

A single district, multisite case study about the lived experiences and best practices of faculty in
incorporating artificial intelligence

by

Cameron Redden

B.A., Hampton University 2005
M.Ed., Baldwin Wallace University 2010

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF EDUCATION

Department of Educational Leadership
College of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2024

Abstract

Artificial intelligence (AI) has demonstrated effectiveness in various educational contexts, offering adaptive evaluation mechanisms, personalized learning experiences, and increased learner engagement (Holstein et al., 2019; Woolf, 2019). This study examined the experiences of community college faculty incorporating AI technologies in teaching practices, how faculty engaged first-generation adult learners when incorporating AI technologies, and how AI technologies were addressed in college documents and policies.

Given the context of this research, the chosen methodology for this study was a qualitative case study design comprised of interviews with faculty from a single-district multi-campus site in the United States. The interviews were semi-structured to allow the researcher to gather information on the experiences of faculty incorporating AI technologies into their teaching practices. The semi-structured interview method provided a fitting structure to explore the rich, complex, and detailed description of the experiences of community college faculty incorporating AI technologies in teaching practices.

The researcher examined institutional archival documents to supplement semi-structured interviews and increase the credibility and reliability of the analyses. The researcher determined how AI technologies were addressed in institutional documents and policies using Huber's (1993) organizational change theory as the theoretical framework and Rogers' (1995) diffusion of innovation as the conceptual framework.

Faculty concluded that AI could improve the quality of teaching practices by addressing uncertainties, bridging the digital divide, and promoting technology acceptance. Participants acknowledged that AI can foster creativity, facilitate experimental learning, support professional development, and enhance training to improve learner outcomes in the classroom. However,

some faculty expressed concerns about integrating AI into teaching. Participants cited the potential long-term impact of learner critical thinking. They acknowledged that generative AI technology is limited and can create misleading or skewed information due to bias and hallucinations affecting student learning.

Furthermore, faculty acknowledged the existence of the digital divide and its impact on first-generation learners. The participants agreed that first-generation learners could use AI technologies at the same levels as non-first-generation learners. However, some faculty noticed that first-generation learners associated guilt with AI usage or became hesitant to use the technology when the information generated was incorrect.

Further research and ongoing support is necessary to continue advancing the integration of AI tools into educational practices. The findings of this study inform community college faculty about the multifaceted nature of integrating AI technologies into teaching practices. Community colleges interested in implementing or expanding faculty's use of AI in teaching practices could create a task force to develop policies and best practices and review and monitor academic integrity, ethical use, data privacy, and bias. Additionally, the institution can allocate resources for faculty professional development and training and launch pilot programs to learn how to use AI technologies in select areas.

Keywords: organizational change theory, diffusion of innovation, Artificial Intelligence, personalized learning, adaptive learning, first-generation learner, community college, cultural capital, learner autonomy, andragogy, heutagogy, bias, hallucinations.

A single district, multisite case study about the lived experiences and best practices of faculty in
incorporating artificial intelligence

by

Cameron Redden

B.A., Hampton University 2005
M.Ed., Baldwin Wallace University 2010

A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF EDUCATION

Department of Educational Leadership
College of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2024

Approved by:

Major Professor
Dr. Terry Calaway

Copyright

© Cameron Redden 2024.

Abstract

Artificial intelligence (AI) has demonstrated effectiveness in various educational contexts, offering adaptive evaluation mechanisms, personalized learning experiences, and increased learner engagement (Holstein et al., 2019; Woolf, 2019). This study examined the experiences of community college faculty incorporating AI technologies in teaching practices, how faculty engaged first-generation adult learners when incorporating AI technologies, and how AI technologies were addressed in college documents and policies.

Given the context of this research, the chosen methodology for this study was a qualitative case study design comprised of interviews with faculty from a single-district multi-campus site in the United States. The interviews were semi-structured to allow the researcher to gather information on the experiences of faculty incorporating AI technologies into their teaching practices. The semi-structured interview method provided a fitting structure to explore the rich, complex, and detailed description of the experiences of community college faculty incorporating AI technologies in teaching practices.

The researcher examined institutional archival documents to supplement semi-structured interviews and increase the credibility and reliability of the analyses. The researcher determined how AI technologies were addressed in institutional documents and policies using Huber's (1993) organizational change theory as the theoretical framework and Rogers' (1995) diffusion of innovation as the conceptual framework.

