal computer usage, the model excluded behavioral intent. The MPCU specifically evaluated the direct influence of affect towards use, facilitating conditions, long-term perceived consequences of use, social influences, complexity of use and job-fit which led to the PC utilization. The model predicted job fit, social factors, long-term consequences and complexity have strong influences on the PC usage. However, facilitating conditions and affect towards use did not have significant effect on the PC use (Thompson et al., 1991). The MPCU was incorporated into the UTAUT framework by Venkatesh et al (2003) and contributed to all four determinants which predict behavioral intentions which could lead to behavioral use (Phichitchaisopa & Naenna, 2013). Figure 8 illustrates MPCU's contribution to UTAUT.

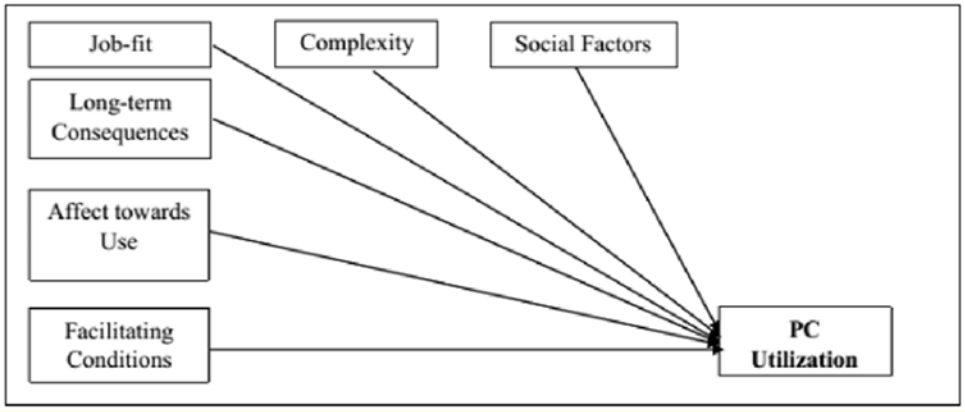

Figure 8: The Model of PC Utilization (Thompson et al., 1991)

The Social Cognitive Theory (SCT) was proposed based on three main factors; behavioral, cognitive, or personal, and environmental which were interacted bi-directionally to predict both group and individual behavior (Bandura, 1986). The theory was designed to identify methods which could change and modify behavior. The SCT model predicted the behavioral factor was focused on usage, performance, and adoption issues. The cognitive factor was any personality, cognitive and demographic aspects characterizing a person. Environmental factors included physical and social factors which both were external to the individual. The SCT demonstrated that all three factors constantly influence one another and could change an individual's behavior (Rana & Dwivedi, 2015). SCT was incorporated into the UTAUT framework by Venkatesh et al (2003) and contributed to the performance expectancy determinant (outcome expectations) which predict behavioral intentions which could lead to behavioral use (Phichitchaisopa & Naenna, 2013). Figure 9 illustrates SCT's contribution to UTAUT.

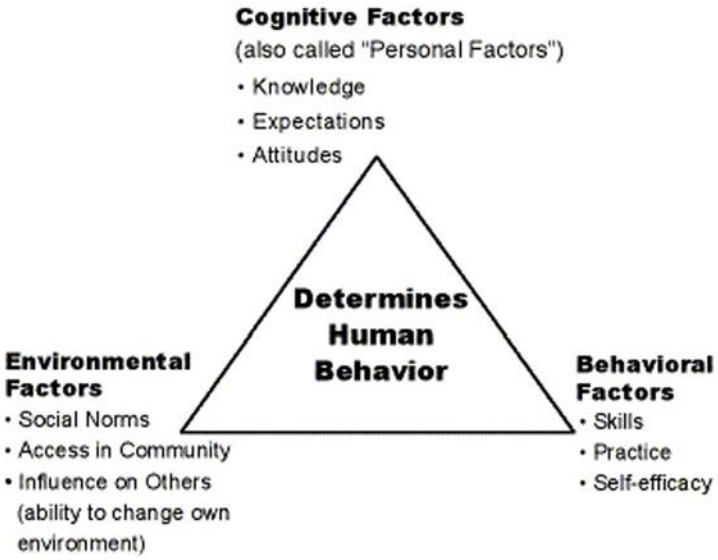

Figure 9: The Social Cognitive Theory (Bandura, 1986)

UTAUT was developed on a literature review as a comprehensive synthesis of prior technology acceptance research. UTAUT focused on the critical factors from one set of theories and designed a model which could predict behavioral intention to use a technology in organizational contexts. UTAUT demonstrated about 70 percent of the variance in behavioral intention to use technology and 48 percent of the variance in technology use in longitudinal field studies of employee technology acceptance (Venkatesh et al. 2003).

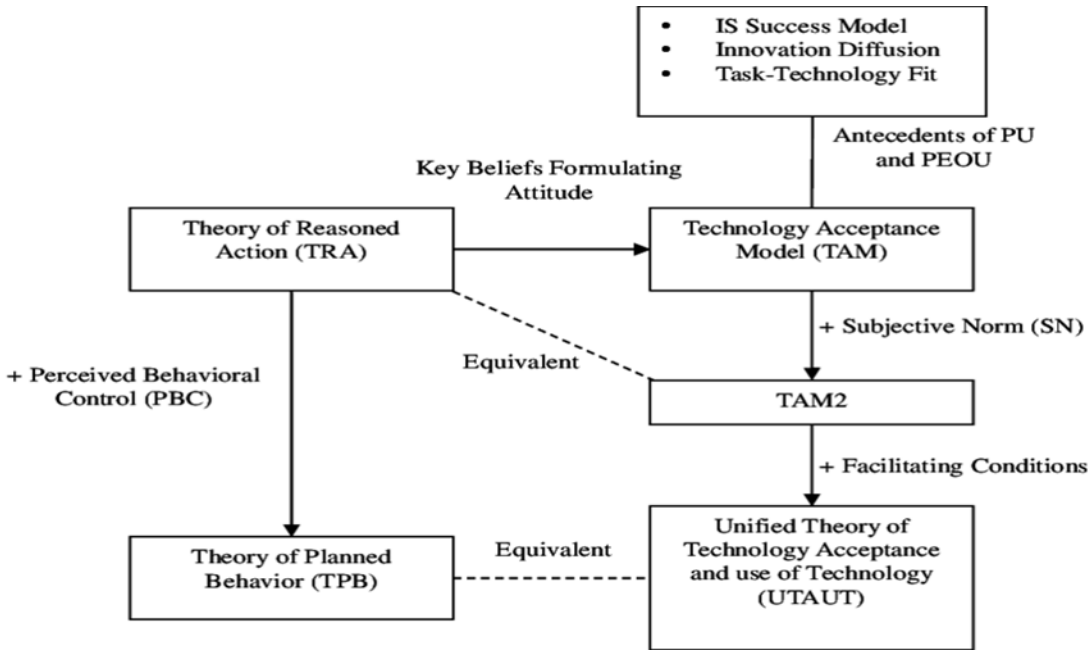

Figure 10: The Unified Theory of Acceptance and Use of Technology (Venkatesh et al, 2003)

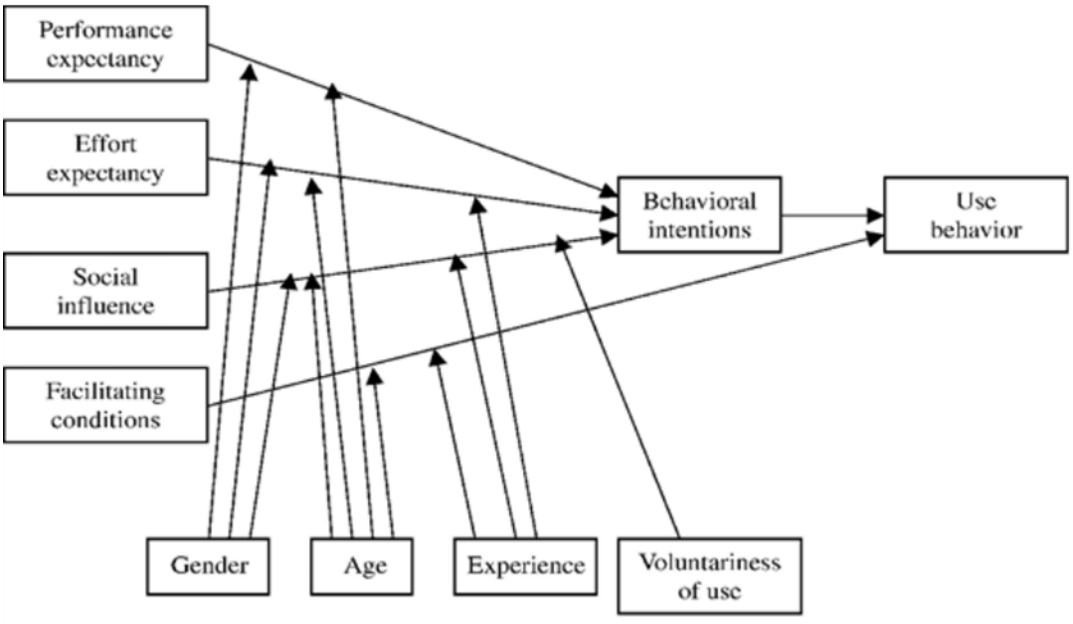

Figure 11: The Unified Theory of Acceptance and Use of Technology (Venkatesh et al, 2003)

The UTAUT (Venkatesh et al, 2003) has four key constructs which determine behavioral use: performance expectancy, effort expectancy, social influence, and facilitating conditions. Each construct predicted/influenced behavioral intention to adopt use of a technology. Performance expectancy was defined as the degree to which using technology will provide benefits to consumers in performing certain activities. Effort expectancy was the degree of ease associated with consumers' use of technology. Social influence was the extent to which consumers perceived that IT usage was important to others, and they believed they should use a particular technology. Facilitating conditions referred to consumers' perceptions of the resources and the support available to perform a behavior (Venkatesh et al. 2003). According to the UTAUT, performance expectancy, effort expectancy, and social influence were theorized to influence behavioral intention. Behavioral intention and facilitating conditions determined technology use. Also, individual difference variables, age, gender, experience, and voluntariness of use were theorized to moderate various UTAUT relationships (as illustrated in Figure 11).

An extended version of the UTAUT guided the conceptual framework for this study. The extended version of the UTAUT, which was modified by Venkatesh et al (2012) and labeled the UTAUT2 could provide the framework in answering more specific questions which predict behavioral intention of college students which could lead to behavioral usage of a smartphone in and out of the university classroom. UTAUT2 could predict both internal and external motivation factors which could lead to a certain behavior. UTAUT included external motivating determinants but lacked internal motivating determinants. Hedonic motivation, price value, and habit were included in predicting internal motivational use of technology (Venkatesh et al, 2012). The UTAUT was originally developed to explain employee technology acceptance and use (Venkatesh et al, 2003). UTAUT2 examined how UTAUT could be extended to other

contexts, such as the context of consumer technologies which include smartphones (Venkatesh et al, 2012). Figure 12 illustrates UTAUT2.

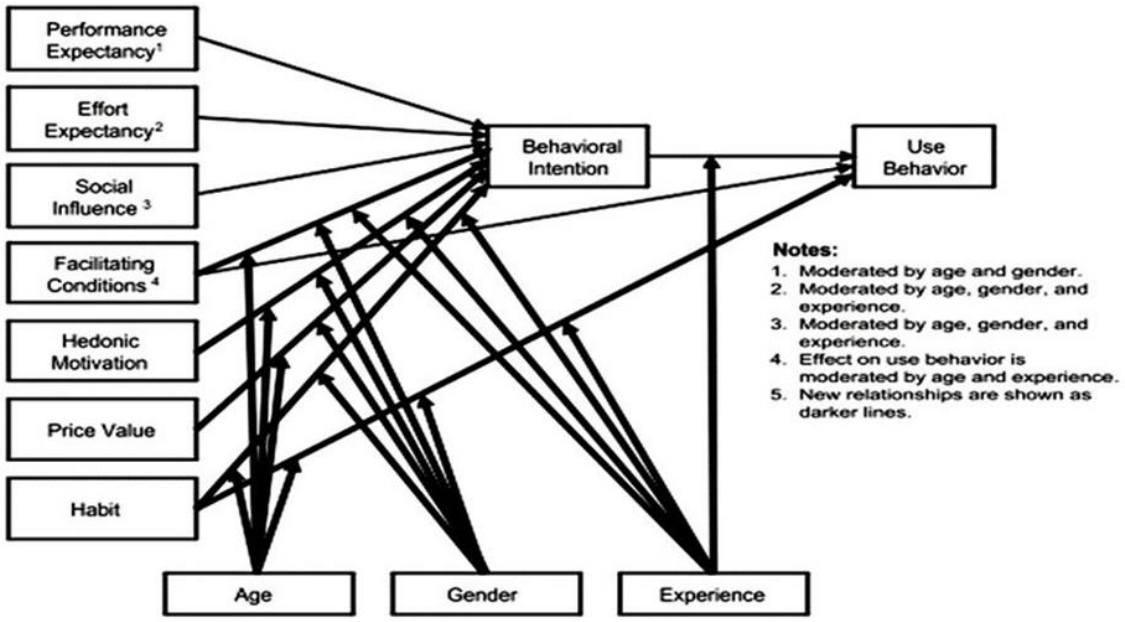

Figure 12: The Unified Theory of Acceptance and Use of Technology 2 (Venkatesh et al, 2012)

Hedonic motivation was defined as the pleasure derived from using technology, and it has shown to play a significant role in determining technology acceptance and use (Brown and Venkatesh 2005). In the consumer context, hedonic motivation has also been found to be an important determinant of technology acceptance and use (Venkatesh et al, 2012). Studies noted students experienced hedonic motivation to use smartphones for non-academic use in class derived from previous pleasurable experiences and was followed by experiencing boredom in class (Bolkan & Griffin, 2016).

A major difference between a consumer use setting and the organizational use setting, where the UTAUT was developed, was that consumers were responsible for the monetary cost of

use whereas employees were not (Venkatesh et al, 2012). The cost and pricing liabilities could have a significant impact on consumers' technology usage. Studies demonstrated that IT popularity increased as prices become more affordable (Dodds et al, 1991; Venkatesh et al, 2012). Monetary cost was usually conceptualized together with the quality of products or services which determined the perceived value of products or services (Zeithaml 1988). UTAUT2 followed these ideas and defined price value as consumers' cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using them (Dodds et al, 1991).

The price value was positive when the benefits of using a technology were perceived to be greater than the monetary cost and such price value had a positive impact on intention (Venlatesh et al, 2012). Smartphones are becoming more affordable and accessible to the college student demographic. The perceived benefits of owning and using a smartphone on campus play an important factor in determining use. The price determinant was slightly altered when used to analyze participant responses in this study to represent the penalty (cost) of using a smartphone in class when students were aware of not to use them.

Research on IT usage has revealed two related yet distinct constructs: experience and habit (Kim et al, 2005; Venkatesh et al., 2003). Experience, as conceptualized in the UTAUT, considered an opportunity to use a target technology and was commonly measured as the passage of time from the initial use of technology (Kim et al., 2005; Venkatesh et al., 2003). Habit has been defined as the extent to which people tend to perform behaviors which were learned and become automatic (Kim et al., 2005). Habit has been measured in two distinct ways. Habit was viewed as prior behavior, and habit was measured to the extent to which an individual believed the behavior to be automatic (Kim et al., 2005). The habit construct could be used to predict prior

behavior which became automatic outside the classroom, which automatically transitioned to in class usage.

UTAUT2 included prior use as a predictor of habits and accounted for experience with the target technology in their attempt to understand the impact of habits on technology use. Ajzen and Fishbein (2005) also noted that feedback from previous experiences will influence various beliefs which contributed to future behavioral use. In this context, habit is a perceptual construct that reflects the results of prior experiences. UTAUT2 found that prior use was a strong predictor of future technology use. This study linked lived experiences which could result in habitual behavior.

UTAUT2 incorporated the main relationships within the UTAUT, but the model also contributed new constructs and relationships that extended the application of the UTAUT from an organizational to a consumer context (Venlatesh et al., 2012). UTAUT2 documented results from a survey of 1512 mobile internet consumers. The variance demonstrated 74 percent in behavioral intention (compared to 70 percent for the UTAUT in an organizational context) and 52 percent in technology use (compared to 48 percent in the UTAUT in an organizational context) (Venlatesh et al., 2012). Venlatesh et al. (2012) suggested the extensions were critical in making the predictive validity of the UTAUT in a consumer context comparable to what was found in the original UTAUT in an organizational context. UTAUT2 has proven to be a powerful predictive framework which this study utilized deductively to predict behavioral intent and use of smartphones. This study prioritized determinants which focused on attitudes, experiences, perceived behavioral control, and motivation determinants from UTAUT2.

CHAPTER 3

METHODOLOGY

Introduction

Qualitative studies can begin with "assumptions about a specific problem that needs to be explored" (Creswell, 2007, p. 37). This study hoped to explore why university students continued to use smartphones in class when they understood their behavior caused problems in class. The purpose of this qualitative interview study was to explore undergraduate university students' perceptions on the use of personal smartphones in college classrooms. Additionally, this study investigated the experiences and behaviors which could motivate a college student to use their personal smartphone in the university classroom.

This study utilized a qualitative research methodology to describe and understand lived experiences, rather than predict and control it. Qualitative methods focus on the whole of human experience and the meanings through individuals lived experiences which could reveal a broader understanding and deeper insight into human behaviors (Lincoln, 1992). Lincoln (1992) argued that qualitative methods are naturalistic and participatory modes of inquiry that disclose the lived experiences of individuals. Consequently, "there is no single, objective reality, there are multiple realities based on subjective experience and circumstance" (Wuest, 1995, p.30). The conceptual framework from which the data was collected and analyzed in this study incorporated methods which were both inductive and deductive.

A qualitative interview was used inductively to explore and discover how an individual undergraduate university student experienced smartphone uses in their everyday campus life.

This study focused on participants' lived experiences in the classroom environment. Research questions and interview questions guided the theoretical framework. High-quality qualitative research begins with a question or set of questions that help guide the researcher (Ritchie et al., 2013). Themes identified inductively from the emerging data contributed to the findings. As a result, early design decisions were revisited as themes and important topics emerged from the data.

Deductive data collection and analysis was used to confirm and evaluate whether data were consistent with prior assumptions or theories (Thomas, 2006). This study utilized the Unified Theory of Technology Acceptance and use of Technology 2 (UTAUT2) (Venkatesh et al., 2012) to evaluate or confirm existing theories on behavioral intent and use of smartphones in class. A pre-set list of codes generated from the determinants of UTAUT2 (Venkatesh et al., 2012) were used to extract themes from participants' responses. Appendix B outlines the determinants used for coding and definitions for each pre-set code.

Research Design

Researchers widely use qualitative research to study human behavior, opinions, themes, and motivations (Wilson, 1986). Data is concerned with the features, attributes and characteristics of phenomenon that can be interpreted thematically. One of the advantages of qualitative research over quantitative research as noted by Wilson (1986) suggests qualitative research is useful when a subject is too complex to be categorized by simple yes or no hypothesis. This method of study could yield richer and more insightful data with reasons and patterns within phenomena. Another advantage is when budgets are small and sample sizes are restricted, and small sample sizes could generate meaningful results. Qualitative research could *paint a picture* of phenomenon over dispassionate quantitative review and provide depth of

understanding about phenomena that cannot be measured. High internal validity could be achieved, and useful data is always generated. Unlike quantitative research, there is not a problem if qualitative research goes in an unexpected direction, and unexpected results are welcome and discussed (Wilson, 1986).

A qualitative interview design with research questions guiding data collection and discussion was considered the most appropriate research methodology to generate the data needed to meet the goal of this study. The focus of this study was to develop the full meaning of the participants' experiences as shared in their own words. Qualitative research incorporating interviews provided examples of lived experiences with the aim of achieving a deeper understanding of nature or the meaning of one's everyday experiences. This approach has been deemed especially suitable for researchers attempting to discover a deeper understanding of everyday lived experiences (Mackey, 2005). Smartphones are now considered an essential element of college students' everyday lifestyle (Tamayo et al., 2024). This study was concerned with investigating how smartphone usage could impact the academic experiences of college students, which is a growing experience for college students in university classrooms.

Research Questions

The aim of this research was to answer the following questions:

1. How do undergraduate university students perceive the use of smartphones in a face-to-face college classroom?

2. What experiences and behaviors motivate undergraduate university students to use their smartphones in a face-to-face college classroom?

Participants

Undergraduate students attending a university were conveniently selected to participate in this study. The University of Georgia (UGA) provided the target sample population desired for this study. UGA is a diverse, technologically advanced university with a large enrollment of undergraduate students to sample from. Participants were purposefully selected at UGA to provide homogeneity. Higher levels of homogeneity were achieved by purposefully sampling from the undergraduate student population to include only first-year students in their second semester. The participants were selected who own and use at least one smartphone. Convenient sampling was utilized due to my academic enrollment at UGA which allowed for ease of access to the sample population. The sample size of ten participants was sufficient to reach data saturation in this study. Guest et al. (2006) carried out a systematic analysis of their own data from a study of sixty participants. The study concluded that for studies with a prominent level of homogeneity among the population, a sample size of six interviews may be sufficient to enable development of meaningful themes and useful interpretations.

Procedure

This study was conducted at the University of Georgia. Students at UGA were recruited from freshmen Odyssey courses during the spring semester. Written permission was obtained from the teaching institution where the sample was recruited. I incentivized participation by offering students a $25 gift card of their choice to participate in this study. The first 10 participants who responded were recruited for the study. An IRB approval was obtained from UGA to conduct this study. A written consent form which included the confidentiality of each participant was distributed and completed by the chosen participants in this study. Audio

recorded interviews were conducted in person and all follow ups were communicated through email.

Methods for Data Collection

The purpose of qualitative data is to provide evidence of the characteristics of an experience (Polkinghorne, 2005). Common methods include interviews and observations (Hoepfl, 1997). The data collection method in this study included individual interviews. The semi-structured interview questions consisted of ten open-ended questions which were conducted face-to-face. An interview should consist of 5 to 15 predetermined questions, but the interviewer can probe and dig deeper into the interviewees' responses through follow-up questions (Lingard & Kennedy 2010). The interview sessions were audio recorded to last no longer than 30 minutes in duration.

Advantages and disadvantages of the decision to conduct interviews for this study will be discussed. A significant advantage was that any topic can be explored in much more depth with interviews than with almost any other method (Turner, 2010). Participants could share information with researchers in their own words and from their own perspectives. In-person interviews allowed researchers to make observations beyond those that a respondent was orally reporting (Turner, 2010). Interviews were at a disadvantage due to the extensive time commitment required for the researcher. Scheduling conflicts were identified in the interview process with varied schedules from the participants of studies. Interviews were also deemed more labor intensive than observations. Lastly, interviews relied on respondents' ability to recall specific details accurately and honestly about their lives, circumstances, thoughts, opinions, or behaviors (Turner, 2010).

Disadvantages of conducting an interview could limit qualitative studies, but limitations could be addressed (Turner, 2010). The use of video observations to interpret body language and member checking with follow up questions to clarify responses could be utilized to increase the validity of the participants' responses. Video observations were not utilized in this study due to the lack of expertise in interrupting body language, but member checking was utilized to build trustworthiness. The disadvantage of time could have been addressed by utilizing graduate assistants to collect data which could minimize the time requirement of the researcher. However, this study did not require an outside source to conduct the interviews, I conducted the interviews in hopes of gaining detailed data suitable to answer the research questions. I was more effective than an outside source in probing or digging deeper into a response. Scheduling conflicts were avoided by scheduling interviews that took place during breaks when students did not have class. The interview sessions were scheduled on the main campus and in the library, which created convenience and comfort for the participants to attend.

There are three common formats for interview design which are summarized by Bryman (2003). One familiar format is an open or unstructured interview, which is often based on a single question with the interviewer and interviewee then shaping the conversation in real time rather than following a prewritten schedule. Another familiar format is a structured interview, which is rigidly structured to provide greater control for the researcher, becoming questionnaires where responses are verbal rather than written. The third usual format is a semi-structured interview which is the most common. Core elements of the phenomenon being studied are explicitly asked about by the interviewer, which ensures data will be captured in key areas while still allowing flexibility for participants to bring their own personality and perspective to the discussion.

A semi-structured interview was selected and deemed most effective in collecting the desired data in this study. The determinants from UTAUT 2 were incorporated into the structure of the questions (see Appendix B). Data in key areas were desired while open-ended questions allowed the interviewee the flexibility to add their own perspective to the discussion. Open-ended questions were the preferred method of discussion during the interview process to enhance detailed responses from participants in their own words. Appendix A outlines the interview protocol and interview questions.

Data Analysis

Data interpretation or analysis is to make *sense* out of what was just uncovered and compile the data into sections or groups of information, also known as themes or codes (Creswell et al., 2007). Themes are consistent phrases, expressions, or ideas that were common among research participants (Kvale, 2007). The purpose of qualitative data analysis is to understand phenomena deeply and in detail. All qualitative data can be coded quantitatively (anything that is qualitative can be assigned to meaningful numerical values) and all quantitative data is based on qualitative judgment (numbers in and of themselves cannot be interpreted without understanding the assumptions which underlie them) (Atieno, 2009). This study analyzed data deductively, inductively, and thematically which explored how an individual undergraduate college student experienced smartphone uses in their everyday college life.

Deductive analysis was used to confirm and evaluate whether data were consistent with prior assumptions or theories (Thomas, 2006). This study utilized the Unified Theory of Technology Acceptance and Use of Technology 2 (UTAUT2) (Venkatesh et al., 2012) to evaluate or confirm existing theories on behavioral intent and use of smartphones in class. A pre-set list of codes extracted from UTAUT2 (Venkatesh et al., 2012) was used for coding interview

responses. Appendix B outlines how each determinant from UTAUT2 (Venkatesh et al., 2012) was used for coding interviews with definitions provided for each pre-set code. A *top-down* approach as described by Creswell (2012) was used to analyze data that started with predetermined codes established from UTAUT2 (Venkatesh et al., 2012).

Inductive analysis is exploratory and uses detailed readings of raw data to derive concepts, themes, or a model through interpretations made from raw data by the researcher (Thomas, 2006). The researcher begins with a topic of study and allows the codes and themes to emerge from the data (Strauss & Corbin, 1998). Although the determinants of UTAUT2 were used deductively as predetermined codes, an inductive approach also allowed for data to emerge in addition to the determinants. A *bottom-up* approach as described by Creswell (2012) was used to analyze data upon completion of the top-down approach that allowed for codes, patterns, and themes to emerge inductively which broadened and refined prominent codes that were identified from the top-down approach.

This study also relied on thematic analysis which is a descriptive approach described as a method for identifying and analyzing patterns within data (Braun & Clarke, 2006). Thematic analysis in this study was structured as described by Creswell (2012). Creswell (2012) suggested a data analysis process that was categorized into five steps which the author of this study replicated. The analysis process was structured into (1) familiarization with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing and refining themes, and (5) defining and describing themes.

The first step in Creswell's Thematic Analysis Process suggested that the researcher carefully reads the transcribed data multiple times to ensure a comprehensive understanding of the data collected from participants (Creswell, 2012). This is the initial time spent by researchers

to be reflexive and identify potential areas of interest. The author of this study utilized the ATLAS.ti (2025) software to transcribe participant responses which allowed for familiarization of the data. The data was read multiple times which provided further understanding of the data which resulted in key areas of interest that were documented in ATLAS.ti (2025). ATLAS.ti (2025) software was a useful tool for organizing and storing information securely and the digital notetaking features provided a convenient method of notetaking or journaling. The documented areas of interest served as a reminder in later steps which helped identify patterns, meanings, and concepts that resulted in the establishment of themes.

Once the data was familiarized, participant voices were clarified through reflexivity to align with the definitions and meaning of the eight priori codes. For example, participants' choice of words did not align with the priori codes. The author of this study clarified responses during the interview sessions to gain detailed understanding of the meaning behind words or phrases recorded from participants which provided an alignment to the meaning of the priori codes. Participants did not use the word *hedonistic*; therefore, the words *pleasure*, *pleasurable*, *leisure*, and *fun* were included in the priori code for hedonistic motivation.

Notes were documented through journaling and tagged as comments in the ATLAS.ti (2025) software when an area of interest was identified during the familiarization process. Tagged comments were very useful during the open coding process which provided analytical direction because they were documented from the interpreter's lens. ATLAS.ti (2025) software also provided tools to help familiarize the data with features such as examining word frequencies, searching for concepts, or searching for sentiment.

The second step in Creswell's Thematic Analysis Process suggested that the researcher starts the coding process by assigning labels or categories of data that identify key ideas or

patterns (Creswell, 2012). This step included both the top-down and bottom-up approaches. The author of this study utilized In Vivo coding which emphasizes participants' voice (Saldaña, 2009). In Vivo coding uses participants' exact words which ensures thick descriptions (Ponterotto, 2006). Codes were identified during the analysis process where certain words and phrases began to repeat in high frequency and become a key concept, pattern, or theme. Meaningful data which repeated with the highest frequencies were identified as prominent codes. The determinants of UTAUT2 (Venkatesh et al., 2012) were used as pre-set codes to identify and categorize data. The ATLAS.ti (2025) software aided in the organization and categorization of identified codes from participant responses.

The top-down approach was utilized to start the coding process. The predetermined codes extracted from the determinants of UTAUT2 (Venkatesh et al., 2012) provided a useful and organized initial framework. Eight established priori codes were manually created and applied in the ATLAS.ti (2025) software. There is a function in ATLAS.ti (2025) where the user has the option to add a definition or comments to created codes or applied codes which proved to be useful to ensure reflexivity (see Appendix B for examples of definitions used for each priori code and how they were applied). Priori codes helped organize and categorize data which resulted in identification of meaningful patterns, concepts, and ultimately themes.

The bottom-up approach was utilized once deductive coding was completed. ATLAS.ti (2025) coding software was used as a digital form of open coding called auto coding. Open coding allows for concepts to emerge from raw data and later grouped into categories (Saldaña, 2009). The auto coding feature available in the ATLAS.ti (2025) software provided open coding where the entire document was coded line by line, but the coding software automatically grouped

concepts and patterns and suggested potential codes for categorization. The auto coding feature was not a reliable source to analyze data, and it proved to be somewhat inaccurate.

The author of this study struggled with the use of the auto code feature as the ATLAS.ti (2025) software produced 476 code suggestions. Most of the auto generated codes were not codes; therefore, adjustments and refinements were required which defeated the purpose of using the auto coding feature to save time. The author found that it was more effective to manually code line by line. Although manual line by line coding is time intensive, it was actually more time intensive to go through each of the 476 auto generated codes and remove or adjust and refine each one. The ATLAS.ti (2025) software has a manual open code function which was more effective when familiarity and reflexivity was incorporated into the process. The researcher established areas of interest from familiarity of data which expedited the open code process. For example, when the area of interest identified from familiarity emerged (for example, self-regulation of smartphone use), the area of interest was tagged as a potential code and defining meaning or words or phrases (for example, restrict, put away, turn off, silence, do not disturb, ignore, do not check) could be added to the tag and, comments were documented for reflexivity.

Data from each interview transcript was also segmented and assigned a code. For example, the sentiment feature was used during the familiarization process which segmented the data. Positive and negative sentiment for smartphone use in class was initially applied and then broken down into smaller and more meaningful segments until a meaningful concept for a code such as boredom emerged which was then tagged as a code.

The third step in Creswell's Thematic Analysis Process suggested that the researcher starts to search for themes (Creswell, 2012). Creswell (2012) suggested that themes are formed when prominent codes are grouped together to represent broader patterns or meanings. ATLAS.ti

(2025) software was most useful once prominent codes were identified. The software has a code manager where codes were organized. The code manager helped categorize codes and examined the frequencies and theoretical development of codes. The code manager has functions that merge or split codes. Codes were refined and meaningful codes were split into sub-codes. The software has visual thematic maps that were used to identify patterns and relationships between codes and themes. The visual maps were helpful to see how codes were interconnected and how they represented broader patterns or meanings to form themes.

The fourth step in Creswell's Thematic Analysis Process suggested that the researcher review and refine themes (Creswell, 2012). Creswell (2012) suggested that researchers revisit data to ensure accuracy and align data with the research questions. Code-recode strategy was used to ensure accuracy. The use of ATLAS.ti (2025) coding software provided a convenient way for the author of this study to code-recode multiple times. The same transcribed data was organized and categorized by the same coding software to ensure dependability of findings. The prominent codes which were identified remained the same with every code-recode attempt. The words and phrases which repeated in the highest frequencies remained the same. Once the data was coded multiple times, prominent codes and themes were aligned to correspond to each research question or aligned to correspond to both research questions. Themes were revisited and refined which identified sub-themes to a central theme.

The fifth step in Creswell's Thematic Analysis Process suggested that the researcher define and describe themes (Creswell, 2012). Creswell (2012) indicated that the final step involves the researcher providing descriptions of meanings and significance within the findings. Results of findings from this study are discussed in detail in chapter 5. Results were discussed with supporting evidence from the established synthesis of theories which make up the UTAUT2

(Venkatesh et al., 2012). Additional documented studies pulled from literature were used to discuss codes and themes that were not supported by UTAUT2.

Limitations

A limitation of this study was the study focused on a single research method. A mixed method design which includes a quantitative analysis could further validate data and could be complimentary to fully explain the results of analysis (Yauch & Steudel, 2003). Research has already established numerous quantitative studies which documented college students and the use of smartphones in class. Qualitative focus could contribute more specific details from the students' perspective (their voice) to what is already documented. This study focused on a qualitative inquiry on discovering why university students used smartphones in class even though they were aware of the disruptive nature. "The degree to which participant voice is heard and embedded in the membership of the research team, engagement of participants in the research design, approaches to transcript analysis, and ways in which meaning is made, iterated, and shared may be best accommodated using the methods of qualitative research" (Kozleski, 2017, pg. 22). The goal of this study was achieved in conducting face-to-face interviews rather than distributing surveys.

Another limitation of this study was the study omitted age and gender as potential determinants of smartphone use in the college student demographic. Age and gender were described in UTAUT2 as determinants for behavioral intent and use of technology such as smartphones, but I decided to omit both potential codes. My rationale to this omission was that I recruited the first ten participants who responded to participate in this research, regardless of gender, therefore, omitting the categorization of gender was appropriate.

As for the omission of age, I purposively selected the participants from second semester, first year students to create homogeneity due to the limited number of participants sampled in this study. The concept of selective sampling to create homogeneity was suggested by Guest et al. (2006) allows qualitative researchers to reach data saturation with limited participants. All participants were also of similar age due to their similarity in their academic standing. The omission of age could limit the results of this study due to the potential of differences in perceptions of upper-class college students compared to lower-class college students. College classroom size emerged as the central theme in this study, and upper-class college students who were omitted from this study could have a different perspective on what constitutes a large or small class. Upper-class college students generally attend smaller classes compared to lower-class college students; therefore, they could perceive smartphone use differently.

Teachers were omitted as the study focused on the students' perspectives. The rationale to my interest in the students' perspectives was I sought to better understand *why* they continue to use smartphones in classrooms, even when smartphones were banned, or they perceived smartphone usage to be disruptive. Research documented college students were aware of the disruptive nature of smartphone use in classrooms, but they generated excuses to use them anyways (Langan et al., 2016). College students and their use of smartphones were the source of distractions in face-to-face classrooms; therefore, I believed this study was best suited to focus on the students' perceptions in hopes of contributing to existing literature and providing some clarification to why they behave in this manner.

Smart devices which are comparable to smartphones such as laptops and tablets were also omitted, which limited this study. The rationale to this limitation was research documented that college students were less likely to own and use tablets in college classrooms (Pearson, 2015),

and laptops were generally accepted by college professors in their classrooms (Reisdorf et al., 2020). Laptops are typically not viewed as a disruptor in a classroom environment, but rather a modern notetaking tool utilized by college students in face-to-face classrooms.

Trustworthiness

Trustworthiness was established to ensure the quality of the findings from this study. The author established trustworthiness with the suggested trustworthiness criteria provided by Anney (2014). Anney (2014) investigated graduate level dissertation submissions and purposely examined the trustworthiness criteria disclosed in the methodology chapters for appropriateness. The researcher performed a library-based investigation into the dissertation submissions which indicated that doctoral students sampled in the study did not meet trustworthiness criteria as suggested by established literature. The results indicated that only 7 out of 245 dissertation submissions examined in the study met trustworthiness criteria. Anney (2014) suggested that qualitative researchers should consider credibility, transferability, dependability, and confirmability to meet trustworthiness criteria to ensure the rigor of findings. Each category of trustworthiness criteria will be explained followed by a discussion of examples of trustworthiness utilized in this study to meet the trustworthiness criteria established by Anney (2014).

Credibility was defined by Anney (2014) as "the confidence that can be placed in the truth of the research findings" (p. 276). Anney (2014) indicated that credibility establishes researcher interpretation drawn from participant responses remain in the context of the participants' original views. Anney (2014) identified various strategies that promote credibility, but the author of this study established credibility with peer review and member checks. Feedback provided by professionals in the field of education was established by the author of

this study to promote credibility. Anney (2014) suggested that a peer review can improve the quality of findings. The committee members for this dissertation provided valuable peer review which established credibility to meet trustworthiness criteria.

Anney (2014) indicated that member checking was a crucial strategy to maintain credibility. Member checking can reduce researcher bias when interpreting data in qualitative research. Member checking allows researchers to seek clarifications throughout the data analysis process to remain focused on the context of participant responses, rather than their subjective interpretations (Anney, 2014). Although Anney (2014) suggested follow up member checks should be performed upon completion of data collection, member checking in real time during the interview process has also shown to be an effective strategy to maintain credibility (Zairul, 2021).

Zairul (2021) indicated that member checks in real time was a new approach in qualitative research, and member checks in real time were useful alternatives compared to traditional member checks where researchers ran into issues of obtaining responses from participants once the interview sessions were completed. Situational probing and real time member checks were utilized in this study which provided clarifications from participants during interview sessions. Real time member checks and situational probing allowed the author of this study to clarify responses from interviewees in real time which promoted the concept of thick descriptions. Situational probing and real time member checks during interview sessions reduced the amount of time spent on follow-up member checks. Member checking through follow-up emails were only necessary to clarify responses from the first interviewee.

According to Anney (2014), transferability refers to “the degree to which the results of qualitative research can be transferred to other contexts with other respondents” (p. 278).

Transferability can be facilitated by relying on the concept of thick descriptions (Anney, 2014). The concept of thick descriptions was utilized during data collection and data analysis which reduced my bias and ensured transferability. Ponterotto (2006) defined the concept of thick descriptions as "the researcher's task of both describing and interpreting observed social action (or behavior) within its particular context" (Ponterotto, 2006, p. 543). Thick descriptions could be achieved when the researchers made themselves aware of their subjectivity and remained focused in context of participants' responses (Ponterotto, 2006). Thick descriptions allow researchers to be focused on participant responses, rather than their own interpretations, and provide interpretation directly from quotations. A good example of this concept is to compare thick descriptions to thin descriptions. Thick descriptions provide specific details straight from participant responses which describes their behavior and provide rich, detailed descriptions. Thin descriptions tend to be generalized findings where participant responses are interpreted in the context of the researcher (Ponterotto, 2006).

Dependability refers to "the stability of findings over time" (Anney, 2014, p. 278). Anney (2014) identified various strategies to ensure dependability, but the author of this study relied on the code-recode strategy and peer examination. The code-recode strategy involves the researcher coding the same data multiple times and comparing the results for similarities and differences. Dependability is ensured when code-recode results are the same (Anney, 2014). The use of ATLAS.ti (2025) coding software provided a convenient way for the author of this study to code-recode multiple times. The same transcribed data was processed by the same coding software to ensure dependability of findings. The prominent codes which were identified remained the same with every code-recode attempt. The words and phrases which repeated in the highest frequencies remained the same.

The peer examination ensures dependability as described by Anney (2014) as the process of the researcher to establish discussion with neutral colleagues about his or her research process and findings. Peer discussions can contribute to the reflexivity of the researcher (Anney, 2014). The author of this study was fortunate to have multiple colleagues enrolled in the same doctoral program who provided peer examination throughout the data analysis process. The discussions from peers were valuable, particularly during the open coding process, where peers provided feedback which contributed to my reflexivity to ensure dependability.

According to Anney (2014), confirmability is "concerned with establishing that data and interpretations of the findings are not figments of the inquirer's imagination but are clearly derived from the data" (p. 279). Confirmability can ensure trustworthiness through reflexive journaling and assessing researcher's self-analysis with a subjectivity statement (Anney, 2014). The author of this study disclosed a subjectivity statement, and the statement revealed a negative perception for the topic of study. The subjectivity statement was useful as a constant reminder for the researcher to maintain reflexivity.

Researcher bias is a concern in qualitative research, but confirmability can be established to limit researchers' bias through reflexivity (Olmos-Vega et al., 2022). Olmos-Vega et al. (2022) defined reflexivity as, "continuous, collaborative, and multifaceted practices through which researchers self-consciously critique, appraise, and evaluate how their subjectivity and context influence the research processes" (p. 241). Reflexivity is a useful practice for qualitative researchers where they could, for example, writing memos or journal thoughts and ideas throughout the data collection and analysis process to help them reflect on their subjectivity.