Faculty concluded that AI could improve the quality of teaching practices by addressing uncertainties, bridging the digital divide, and promoting technology acceptance. Participants acknowledged that AI can foster creativity, facilitate experimental learning, support professional development, and enhance training to improve learner outcomes in the classroom. However,

some faculty expressed concerns about integrating AI into teaching. Participants cited the potential long-term impact of learner critical thinking. They acknowledged that generative AI technology is limited and can create misleading or skewed information due to bias and hallucinations affecting student learning.

Furthermore, faculty acknowledged the existence of the digital divide and its impact on first-generation learners. The participants agreed that first-generation learners could use AI technologies at the same levels as non-first-generation learners. However, some faculty noticed that first-generation learners associated guilt with AI usage or became hesitant to use the technology when the information generated was incorrect.

Further research and ongoing support is necessary to continue advancing the integration of AI tools into educational practices. The findings of this study inform community college faculty about the multifaceted nature of integrating AI technologies into teaching practices. Community colleges interested in implementing or expanding faculty's use of AI in teaching practices could create a task force to develop policies and best practices and review and monitor academic integrity, ethical use, data privacy, and bias. Additionally, the institution can allocate resources for faculty professional development and training and launch pilot programs to learn how to use AI technologies in select areas.

Keywords: organizational change theory, diffusion of innovation, Artificial Intelligence, personalized learning, adaptive learning, first-generation learner, community college, cultural capital, learner autonomy, andragogy, heutagogy, bias, hallucinations.

Table of Contents

List of Figures	xii
List of Tables	xiii
Acknowledgements	xiv
Dedication	xv
Chapter 1 - Introduction.....	1
Statement of the Problem.....	2
Background of the Problem	2
Purpose of the Study	5
Research Questions	5
Theoretical and Conceptual Frameworks	6
Organizational Change Theory	6
Diffusion of Innovation	7
Methodology	8
Alignment Table	9
Delimitations and Assumptions	9
Significance of the Study	11
Definition of Terms	13
Chapter Summary	18
Organization of the Study	18
Chapter 2 - Literature Review.....	19
Literature Review Search Protocol	21
Theoretical and Conceptual Frameworks	22
Organizational Change Theory	22
Diffusion of Innovation.....	24
Faculty Support of First-Generation Learners	28
Defining and Identifying the First-Generation Learner	28
Challenges Facing First-Generation Learners	30

Cultural Capital	32
Toward a Culturally Competent Andragogy	35
Six Characteristics	35
Learner Autonomy	36
AI Tools in Education	39
Benefits	40
Apprehensions	42
Reskilling and Upskilling the Contemporary Workforce	46
Renewed Focus on Upskilling and Reskilling	47
Higher Education and the Workforce	48
Summary	52
Conclusions	53
Chapter 3 - Methodology	54
Introduction	54
Purpose of Study	54
Research Questions	54
Theoretical and Conceptual Frameworks	55
Alignment Table	56
Research Design	56
Study Setting	57
Study Participants	58
Instrumentation	60
Data Analysis	63
Limitations	66
Ethical Considerations	67
Study Quality	69
Reflexivity Statement	70
Summary	70
Chapter 4 - Research Findings and Analysis	72
Purpose	72
Research Questions	72

Participant Demographics	72
Research Findings	73
Research Question 1	73
Adaptation and Learning	74
Faculty and Learner Uncertainty	76
Technology Adoption	79
Personal Experience and Training	81
Faculty Best Practices	84
Research Question 2	88
Digital Divide Acceptance.....	89
Digital Divide.....	90
First-Generation Learner Adoption.....	92
Research Question 3	94
Findings from Document Analysis	94
Educational Integration and Practice	94
Center for Learning and Innovation.....	95
Use and Knowledge of Generative AI	99
Guidance for Faculty Incorporating AI Tools and Academic Misconduct.....	101
Summary	104
Chapter 5 - Summary, Discussion, and Recommendations	106
Overview of the Problem	106
Purpose of the Study	106
Research Questions	106
Theoretical and Conceptual Frameworks	107
Methodology	108
Data Collection and Analysis	108
Discussion of Findings and Related Literature	110
Unexpected Findings	121
Practical Implications	122
Recommendations for Further Research.....	123
Conclusions and Final Recommendations	124