The author of this study practiced the concept of reflexivity and thick descriptions during data collection and data analysis. The author constantly reminded himself to be aware of his bias

and stay in the context of participants' responses during the interview process. Journaling during the interview sessions recorded the author's subjectivity towards participant responses. The journals ensured researcher reflexivity during the coding process which focused data interpretation on participant quotations and allowed codes and themes to emerge from participant responses. The journals collected during the interview sessions provided clarity on where to draw the line between the author's subjectiveness and participant responses. When a new code or theme arose from participant interviews during data collection that was not expected, the author practiced reflexivity before probing participants to ensure they did not lead the participants to respond in the manner the author desired.

Subjectivity Statement

The impact of portable, handheld computing devices such as smartphones and their use in university classrooms is an area of interest for me as a researcher. In terms of qualitative research, I have interest in exploring university students' use of smartphones in college classrooms described in their own words. It would be interesting to discover both the positive and the negative perspectives that may result from the study and examine how these results could contribute to existing studies and current practices. I hope the results from my research positively impact on the way higher education faculty and administrators formulate policies concerning smartphone usage in classrooms. I want to focus my research on performing studies that may yield practical results.

What is not relatable for me is the use of portable, handheld computing devices such as smartphones in my classrooms. I did not grow up with the use of this type of technology in my studies, so I am unaware of its potential benefits. I grew up with historical classroom technologies such as the pen, paper, and the chalk board which allowed for note taking from a

lecture. I am well versed in the traditional teacher-centered (passive) approach of instruction. I realize current educational technological advancements have shifted the learning environment towards a more student-centered (active) approach.

I teach college level courses in face-to-face classrooms at a major university, and I struggle with the transition from more traditional teaching approaches to modern technological approaches. I do not have the guidance or background to effectively incorporate a device such as a smartphone into my teaching practice. I only have my personal experience as an instructor to rely on, and my experience with students' smartphone use in my classrooms has been negative. I associate cellphone use in my classrooms as distractions, and I ban cellphones in my classroom policy. Recent studies documented that college students will use their smartphones in class, but few provide details from the students' perspective on *why*.

The findings from this study could have the potential to positively impact college students' usage of smartphones in university classrooms and improve students' academic achievement in higher education. Additionally, the study could yield useful information on how a college student perceives others using smartphones in class and how this perception could influence classroom policies. These findings could potentially impact smartphone policy formation in higher education institutions and how best to incorporate smartphones into the university classroom.

Lastly, I believe this research was strengthened by the ease of my ability to collect data. I had the potential to sample from thousands of college level students from my university as potential participants. There were an abundant number of studies to compare the results of my study, but most studies in this area were quantitative; therefore, a qualitative examination further strengthened research in this area of study. This study had the potential to become influenced by

my bias. My personal experience motivated me to focus on negative results from this study. I was very careful not to let this bias limit my research, and I incorporated research methods (trustworthiness) which helped reduce the impact of my bias and provided credibility, transferability, dependability, and confirmability to the findings.

CHAPTER 4

PARTICIPANT PROFILES

This chapter provides a profile for the ten individuals interviewed for this study. All participants were enrolled and attending the University of Georgia during the 2024 spring semester. All participants were in their second semester of their freshman year, and each participant owned and used a smartphone daily. Participants were recruited and interviewed at the end of their second semester in hopes to ensure each participant had enough college experience and a variety of classes from which to draw experiences and perceptions. This purposive sampling provided a homogenous sample population which allowed this study to achieve data saturation with limited participants (Guest et al., 2006).

Each participant described in this chapter was given an interviewee number from one to ten to maintain their anonymity. Participants were interviewed in person and on campus near the end of spring semester 2024. The interview was conducted in the main library on campus in hopes of providing comfort and security for the participants. Qualitative interviews which lasted thirty minutes were semi-structured and allowed flexibility during the interview process to be less scripted and more conversational. The more relaxed tone and conversation allowed themes to be identified inductively outside of the predetermined conceptual framework.

Interviewee 1

Interviewee 1 (INT 1) owns and uses one smartphone daily, which was paid for by their parents. They have owned smartphones since sixth grade and felt socially influenced by others to upgrade and use Apple products. They prioritized getting another phone over buying groceries if

their smartphone broke, which demonstrated the importance of the device in their daily life. INT 1 perceived smartphones to be easy to use and useful in everyday life for communication, accessing emails, schoolwork, and as a calculator. However, INT 1 acknowledged the negative impacts of excessive use, such as time consumption and decreased productivity. INT 1 perceived smartphones to be easy and convenient to use, which leads to more usage.

They valued accessibility and demonstrated dependence (they always had their phone on and on them). INT 1 felt pressured not to use their smartphone in small classrooms due to others seeing them and respecting teachers, while in large classes, they used it freely. Professors' engagement influenced their smartphone use in class. They felt boredom when disengaged from the teaching methods provided by their professors. INT 1 turned to their smartphone to cure boredom in their personal life, while also finding it a cure for boredom in class. They believed they had control over smartphone usage but admitted it could be difficult to resist the urge to scroll. Their smartphone use was influenced by notifications, boredom, and social compliance with friends and family. INT 1 considered their smartphone useful in class for various functions such as notetaking and using educational resources.

While they preferred using a laptop in class, they believed smartphones and laptops should be held to similar standards by professors. They preferred using their laptop for school-related tasks and their smartphone for entertainment purposes. They sometimes used their phone in class for non-academic activities such as social media and texting friends, feeling compelled to check notifications without considering the consequences. They found it difficult to resist checking notifications out of habit and the fear of missing out (FOMO).

They acknowledged that smartphone use could be distracting in class, which led to potential negative impacts such as not retaining information from class lectures. However, they

generally accepted others using smartphones in classes and believed that students should have the freedom to make their own decisions regarding phone use, apart from use during quizzes and exams which will lead to cheating. INT 1 did not see a need for professors to incorporate smartphones into course content or lectures, as they believed computers are more suitable for that purpose.

Interviewee 2

Interviewee 2 (INT 2) owns and uses one smartphone daily and has one subscription plan which is paid by their parents. They had access to a smartphone since sixth grade, about eight years, and would purchase a new one if needed in the future. They perceived smartphones as useful tools and they used their smartphone in everyday life for communication, reminders, checking assignments, and social media. INT 2 found smartphones important, easy to use, and convenient in their everyday life, particularly for entertainment to relieve boredom.

In college classrooms, they perceived smartphone use as less necessary but still positive. They perceived it as useful for staying organized and focused academically. While they believed people should have self-control with smartphone use, they supported having access to smartphones in class. INT 2 perceived smartphones to be easy to use and useful in class for reminders, boredom relief, and academic purposes such as notetaking. They sometimes hesitated to use their smartphone in class due to potential distractions, but they believed in having the choice to use it responsibly. INT 2 perceived class size as a factor in more frequent smartphone use, particularly in larger classrooms where they felt they could use smartphones and not get noticed.

INT 2 did not negatively judge others' phone use. They perceived others’ use of their smartphones as a social influence to use theirs at times, especially when feeling bored. They

believed smartphone policy should be discouraged and not banned but banned during quizzes and exams to prevent cheating. They also discussed personal efforts to self-regulate screen time for productivity.

Interviewee 3

Interviewee 3 (INT 3) owns and uses one smartphone daily, with their parents managing the payments. They would be willing to pay for their phone if necessary. They consider smartphones to be a lifeline and essential for staying connected socially. INT 3 owned a smartphone since sixth grade, with the importance growing in high school. They see benefits in social connectivity but acknowledged it can be a distracting habit. INT 3 was aware of the disruptive potential on productivity; therefore, they self-regulated usage. They found it difficult to resist checking notifications out of habit and the fear of missing out (FOMO).

In classrooms, they found it disrespectful to use smartphones during face-to-face lectures, particularly in small classrooms. INT 3 considered the professor's perception more important than their peers. They were aware of the consequences before using their phone, balancing urgent situations and respectful behavior. INT 3 perceived smartphones to be useful and easy to use academically for calculations or referencing class material. INT 3 admitted they are more motivated to use smartphones in large classrooms where use could go unnoticed.

Outside the classroom, their lifestyle usage was consistent, favoring laptops for class activities and smartphones for leisure activities. They had a positive view of smartphones in everyday life, but in class, they perceived smartphone use to be more negative, and they should be limited or banned to maintain focus and respect. INT 3 preferred using Apple products over Android due to their user-friendliness, speed, and quality, finding it easier to use for various

situations. Most of their friends also owned Apple products, with one friend switching from Android to Apple due to social pressure and easier group chat compatibility.

Interviewee 4

Interviewee 4 (INT 4) owns and uses one smartphone daily, which was paid for by their parents. They perceived smartphones in everyday life to be easy to use and useful for activities such as communication, schoolwork, and directions. INT 4 prefers Apple over Android due to family and social influence. They view smartphones as convenient and useful when they get bored. Smartphones are the "go to" for entertainment and social connection to relieve boredom in everyday life.

They discussed smartphones as distractions in the classroom, particularly in larger classes where their smartphone use is more frequent and identified boredom as a key reason for smartphone use both inside and outside of class. INT 4 acknowledged their screen time habits, tracing them back to their childhood experiences where their parents cultivated their ability to manage boredom without technology. They detailed their academic and non-academic uses of smartphones in class, which attributed their usage to convenience and entertainment.

INT 4 perceived notifications as tempting and may prompt habitual behaviors. They used to constantly check their smartphone for notifications due to the fear of missing out but have now become more aware of their smartphone usage. They felt their smartphone use was the highest in class due to boredom and curiosity from notifications. They believed their friends were addicted to their smartphones and felt influenced to use their own smartphone when others do.

INT 4 found it unprofessional if a teacher used their phone in class but acknowledge their own phone use may be perceived similarly, particularly in small classrooms. They reflected on the negative consequences of excessive smartphone use on their learning and studying habits.

They believed students should have the choice to use phones in class but would favor a banned smartphone policy during quizzes and exams to prevent cheating.

Interviewee 5

Interviewee 5 (INT 5) owns and uses one smartphone daily which was paid for by their parents. They owned a smartphone for four years, having had a phone since eighth grade. They found smartphones to be important in their daily life, and they would purchase their next smartphone on their own if necessary. They perceived smartphones useful and easy to use in everyday life for communication, navigation, weather updates, and tools such as calculators. INT 5 acknowledged always having their smartphone with them and on but they self-regulated use due to the disruptive potential of smartphone use which hindered productivity.

In the classroom, the participant avoided using their smartphone for non-academic purposes, finding it distracting and prefers laptops or paper for notetaking. They prioritized paying attention as they are now investing in their education. While they may check their phone for important notifications during class, they consider the consequences of being caught by their professor, particularly in small classrooms. INT 5 avoided using their smartphone in class by using a notebook instead, feeling more control using their smartphone outside of class than inside.

They were influenced by the fear of getting kicked out of class and their desire to be respectful, particularly in small classrooms. Seeing others using their smartphones around them did not impact their behavior, but if everyone in class was using their phones, they may feel more comfortable using theirs, particularly in large classrooms. INT 5 believed in discouraging smartphone use in the classroom, allowing for emergency use only if they drafted smartphone

policies. They believed smartphone use during exams and quizzes should be banned to prevent cheating.

Interviewee 6

Interviewee 6 (INT 6) owns and uses one smartphone daily that their parents paid for. They got their first smartphone at 13 years old. INT 6 perceived smartphones to be essential in their everyday life for communication and found them to be useful for various tasks such as alarms, checking weather, listening to music, and staying connected to friends and family. They viewed smartphones as easy to use tools that made daily tasks easier but also found them to be distractions, especially at night when they were bored.

In class, INT 6 avoided using their smartphone and controlled distractions by using the 'Do Not Disturb' mode and silenced notifications. They found it difficult to resist checking notifications out of habit and the fear of missing out (FOMO). They perceived smartphones useful and easy to use in class for academic purposes such as taking photos of whiteboard notes or sending course emails. INT 6 acknowledged the potential for smartphones to be distracting in class but actively managed their usage to stay focused on academic priorities. They used their smartphone for pleasure when they struggled to pay attention in class due to boredom.

The professors' lecture delivery impacted their level of engagement which caused boredom when disengaged. They perceived they have control over their smartphone usage in class due to negative past experiences. INT 6 compared the level of control in large vs small classrooms, revealing they felt more control over usage in large classes where use could go unnoticed.

They perceived smartphones as potentially useful education tools depending on the context and understood why some professors discourage smartphone use in class. INT 6 was

against banning smartphones in class and favored discouraging their use. They felt individuals were responsible for the consequences of their actions, such as lower grades if distracted by their phones, and would only ban phones during exams and quizzes to prevent cheating.

Interviewee 7

Interviewee 7 (INT 7) owned a smartphone since the age of thirteen and currently uses one daily that their parents paid for. They perceived smartphones to be useful and easy to use for staying connected to family and friends in everyday life, especially while being away from them. They felt that smartphone usage in everyday life and in the classroom can be both positive and distracting. They typically relied on their smartphone for pleasure when they felt boredom in everyday life, highlighting a problem with productivity when smartphone use was not self-regulated. They found it difficult to resist checking notifications out of habit and the fear of missing out (FOMO). INT 7 perceived smartphone use of their friends to be addictive and they acknowledged social factors could influence their use.

In class, they tried to limit their smartphone usage out of respect for their professors but admitted to sometimes being tempted to use it when others around them were using their smartphones. INT 7 perceived smartphones to be very useful for various activities in class, including academic purposes such as taking pictures of the board and using it as a calculator, as well as for non-academic purposes such as communication and entertainment. They also acknowledged that peer behavior could influence their own smartphone usage in class. INT 7 felt they were more tempted to use their smartphones in larger classrooms vs smaller ones, and the teachers' delivery method of lectures played an influential role in creating boredom which motivated them to consider using their smartphone for entertainment. The participant felt the best

way for professors in college to control smartphone usage in class was to strongly discourage use during lectures and to ban them for quizzes and exams.

Interviewee 8

Interviewee 8 (INT 8) owns and uses one smartphone daily which was purchased by their parents, but if they had to pay for another smartphone themselves, they would. They perceived smartphones to be easy to use and useful in everyday life for basic functions such as calling, texting, and surfing the web. Smartphones played a significant role in their daily lifestyle, aiding tasks such as alarms for waking up and listening to music, but they limited their screen time during school days. They revealed that smartphones were their "go to" for pleasure throughout the day, particularly when they were bored. INT 8 recognized the addictive nature of smartphones and self-regulated their usage, particularly in small classroom settings. They found it difficult to resist checking notifications out of habit and the fear of missing out (FOMO).

They recognized the benefits of smartphones for educational purposes but acknowledged the potential for distraction to be the greater impact. In class, they perceived smartphones to be easy to use and useful for academic purposes such as taking pictures of the board, video recording lectures, Photomath, and Kahoot. INT 8 also discussed factors such as boredom or social influences that would motivate them to check and use their smartphone for non-academic purposes. They tried to resist and control using their smartphone in class to stay focused on learning, but they revealed they were more motivated to use their smartphone for non-academic purposes in larger classroom settings vs smaller classroom settings. INT 8 acknowledged teaching methods which caused boredom as a primary reason for smartphone use for non-academic purposes.

INT 8 perceived they had more control over smartphone use in a larger class because they felt they could get away with usage without being noticed. They found educational apps such as Photomath and learning-based games like Kahoot to be easy to use and useful for educational purposes, while social media apps such as Snapchat and Instagram were considered distracting. They felt that smartphones were user-friendly and easy to use in and out of class, with a preference for iPhones influenced by social factors.

They admitted to using their smartphone in class despite bans, especially for boredom and social media. INT 8 felt smartphone policies in college were more relaxed compared to high school, leading to increased phone use in class for both academic and non-academic purposes. They prefer professors to discourage smartphone use in class, and ban smartphone use on quizzes and exams.

Interviewee 9

Interviewee 9 (INT 9) has owned and used a smartphone daily for about eight years, with their parents providing the phone and paying for subscriptions. They prefer Apple products for their simplicity, user-friendliness and social conformity. INT 9 perceived smartphones to be easy to use and useful in everyday life for communication, studying, web browsing, navigation, and social media. While they perceived smartphones distracting in everyday life and in college classrooms, INT 9 viewed their potential to be useful for certain academic activities in class. They self-regulated smartphone usage and potential distractions caused by smartphone use by using the "do not disturb" setting during class and while studying away from class.

INT 9 limited smartphone use with friends due to what they perceived to be addictive but used it more freely for entertainment and social media when they were alone. They were motivated to use their smartphone in class due to lack of interest in the subject, notifications

from friends, and peer influence. They perceived smartphones in class as both distracting and potentially useful for certain tasks. INT 9 recognized the positives, such as time management and communication with classmates and professors for academic purposes, as well as negatives of smartphone use in class.

INT 9 sometimes used their smartphone in class for non-academic purposes, particularly in large, auditorium style classrooms, but tried to follow classroom policies, particularly in small classrooms. Despite acknowledging distractions, they found it difficult to resist checking notifications out of habit and the fear of missing out (FOMO). INT 9 discussed smartphone policies in classes and believed that enforcing bans may not be entirely effective. If they were a professor, they would discourage use, not ban smartphone use to maintain student focus. They made an exception during exams where they felt it should be banned.

Interviewee 10

Interviewee 10 (INT 10) owns and uses one smartphone daily, and its plan is paid for by their parents. They have owned and experienced the use of smartphones for 5 years. INT 10 perceived smartphones to be easy to use and useful in everyday life for communication and social media but was aware of the negative impact excessive phone use had on productivity. They found it difficult to resist checking notifications out of habit and the fear of missing out (FOMO). While they viewed smartphones as simple to use and useful for staying in touch with friends and family.

Motivated by social factors, INT 10 preferred Apple products due to its familiarity and the convenience of connectivity with friends who also owned Apple products. In college classrooms, they felt smartphones were distracting and should be put away to prioritize learning. They self-regulated their smartphone use in class to essential tasks for academic purposes, taking

notes on their laptop instead. They felt any smartphone use in classrooms was a distraction for both the user and others around the user. They also felt classroom size and teaching methods could alter how they perceived smartphone use. INT 10 believed larger classrooms could motivate them to use their smartphones due to others frequently using smartphones around them. They also perceived they had more control over smartphone use in larger classrooms because use could go unnoticed.

They felt the method of teaching impacted on their engagement and disengagement which created boredom which could lead to smartphone usage for non-academic purposes. Professors who were disengaged caused boredom where they were tempted to use their smartphone in class to cure the boredom. INT 10 discussed they were more inclined to use their smartphone for non-academic purposes if the teacher reads off slides during lectures or posts all course related materials online and they do not deliver anything more. The participant would enforce strict smartphone policies during exams to discourage cheating but preferred policies that strongly discourage smartphone use. They felt Incorporating smartphones into the classroom for educational purposes could be useful for students.

CHAPTER 5

RESULTS

Introduction

According to Saldaña (2009), "A theme is an outcome of coding, categorization, and analytic reflection" (p. 13). I listened to and transcribed each interview with the assistance of ATLAS.ti (2025). The transcription component of the qualitative research software program was used. I analyzed participants' responses through a coding process with the aid of ATLAS.ti (2025) qualitative data analysis software. Codes were identified during the analysis process where certain words and phrases began to repeat and form meaningful concepts. The ATLAS.ti (2025) software aided in the organization and categorization of identified codes. Codes were interconnected and the groups of codes represented broader patterns or meanings to form themes.

The next section will discuss the findings from participant responses. Data interpretation is to make sense out of what was just uncovered and compile the data into sections or groups of information, also known as themes or codes (Creswell et al., 2007). Prominent codes are presented in the first section of this chapter with explanations from literature which will help make sense of participants' responses and provide credibility to findings. Results from the findings are discussed in detail with the aid of UTAUT2 (Venkatesh et al., 2012) and other explanations from literature. Themes are consistent phrases, expressions, or ideas that were common among research participants (Kvale, 2007). Themes will be discussed in the second section of this chapter. The central theme of class size was the outcome of prominent codes that

was refined into two sub-themes of habitual behavior of smartphone use in large classes and habitual behavior of smartphone use in small classes.

Discussion of Results

In the next section of this chapter, the author of this study presents prominent codes that were identified from the participant interviews. The first Table (see Table 1) describes the codes that were identified deductively from the pre-set list of codes used in analysis from UTAUT2 (Venkatesh et al., 2012). The second Table (see Table 2) lists codes that were identified inductively. Table 1 lists each code and the research question to which it corresponds. Table 2 lists each code which corresponds to both research questions.

Table 1 ***Research Questions and Related Codes***

Research questions	Codes from Determinants of UTAUT2
1. How do undergraduate university students perceive the use of smartphones in a face-to-face college classroom?	Ease of Use Usefulness Social Factors External Motivations
2. What experiences and behaviors motivate undergraduate university students to use their smartphones in a face-to-face college classroom?	Perceived Control Habit Hedonistic Motivations

This section is divided into two subsections with the first subsection focused on codes from the determinants of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), and the second subsection is focused on codes identified from inductive analysis.

Codes Identified from UTAUT2

The prominent codes that were identified deductively from the pre-set codes extracted from UTAUT2 (Venkatesh et al., 2012) demonstrated perceptions for intention and use of smartphones in a college classroom: (1) perceived ease of use, (2) perceived usefulness, (3) social factors and influences, (4) external motivations, (5) facilitating conditions - perceived control, (6) lived experiences which created habit, and (7) hedonistic motivations (see Table 1). The first subsection will discuss each code to the corresponding research question.

Research Question 1.

The first question sought to discover and understand how undergraduate university students perceived the use of smartphones in a face-to-face college classroom. Pre-set determinants were used as codes to identify themes. The first research question sought to discover participants' perceptions focused on attitudes and extrinsic motivating factors as described by UTAUT2 (Venkatesh et al, 2012). Codes that were identified include perceived ease of use, perceived usefulness, social factors, and external motivations.

Perceived Ease of Use.

Perceived ease of use was derived from the Technology Acceptance Model (TAM) (Davis, 1989) which is the foundation of the synthesis of theories which make the UTAUT2 (Venkatesh et al, 2012). UTAUT2 theorized that when technological devices such as smartphones are perceived to be easy to use, the user will build a positive attitude towards usage. The positive shift in attitude could result in intention for use which could ultimately result in

actual usage (Venkatesh et al, 2012). All ten participants perceived smartphones to be easy to use in their daily lives which were translated into the college classrooms. Participants mentioned examples such as convenience, user friendliness, and familiarity which contributed to ease of use. Participants acknowledged they established positive attitudes of smartphone use in daily life outside the classroom which shaped a positive perception for usage as described by UTAUT2 (Venkatesh et al., 2012) inside the classroom.

Interviewee 1 mentioned, “I would say, for me, it's easy to use, and everything's easy to get to. It’s very convenient and user friendly and it’s on me 24/7. I prefer to always have my phone with me, and I don’t leave my dorm without it”. Interviewee 1 acknowledged they perceived smartphone use similarly in class, although they revealed smartphone usage in class was mainly for non-academic purposes. Interviewee 4 mentioned, “For school, if I have a question that I need to email my teacher, it's easier to email than to wait for the office hours and remember the question and then take time out of my day to go talk to them. It makes it so much easier.” Interviewee 4 demonstrated how the perception of ease of use as described by UTAUT2 (Venkatesh et al., 2012) transitioned into campus life. Clarifications revealed participants only perceived smartphones to be easy to use in large classrooms. Probing revealed they perceived smartphone use to be disrespectful and difficult to use in small classrooms. The central theme of class size emerged from coding which will be discussed in detail later in this chapter.

Documented studies related to college students’ use of smartphones in classrooms suggested college students exhibited behavior that were negative and addictive. Literature noted college students were unable to restrict smartphone use in face-to-face classrooms which resulted in poor outcomes (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Results from this study can broaden what is

documented to include ease of use as described by UTAUT2 (Venkatesh et al., 2012) as an explanation to support college students' addictive behavior. They perceived smartphones to be easy to use in and out of class; therefore, they freely used smartphones in class regardless of policy which can be interpreted to be addictive behavior because they did not restrict use.

Perceived Usefulness.

Perceived usefulness was also derived from the Technology Acceptance Model (TAM) (Davis, 1989) which is one of the theories which make the UTAUT2 (Venkatesh et al, 2012). UTAUT2 theorized that when technological devices such as smartphones are perceived to be useful, the user will build a positive attitude towards usage (Venkatesh et al., 2012). The positive shift in attitude could result in intention for use which could ultimately result in actual usage (Venkatesh et al, 2012). All ten participants perceived smartphones to be useful in their daily lives which included their campus lives. Participants mentioned smartphones to be useful for communication and social connection, organization, accessibility, and utilities (tools). They described that smartphones created useful lifestyle experiences which generated positive attitudes towards smartphone use in classrooms.

Interviewee 1 mentioned, "My phone is useful for communication, especially here when you're all on different schedules. In high school, you're usually on the same schedule as your friends during the day, but here in college you're not at all. I feel like communication is big, and I enjoy entertainment, social media, and then I can look at emails on my phone. I use my phone every day and it's useful for tools like the alarm, calculator, and maps. I feel like it just helps you with a lot of stuff." Interviewee 1 demonstrated similar positive perceptions of smartphones towards how useful they were to ease of use of smartphones in their daily life. UTAUT2

discussed that technology users usually perceive positive attitudes towards both ease of use and usefulness, they go hand in hand (Venkatesh et al., 2012).

Interviewee 4 mentioned, “It's useful at the beginning of the semester when I have no idea where my classes are, and I can just walk around with my phone in my hand and tell me directions. I enjoy the social media that I have and getting to see, like what's going on in my friends' lives and what they're doing. And then friends from back home who've moved across the country or are still back home, I can see what's going on in their lives and see what they're up to. I text people every single day, and it connects me to the world.” Interviewee 4 had similar perceptions of smartphone use in and out of the classroom and its associated ease of use and usefulness as described by UTAUT2 (Venkatesh et al., 2012).

Social Factors.

Social factors derived from the extended version of TAM (Davis, 1989) called TAM2 (Venkatesh & Davis, 2000) included social factors that could create social influences. TAM2 (Venkatesh & Davis, 2000) is one of the synthesized theories which make up the UTAUT2 (Venkatesh et al., 2012). UTAUT2 included prior lived social experiences which could contribute to behavioral intent and use of technology in addition to attitudes which shaped user perceptions of ease of use and usefulness (Venkatesh et al, 2012). TAM (Davis, 1989) focused on attitudes which could predict intent and use of technology, while TAM2 (Venkatesh & Davis, 2000) added behavioral predictive elements such as social influences.

All ten participants perceived smartphone usage to be influenced by social factors which aligned with how social factors can influence technology use as described by UTAUT2 (Venkatesh, 2012). Participants mentioned social norms and compliance, social preferences, and peer pressure as social factors from lifestyle experiences which influenced their perceptions for

behavioral intent and use of smartphones, and these behaviors crossed into the classrooms. Although participants acknowledged social factors as described by UTAUT2 (Venkatesh et al., 2012) contributed to how they perceived intention to use smartphones in college classrooms similarly to how they perceived use outside the classrooms, not all the participants followed through with actual usage inside the classroom as opposed to outside of class where intention always resulted in actual use. They discussed how their perspectives changed in different classroom environments. Social influences as described by UTAUT2 (Venkatesh et al., 2012) were a factor when conditions were favorable to support smartphone use, and not a factor when they were unfavorable. Favorable and unfavorable conditions will be discussed in more detail later in this section of this chapter as described by UTAUT2 (Venkatesh et al., 2012).

Interviewee 8 mentioned social factors influenced their perception for behavioral intent and use as described by UTAUT2 (Venkatesh et al., 2012), “When people around me are using their phones, I think about it and get the urge to use mine. I do go on my phone when my classmates around me are using their phones.” They went on to discuss social conformity, “The fact that everyone else had an iPhone, so this could be a social influence, I guess, I must have an iPhone. I want to fit in with my friends. I don’t want my texts to appear green. I think it's social influence.” Interviewee 5 mentioned, “If everyone around me in class was on their phones, I probably would consider using mine. I would assume the teacher was ok with it since they didn’t say anything, so I would use it too.” Interviewee 7 mentioned, “If other students around me are using phones, that would give me the urge to look at my phone and use it.” Interviewee 1 mentioned, “If I was hanging out with my friends and everyone was on their phone, then yeah, I would scroll.”

All participants acknowledged social factors as described by UTAUT2 (Venkatesh et al., 2012) could influence (intention for) smartphone use, but not all participants perceived they would follow through with actual usage. Interviewee 10 mentioned, “I think personally, it's a little bit disrespectful to the professor. Even though I get the urge to use my phone in class when others around me are on their phones, I'll do what I think is best and pay attention.” Interviewee 2 mentioned, “If other people were on the phone in class, I would think about using my phone, but I do care about what the professor thinks of me, so I would probably pay attention and not use my phone.”

Social factors were considered an extrinsic motivator as described by TAM2 (Venkatesh & Davis, 2000) which was included in UTAUT (Venkatesh et al., 2003) before UTAUT (Venkatesh et al., 2003) was modified to include intrinsic elements and become known as UTAUT2 (Venkatesh et al., 2012). UTAUT was modified to include intrinsic motivation to resolve the limitation of UTAUT (Venkatesh et al., 2003) where the synthesized theories associated with UTAUT (Venkatesh et al., 2003) could predict intention to use technology, but intention did not always result in usage. Findings from this study confirmed the limitation to UTAUT (Venkatesh et al., 2003) where extrinsic elements were not as significant in predicting technology usage behavior compared to intrinsic elements (Venkatesh et al., 2012).

External Motivations.

Extrinsic motivation derived from the extended version of TAM (Davis, 1989) called TAM2 (Venkatesh & Davis, 2000) included external voluntary motivations derived from the Theory of Reasoned Action (Fishbein & Ajzen, 1975). TAM2 (Venkatesh & Davis, 2000) is one of the synthesized theories which make up the UTAUT2 (Venkatesh et al., 2012). UTAUT2 included voluntariness which could contribute to behavioral intent and use of technology in

addition to attitudes which shaped user perceptions of ease of use and usefulness (Venkatesh et al, 2012). TAM2 (Venkatesh & Davis, 2000) added behavioral predictive elements such as external motivations which could predict behavior.

All ten participants perceived voluntary smartphone usage could be influenced by external motivating factors as described by UTAUT2 (Venkatesh et al., 2012). Participants established that curiosity created from notifications on their smartphones was the primary external motivating factor as described by UTAUT2 (Venkatesh et al., 2012) that contributed to voluntary smartphone use in and out of classrooms. Participants revealed they shared similar perceptions of external motivation to how they perceived social influences as described by UTAUT2 (Venkatesh et al., 2012). Interviewee 9 discussed how lived experiences of routinely checking notifications out of curiosity and a fear of missing out has established habitual behavioral to use their smartphone in class. Interviewee 9 mentioned, “The way the phone notifications come on; it's almost like the Pavlov effect. If I hear a buzz on the phone, I want to check it. I’ve just been trained to check it. That's habit, the need to know and FOMO, fear of missing out.” Interviewee 9 clarified that they turn off notifications in small classrooms and their response was in the context of large classrooms.

Documented studies suggested college students exhibited addictive behavior of smartphone use where they were unable to restrict use in face-to-face classrooms due to FOMO (Al-Furaih & Al-Awidi, 2021). Results from this study can broaden what is documented to include external motivating factors as described by UTAUT2 (Venkatesh et al., 2012) as an explanation to support college students’ addictive behavior to check notifications from smartphones while attending class.

Interviewee 4 mentioned, “I used to pick it up every single time that I got a notification. Sometimes there'll be a situation where I'm sharing a desk with somebody and their phone will vibrate and mine won't, and I'll still reach for my phone and pick it up to see if it was my phone that got a notification. So, I think it is kind of like automatic behavior. I think that most screen time occurs in class, not out of class. My boredom and curiosity motivate me to use my smartphone more in class than outside of class, especially for non-academic purposes.” Interviewee 4 discussed how their boredom heightened their external motivation as described by UTAUT2 (Venkatesh et al., 2012) to use their smartphone more in class compared to outside of class. Interviewee 4 clarified this behavior was consistent in large classrooms, but not in small classrooms. Boredom was another prominent code that was identified inductively that was interconnected with hedonistic motivation to use smartphones in class as described by UTAUT2 (Venkatesh et al., 2012) where participants perceived it to be associated with large classrooms which will be discussed as a theme later in this chapter.

Participant responses for social factors and external motivations were consistent with the limitations documented for TAM2 (Venkatesh & Davis, 2000) and why researchers revised TAM2 (Venkatesh & Davis, 2000) to include additional theories to form UTAUT (Venkatesh et al., 2003). TAM2 (Venkatesh & Davis, 2000) could explain intentions for use but could not explain why every intention did not result in actual usage. Participant responses from this study confirmed TAM2’s limitation where participants did not always follow through with actual use once an intention was formed (Venkatesh & Davis, 2000).

UTAUT included additional theories which could provide an explanation to predict behavioral use of technology once intention was formed (Venkatesh et al., 2003). UTAUT suggested that perceived control from facilitating conditions should be considered to predict

actual behavioral use of technology when intention was formed (Venkatesh et al., 2003). Researchers extended UTAUT (Venkatesh et al., 2003) once more to be known as UTAUT2 (Venkatesh et al., 2012). UTAUT2 was an extension of theories which could provide an explanation of experiences and behaviors which were included to discuss how lived experiences created automatic responses of habit, price value, and hedonistic motivation which were impactful determinants on predicting technology usage when intention was formed (Venkatesh et al., 2012). The next subsection will discuss codes from UTAUT2 (Venkatesh et al., 2012) which corresponds to the second research question.

Research Question 2.

The second question sought to discover and understand what experiences and behaviors motivated undergraduate university students to use their smartphones in a face-to-face college classroom. Pre-set determinants were used as codes to extract themes to answer this research question. Intrinsic motivation determinants as described by UTAUT2 (Venkatesh et al., 2012) was the focus in determining the pre-set codes. Prominent codes that were identified include perceived control, habit, and hedonistic motivation.

Price value was the only priori code that was not identified as a prominent code. All participants' smartphones were purchased by their parents and most of their subscription plans were also managed by their parents; therefore, participants did not perceive a monetary value as described by UTAUT2 (Venkatesh et al., 2012) when they used their smartphones. The perception of cost or penalty of use was not identified as a prominent code when price value was altered to examine perceptions of premeditated thoughts that could establish perceptions to restrict smartphone usage.

Participants perceived habitual behaviors which supported automatic use of smartphones as described by UTAUT2 (Venkatesh et al., 2012) in class, rather than premeditated thoughts for cost of use. Interviewee 2 mentioned, “In the classroom, it's habitual, I don’t think about the negative outcome of using it, like the cost associated, like the penalties and whatever or not.” Price value as described by UTAUT2 (Venkatesh et al., 2012) was not mentioned by participants in high frequency; however, habit was identified as prominent code.

Perceived Control.

UTAUT (Venkatesh et al., 2003) incorporated the Theory of Planned Behavior (TPB) (Ajzen, 1991) which included the perceived control determinant. The theory predicted behavioral intention can result in actual behavior once an individual forms control beliefs and perceived power. TPB (Ajzen, 1991) established that facilitating conditions could influence both control beliefs and perceived power through lived experiences which could provide a sense of control and power to follow through with behavior. This theory was used in the context of technology acceptance and use in UTAUT2 (Venkatesh et al, 2012). This study will discuss how facilitating conditions in the face-to-face college classroom environment influenced perceived behavioral control and power to use smartphones in class.

All participants acknowledged they would use their smartphones in class when conditions were favorable for them to use their smartphones without being noticed. Participants agreed they perceived more control and power to use smartphones as described by UTAUT2 (Venkatesh et al., 2012) in larger class sizes and when teaching methods were disengaged. Probing during the interviews clarified that participants perceived unfavorable conditions as described by UTAUT2 (Venkatesh et al., 2012) which supported self-regulation of smartphones in small class sizes.

Teaching methods and self-regulation were prominent codes that were identified inductively from participant responses which will be discussed later in this chapter.

Participants shared examples of smartphone use in class where they felt they perceived favorable conditions to get away with usage without being noticed. Favorable conditions were perceived by participants as holding power and a sense of control to support smartphone use which aligned with the synthesized theories from UTAUT2 (Venkatesh et al., 2012). Refinement of the code for perceived control as described by UTAUT2 (Venkatesh et al., 2012) identified the code segmented into two sub-codes. One sub-code identified favorable conditions for smartphone use and the other code identified unfavorable conditions for smartphone use. Unfavorable conditions were perceived by participants as lacking power and a sense of control to use smartphones which resulted in restriction of smartphone use. UTAUT2 indicated that technology users will avoid or restrict use of technology when conditions were unfavorable, and users perceived they lacked power and control for use of technology (Venkatesh et al., 2012).

Interviewee 3 highly valued the respect for teachers and supported not using smartphones in classes, but even they admitted using smartphones in class when conditions were favorable, and they perceived power and in control of use as described by UTAUT2 (Venkatesh et al., 2012) to go unnoticed, “I personally think it's disrespectful for students to be on their smartphone while the professor is lecturing.” They went on to say, “But then I've seen in larger lecture classes, like 100 plus students, where maybe you're not as close to the professor or it's easier to sit in the back of the classroom, that's when students tend to go on their cell phones more, and I'm guilty of that. In that situation, I don't always see it as a bad thing, especially if maybe what we're learning is something that I've gone over before, or if I get an important text message and I

just want to answer it quickly. So yeah, I think it just depends on the situation where I feel I have more control over not being seen."

Interviewee 6 also has a no use smartphone attitude in face-to-face classrooms, they routinely put their smartphone away in their backpack for self-regulation, but they also described use in a class where the teaching method or course material created a favorable condition of control and power over usage as described by UTAUT2 (Venkatesh et al., 2012), "This class that I had last semester, it was an easy class. I pretty much only went because of the attendance. There was an attendance requirement, and they would do random attendance checks. All the notes were posted on ELC, all the exams and quizzes were online and open notes. I will admit that I got bored with lecture, and I got the urge to go on my phone and I pulled my phone out and used it." Interviewee 6 described how the disengaged teaching method facilitated favorable conditions as described by UTAUT2 (Venkatesh et al., 2012) to use their smartphone in class. They perceived they did not need to pay attention; therefore, they felt they had more power and control for the use of smartphones (Venkatesh et al., 2012).

Documented studies related to college students' use of smartphones in classrooms suggested college students exhibited behaviors that were negative and addictive. Literature noted college students were unable to restrict use in face-to-face classrooms which resulted in poor outcomes (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Results from this study can broaden what is documented to include perceived control as described by UTAUT2 (Venkatesh et al., 2012) as an explanation to support college students' behavior of smartphone use in class. Participants in this study revealed that their behavior is not necessarily negative or addictive, but rather, conditional to a sense of control and power to use smartphones in a classroom environment which supports

smartphone usage or does not support usage (Venkatesh et al., 2012). The findings from this study identified classroom sizes dictated whether perceptions for smartphone usage was favorable or unfavorable as described by UTAUT2 (Venkatesh et al., 2012) which will be discussed later in this chapter.

Habit.

Habit was included in UTAUT2 (Venkatesh et al., 2012) as part of the extension of theories from UTAUT (Venkatesh et al., 2003) which provided additional context from outcome expectations from prior use as described by the Social Cognitive Theory (Bandura, 1986). Habit could be explained in the context of motivation to use smartphones from prior lived experiences in which the user was influenced by various outcome beliefs which contributed to future behavioral use which the user believed became automatic (Venkatesh et al, 2012). Examples of lived experiences which participants believed were automatic were routine use, dependency, lifestyle, communication and social connection, leisure to cure boredom, respect for teachers which created responsibility and accountability, and prior poor performances in classes contributed to outcome beliefs which became automatic. Every participant in this study acknowledged in some manner that they felt habit as described by UTAUT2 (Venkatesh et al., 2012) contributed to how they perceived smartphone usage in face-to-face classrooms.

Interviewee 8 mentioned, “It is fun using my smartphone, so I use it for boredom. If I get bored, I think of ways to keep myself entertained and the smartphone has become the go-to and automatic response to cure boredom. I feel like something that I've noticed is, even when we're little, our parents would give us tablets or iPads to play on when we get bored, or loud and annoying. I feel like it's been engraved in our brains from a very young age to turn to electronics. I feel like we've been raised that way and now it’s become habit. I grew up with a smart device.

Now that I'm in college, if I get bored, I guess I immediately go on my smartphone. I don't even think about it." Interviewee 8 went on to say, "In class, whenever I feel an intention or urge to use the phone, I feel like I just kind of do it. I usually get that urge because I'm bored. When I get bored, I always use my phone. There's never been a time where I've been, like, oh I shouldn't use it because I'm in class right now, it's habit now." Interviewee 8 acknowledged prior lived experiences shaped their beliefs for automatic use of smartphones in and out of classrooms which aligned with the habit determinant theory as described by UTAUT2 (Venkatesh et al. 2012).

Interviewee 1 mentioned, "In class today, I just scrolled on my smartphone and my friends were texting me on Snapchat. So, I looked at it and I knew not to do it, but it was an automatic response, a habit. I got multiple notifications, and I didn't want to miss out on what they were saying. It was a habit of checking my phone when multiple notifications go off." Interviewee 1 demonstrated a similar response to interviewee 9 which was described previously in the external motivation code (Venkatesh et al., 2012), "If you hear a buzz on the phone, you want to check it. I've just been trained to check it. That's habit. The need to know and FOMO, fear of missing out." Member checking via email revealed Interviewee 1 was responding in the context of large classrooms.