Summary	125
References	128
Appendix A - Alignment Table	155
Appendix B - XXXX Community College's IRB Approval	156
Appendix C - XXXX Community College's IRB Approval	157
Appendix D - Letter of Introduction	158
(XXXX Community College).....	158
Appendix E - Letter of Introduction	159
(XXXX Community College).....	159
Appendix F - Letter of Introduction (Faculty).....	160
Appendix G - Informed Consent (Faculty).....	161
Appendix H - Interview Protocol Form (Faculty)	164

List of Figures

Figure 2.1 Diffusion of Innovation: Adopters Categories	25
Figure 2.2 Diffusion of Innovation Model: “S”-shaped Curve.....	26
Figure 4.1 District Artificial Intelligence Task Force Proposed Project Phase 1 and Timeline...	96
Figure 4.2 District Artificial Intelligence Task Force Proposed Project Phase 2 and Timeline...	98

List of Tables

Table 2.1 List of the Primary Characteristics of Transformational Leadership	23
Table 2.2 Four Elements of Diffusion of Innovation.....	24
Table 2.3 Five Diffusion of Innovation Characteristics.....	28
Table 2.4 First-Generation Adult Learners Role and Responsibilities	31
Table 2.5 Community College of Baltimore County Culturally Responsive Teaching Themes..	38
Table 2.6 Main Characteristics of Industrial Revolution.....	46
Table 3.1 Faculty Participant Demographics.....	58
Table 3.2 Archival Documents	65
Table 4.1 Descriptive Demographics of Participants	73
Table 4.2 RQ 1 Themes and Codes	74
Table 4.3 RQ 2 Themes and Codes	89
Table 4.4 Participant Self-Assessment of Knowledge of Generative AI.....	99
Table 4.5 Statement on Levels of Allowed Generative AI Usage.....	103
Table 5.1 Faculty Categorization: Diffusion of Innovation.....	113
Table 5.2 Student Resource Site: Artificial Intelligence for Learners.....	117
Table 5.3 Generative Artificial Intelligence Tools for Learners.....	118

Acknowledgements

Completing this dissertation would not have been possible without the support and guidance of the CCLP faculty, my CCLP cohort, family, and friends.

First and foremost, I would like to express my deepest gratitude to Dr. Terry Calaway, Major Professor; Dr. Margaretta B. Mathis, Graduate Director and Supervisory Committee Member; and Committee Members Dr. Jennifer Spielvogel, Dr. JaNice Marshall, and Dr. Jim Martin for their unwavering support and steadfast commitment to my success. Your insight, feedback, and encouragement were invaluable.

Moreover, I would like to thank my CCLP cohort and College of the Desert siblings, who inspired me throughout this journey. Your calls and text messages provided motivation and timely humor that kept me focused and grounded.

Finally, I would like to acknowledge my family and friends. To my departed grandmother, Hazel D. Redden, who paved the path to our family's success and taught me at an early age the importance of education. To my mother, Dr. Pamela L. Redden, brother, Schuyler B. Redden, and daughter, Amani T. Redden, who kept me lifted through this journey. To my partner, Blazine, as in B. Howard, who demonstrated an unrelenting willingness to support the early mornings, late evenings, and weekends of this journey. Your daily reminders about the importance of "completing the process" are appreciated.

The best way to say "thank you" is to take this experience and *pay it forward*.

"Ora Et Labora"

Dedication

This dissertation is dedicated to my grandmother, mother, brother, daughter, and partner, whose unwavering support gave me the grace I needed to complete this journey.

I also dedicate this dissertation to those who have served as mentors, directly or indirectly, along this journey: Dr. Terry Calaway, Dr. Michael Baston, Dr. Janice Taylor Heard, Dr. JaNice Marshall, and Dr. Nadra Tyus. Insight into your professional and personal experiences provided a perspective that's invaluable.

Chapter 1 - Introduction

The labor market of the 21st century, fueled by rapid technological advancement, demands an ever-developing skill profile. To remain competitive and relevant, individuals will need to adopt a lifelong learning approach, continuously updating and expanding their skill portfolio. According to Bennett and McWhorter (2021), reskilling prepares individuals for new work prospects, while upskilling emphasizes the significance of continuing education and training to keep employees productive and prepare them for career progression in their fields. This dynamic, however, presents unique challenges to a segment of learners. First-generation learners, defined by their familial history of a lack of postsecondary education, embark on a reskilling or upskilling journey often filled with obstacles.