Some participants formed a habit from prior experiences as described by UTAUT2 (Venkatesh et al., 2012) which limited smartphone use in face-to-face classrooms. Interviewee 6 mentioned, "I always have my phone on silenced, and there's a mode on Apple phones called do not disturb, so no notifications pop up. I always put that on just so I don't get tempted to look at my phone. I guess this is habit that I picked up from the past where my phone distracted me in

class, and I missed important parts of the lecture." Probing and clarification revealed Interviewee 6's response was related to small classrooms.

Interviewee 3 mentioned, "I would say in class, I might be more aware of the negative consequences of phone use and regulate it. Whereas in the everyday world, where I'm not necessarily being watched all the time, or it's just me, and there is not any consequence, I guess I'm more likely just to act on it whenever I want to. So, it's probably two different habits that were formed, one to use it automatically out of class and restrict use in it." Probing and clarification revealed that Interviewee 3 also established different habits as described by UTAUT2 (Venkatesh et al., 2012) pertaining to the size of classes they experienced, one habit of using smartphones in large classes and another habit to restrict use in small classes.

Results from participant responses described opposing perceptions of habit in association to class sizes. Participants perceived habitual behavior to be positive and favorable in large college classrooms, and negative and unfavorable in small college classrooms. This study was focused on lived experiences which could describe and explain behaviors; therefore, habit as described by UTAUT2 (Venkatesh et al., 2012) contributed to and is interconnected to class sizes. Habit identified from deductive codes and class size identified inductively became the two most meaningful concepts mentioned during the coding process; therefore, the two meaningful concepts interconnected and emerged as two sub-themes of habitual behavior in large classes and habitual behaviors in small classes which will be discussed in detail later in this chapter.

Documented studies related to college students' use of smartphones in classrooms suggested college students exhibited behavior that were disruptive and addictive, not habitual. Literature noted college students were unable to restrict smartphone use in face-to-face classrooms due to their addiction towards smartphones which resulted in poor outcomes (Al-

Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Results from this study can broaden what is documented to include habit as described by UTAUT2 (Venkatesh et al., 2012) as an explanation to support college students' behavior of smartphone use in class. Participants in this study revealed that their behavior was not necessarily an addiction, but rather, habitual behavior to use smartphones in a classroom environment which supported smartphone usage or inhibited usage. The findings of this study identified classroom sizes dictated whether perceptions for smartphone usage was favorable or unfavorable through lived experiences where automatic behavior was established as described by UTAUT2 (Venkatesh et al., 2012).

Hedonistic Motivation.

Hedonistic motivation was also included in UTAUT2 as part of the extension of theories from UTAUT (Venkatesh et al., 2003) which supported an internalized component to describe motivation to use a technology such as smartphones (Venkatesh et al., 2012). UTAUT2 defined hedonistic motivation as the pleasure derived from using technology, and it has shown to play a significant role in determining technology acceptance and use (Venkatesh et al, 2012). Every participant described smartphone use in their daily lives as a pleasurable experience. Participants turned to their smartphones in face-to-face classrooms for pleasurable experiences as described by UTAUT2 (Venkatesh et al., 2012) out of habit to cure boredom or when teaching methods were disengaged.

Interviewee 9 acknowledged they developed hedonistic motivation as described by UTAUT2 (Venkatesh et al., 2012) to use their smartphones in and out of class, "The smartphone is definitely something I turn to for fun, like playing mobile games. I can play games on it as well as other stuff like social media and entertainment." Interviewee 9 went on to say that this

behavior also crosses into classrooms, “Playing games on my phone is my go-to when I get bored in class, for example the last class I was just in, it's mythology. It’s something that I'm interested in, but he also posts everything online, and when I study, I look over everything that’s on PowerPoints ahead of time. I'm going to look over this regardless of what he talks about in class, so it wouldn't be detrimental if I played a game on my phone and I did, because I already had the course content. He doesn't deviate from the course content and he's just reading PowerPoints the entire class.” Probing during the interview clarified that the Mythology course was delivered in a large auditorium style classroom.

Interviewee 6 mentioned, “There'd be times when I got bored in class, I would pull up like Instagram and social media for pleasure and fun.” Interviewee 6 went on to say, “I think this is habit from going on my phone for pleasure and fun during my personal time.” Interviewee 2 mentioned, “This morning in Bio, it's a lecture, and it's a longer one, and we got to a part that I already knew pretty well, and I was bored, so I got my phone, and I did the crossword on the New York Times website.” Real time member checking during the interview sessions clarified that all previous responses were in the context of large classrooms.

A significant outcome identified during coding was that every participant who was motivated to use their smartphones for hedonistic reasons always followed through with actual usage. Hedonistic motivation proved to be a powerful determinant for smartphone usage, which is consistent with how UTAUT2 described hedonistic motivation for technology users (Venkatesh et al., 2012). The inability of participants to restrict smartphone use due to hedonistic motivation confirmed what is known in literature. Documented studies suggested college students exhibited addictive behavior of smartphone use where they were unable to restrict use in classrooms (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan

Yilmaz et al., 2024; Tamayo et al., 2024). Results from this study can broaden what is documented in literature to include hedonistic motivation as described by UTAUT2 (Venkatesh et al., 2012) as an explanation to support college students' addictive behavior of smartphone use in face-to-face college classrooms.

Codes Identified Inductively

Prominent codes that were identified inductively include: (1) class size, (2) boredom (3) distractions, (4) responsibility and accountability, (5) self-regulation, (6) respect for teachers, (7) teaching methods, and (8) smartphone policy (see Table 2). Codes identified inductively provided explanations towards both research questions which sought to discover and understand how undergraduate university students perceive the use of smartphones, and what experiences and behaviors motivate undergraduate university students to use their smartphones in a face-to-face college classroom. The next subsection will discuss each code to correspond both research questions.

Table 2 ***Research Questions and Related Codes***

Research questions	Codes Identified Inductively (Related to Both Research Questions)
1. How do undergraduate university students perceive the use of smartphones in a face-to-face college classroom?	Class Size
	Teaching Methods
2. What experiences and behaviors motivate undergraduate university students to use their smartphones in a face-to-face college classroom?	Boredom
	Distractions
	Respect for Teachers
	Accountability
	Responsibility
	Self-regulation
	Smartphone Policy

Class size.

Class size was identified as the most significant and meaningful code during the coding process that emerged as the central theme. The theme for Class size was refined into two sub-themes which will be discussed later in this chapter.

Boredom.

Boredom was identified inductively as a prominent code which was interconnected with participants' perception of habitual behavior in large classrooms. Participants perceived boredom as a negative perception that could be easily resolved with a pleasurable experience. As described earlier in this chapter, hedonistic motivation was described by UTAUT2 as a powerful determinant to support technology usage (Venkatesh et al., 2012).

The outcome of coding revealed boredom was interconnected with hedonistic motivation and habit as described by UTAUT2 (Venkatesh et al., 2012). Every time boredom was mentioned by participants, they followed with a response describing hedonistic motivation to use smartphones in class, particularly in large classrooms. Habit was developed from positive lived experiences where participants eliminated a negative feeling of boredom with a positive, pleasurable experience provided by smartphone usage which aligned with the hedonistic motivation determinant to support smartphone use as described by UTAUT2 (Venkatesh et al., 2012).

Interviewee 4 mentioned, "My boredom and curiosity motivate me to use my smartphone more in class than outside of class, especially for non-academic purposes." Interviewee 4 clarified this response referred to their perception in large classrooms. Interviewee 7 mentioned, "In my biology class, it's a large class, she was just like teaching us about something, but it was something that she had gone over so many times. So, I was kind of bored. I just went to my phone, and I think I had texted my friends." Interviewee 7 went on to say, "My smartphone is my go-to for boredom."

There were a few instances where participants mentioned they perceived boredom in small classes; however, hedonistic motivation was controlled, and smartphones were restricted due to prior lived experiences of poor outcomes. UTAUT2 theorized technology users were more inclined to use technology when users experienced positive outcomes from prior use, and users were less inclined to use technology when users associated poor outcomes (Venkatesh et al., 2012). When participants perceived boredom in small classes, they perceived the environment as unfavorable for smartphone use, and the respect for teachers motivated them to pay attention, rather than seeking a pleasurable experience. Interviewee 7 mentioned, "I feel like

the professor knows me more in a smaller class, and they can see me easier if I use my phone, and they will think I'm not paying attention. It doesn't matter how bored I get; I stay off my phone. I feel like it's rude because I have that respect level for the instructor."

Boredom was also interconnected with disengaged teaching methods that was interconnected with large classrooms. Participants revealed that they perceived large class lectures as being disengaged, which resulted in the feeling of boredom. Boredom resulted in hedonistic motivation as described by UTAUT2 (Venkatesh et al., 2012) to resolve the boredom. Interviewee 5 mentioned, "This geography class doesn't allow phones, but I used it because I previously got away with using it without the professor noticing me. The lecture that day wasn't engaging, and the class was like 80 people so it's a little bigger, and I knew he wasn't looking at me. I felt I could get away with it today in class and I was also getting bored again from the lecture. I got bored and zoned out again, and I got the urge. I cured my boredom by playing games on my phone." Interviewee 5 demonstrated that the large classroom environment provided favorable conditions to use their smartphone, as described previously by the deductive code for perceived control from UTAUT2 (Venkatesh et al., 2012).

The inability of participants to restrict smartphone use due to hedonistic motivation also confirmed what is known in literature. Documented studies suggested college students exhibited behavior of smartphone use where they were unable to restrict use in classrooms (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Results from this study can broaden what is documented to include boredom created by disengaged teaching methods as the primary cause for hedonistic motivation as described by UTAUT2 (Venkatesh et al., 2012) as an explanation to support college students' behavior of smartphone use in face-to-face college classrooms.

Distractions.

Distractions was identified inductively as a prominent code which was interconnected with participants' perception of habitual behavior in small classrooms. Participants perceived positive attitudes and favorable conditions for smartphone usage in large classes which aligned with UTAUT2 (Venkatesh et al., 2012), but they revealed contradictory perceptions in small classes. Participants perceived smartphone use in small class sizes to be disruptive and difficult to use without being noticed by others. UTAUT2 described perceptions of unfavorable conditions can limit technology use (Venkatesh et al., 2012). Participants clarified they did not perceive smartphone use of others, or themselves as distractions in large classes.

Participants were more focused on paying attention to the teachers in small classes. Prior negative experiences filled with distractions and disruptions established a perception to restrict the use of smartphones. UTAUT2 theorized technology users were less inclined to use technology when users associated poor outcomes (Venkatesh et al., 2012). Distractions were perceived by participants as negative lived experiences as described by UTAUT2 (Venkatesh et al., 2012); therefore, they were less inclined to use smartphones in small classrooms.

Interviewee 3 mentioned, "It depends on the situation that I'm in. If I'm in a large class, and the teacher's lecturing, and I get a text, sometimes I'll look at the text. I'll see who it is or maybe what the notification is. And depending on the urgency that I think is associated with it, then I might act on it and answer the text. But if I'm in a smaller class, I think that listening to the teacher is more important, I probably won't follow through with it." Interviewee 3 clarified they restrict smartphone use in smaller classes due to formed negative perceptions as described by UTAUT2 (Venkatesh et al., 2012) of distractions from the past.

Interviewee 10 mentioned, “My phone stays in my backpack while I'm in a small class. I'm an out of state student, so I pay a lot of money to be here. So, when I'm in class and I'm listening and paying attention and I’m at least trying to learn something, and the professor is engaging, I feel the phone is a distraction. I think phones don't really have a place when I’m interested in learning because they are disruptors, for both my use and use of others around me.” Interviewee 10 clarified they do not put away their smartphone in large, disengaged classrooms where they perceive favorable conditions as described by UTAUT2 (Venkatesh et al., 2012) to use smartphones.

An area of concern in documented research noted college students continue to use smartphones for non-academic purposes even though they perceived their smartphone use as a distraction (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Findings from this study were consistent with what is documented in research. Participants of this study acknowledged they also perceived smartphone use in college classrooms to be a distraction, but their perception towards smartphones being distractions was conditional as described by UTAUT2 (Venkatesh et al., 2012).

Langan et al. 2016 noted college students subjectively decided for themselves when it was appropriate to use cellphones in class, even when cellphones were banned, or they perceived them to be distractions. The findings from this research could broaden what was identified by Langan et al. 2016 and other studies which focus on the negative behaviors associated with smartphone use in college classrooms (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Participants of this study perceived smartphones to be distractions when conditions were unfavorable to support usage as described by UTAUT2 (Venkatesh et al., 2012), which is associated with small classrooms.

Responsibility and Accountability.

Responsibility and accountability were identified inductively as a prominent code which was interconnected with participants' perception of habitual behavior in small classrooms. The responsibility and accountability code were also closely connected with how participants viewed smartphone policy. Participants favored a discouraging policy where students should be responsible and accountable for smartphone use in classrooms. Literature suggested college students valued individual rights, and they desired a voice while attending class (Shutter et al., 2017). Probing and clarifications revealed participants also perceived some responsibility and accountability to restrict smartphone use in classrooms that were perceived to be engaging.

The perception of responsibility and accountability was established from prior lived experiences where participants highly valued respect for teachers who were engaging. UTAUT2 theorized technology users were more inclined to use technology when users experienced positive outcomes from prior use, and users were less inclined to use technology when users associated poor outcomes (Venkatesh et al., 2012). Participants revealed they did not perceive responsibility and accountability in large classrooms where they described disengaged teaching methods which resulted in the lack of respect for teachers. The disengaged teaching methods created a perception of boredom which resulted in hedonistic motivation to use smartphones to resolve boredom. Hedonistic motivation was described by UTAUT2 as a powerful determinant to support technology usage (Venkatesh et al., 2012).

Interviewee 2 mentioned, "I think that at this age, people should be responsible and accountable enough to be able to pay attention. It is their decision or choice, and I think it comes down to the student and how they use that, it's not the teacher's responsibility. I think that there's a certain, like a level of control that people should have because I think it can be somewhat of a

distraction and that will be negative. Interviewee 2 was referring to their perspective on smartphone policy where they support discouraging use (Shutter et al., 2017), rather than banning use of smartphones in classrooms.

Interviewee 8 mentioned, “I feel like in college it's really easy to fail a class. The professors won't say anything. So, I feel like I’m responsible and accountable for my own actions. Besides that, I believe you should be able to use phones if you want to use them. I mean, like, obviously they can say, don't use your phone during class, but they should leave it up to you to decide. We’re all adults now, we should know better when not to use phones. We should be responsible and accountable if we use phones and not pay attention and fail, that’s our fault.”

Self-regulation.

Self-regulation was identified inductively as a prominent code which was interconnected with participants’ perception of habitual behavior in small classrooms. Participants perceived facilitating conditions were unfavorable to support smartphone usage in small classes; therefore, they self-regulated smartphone usage. UTAUT2 theorized technology users will avoid or restrict use of technology when conditions were unfavorable, and users perceived they lacked power and control for use of technology (Venkatesh et al., 2012). The self-regulation code was interconnected with engaged teaching methods, respect for teachers, and responsibility and accountability. Participants acknowledged they self-regulated smartphone usage when teaching methods were engaging and they were motivated to pay attention to teachers out of respect for them. The perception of respect for teachers established a sense of responsibility and accountability to self-regulate smartphone use in small classrooms.

Interviewee 6 mentioned, “But in a small classroom, I respect my peers and the professor. So, it would be more difficult to use, so I don’t use it and silence my phone. I believe

it’s very difficult to control how that's going to rub off on others in class.” Interviewee 6 acknowledged they do not perceive the motivation to self-regulate smartphone use in large classes where they perceive a favorable environment for smartphone usage which aligned with the determinants of UTAUT2 (Venkatesh et al., 2012). Interviewee 3 mentioned, “But if I’m in a smaller class, I think that listening to the teacher is more important, I probably won't follow through with it.” Interviewee 3 went on to say, “I personally think it's disrespectful for students to be on their smartphone while the professor is lecturing.” Interviewee 3 provided a different example when they responded previously to how they perceived smartphone use in large classrooms; they clarified they lack self-regulation of smartphones, and they would follow through with checking notifications and using smartphones which also aligned with the determinants of UTAUT2 (Venkatesh et al., 2012).

Participants in this study provided examples for the ability to restrict and self-regulate smartphone use when conditions were unfavorable, which contradicts what is known in literature. (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). College students’ smartphone usage behaviors can be explained and broadened by UTAUT2 (Venkatesh et al., 2012). UTAUT2 theorized technology users were more inclined to use technology when users experienced positive outcomes from prior use, and users were less inclined to use technology when users associated poor outcomes (Venkatesh et al., 2012).

Respect for Teachers.

Respect for teachers was identified inductively as a prominent code which was interconnected with participants’ perception of habitual behavior as described by UTAUT2 (Venkatesh et al., 2012) in small classrooms. Participants perceived respect for teachers when

teaching methods were engaging. Participants described small classrooms made them feel engaged; therefore, they perceived respect for teachers. Participant perceptions revealed teachers who teach in small classes made them feel they were in an intimate setting, and teachers presented more personalized instruction which sparked participation. They mentioned they were motivated to participate in class discussions, and they were more invested in their learning. Participants were motivated to pay attention and lacked hedonistic motivation to use smartphones because they did not feel boredom. As described earlier in this chapter, hedonistic motivation (interconnected to boredom) was described by UTAUT2 as a powerful determinant to support technology usage (Venkatesh et al., 2012).

Participants described teachers tried to get to know them, which created a perception of respect for teachers. The added respect for teachers motivated participants to practice responsibility and be accountable for their actions. A sense of responsibility and accountability promoted self-regulation of smartphone use in small classes to avoid being noticed by others which participants believed to be disrespectful and rude. UTAUT2 theorized technology users will avoid or restrict use of technology when conditions were unfavorable, and users perceived they lacked power and control for use of technology (Venkatesh et al., 2012). The self-regulation code was interconnected with engaged teaching methods, respect for teachers, and responsibility and accountability.

10 mentioned, “I think personally, it's a little bit disrespectful to the professor. Even though I get the urge to use my phone in class when others around me are on their phones, I'll do what I think is best and pay attention.” Interviewee 10 clarified this perception was experienced in small classes where they value respect for teachers. Interviewee 2 mentioned, “If other people were on the phone in class, I would think about using my phone, but I do care about what the

professor thinks of me, so I would probably pay attention and not use my phone." Interviewee 2 clarified this behavior was more prominent in small classrooms due to their respect for teachers. Interviewee 1 mentioned, "When I'm bored in small classes, I must persevere through, because I respect the professor, and I do not want to look bad in class and I will get noticed. It could also impact my grade badly because I will not pay attention and miss important information."

Documented studies related to college students' use of smartphones in classrooms suggested college students were incapable of restricting smartphone use in class (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Findings from this study indicated that students have the ability to restrict smartphone use in classes when they respect teachers, and college students' smartphone usage behavior was not necessarily negative or an addiction, but rather, habitual behavior to use smartphones in a classroom environment which was perceived to be favorable (disengaged teaching methods) or unfavorable (engaged teaching methods) (Venkatesh et al., 2012).

Teaching Methods.

Teaching methods was identified inductively as a prominent code. Refinement of the teaching method code segmented into two sub-codes. The first sub-code was identified to interconnect to large classrooms where participants described disengaged teaching methods. The second sub-code was identified to interconnect to small classrooms where participants described engaged teaching methods.

Participants perceived teaching methods to be disengaging in large classes which created a sense of boredom. Participants acknowledged they were hedonistically motivated as described by UTAUT2 (Venkatesh et al., 2012) to cure boredom when teaching methods were disengaged. They prioritized seeking pleasure vs paying attention to lecturers. Hedonistic motivation proved

to be a powerful determinant for smartphone usage, which is consistent with how UTAUT2 described hedonistic motivation for technology users (Venkatesh et al., 2012). Some examples of what the participants perceived to be disengaging were teachers read off slides, teachers posted everything online, teachers did not care to get to know them, and no one is paying attention, and everyone is on their phones.

Interviewee 5 mentioned, “The lecture that day wasn’t engaging, and the class was like 80 people so it's a little bigger, and I knew he wasn't looking at me. I felt I could get away with it today in class and I was also getting bored again from the lecture. I got bored and zoned out again, and I got the urge. I cured my boredom by playing games on my phone.”

Interviewee 6 mentioned disengaged teaching methods in a large classroom resulted in boredom, “This class that I had last semester; it was an easy class. I pretty much only went because of the attendance. There was an attendance requirement, and they would do random attendance checks. All the notes were posted on ELC, all the exams and quizzes were online and open notes. I will admit that I got bored with lecture, and I got the urge to go on my phone and I pulled my phone out and used it.”