The educational terrain first-generation learners tread is often unfamiliar, leaving them feeling isolated and unsupported. Research shows that first-generation learners cannot draw from the reservoir of experiences and wisdom that their counterparts with a familial history of higher education can access. Payne et al. (2001) noted:

The nearly uniform advantages received by the children of the college-educated professionals suggest the evolution of an increasingly distinct subculture in American society, one in which adults routinely transmit to their offspring the symbolic thinking and confident problem solving that mark the adults' economic activities and that are so difficult for outsiders to acquire in mid-life. A trend toward separation into subcultures jeopardizes the upward mobility that has given this nation greatness and presages the tragedy of downward mobility that produces increasing numbers of working poor. If this trend is to be reversed, a beginning must be made now. The issue is no longer one of

eradicating poverty or of putting welfare recipients to work but of reversing a trend, the downward drift of the working class. (p. 40)

This predicament raises concerns regarding equity in higher education and the uneven distribution of opportunities for upward social mobility.

Statement of the Problem

Research has revealed the lack of social and cultural capital among first-generation adult learners as a factor limiting their integration into academic life (Glass, 2023; Kornbluh et al., 2022). Deng and Yang (2021) define first-generation learners as the first in their families to attend a postsecondary institution. First-generation adult learners often need additional academic preparation and access to necessary resources and support systems, further impeding their ability to upskill and reskill efficiently (Kim et al., 2021). Consequently, their journey toward economic mobility and social integration may be hindered, perpetuating cycles of disadvantage and inequity. The higher education landscape raises urgent questions about how faculty can optimize first-generation adult learners' upskilling and reskilling experiences using artificial intelligence (AI). Although numerous interventions have been proposed and implemented, a glaring gap exists in exploring how community college faculty use (AI) technologies in teaching practices. Despite the proven efficacy of AI, such as personalized learning, adaptive evaluation, and increasing student involvement, its role in improving the upskilling and reskilling experiences of first-generation adult learners is underexplored (Badi et al., 2022).

Background of the Problem

The increasing need for continuous learning in today's workforce and the rapid shift to digitalization make these challenges more prominent (Lang, 2023). The expanded need for upskilling and reskilling of the workforce has been identified as a crucial trend in contemporary

organizations (Allan-Bentley, 2021; Ramont, 2022; Sivalingam & Mansori, 2020). The role of higher education institutions in meeting these demands is increasingly being scrutinized.

In this complex landscape, first-generation adult learners are often disadvantaged (Brooks-Terry, 1988). Lack of familial history in higher education can result in a dearth of social and cultural capital that often manifests in limited access to resources, insufficient academic preparation, and inadequate support systems (Glass, 2023; Kornbluh et al., 2022). These unique challenges can hinder the progress of first-generation adult learners in acquiring new skills and credentials, potentially affecting their economic mobility and social integration (Kim et al., 2021). Furthermore, research indicates that first-generation adult learners require additional technological skills to progress with AI and online learning, which may impact their academic achievement (Deng & Yang, 2021).

Despite these concerns, exploring how faculty incorporate AI into teaching practices is emerging as a promising avenue to explore. AI has demonstrated effectiveness in various educational contexts, offering personalized learning experiences, adaptive evaluation mechanisms, and increased student involvement (Holstein et al., 2019; Woolf, 2019). AI could be particularly valuable in addressing first-generation adult learners' unique challenges.

Atlas (2023) provided a comprehensive guide to using conversational AI, such as ChatGPT, in higher education and professional development. Conversational AI can provide personalized learning support, answer learners' queries, and offer feedback, fostering a more interactive and engaging learning environment. Such AI-powered tools could be particularly beneficial for first-generation adult learners, providing them with much-needed academic support. Additionally, Cope et al. (2021) discussed the potential of AI in assessing knowledge in AI-enabled learning environments. They argue that AI can provide more nuanced and

personalized assessments, fostering a more accurate understanding of learners' progress.

Incorporating AI-enabled learning environments could offer a more equitable and supportive evaluation mechanism for first-generation adult learners who may struggle with traditional assessment methods.

Considering these developments, the potential of AI for upskilling and reskilling first-generation adult learners is clear. However, it is equally evident that a careful and thoughtful approach is necessary to implement these tools effectively and ethically. As postsecondary institutions explore the potential of AI to enhance the upskilling and reskilling experience of first-generation adult learners, faculty must remain cognizant of the need for careful design, ethical usage, and mindful implementation.

These insights indicate the need for a nuanced approach to implementing AI tools in adult education. The potential benefits of AI in providing personalized learning experiences, enhancing online learning, and facilitating professional upskilling and reskilling are significant. The literature suggests a promising yet complex landscape for applying AI to support first-generation adult learners in their upskilling and reskilling journeys. However, the ethical implications of AI use in education, the need for human-AI collaboration, and the careful design and implementation of AI tools need to be considered.

Although AI has successfully tackled educational difficulties such as personalized learning, adaptive evaluation, and learner engagement (Atlas, 2023; Cope et al., 2021; Holstein et al., 2019; Woolf, 2019), its specific role in improving the upskilling and reskilling experience for first-generation adult learners requires investigation. There has been little research into the potential of AI tools to upskill or reskill community college first-generation adult learners in higher education.

Despite evidence of the effectiveness of AI in addressing educational challenges and enhancing opportunities (Barua et al., 2022; Pradhan & Saxena, 2023), faculty use of AI in improving the upskilling and reskilling experience for these learners remains relatively underexplored. Past research has highlighted AI's potential to enhance personalized learning, offer adaptive evaluation, and improve online instructional materials, which could benefit first-generation adult learners.

A gap exists in the literature regarding AI tool use by community college faculty among first-generation adult learners in the classroom. Although community college instructors have been known to incorporate AI into their teaching practices, the full potential of AI remains unexplored. A recent study conducted by Primary Research Group in early 2023 surveyed 954 instructors from community colleges and four-year institutions. Of the participants, 18% developed guidelines for using AI in the classroom, most of which were community college faculty (D'Agostino, 2023).

Purpose of the Study

The purpose of this study is to examine the experiences of community college faculty incorporating AI technologies in teaching practices, how faculty engage first-generation adult learners when incorporating AI technologies, and how AI technologies are addressed in college documents and policies.

Research Questions

The following three research questions will guide this study:

RQ1. What are the experiences and best practices of faculty at a community college incorporating artificial intelligence technologies into their teaching practices?

RQ2. How do faculty at a community college engage first-generation adult learners when incorporating artificial intelligence technologies in teaching and learning processes?

RQ3. How is the use of artificial intelligence technologies addressed in community college documents and policies?

Theoretical and Conceptual Frameworks

Organizational Change Theory

Two theories provide this study's theoretical and conceptual frameworks: organizational change theory and diffusion of innovation theory. According to Lochmiller and Lester (2017), the theoretical framework is a perspective that the researcher chooses to express their stance or position in relation to the research design. Huber's (1993) organizational change theory (OCT) is the foundation for this study. Huber's OCT examines how organizational leaders and the environment influence organizational change. Huber identifies two factors that drive change in the organizational environment: (1) the increasing effectiveness of communication technology and computing technology and (2) the increasing effectiveness of transportation technology (Huber & Glick, 1993). Both factors influence how organizations gain, share, and use knowledge to enhance performance and adapt to changes (Belinski et al., 2020). Applying OCT to the context of this study offers a valuable lens to examine the challenges and opportunities of using AI tools for first-generation adult learners. It helps delineate the multiple levels of change required, from individual behaviors and attitudes to institutional policies and practices. It also underscores the importance of leadership in facilitating this change and the need for a supportive digital ecosystem to implement AI tools effectively.

Applying OCT to the current study enables a systematic examination of the necessary changes at multiple levels. According to Enders et al. (2020), at the institutional level,

introducing AI tools necessitates changes in andragogical practices, institutional policies, and resource allocation. Similarly, according to Leithwood & Louis (2021), it may also influence the organization's culture, impacting attitudes toward technology and innovation. Moreover, successfully implementing AI tools requires leadership commitment, framing the change in a positive light, and addressing potential resistance among faculty and learners (Oreg & Berson, 2019). At a micro level, introducing AI tools may require changes in individual attitudes, competencies, and behaviors. According to Anderson (2019), faculty may need to adapt their teaching practices while incorporating AI tools as first-generation adult learners develop new skills.