Interviewee 9 mentioned, “Playing games on my phone is my go-to when I get bored in class, for example the last class I was just in, it's mythology. It’s something that I'm interested in, but he also posts everything online, and when I study, I look over everything that’s on PowerPoints ahead of time. I'm going to look over this regardless of what he talks about in class, so it wouldn't be detrimental if I played a game on my phone and I did, because I already had the course content. He doesn't deviate from the course content and he's just reading PowerPoints the entire class.”

Participants indicated social influences and notifications were more prominent in large classes where teaching methods were disengaged. All ten participants perceived smartphone usage to be influenced by social factors which aligned with how social factors can influence technology use as described by UTAUT2 (Venkatesh, 2012). Documented studies suggested college students exhibited addictive behavior of smartphone use where they were unable to restrict use in face-to-face classrooms due to FOMO caused by notifications (Al-Furaih & Al-Awidi, 2021). Results from this study can broaden what is documented to include external motivating factors as described by UTAUT2 (Venkatesh et al., 2012) as an explanation to support college students' addictive behavior to check notifications can be an outcome of disengaged teaching methods.

Interviewee 5 mentioned, "If everyone around me in class was on their phones, I probably would consider using mine. I would assume the teacher was ok with it since they didn't say anything, so I would use it too." Interviewee 7 mentioned, "If other students around me are using phones, that would give me the urge to look at my phone and use it." Interviewee 9 mentioned, "The way the phone notifications come on; it's almost like the Pavlov effect. If I hear a buzz on the phone, I want to check it. I've just been trained to check it. That's habit, the need to know and FOMO, fear of missing out."

Participants perceived teaching methods to be engaging in small classes which sparked a vested interest in participation and learning. They perceived motivation to pay attention due to respect formed for the teachers due to the engagement they felt from the teachers. Participants rarely perceived boredom which limited their hedonistic motivation to use smartphones. As described earlier in this chapter, hedonistic motivation (interconnected to boredom) was described by UTAUT2 as a powerful determinant to support technology usage (Venkatesh et al.,

2012). They sensed more personalized instruction from teachers who lecture in small classes, and they felt the environment was comfortable to build a personal relationship with teachers and fellow classmates.

Interviewee 4 mentioned, “When I go to my class with 12 people and I get to know the teacher and the teacher knows me, I'm less likely to go on my phone and I'm more likely to participate in the class. And I'll never participate in an auditorium class. I mean sometimes the teacher will ask for input, but I will never be the one to raise my hand, but in a classroom of 12 people, I will raise my hand, and I'll answer the question, and I'll engage. And partly I think it’s the way the teacher engages me, I'd say usually in a small class, the teacher requires participation as part of your grade. Also, I don't know why, but I feel more comfortable participating in a 12-person class and staying off my phone. Cause it's more intimate, more personal.”

Participants who perceived engaged teaching methods perceived smartphone use to be disruptive, particularly in small classrooms. UTAUT2 theorized technology users were less inclined to use technology when users associated poor outcomes (Venkatesh et al., 2012). Distractions were perceived by participants as negative lived experiences; therefore, they were less inclined to use smartphones in small classrooms (Venkatesh et al., 2012).

Interviewee 10 mentioned, “When I'm in class and I'm listening and paying attention and I’m at least trying to learn something, and the professor is engaging, I feel the phone is a distraction. I think phones don't really have a place when I’m interested in learning because they are disruptors, for both my use and use of others around me.” Interviewee 10 clarified this is a perception they established in small classes, they revealed they did not perceive smartphones to be distractions in large, disengaged classes.

Participants in this study identified perceptions for smartphone usage was favorable when teaching methods were disengaged and smartphone usage was unfavorable when teaching methods were engaging. Favorable conditions were perceived by participants as holding power and a sense of control to support smartphone use which align with the synthesized theories from UTAUT2 (Venkatesh et al., 2012). UTAUT2 theorized technology users will avoid or restrict use of technology when conditions were unfavorable, and users perceived they lacked power and control for use of technology (Venkatesh et al., 2012).

Smartphone Policy.

The code for smartphone policy was also identified inductively, but it did not associate with the central theme of class sizes. However, smartphone policy was interconnected with responsibility and accountability to self-regulate smartphone usage. Smartphone policy will be discussed as a separate code. Participants favored smartphone policies that discouraged the use of smartphones in college classrooms, rather than banning the use. They perceived university students to be responsible and accountable for their actions; therefore, they perceived they should be provided with the opportunity to decide for themselves. Participants supported a "pro-choice" philosophy.

Literature suggested college students valued individual rights, and they desired a voice while attending class (Shutter et al., 2017). Morris & Sarapin (2017) conducted a study which indicated participants believed college students were adults and should be able to regulate themselves in class. The findings from this study are consistent with documented research that suggested college students support discouraging smartphone use policies while attending classes compared to banning policies. However, all participants agreed that smartphones must be banned during quizzes and exams to prevent cheating.

Interviewee 4 mentioned, “I think that it's solely up to the student on how they want to use smartphones in class. I think that if they don't want to pay attention in class and they want to go on their phones, then that's on them. You might want to pay attention, you know. I mean, it's up to the students whether they want to learn or not in class. I don't think that banning the phone is necessary. I would discourage use of it, not ban it.” Interviewee 4 goes on to say, “Technology during quizzes and tests is a no. Phones should be banned for quizzes and exams, so that students can't cheat.”

Interviewee 6 mentioned, “I wouldn't ban them, but I would just discourage the use of them. I feel like students are making a personal choice to get on their phone, and that is their grade that is negatively affected because of that, and that's their fault.” Interviewee 6 went on to say, “Definitely ban on tests and quizzes because of cheating. I feel like professors don't realize how easy it is to cheat, even when cell phones are banned. I've seen students using their phones to look up stuff or even like taking pictures of exams so they can send it to their friends. I feel like I would definitely ban them for tests and quizzes.”

Interviewee 10 mentioned, “I think once you're a certain age, you should have a certain level of maturity where that's not an issue using your phone in class, like in high school it makes sense to ban cell phones. But as an adult, at a certain point you get out of class what you put into it. Hopefully, the students who are sitting on their phones in class will see that reflected in their class performance and change. I don't know if I would support a school wide policy, you know, as much as it bothers me, a lot of students will do it anyways. Even though I’m against phones in classes, I would discourage the use, not ban it.” Interviewee 10 went on to say, “Definitely not during exams and quizzes. I know for all of my classes that I've had exams; we keep our phones in our backpack and if it gets taken out, then you automatically get a zero. And I feel like that's

pretty standard for most teachers. I haven't met anyone who's like, oh yeah, we don't have a phone policy during exams. But I feel like keeping it away during exams is important, mostly to deter cheating."

Themes

The next section presents explanations of themes which emerged from prominent codes that help answer both research questions. The significant outcome of coding during the data analysis process revealed a central theme of class size. All participants interviewed in this study perceived a pattern of habitual behaviors that interconnected to class size. All prominent codes (apart from smartphone policy) discussed in the previous section were interconnected with whether the class size was large or small, and the varying habits which resulted from prior lived experiences revealed meaningful patterns of college students' use of smartphones in college classrooms.

Refinement of the central theme of class size revealed that every participant in this study acknowledged they used their smartphones in large classes, and they regulated use in small classes. Two sub-themes emerged from meaningful patterns of codes identified as habitual behavior of smartphone use in large classrooms and habitual behavior of smartphone use in small classrooms. This was an unexpected finding that I did not consider before the start of data collection. The size of college classrooms revealed itself right away during the interview process. I noticed the significance from the first and second interviews. I immediately started probing and member checking in real time in future interviews to gain valuable insight into a code or theme which was not preset and was unexpected. Zairul (2021) suggested clarifying participants' responses with member checking in real time during the interview process is an alternative

method to promote trustworthiness and validate interview responses in addition to the traditional follow up method of member checking during the data analysis process.

Each sub-theme will be discussed in the next subsection of this chapter. The section is divided into three subsections with the first subsection focused on the discussion of the habitual behavior of smartphone use in large class sizes, the second subsection focused on the habitual behavior of smartphone use in small class sizes, and the third subsection paints a picture through participant responses of the contrasting habitual behaviors in relation to the size of class. Table 3 shows prominent codes and their interconnection with the habitual behavior of smartphone use of participants in large classrooms compared to habitual behavior of smartphone use of participants in small classrooms.

Table 3 ***Prominent Codes Interconnected with Habitual Behavior in Classrooms***

Prominent Codes	Sub-Theme: Habitual Behavior in Large Classrooms	Sub-Theme: Habitual Behavior in Small Classrooms
Perceived Ease of Use	Positive attitudes - easy to use	Negative attitudes – disrespectful to use
Perceived Usefulness	Positive attitudes - useful to cure boredom	Negative attitudes – disruptive
Social Factors & Influences	Smartphone use of others influenced use	Smartphone use of others were distractions
External Motivations	Notifications were checked (FOMO) and use not regulated	Silenced notifications or turned off smartphones or put away
Perceived Control	Conditions favorable, perceived more power and control	Conditions unfavorable, perceived less power and control
Habit	Prior lived experiences established habits for use	Prior lived experiences established habits to self-regulate use
Hedonistic Motivation	Hedonistically motivated to cure boredom	Lacked hedonistic motivation, motivated to pay attention
Boredom	Disengaged teaching created boredom	Did not associate boredom due to engaged teaching methods
Distractions	Participants did not perceive use as a distraction	Perceived use as a distraction
Responsibility and Accountability	Perceived less responsibility and accountability to self-regulate use	Perceived more responsibility and accountability to self-regulate use
Self-regulation	Perceived positive attitudes towards use and did not self-regulate use	Perceived negative attitudes towards use and self-regulated use
Respect for Teachers	Lacked respect for teachers due to disengaged teaching methods	Respected teachers due to engaged teaching methods
Teaching Methods	Disengaging – caused boredom and less responsibility and accountability to self-regulate	Engaging – paid attention, more responsibility and accountability to self-regulate

Habitual Behavior in Large Classes.

Participants acknowledged they perceived a positive attitude towards smartphone use in larger classrooms from previous lived experiences which established habitual behaviors to use smartphones. UTAUT2 demonstrated technology users are motivated to use technology when they perceive positive attitudes towards usage and when they perceive favorable conditions to support use (Venkatesh et al., 2012). Positive outcomes from prior smartphone use in large classes contributed to developing a habit perceived as favorable conditions to support future use. Habit was included in UTAUT2 as part of the extension of theories from UTAUT which provided additional context from outcome expectations from prior use as described by the Social Cognitive Theory (Bandura, 1986). Habit could be explained in the context of motivation to use smartphones from prior lived experiences in which the user was influenced by various outcome beliefs which contributed to future behavioral use which the user believed became automatic (Venkatesh et al, 2012).

Participants agreed teaching methods were disengaged in larger, auditorium style classrooms. Disengaged teaching methods created boredom which was identified as the prominent code for participants to use smartphones in class for non-academic purposes. Participants described their smartphones were the primary instrument to cure boredom and they were hedonistically motivated to use their smartphones in large classes. UTAUT2 discussed hedonistic motivation as a determinant of technology use (Venkatesh et al., 2012). UTAUT2 suggested pleasure derived from technology use was a strong predictor for motivation to use technology (Venkatesh et al., 20212).

Participants also acknowledged disengaged teaching methods from large classes contributed to the lack of respect for teachers. They agreed that teaching methods in large

classrooms tend to be impersonal and teachers read off lecture slides. Participation seemed to be lacking in larger classes and course materials were usually posted online for students to access outside of class. The lack of respect for teachers created a perception of boredom rather than responsibility and accountability to self-regulate smartphone usage. Participants perceived favorable conditions and hedonistic motivation to use smartphones in this type of environment which aligned with UTAUT2 (Venkatesh et al., 2012). Favorable conditions were perceived by participants as holding power and a sense of control to support smartphone use which align with the synthesized theories from UTAUT2 (Venkatesh et al., 2012).

Lastly, participants discussed that the sheer size of large classrooms and the large number of students created an environment that supported smartphone usage. They perceived more social influences since more students around them were on their phones. Participants perceived smartphone usage to be influenced by social factors which aligned with how social factors can influence technology use as described by UTAUT2 (Venkatesh, 2012). Participants acknowledged they perceived facilitating conditions where they felt more control and power to use smartphones in large classes and get away with usage without being noticed by others. UTAUT2 described that technology users are motivated to use technology when they perceive they have control and power for usage (Venkatesh et al., 2012).

Documented studies related to college students' use of smartphones in classrooms suggested college students exhibited behaviors that were negative and addictive. The smartphone addiction was described as the inability of college students to restrict smartphone use in class, even though they understood their usage would cause distractions (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Results from this study revealed that college students' smartphone usage behavior was not

necessarily negative or an addiction, but rather, habitual behavior to use smartphones in a classroom environment which was perceived to be favorable or unfavorable as described by UTAUT2 (Venkatesh et al., 2012).

The findings from this study identified classroom sizes dictated whether perceptions for smartphone usage was favorable or unfavorable through lived experiences where automatic behavior was established as described by UTAUT2 (Venkatesh et al., 2012). Participants' behaviors in large classrooms were more consistent with what is known in literature. Participants revealed they struggled with their ability to restrict smartphone use in large classrooms which exhibits behavior that is similar to a smartphone use addiction as described by college students' smartphone use studies (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024).

Habitual Behavior in Small Classes.

Participants acknowledged that they perceived a negative attitude towards smartphone use in small classrooms from previous lived experiences which supported a disruptive nature filled with distractions and poor outcomes. UTAUT2 demonstrated technology users are less motivated to use technology when they perceive negative attitudes towards usage, particularly when poor outcomes were associated with technology use (Venkatesh et al., 2012). Participants perceived smartphone use in small classrooms to be unfavorable; therefore, they restricted use. UTAUT2 (Venkatesh et al., 2012) suggested technology users were less likely to use technology when they perceived unfavorable conditions created by a perception of loss of control and power to use technology.

Although participants perceived positive attitudes towards smartphone use in their daily lives which supported use in large classrooms, they were also aware of their disruptive nature.

Participants acknowledged distractions from excessive smartphone use hindered productivity and disrupted everyday life. This negative perception of smartphone use crossed into the college classrooms, particularly in small classroom sizes. UTAUT2 indicated that technology users were less motivated to use technology when they perceived negative attitudes towards usage, particularly when poor outcomes were associated with technology use (Venkatesh et al., 2012).

Distractions were identified as a prominent code for restricting smartphone use that interconnected with small classrooms. Participants agreed that prior negative lived experiences from using their smartphones in small classrooms contributed to forming habitual behavior as described by UTAUT2 (Venkatesh et al., 2012) to self-regulate smartphone use. UTAUT2 indicated that technology users were less motivated to use technology when they perceived negative attitudes towards usage, particularly when poor outcomes were associated with technology use (Venkatesh et al., 2012). Prior negative experiences where teachers and classmates labeled their smartphone use in class as a distraction impacted their beliefs of loss of control and power to use their phones. UTAUT2 (Venkatesh et al., 2012) suggested technology users were less likely to use technology when they perceived unfavorable conditions created by a perception of loss of control and power to use technology.

Unlike the codes that interconnected with large classrooms, participants perceived teaching methods were engaging in small classrooms which created a perception of unfavorable condition to use smartphones as described by UTAUT2 (Venkatesh et al., 2012). Participants described small classrooms made them feel they were in an intimate setting, and teachers presented more personalized instruction which sparked participation. They mentioned they were motivated to participate in class discussions, and they were more invested in their learning. Engagement in small classes motivated participants to pay attention and they seldom perceived

boredom. They were not hedonistically motivated to use their smartphones because they were not bored. UTAUT2 indicated that technology users were less likely to use technology when they lack hedonistic motivation (Venkatesh et al., 2012).

Participants indicated professors tried to get to know them, which created a perception of respect for teachers. The added respect for teachers motivated participants to practice responsibility and be accountable for their actions. A sense of responsibility and accountability contributed to self-regulation for smartphone use in small classes to avoid being noticed which participants believed to be disrespectful and rude. UTAUT2 (Venkatesh et al., 2012) suggested technology users were less likely to use technology when they perceived facilitating conditions created a perception of loss of control and power to use technology.

Participants also mentioned their fear of getting removed from smaller classes by their teachers contributed to responsibility and accountability to self-regulate smartphone use. Prior experiences of poor outcomes could form habitual behaviors to avoid the use of technology which aligned with behavioral traits described by UTAUT2 (Venkatesh et al., 2012). They acknowledged there were fewer social influences in small classrooms because there were less students on their phones. Fewer social influences can support a restriction in technology usage due to the lack of external motivation (Venkatesh et al., 2012).

Participants in this study revealed that their smartphone usage behavior in small classrooms were developed from prior lived experiences in classrooms. All participants in this study acknowledged they restricted, and self-regulated smartphone use in small classrooms, which contradicts what is documented in smartphone use literature that described the inability of college students to restrict smartphone usage (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024).

Participant Responses.

This section provides participant descriptions of their contrasting habitual behaviors in large vs small classrooms. I selected a few quotes from each participant to describe how they perceived smartphone usage in relation to the size of classrooms. I intend to *paint a picture* from participant quotations in hopes to provide thick descriptions of how university students who were sampled in this study perceived contrasting habitual behaviors in large classes vs small classes.

Interviewee 1 mentioned, “I think it is boredom because when I'm in a big lecture class, when the professor just reads off the slides and I already know it, then I'm bored and I don't want to pay attention, I just scroll on my phone for fun and excitement.” Interviewee 1 went on to say they have a different perception in small classrooms where their respect for teachers outweighs hedonistic motivation and they feel they have less control over usage, “When I'm bored in small classes, I must persevere through, because I respect the professor, and I do not want to look bad in class and I will get noticed. It could also impact my grade badly because I will not pay attention and miss important information.”

In small classes, Interviewee 2 mentioned, “If other people were on the phone in class, I would think about using my phone, but I do care about what the professor thinks of me, so I would probably pay attention and not use my phone.” Interviewee 2 went on to share perceptions in large classes, “This morning in Bio, it's a lecture, and it's a larger one, and we got to a part that I already knew pretty well, and I was bored, so I got my phone, and I did the crossword on the New York Times website.”

Interviewee 3 mentioned, “It depends on the situation that I'm in. If I'm in a large class, and the teacher's lecturing, and I get a text, sometimes I'll look at the text. I'll see who it is or maybe what the notification is. And depending on the urgency that I think is associated with it,

then I might act on it and answer the text. But if I'm in a smaller class, I think that listening to the teacher is more important, I probably won't follow through with it." Interviewee 3 clarified they restrict smartphone use in smaller classes due to formed negative perceptions of distractions from the past. They go on to say, "But then I've seen in larger lecture classes, like 100 plus students, where maybe you're not as close to the professor or it's easier to sit in the back of the classroom, that's when students tend to go on their cell phones more, and I'm guilty of that. In that situation, I don't always see it as a bad thing, especially if maybe what we're learning is something that I've gone over before, or if I get an important text message and I just want to answer it quickly. So yeah, I think it just depends on the situation where I feel I have more control over not being seen."

Interviewee 4 mentioned, "I try to stay off my phone as much as I can, but in class, the only source of entertainment is my phone, so I use it for boredom. I don't have any other options in class." Interviewee 4 went on to say, "In my lecture classes when it's a lot less noticeable that I'm on my phone, I'll use it, especially in large classes. Like when I'm in an auditorium of 500 people, nobody notices me using my phone. But then when I go to my class with 12 people and I get to know the teacher and the teacher knows me, I'm less likely to go on my phone and I'm more likely to participate in the class. And I'll never participate in an auditorium class. I mean sometimes the teacher will ask for input, but I will never be the one to raise my hand, but in a classroom of 12 people, I will raise my hand, and I'll answer the question, and I'll engage. And partly I think it's the way the teacher engages me, I'd say usually in a small class, the teacher requires participation as part of your grade. Also, I don't know why, but I feel more comfortable participating in a 12-person class and staying off my phone. Cause it's more intimate, more personal."

Interviewee 5 mentioned, “Smartphones are more distracting in small classes, and I think it’s disruptive and negative in all classes. I generally don't use it in classrooms, but especially where it's a more intimate setting with the teacher. Like if we have less than 40 students in the classroom, I'm not going to get on my phone even if the Professor is lecturing and I'm kind of zoning out from being bored. I guess because it's a respectful thing for me, I know if I'm presenting, I don't want to see someone on their phone. I feel like that's just a common courtesy, and its rudeness, that's rude.”

Interviewee 5 went on to say, “This morning, I'll say I was in geography, and I got a notification for a grade that I've been anticipating for comparative politics, and it was a quiz and then I saw the post notification and I had to know. So that would be a time when I think I'd used my phone when I'm not supposed to for something that was not related to the class. This geography class doesn't allow phones, but I used it because I previously got away with using it without the professor noticing me. The lecture that day wasn’t engaging, and the class was like 80 people so it's a little bigger, and I knew he wasn't looking at me. I felt I could get away with it today in class and I was also getting bored again from the lecture. I got bored and zoned out again, and I got the urge. I cured my boredom by playing games on my phone.”