OCT suggests that, for an organization to survive, it must be compatible with its environment (Huber & Glick, 1993). As the adoption and use of AI tools expand among faculty, the OCT framework will examine how members of community college organizations incorporate complex changes to incorporate AI tools into the classroom.

Diffusion of Innovation

The conceptual framework builds on the theoretical framework by narratively explaining the key factors, variables, or constructs and their presumed interrelationships central to the study (Lochmiller & Lester, 2017). This study will use Rogers' diffusion of innovation (DOI) theory to understand how artificial intelligence tools are adopted and spread in the institution identified for this study. According to Sahin (2006, as cited in Medlin, 2001; Parisot, 1995), Rogers' DOI theory is well-suited for studying technology adoption in higher education and educational settings. By analyzing the four characteristics of DOI, including innovation, communication channels, time, and the social system of higher education institutions (Rogers, 2003), this

framework will be applied to community college faculty integrating AI technologies to help first-generation adult learners with reskilling and upskilling.

The study is designed to identify likely faculty facilitators and non-facilitators of adoption by examining AI tools' relative advantage, compatibility, complexity, trialability, and observability (Lee, 2021). Moreover, the study will explore how communication channels, such as institutional messaging, peer networks, and experiential learning, influence diffusion.

Lastly, as the study involves an institutional setting, integrating DOI with an organizational perspective will offer valuable insights. For instance, examining the role of organizational culture, leadership, and infrastructure in the diffusion process can provide a holistic understanding of community college faculty incorporating AI technologies in teaching practices (Lundblad, 2003). Additionally, considering the institutional environment, such as regulatory guidelines and industry standards, can help identify external factors influencing the diffusion process (Vargo et al., 2020).

DOI provides a robust and comprehensive conceptual framework for the current study. Its focus on the innovation's characteristics, the diffusion process, and the social system's role offers a multifaceted lens to understand the potential adoption of AI tools for first-generation adult learners. By integrating DOI with an organizational perspective, the study will also account for the complex dynamics of innovation adoption among faculty in an institutional context.

Methodology

The study will employ a qualitative case study design, adopting the definition of qualitative research by Denzin and Lincoln (2005), which aims to understand how people make sense of and experience the world around them in their natural environment. Lochmiller and Lester (2017, as cited in Deng & Yang, 2021) define a case study as “an empirical investigation

of a current phenomenon in its real-world context” (p. 18). Moreover, Lochmiller and Lester (2017, as cited in Yin, 2012) suggest that case study methodology is beneficial for researching specific questions to include descriptive questions, such as “what is happening or what has happened,” and explanatory questions, such as “how or why did something happen” (p. 104).

The researcher will conduct semi-structured interviews to gather information on the experiences of faculty incorporating AI technologies into their teaching practices. Additionally, the researcher will examine institutional archival documents to supplement the semi-structured interviews and increase the credibility and reliability of the analyses.

Alignment Table

The problem based on the literature, interview questions, and proposed institutional site documents to be analyzed, as well as the research questions, theoretical framework, conceptual framework, and methodology that guide this study, are displayed in the alignment table that can be found in the appendix section of this study (please see the Alignment Table, Appendix A, for a full description).

Delimitations and Assumptions

Delimitations

The researcher decides on delimitations that set the study's parameters (Simon & Goes, 2013). Several factors delimit this study. The study will involve faculty at community colleges. No 4-year colleges or universities will be included, as their experiences may be distinct due to resource differences, institutional culture, and student demographics. This study also focuses exclusively on AI tools employed in educational settings and does not account for the broader technological ecosystem in which these tools are embedded. The study will explore how faculty integrate AI technologies into teaching practices. The investigation will not focus on the

administrative or support functions of implementing AI in institutions as an overarching theme. Furthermore, the study will concentrate on faculty experiences up to and including data collection time; no future projections or speculation will be undertaken regarding AI technologies in teaching practices.

Assumptions

Assumptions are aspects of the research that are assumed to be accurate but cannot be directly validated. In this study, several assumptions underpin the research design and interpretation of the proposed findings. First, as is true of any study based on subjective participant responses, participants will be assumed to provide truthful and accurate accounts of their experiences during the interviews. This assumption aligns with Lincoln and Guba's (1985) constructivist epistemology, which views reality as a subjective construct of individuals' perceptions and experiences. Despite the potential subjectivity and bias inherent in self-reported data, this approach is widely accepted in qualitative research as it offers deep, context-rich insights into the phenomenon under investigation (Creswell & Poth, 2016).