Interviewee 6 mentioned, “In a small classroom, I respect my peers and the professor. So, it would be more difficult to use, so I don’t use it and silence my phone. I believe it’s very difficult to control how that's going to rub off on others in class.” Interviewee 6 went on to say, “There's a mode on Apple phones called do not disturb, so no notifications pop up. I always put that on just so I don't get tempted to look at my phone. I guess this is habit that I picked up from the past where my phone distracted me in class, and I missed important parts of the lecture.” Interviewee 6 also described use in a large class, “This class that I had last semester, it was an

easy class. I pretty much only went because of the attendance. There was an attendance requirement, and they would do random attendance checks. All the notes were posted on ELC, all the exams and quizzes were online and open notes. I will admit that I got bored with lecture, and I got the urge to go on my phone and I pulled my phone out and used it."

Interviewee 7 mentioned, "I think it's easier to get away with using my phone in a bigger class. I will look at my phone more if I'm in a bigger class or in the back of the room or something. I feel like the professor knows me more in a smaller class, and they can see me easier if I use my phone, and they will think I'm not paying attention. I feel like it's rude because I have that respect level for the instructor. I don't get that in the big auditorium classrooms, and to be honest, I get bored and get on my phone. I respect them, but it's harder for them to know me and know what's happening, so I do my own thing."

Interviewee 8 mentioned, "It is fun using my smartphone, so I use it for boredom. If I get bored, I think of ways to keep myself entertained and the smartphone has become the go-to and automatic response to cure boredom. Now that I'm in college, if I get bored, I guess I immediately go on my smartphone. I don't even think about it." Interviewee 8 went on to clarify, "In a large class, whenever I feel an intention or urge to use the phone, I feel like I just kind of do it. I usually get that urge because I'm bored. When I get bored, I always use my phone. There's never been a time in large classes where I've been, like, oh I shouldn't use it because I'm in class right now, it's habit now." Interviewee 8 shared their perceptions towards smartphone use in small classes varied, "I understand it's become a habit and that it's addictive, that's why I have to control it in small classes. The urge is still there sometimes, and I do get the urge to go on my phone when my classmates around me are using their phones, but I feel like I'd be more inclined to pay attention. They do distract me from paying attention to the professor."

Interviewee 9 mentioned, “I guess in terms of being in a classroom I guess it honestly just depends on what class I'm in because I have large lectures and then I have smaller classroom settings such as my math class. In a smaller classroom setting, I feel more obligated not to get on my phone because we're pretty involved, like everyone is participating, so I feel motivated to stay focused on what's going on in my class. I'm usually not on my phone and aware of the social context not to disturb others around me. Then in my last class, it was a huge lecture, there's no point where I'm ever like participating with the rest of the class. I guess I feel less need to be fully synced in with the rest of the classroom, if that makes sense. I feel like I have a little more personal space to do what I want. I feel I have more control to use my phone when I get bored.”

Interviewee 10 mentioned, “I think personally, it's a little bit disrespectful to the professor. Even though I get the urge to use my phone in class when others around me are on their phones, I'll do what I think is best and pay attention. My phone stays in my backpack while I'm in a small class. I'm an out of state student, so I pay a lot of money to be here. So, when I'm in class and I'm listening and paying attention and I’m at least trying to learn something, and the professor is engaging, I feel the phone is a distraction. I think phones don't really have a place when I’m interested in learning because they are disruptors, for both my use and use of others around me.” Interviewee 10 went on to share how they perceive smartphone use in large classrooms, “Occasionally, I'll get a text message, and I'll get a notification on my phone, like something happened, and I will check my phone. If it was an urgent notification I would be motivated to use my phone.” I asked Interviewee 10 to describe their last experience when they used their smartphone in class, “I checked it, and I responded to let my mom know what I was doing. I feel like there's always exceptions and if something is like urgent or needs attention, and I’m in a large class where I didn’t need to pay attention, I would pull my phone out and use it.”

Summary of Findings

The significant outcome of coding during the data analysis process revealed a central theme of class size. Participants perceived they developed varying habits as described by UTAT2 (Venkatesh et al., 2012) that interconnected with whether the class size was perceived to be large or small. The perceived habits that were developed from prior lived experiences of participants revealed meaningful patterns of college students' use of smartphones in college classrooms. Refinement of the central theme of class size revealed that every participant in this study perceived that they developed habitual behavior to support use of smartphones in large classes, and that they developed habitual behavior to regulate the use of smartphones in small classes.

Two sub-themes emerged from the identification of meaningful patterns of codes which revealed that participants perceived two contrasting habits. In large classrooms, habitual behavior was perceived to be developed from positive and favorable lived experiences of smartphone use which UTAUT2 described supports technology use (Venkatesh et al., 2012). In small classrooms, habitual behavior was perceived to be developed from negative lived experiences of smartphone use which UTAUT2 described can limit technology use (Venkatesh et al., 2012). Positive habitual behaviors which support smartphone usage in large classrooms are listed, described, and compared to negative habitual behaviors which restrict smartphone usage in small classrooms in Table 3.

Codes and themes identified in this study aligned with the determinants from the unified set of theories from UTAUT2 which predicted technology use (Venkatesh et al., 2012). UTAUT2 theorized technology users were more inclined to use technology when users experienced positive attitudes and outcomes from prior use, and users were less inclined to use technology when users associated negative attitudes and outcomes (Venkatesh et al., 2012).

Results from this study indicated that college students' smartphone usage behavior in classrooms were not necessarily negative or an addiction as described in literature (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024), but rather, habitual behavior to use smartphones as described by UTAUT2 (Venkatesh et al., 2012) in a classroom environment which was perceived to be favorable in large classrooms or unfavorable in small classrooms.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Current documented smartphone usage studies highlight the negative disruptive potential of college students' use of smartphones while attending classes (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Literature suggested college students exhibited behaviors that were negative and addictive in classrooms. The negative smartphone behavior was described as the inability of college students to restrict smartphone use in class, even though they understood their usage would cause a distraction (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Results from this study indicated that college students' smartphone usage behavior was not necessarily negative or uncontrollable, but rather, habitual behavior that was developed to use or restrict smartphones in a classroom environment which was perceived to be favorable or unfavorable as described by UTAUT2 (Venkatesh et al., 2012).

UTAUT2 provided the theoretical framework and the supporting evidence throughout data discussion (Venkatesh et al., 2012). UTAUT2 theorized technology users will avoid or restrict use of technology when conditions were unfavorable, and users perceived they lacked power and control for use of technology (Venkatesh et al., 2012). UTAUT2 also indicated that technology users were motivated to use technology when they perceived conditions to be favorable and they could control and had power to support technology use (Venkatesh et al., 2012).

The findings from this study identified themes which indicated classroom sizes dictated whether perceptions of smartphone usage was favorable or unfavorable as described by UTAUT2 (Venkatesh et al., 2012). Participants perceived conditions in large classrooms were favorable for smartphone usage, and they perceived conditions were unfavorable for smartphone usage in small classrooms. Themes from this study indicated smartphone usage perceptions were developed through lived experiences where automatic behavior was established (Venkatesh et al., 2012).

Findings from this study aligned with the determinants drafted from the synthesized and unified set of theories from UTAUT2 which predicted technology use (Venkatesh et al., 2012). UTAUT2 theorized technology users were more inclined to use technology when users experienced positive attitudes and outcomes from prior use, and users were less inclined to use technology when users associated negative attitudes and outcomes (Venkatesh et al., 2012). Participants perceived positive attitudes towards smartphone usage in large classrooms, and negative attitudes towards smartphone usage in small classrooms. Table 3 outlines the interconnections between codes to themes which identified smartphone behavior patterns in large classes compared to small classes.

I am a teacher in college classrooms, and I view the results of this study as significant. I now have a better understanding of why college students use their smartphones in class. The results of the findings from this study indicated that college students drew upon their lived experiences that developed habits as described by UTAUT2 (Venkatesh et al., 2012) towards smartphone usage in classrooms. I believe teachers are influential in providing the lived experiences for students in college classrooms because teachers are in charge of the classroom environment. Maybe we educators are at the root of the dilemma noted in smartphone research in

the college student demographic which painted a negative picture (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024).

I believe teachers must be reflexive and examine their own teaching methods and what sort of teaching environment is being delivered to students. This could be a potential area of interest in future research. Literature focuses on students' smartphone use behaviors in college classrooms, and they suggest the disruptions are related to students' behaviors (Al-Furaih & Al-Awidi, 2021; Das & Ahmed, 2023; Joshi et al., 2022; Karaoglan Yilmaz et al., 2024; Tamayo et al., 2024). Findings from this study indicated that the source of distractions and disruptions caused by students' smartphone usage in college classrooms could be caused by teachers who provided negative lived experiences to students in class.

Future Research Recommendations

The most important and interesting finding from the results of this study was college class sizes. Class sizes were not considered as a potential theme during data collection, but it emerged as the central theme. Prominent codes that were identified deductively from the pre-set codes and codes that were identified inductively all interconnected with the central theme of class sizes (with the exception of smartphone policy). Every participant acknowledged they believe they established habits toward smartphone use in their daily lives which transition into classrooms. They favored use in large classrooms from positive perceptions formed from lived experiences, and they regulated use in small classrooms from negative perceptions formed from lived experiences. Participants perceived large classrooms to be supported by disengaged teaching methods which supported smartphone use to cure boredom, while they perceived small classrooms to be supported by engaged teaching methods which heightened respect for teachers to self-regulate usage.

Future research could investigate the association between class sizes and smartphone use and discover best methods to incorporate or regulate smartphone usage when considering the size of classes. Findings from this study revealed that university students could be developing opposing habitual behaviors for smartphone usage in college classrooms that require further examination. Findings from this study identified there is a higher probability of smartphone use in large classrooms compared to small classrooms. Future studies could focus on qualitative inquiries which investigate both the college students' and teachers' perception of how university educators could increase engagement and participation in large classrooms.

The level of respect for teachers and teaching methods were identified as prominent codes with meaningful interconnectedness with one another and to class sizes. Future studies could focus on how college students perceive teaching methods and the level of respect when comparing class sizes. Future research could also examine and clarify how many students constitute whether a class is considered large or small. How many students are required to be defined as a large class? What's the magic number where a class is categorized as large or small? There are ample opportunities for future researchers to examine the association of class sizes to academic performances and experiences of all who are involved in the higher education eco-system.

Age and gender were omitted in this study which limited the scope of this study. Future research could examine both age differences and gender differences related to smartphone perceptions in college classrooms. I was selective in sampling at UGA to include freshmen students in hopes of establishing homogeneity. Future research could sample upper classmen and examine their perspectives. Do upper classmen perceive smartphone use and class sizes in a

similar manner as underclassmen? Class sizes tend to vary as college students advance in their academic standing.

Teachers could also be examined in future research in relation to class sizes. It would be interesting to examine teachers' perspectives and see if they perceive what students perceive in accordance with the size of class. Findings from this study revealed teaching methods were either engaging or disengaging in respect to the size of class. Do teachers feel the same way? Findings from the teachers' perspective could contribute to the findings of this study and provide greater understanding from the teachers' point of view.

Lastly, laptops were omitted from this study due to their acceptance in college classrooms as notetaking tools. Smart devices that are comparable to smartphones could be examined to see if they are as disruptive to the learning environment as smartphones. Future research could examine from the students' perspectives how they perceive laptops in college classrooms. Many students I've encountered in conversations outside of class informed me they perceived laptops to be a larger distraction than smartphones due to the large screen sizes. These students made me aware that not all students who use laptops in class use them solely for notetaking, and when they use them for non-academic purposes, they could distract other students who are in view of their laptop monitors.

Implications For Practice

The findings from this study suggested there is a need for examination of class sizes in higher education. University system's level of resources and their implications for practice are always a tricky topic to discuss. How many students should one instructor teach? What is too large, or too small? I believe the findings from this study provided evidence from the university

students' vantage point on how their college experience can be impacted positively or negatively depending on how many large or small classes they take.

Students from this study described large, auditorium style classes as disengaged and boring. They went on their smartphones for non-academic purposes in this type of environment. They have the potential to not only disrupt their own learning, but they also influence others around them to go on their smartphones regardless of policies. Is this the type of education we educators should be providing? On the other hand, students from this study described small classes as engaged, intimate, and personal. They self-regulated smartphones and paid attention to and respected teachers. They felt more involved, and they actively participated, which enhanced their learning. As a teacher, this is how I wish my students would describe my classes.

I believe educators could elevate teaching practices once we discover that fine line where classroom sizes are large enough to meet university resource requirements, but small enough to deliver personalized instruction. The results from this study demonstrated that university students preferred personalized instruction. There is no need for a smartphone policy (apart from exams) when students are engaged, and they respect teachers. What is the magic number? I am uncertain, but some participants disclosed they perceived class size to be large when the number of students exceeded 50-60. Further investigation that are focused on discovering what the ideal number looks like could contribute positively to teaching practices. The findings from this study suggested that higher education teachers should figure out ways to re-engage students in large classrooms. Participants revealed that teachers in large classrooms tend to read off slides and they do not provide additional information to what is already posted online. This is something we educators can fix and improve teaching practices.

Personal Journey

I began this journey with the desire to better understand the student population I work with daily. Their behavior towards smartphone uses in my face-to-face classes puzzled me. I could not empathize with them on how they perceived smartphone usage in class. As I mentioned in my subjectivity statement, I did not grow up with technology in my studies. I could not understand why college students continue to use smartphones in my classes and disrupt my class when I ban them. I felt a perfect opportunity presented itself to me when I enrolled in this doctoral program, and on the very first day of class, a professor (Dr. Jay Rojewski) asked this question, "What area of research are you interested in, and what problems from your teaching practice do you wish to investigate?" This research topic was born instantly, with no hesitation.

I come from a scientific background, and I teach in the health professions college at the university of my employment. I always considered myself a numbers guy, and I enjoy statistical analysis, and I shy away from writing. I began my journey at UGA with a predetermined mindset to conduct a quantitative analysis, but then I met Dr. Janette Hill who enlightened me. I discovered in her qualitative research course that my research goals would be well suited with qualitative study. Thank you, Dr. Hill, you were correct and thank you for serving on this committee. I am very thankful I chose this path. The findings from college students have opened my eyes to how they perceive smartphones, and this level of detailed data could not be achieved without a qualitative lens.

My perception of this topic has changed tremendously upon completion of this research. I view smartphone use in the college student demographic differently, and I adjusted my cellphone policies in my face-to-face classes to strongly discouraging use, rather than a no tolerance policy. As I reflect when I was a student growing up in the 80s, I did not have

technology with me in classes. Non-academic activities that disrupted classes usually involved paper and pencil. How absurd would it be if teachers back then banned paper and pencil because they disrupted class? That is how I currently feel about smartphones, and the findings from this study helped me develop this perception.

This study revealed how important smartphones are in college students' daily lives, which include their campus life. I now realize they use their smartphones in class conditionally, regardless of policy. I feel better equipped to improve my teaching practices since I have greater understanding of what supports favorable and unfavorable conditions for smartphone usage. Now that I have some understanding of their habitual behaviors surrounding class sizes, I will consider the size of my class when I lecture. I will focus on making efforts to practice teaching methods which spark discussion, participation, and engagement in large classes. The findings from this study indicate college students prefer more personalized instruction; therefore, I will strategize methods to establish this sort of teaching environment. Lastly, college students desire smartphone uses in classes to be discouraged and not banned; therefore, I will adjust to their wishes.

REFERENCES

AECT (2004). The definition of educational technology. Washington DC: AECT

Ajibade, P. (2018). Technology acceptance model limitations and criticisms: exploring the practical applications and use in technology-related studies, mixed method, and qualitative research. *Library Philosophy and Practice (e-journal).*

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. *Action Control*, 11-39.

Ajzen, I. (1987). Attitudes, traits, and actions: Dispositional prediction of behavior in personality and social psychology. *Advances in Experimental Social Psychology*, 1-63.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.

Ajzen, I. & Fishbein, M. (2005). The influence of attitudes on behavior. The handbook of attitudes, p. 173 – 221.

Al-Furaih, S.A.A., Al-Awidi, H.M. (2021). Fear of missing out (FoMO) among undergraduate students in relation to attention distraction and learning disengagement in lectures. Education Information Technology 26, 2355–2373

Anney, V. N. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of emerging trends in educational research and policy studies*, 5(2), 272-281.

Atieno, P. (2009). An analysis of the strengths and limitations of qualitative and quantitative research paradigms. *Problems of Education in the 21st Century,* 13, 13-18.

Attride-Stirling, J. (2001). Thematic networks: an analytic tool for qualitative research. *Qualitative Research,* 1(3), 385–405.

Bain, L. Z. & Bhatnagar, N., (2015). Do business students use technology to cheat and do business faculty take any action about it? *Issues in Information Systems,* 16(3), 199-208.

Baker, W., Lusk, E., & Neuhauser, K. (2012). On the use of cell phones and other electronic devices in the classroom: Evidence from a survey of faculty and students. Journal of Education for Business, 87(5), 275-289.

Bandura, A. (1986). Fearful expectations and avoidant actions as coeffects of perceived self-inefficacy. *American Psychologist, 41*(12), 1389–1391.

Barbosa, D. & Geyer, C. (2005). Pervasive personal pedagogical agent: A mobile agent shall always be with a learner. Proceedings IADIS International Conference Mobile Learning 2005, Malta, 281–285.

Beuschel, W. (2013). Social software and the evolution of user expertise: Future trends in knowledge creation and dissemination (pp. 201-226). Hershey, PA: Institute of Business Application Systems.

Bolkan, S. & Griffin, D. (2016). Students' use of cell phones in class for off-task behaviors: the indirect impact of instructors' teaching behaviors through boredom and students' attitudes. *Communication Education,* 66, 1-17.

Brantlinger, E., Jimenez, R., Klingner, J., Pugach, M., & Richardson, V. (2005). Qualitative Studies in Special Education. *Exceptional Children,* 71(2), 195–207.

Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology,* 3(2), 77–101.

Brown, S.A., & Venkatesh, V. (2005). Model of adoption and technology in households: A baseline model test and extension incorporating household life cycle. *MIS Q.,* 29, 399-436.

Bryman, A. (2003). Research Methods and Organization Studies. Routledge.

Carter, S. P., Greenberg, K., & Walker, M. S. (2017). The impact of computer usage on academic performance: Evidence from a randomized trial at the United States Military Academy. *Economics of Education Review*, 56, 118-132.

Chan, L., Bridges, S., Doherty, I., Sharma, N., Chan, N., & Lai, H. (2015). A qualitative study on how health professional students and their facilitators perceive the use of mobile devices during PBL. *Interdisciplinary Journal of Problem-Based Learning*, 9(1).

Coffin, T., Lyle, H., & Evans, A. (2015). Mobile device usage 2015: 2015 Report on the use of mobile devices for academic purposes at the University of Washington. IT Connect: Information technology tools and resources at the UW.

Collins English Dictionary (2025). In Collins English Dictionary.com. Retrieved April 10, 2025, 2022, from https://www.collinsdictionary.com/us/dictionary/english/technology

Creswell, J. W., Hanson, W. E., Clark Plano, V. L., & Morales, A. (2007). Qualitative research designs: Selection and implementation. *The Counseling Psychologist*, 35(2), 236–264.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice*, *39(3)*, 124-130.

Creswell, J. W. (2012). Qualitative inquiry and research design: Choosing among five approaches. Thousand Oaks, CA: Sage.

Dahlstrom, E., & Bichsel, J. (2014). ECAR study of undergraduate students and information technology, 2014. Educause.

Das, D., & Ahmed, M. (2023). Students' perceptions of smartphone use: Institutional policies in Assam, India. E-Learning and Digital Media, 0(0).

Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly,* 13(3), 319-340.

Ditzler, C., Hong, E., & Strudler, N. (2016). How tablets are utilized in the classroom. *Journal of Research on Technology in Education*, 48(3), 181-193.

Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, 28(3), 307–319.

Eiland, L. S., & Todd, T. J. (2019). Considerations when incorporating technology into classroom and experiential teaching. *The Journal of Pediatric Pharmacology and Therapeutics,* 24(4), 270-275.

Erickson, F., & Gutiérrez, K. (2002). Culture, rigor, and science in educational research. *Educational Researcher,* 31(8), 21-24.

Esmaeili, M., & Eydgahi, A., & Amanov, I. (2015). Perceptions of students toward utilizing smartphones in the classroom. Paper presented at 2015 ASEE Annual Conference & Exposition, Seattle, Washington.

Fernandez, S. (2018). University students' perspectives on using cell phones in classrooms-Are they dialing up disaster? *The Turkish Journal of Educational Technology,* 17(1).

Ferreira, M.J., Moreira, F., Pereira, C.S., & Durao, N. (2015). The role of mobile technologies in the teaching/learning process improvement in Portugal. Proceedings of ICERI2015 Conference 16th-18th November 2015, Seville, Spain.

Finn, A. N., & Ledbetter, A. M. (2013). Teacher power mediates the effects of technology policies on teacher credibility. *Communication Education,* 62(1), 26-47.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behavior. An introduction to theory and research. Reading, MA: Addison-Wesley Publishing Company.

Goffman, E. (1963). Stigma: Notes on the management of spoiled identity. New York: Simon & Schuster.

Gonzales, L. D., Kanhai, D., & Hall, K. (2018). Reimagining organizational theory for the critical study of higher education. In Higher education: Handbook of theory and research (p. 505-559). Springer, Cham.

Graham, C. & Gillies, M. (2016). To BYOD or not to BYOD: Factors affecting academic acceptance of student mobile devices in the classroom. *Research in Learning Technology*, vol 24 (2016).

Guest, G., Bunce, A., & Johnson, L. (2006). How Many Interviews Are Enough? An Experiment with Data Saturation and Variability. *Field Methods*, 18(1), 59–82.

Han, S. & Yi, Y. (2018). How does the smartphone usage of college students affect academic performance? *Journal of Computer Assisted Learning*, 35, 13-22.

Hoepfl, M. C. (1997). Choosing qualitative research: A primer for technology education researchers. *Journal of Technology Education,* 9(1), Article 4.

Igbaria, M., Parasuraman, S., & Baroudi, J. J. (1996). A motivational model of microcomputer usage. *Journal of Management Information Systems,* 13(1), 127-143.

Januszewski, A., & Molenda, M. (Eds.). (2013). Educational technology: A definition with commentary. Routledge.

Jackson, Kevin (2018). A brief history of the smartphone: How much do you know about how smartphones evolved? *Science Node, vol* 25 (2018).

Jesse, G. (2015). Smartphone and App usage among college students: Using smartphones effectively for social and educational needs. Conference on Information Systems and Computing Education. Wilmington, North Carolina USA.

Joshi, S.C., Woodward, J. & Woltering, S. (2022). Cell phone use distracts young adults from academic work with limited benefit to self-regulatory behavior. Current Psychology 42, 27071–27087.

Karaoglan Yilmaz, F.G., Ustun, A.B., Zhang, K. (2024). Smartphone Addiction, Nomophobia, Depression, and Social Appearance Anxiety Among College Students: A Correlational Study. *J Rat-Emo Cognitive-Behavior Ther* 42, 305–321.

Kibona, L. & Rugina, J. (2015). A review on the impact of smartphones on academic performance of students in higher learning institutions in Tanzania: A case of Ruaha Catholic University (Rucu), Iringa. *Journal of Multidisciplinary Engineering Science and Technology (JMEST)*, 2(4), 673-677.

Kim, S. S., Malhotra, N. K., Narasimhan, S. (2005). Two competing perspectives on automatic use: A theoretical and empirical comparison. *Information Systems Research*, 16, 418 – 432.

Kosta, A., Pappas, N., & Angelakis, V. (2017). Age of information: A new concept, metric, and tool. Foundations and Trends in Networking: Vol. 12, No. 3, pp 162–259.

Kozleski, E. B. (2017). The uses of qualitative research: Powerful methods to inform evidence-based practice in education. *Research and Practice for Persons with Severe Disabilities*, 42(1) 19–32.

Kvale, S. (2007). Doing Interviews.

Langan, D., Schott, N., Wykes, T., Szeto, J., Kolpin, S., Lopez, C., & Smith N. (2016). Students' use of personal technologies in the university classroom: Analyzing the perceptions of the digital generation. *Technology, Pedagogy, and Education,* 25(1), 101-107.

Lee, S., Kim, M. W., McDonough, I. M., Mendoza, J. S., & Kim, M. S. (2017). The effects of cell phone use and emotion-regulation style on college students' learning. *Applied Cognitive Psychology,* 31(3), 360-366.

Li, M., Alharbi, W., Huang, C., Reynosa, A., Bahkali, S., Tsai, H., & Champion, K. (2015). Discovering how mobile phones impact student learning and social behaviors. Education Research Report.

Lincoln, Y. (1992). Sympathetic connections between qualitative methods and health research. *Qualitative Health Research,* 2(4), 375-391.

Lingard, L. & Kennedy, T.J. (2010). Qualitative research methods in medical education. Understanding medical education: evidence, theory and practice. West Sussex: Wiley-Blackwell; p. 323–335.

Luppicini, R. (2005). A Systems Definition of Educational Technology in Society. *J. Educ. Technol. Soc.,* 8, 103-109.

Mack, N., Woodsong, C., MacQueen, K.N., Guest, G., Namey, E. (2005). Qualitative Research Methods: A Data Collector's Field Guide. Research Park Triangle, NC: Family Health International.

Mackey, S. (2005). Phenomenological nursing research: methodological insights derived from Heidegger's interpretive phenomenology. *International Journal of Nursing Studies,* 42(2), 179–186.

Martin, F., Polly, D., Coles, S., & Wang, C. (2020). Examining higher education faculty use of current digital technologies: Importance, competence, and motivation. *International Journal of Teaching and Learning in Higher Education,* 32(1), 73-86.

Mason, J. (2006). Mixing methods in a qualitatively driven way. *Qualitative Research*, 6(1), 9-25.

Matiru, B., Mwangi, A., Schlette, R., Deutsche Stiftung Für Internationale Entwicklung. Zentralstelle Für Erziehung, Wissenschaft Und Dokumentation, & University of Kassel. Institute for Socio-Cultural Studies. (1995). *Teach your best: a handbook for university lecturers.* German Foundation for International Development, Education, Science and Documentation Centre.

McCoy, B. R. (2016). Digital distractions in the classroom phase II: Student classroom use of digital devices for non-class related purposes. *Faculty Publications, College of Journalism & Mass Communications,* 90.

Merriam-Webster (2025). In Merriam-Webster.com. Retrieved April 10, 2025, from https://www.merriam-webster.com/dictionary/technology

Monaghan, M. S., Cain, J., Malone, P. M., Chapman, T. A., Walters, R. W., Thompson, D. C., & Riedl, S. T. (2011). Educational technology use among US colleges and schools of pharmacy. *American journal of pharmaceutical education*, 75(87).

Morningstar, M. E., Shogren, K. A., Lee, H., & Born, K. (2015). Preliminary lessons about supporting participation and learning in inclusive classrooms. *Research and Practice for Persons with Severe Disabilities,* 40, 192-210.

Morris, P. L., & Sarapin, S. H. (2020). Mobile phones in the classroom: Policies and potential pedagogy. *Journal of Media Literacy Education,* 12(1), 57-69.

Mobile Fact Sheet (2024). Project History. Pew Research Center, Washington, D.C. (January 31, 2024)

Olmos-Vega, F. M., Stalmeijer, R. E., Varpio, L., & Kahlke, R. (2022). A practical guide to reflexivity in qualitative research: AMEE Guide No. 149. Medical Teacher, 45(3), 241–251.

Omona, J. (2013). Sampling in Qualitative Research: Improving the Quality of Research Outcomes in Higher Education. *Makerere Journal of Higher Education*, 4(2).

Patterson, R. W., & Patterson, R. M. (2017). Computers and productivity: Evidence from laptop use in the college classroom. *Economics of Education Review,* 57, 66-79.

Patton, M. (1990). Qualitative evaluation and research methods. Beverly Hills, CA: Sage.

Patton, M. Q. (2002). Two Decades of Developments in Qualitative Inquiry. *Qualitative Social Work: Research and Practice*, 1(3), 261–283.

Pearson: Student Mobile Device Survey 2015. National Report: College Students, June 2015.

Phichitchaisopa, N., & Naenna, T. (2013). Factors affecting the adoption of healthcare information technology. *EXCLI Journal*, 12, 413 - 436.

Polkinghorne, D. E. (2005). Language and meaning: Data collection in qualitative research. *Journal of Counseling Psychology*, 52(2), 137–145.

Ponterotto, Joseph G. (2006). Brief Note on the Origins, Evolution, and Meaning of the Qualitative Research Concept "Thick Description". *The Qualitative Report.* Volume 11 Number 3 September 2006 538-549

Prensky, M. (2001). Digital natives, digital immigrants. On the Horizon (MCB University Press), 9(5), 1-2.

Prensky, M. (2005). Learning in the digital age. *Educational Leadership.* 63(4), 8-13.

Raible, J. & Denoyelles, A. (2017). Exploring the use of E-Textbooks in higher education: A multiyear study. *EDUCAUSE Review online article.*

Rajeev, M., & Jobilal, (2015). Effects of social media on social relationships: A descriptive study on the impact of mobile phones among youth population. *International Research Journal of Social Sciences,* 4(2), 11-16.

Rana, N. P. & Dwivedi, Y.K. (2015). Citizen's adoption of an e-government system: Validating extended social cognitive theory (SCT). *Government Information Quarterly*, 32(2), 172-181.

Rashid-Doubell, F., Mohamed, S., Elmusharaf, K., & O'Neill, C. (2016). A balancing act: A phenomenological exploration of medical students' experiences of using mobile devices in the clinical setting. *BMJ Open,* 6 (2016).

Reisdorf, B., Whisnu, T., & Aleksandr, Y. (2020). Laptop or bust: How lack of technology affects student achievement. *American Behavioral Scientist, 64*.

Ritchie, J., Lewis, J., Nicholls, C.M., & Ormston, R. (2013). Qualitative research practice: A guide for social science students and researchers. Thousand Oaks, CA: SAGE.

Roberts, D. (2017). Higher education lectures: From passive to active learning via imagery? *Active Learning in Higher Education,* 20(1), 63–77.

Rogers, E. M. (1962). Diffusion of innovations, New York: Free Press.

Rogers, E. M. (1995). Diffusion of innovations, 4th edition, New York: Free Press.

Rogers, E. M. (2003). Diffusion of innovations, 5th edition, New York: Free Press.

Roztocki, N., Soja, P., & Weistroffer, H.R. (2019). The role of information and communication technologies in socioeconomic development: towards a multi-dimensional framework. *Information Technology for Development*, 25(2), 171-183.

Schindler, L.A., Burkholder, G.J., Morad, O.A. et al., (2017). Computer-based technology and student engagement: a critical review of literature. *International Journal of Educational Technology Higher Education* 14, 25 (2017).

Sharma, M., & Kanekar, A. (2007). Theory of reasoned action & theory of planned behavior in alcohol and drug education. *Journal of Alcohol and Drug Education,* 51(1), 3-7.

Shifflet, R. & Weilbacher, G. (2015). Teacher beliefs and their influence on technology use: A case study. *Contemporary Issues in Technology and Teacher Education,* 15(3), 368-394.

Shuter, R., Dutta, U., Cheong, P., Chen, Y., & Shuter, J. (2017). Digital behavior of university students in India and the US: Cultural values and communication technologies in the classroom. *Western Journal of Communication,* 82(2), 160-180.

Spano, R. (2002, October 3). *Potential sources of observer bias in observational studies of police.* [Dissertation, University at Albany, State University of New York]. NCJRS.

Strauss, A. & Corbin, J. (1998). Basics of qualitative research: techniques and procedures for developing grounded theory. New York: Cambridge University Press: Sage.

Stiles, B.L., Chun, N., Wong, W., & LaBeff, E.E. (2018). College cheating thirty years later: The role of academic entitlement, deviant behavior, 39:7, 823-834,

Surendran, P. (2012). Technology acceptance model: A survey of literature. *International Journal of Business and Social Research,* 2(4), 175-178.

Tamayo, J.P.M., Rocchi, M.A., St-Denis, B., Bonneville, L., Beaudry, S.G. (2024). A motivational approach to understanding problematic smartphone use and negative outcomes in university students. *Addictive Behaviors, Volume 148,* 2024.

Tinmaz, H., & Lee, J. H. (2020). An analysis of users' preferences on learning management systems: a case on German versus Spanish students. Smart Learning Environments, 7(1).

Totten, J. W., Lipscomb, T. J., & Irtisam, R. (2015). Mobile phone etiquette. *In Z. Yan (Ed.), Encyclopedia of Mobile Phone Behavior* (pp. 267-279). IGI Global.

Thomas, D. R. (2006). A General Inductive Approach for Analyzing Qualitative Evaluation Data. *American Journal of Evaluation*, 27(2), 237–246. Sagepub.

Thomas, K. & O'Bannon, B. (2015). Looking across the new digital divide: A comparison of inservice and preservice teacher perceptions of mobile phone integration. *Journal of Technology and Teacher Education,* 23(4), 561-581.

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly, 15*(1), 125–143.

Turner, D. (2010). Qualitative Interview Design: A Practical Guide for Novice Investigators. *The Qualitative Report*, 15(3), 754–760.

Van Deursen, A. J., & Van Dijk, J. A. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. New Media & Society, 21(2), 354–375.

Venkatesh, V. & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science,* 46(2):186-204.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly,* 27(3), 425-478.

Venkatesh, V., Brown, S. A., Maruping, L. M., & Bala, H. (2008). Predicting different conceptualizations of system use: The competing roles of behavioral intention, facilitating conditions, and behavioral expectation. *MIS Quarterly, 32*(3), 483–502.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly,* 36(1), 157–178.

Velayati, E. (2015). Information and communication technology for students with special educational needs. *Exceptional Education*, 14, 30-39.

Wani, T. A. & Ali, S. W, (2015). Innovation diffusion theory: review & scope in the study of adoption of smartphones in India. *Journal of General Management Research*, 3(2), 101–118.

Wilson, T. P. (1986). Qualitative "Versus" Quantitative methods in social research. Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique, 10(1), 25-51.

Wuest, J. (1995). Breaking the barriers of nursing research. *The Canadian Nurse,* 91(4), 29-33.

Xiumei, G., Esteban, A. P., Cruz, J., Trinidad, C., Millan, A., & Arboleda, J. (2024). Mobile Phone Dependence of College Students: Basis for A Course of Action. The QUEST: Journal of Multidisciplinary Research and Development, 3(2).

Yauch, C. A., & Steudel, H. J. (2003). Complementary Use of Qualitative and Quantitative Cultural Assessment Methods. *Organizational Research Methods*, 6(4), 465–481.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing,* 52(3), 2–22.

Zairul, M. (2021). Can member check be verified in real time? Introducing ARC (asking, record, confirm) for member checking validation strategy in qualitative research. *Engineering Journal*, 25(1), 245-251.

APPENDIX

Appendix A: Interview Protocol

The following example will be a draft of the interview protocol used in this study:

Interview Protocol

I. Information About the Interview/Questionnaire

Interviewee:

Interviewer:

Date:

Time:

Place:

II. Consent and Introduction

The purpose of this study is to understand an undergraduate university student's perception of the use of smartphones in a college classroom.

This questionnaire will be delivered in person in the form of an interview.

This interview will consist of 10 questions to be answered by the student in a recorded (audio) interview.

Results from this interview will be evaluated and included in the requirements for the completion of dissertation research at University of Georgia.

Your participation in this interview will not affect your performance in any classes you are taking or will take from the interviewer.

Your interview will be kept confidential, and the results of the interview will be shared with those conducting this study.

Follow-up communication will be conducted via email for questions and discussion on responses.

III. Interview Questions

1. Where do you go to school, and how many smartphones do you own, and how many mobile plans do you subscribe to? (Include your perspective on why you purchased your smartphone(s) and why you are willing to pay for a subscription to the mobile plan)

2. Describe your general perspective on smartphone use in your everyday life.

3. Describe your general perspective or attitude on smartphone use in face-to-face college classrooms. When was the last time you used your smartphone in class and describe the experience.

4. Describe the accessibility of your smartphone while attending a face-to-face class, and the expectations you perceive from usage.

5. What motivates you to use your smartphone during face-to-face class? (Include both intrinsic and external examples)

6. How do you feel about smartphone usage of others in the face-to-face classrooms you attend? (Include your perspective on how you feel about others using smartphones, and how others influence you)

7. How does your perception of others (teachers and classmates) contribute to your smartphone usage in face-to-face class?

8. If you used a smartphone during lecture in face-to-face class, describe the usefulness which provides benefits or advantages you perceived from using your smartphone.

9. If you used a smartphone during lecture in face-to-face class, describe the negatives you perceived from using your smartphone (is it worth the penalty to use it when not allowed)?

10. Describe your experience with smartphone policies in class. How do they impact your smartphone usage in class? How would you regulate smartphones if you were the professor?

Appendix B: Determinants of UTAUT2

The following is an outline of the determinants used in this study with brief descriptions for each predetermined code.

Determinants from UTAUT2 used as pre-set codes

1. **Perceived usefulness**
    a. Smartphones are perceived to be useful.
    b. The user will build a positive attitude towards smartphone usage.
    c. The positive shift in attitude could lead to intention and use of smartphones
2. **Perceived ease of use**
    a. Smartphones are perceived to be easy to use..
    b. The user will build a positive attitude towards smartphone usage.
    c. The positive shift in attitude could lead to intention and use of smartphones
3. **Social Factors**
    a. Social factors could create social influences to use smartphones.
    b. External voluntary motivations to use smartphones
4. **Extrinsic motivations**
    a. External voluntary motivations to use smartphones
    b. For this research, the primary external motivation was notifications from smartphones.
        i. External motivation code was adjusted to include notifications.
5. **Facilitating conditions**
    a. Intrinsic motivation.
    b. Perceived behavioral control of smartphone use

i. Smartphone behavioral intention could lead to actual smartphone behavior once an individual forms control beliefs and perceives power.

ii. Facilitating conditions were defined as favorable or unfavorable conditions to use smartphones.

6. Habit

a. Intrinsic motivation.

b. Lived smartphone experiences.

i. The user was influenced by various outcome beliefs associated to smartphones.

ii. Motivation to use smartphones from prior lived experiences.

iii. Future behavioral use of smartphones becomes automatic.

7. Price value

a. Intrinsic motivation.

b. Cost of use (is the use of smartphones in class worth the penalty)

i. Smartphone users are more motivated to use technology when the monetary costs were positive or affordable.

ii. This study also altered the meaning of price value to represent cost associated with use or penalty when smartphones were used.

8. Hedonistic motivations

a. Intrinsic motivations

i. Internalized motivation to use smartphones.

ii. The pleasure or leisure derived from using smartphones.

The following Table interconnects the determinants extracted from UTAUT2 used as predetermined codes to each research question.

Research Questions and Codes Predetermined from UTAUT2

Codes	Perceived Usefulness	Perceived Ease of Use	Social Factors	External Motivation Notifications	Perceived Control	Habit	Hedonistic Motivation	Price Value
Research Questions								
1. How do undergraduate university students perceive the use of smartphones in a face-to-face college classroom?	X	X	X	X				
2. What experiences and behaviors motivate undergraduate university students to use their smartphones in a face-to-face college classroom?					X	X	X	X

The following Table interconnects the determinants extracted from UTAUT2 used as predetermined codes to each interview question starting from question 2.

Interview Questions and Codes Predetermined from UTAUT2

Codes	Perceived Usefulness	Perceived Ease of Use	Social Factors	External Motivation Notifications	Perceived Control	Habit	Hedonistic Motivation	Price Value
Interview Questions								
2. Describe your general perspective or attitude on smartphone use in your everyday college campus life.	X	X	X	X	X	X	X	X
3. Describe your general perspective or attitude on smartphone use in face-to-face college classrooms. When was the last time you used your smartphone in class and describe the experience.	X	X	X	X	X	X	X	X
4. Describe the accessibility of your smartphone while attending a	X	X						

face-to-face class, and the expectations you perceive from usage.								
Codes	Perceived Usefulness	Perceived Ease of Use	Social Factors	External Motivation Notifications	Perceived Control	Habit	Hedonistic Motivation	Price Value
5. What motivates you to use your smartphone during face-to-face class? (Include both intrinsic and external examples)			X	X	X	X	X	X
6. How do you feel about smartphone usage of others in the face-to-face classrooms you attend? (Include your perspective on how you feel about others using smartphones, and how others influence you)			X	X	X	X	X	
7. How does your perception of others (teachers and classmates) contribute to your smartphone usage in face-to-face class?			X	X	X	X	X	

Codes	Perceived Usefulness	Perceived Ease of Use	Social Factors	External Motivation Notifications	Perceived Control	Habit	Hedonistic Motivation	Price Value
8. If you used a smartphone during lecture in face-to-face class, describe the usefulness which provides benefits or advantages you perceived from using your smartphone.	X	X						
9. If you used a smartphone during lecture in face-to-face class, describe the negatives you perceived from using your smartphone (is it worth the penalty to use it when not allowed)?			X	X	X	X	X	X
10. Describe your experience with smartphone policies in class. How do they impact your smartphone usage in class? How would you regulate smartphones if	X	X	X	X	X	X	X	X

you were the professor?								