The study will assume that the participants' use of AI tools in the classroom is appropriate and working as intended. Incorrect implementation or technical malfunctions could affect the user experience, skewing the proposed findings of the study. Similarly, the study assumes that the AI tools are designed with the best interests of the learners in mind and have the potential to enhance their learning experiences; in other words, there is an assumption that AI tools are created and deployed 'in good faith.' This assumption is based on the body of literature that has demonstrated the potential of AI in personalizing learning, enhancing student engagement, and improving learning outcomes (Al-Badi et al., 2022; Atlas, 2023; Barua et al., 2022). However, this might only be true for some AI tools or in some implementation contexts.

While recognizing these delimitations and assumptions, it is important to note that they do not undermine the study's validity or value. Instead, they help refine the study's scope, clarify the underlying premises, and guide the interpretation and application of the proposed findings.

Significance of the Study

The proposed research on community college faculty's experiences using AI tools in the classroom is important for academic research, higher education policy and practice creation, and, most importantly, the learners' journey. Despite a growing interest in AI in education (Holstein et al., 2019; Woolf, 2019), few studies have examined faculty's incorporation of AI technologies among first-generation adult learners in the classroom, a group uniquely positioned at the intersection of several educational and socioeconomic challenges (Glass, 2023; Kornbluh et al., 2022). Thus, this research brings a new perspective to AI in education, expanding personal understanding of how technology might interact with varied learner populations.

This study will use empirical data to inform community colleges' AI tool adoption decisions. Evidence-based insights into how AI tools affect faculty might help institutions make more strategic and learner-focused decisions. The findings could inform equitable and inclusive educational policies and methods. In addition, the study could help policymakers address educational inequities, a longstanding issue in higher education, by highlighting the needs, barriers, and facilitators first-generation adult learners face when using AI tools (Deng & Yang, 2021; Kornbluh et al., 2022). It could also help stakeholders identify potential areas for collaboration with AI developers and vendors to ensure that AI tools align with the diverse needs of the student body. Such a qualitative approach offers rich, nuanced insights that may elude more quantitatively oriented studies, potentially revealing subtle dynamics of AI-learner

interactions that can help refine current models of AI-assisted learning (Cope et al., 2021; Creswell & Poth, 2016).

This study embodies a commitment to equity and inclusion by seeking faculty perspectives and insights. Insights from this study may be harnessed to empower faculty as they support first-generation adult learners on their journey toward educational attainment, economic mobility, and social integration. By understanding the different categories of adopters among faculty, the study can offer tailored strategies to encourage adoption across the spectrum (Cholifah et al., 2019). For example, it could involve focusing on training and support for the ‘late majority’ and ‘laggards,’ who are typically more resistant to change (Lee, 2021).

Furthermore, understanding the innovation-decision process can help the institution design effective interventions at each stage to facilitate adoption (Dearing & Cox, 2018). By spotlighting faculty experiences with AI tools, the study can better identify the strengths, needs, and challenges that first-generation adult learners bring to the learning environment, enabling community colleges to provide more effective and tailored support mechanisms.

Through this research, community colleges can not only understand the implications of AI tools for first-generation adult learners, but findings can illuminate potential ethical concerns, such as data privacy, accessibility, fairness in AI tool use (Barua et al., 2022), and plagiarism (King, 2023), contributing to the ongoing discourse on ethical AI in education.

Importantly, findings may have implications for the broader community of adult learners. As AI becomes increasingly integral to educational practices and policies, understanding how these technologies can be leveraged to facilitate learning is essential. As such, this study can improve adult education programs and resources for different learners. Moreover, this study could inform the strategies of corporate entities and industry training programs, which could

incorporate successful AI methods identified in the study to enhance their workforce development efforts. This is particularly significant considering the increased demand for technologically proficient skills in contemporary job markets (Pradhan & Saxena, 2023).

The significance of this study is vast, touching upon the spheres of academia and educational policy and practice. This research aims to contribute to the knowledge, facilitation, and creation of community college policies to fill the gap in the academic understanding of AI in education and to contribute to tangible improvements among faculty incorporating AI technologies in teaching practices. This study's use of the OCT framework offers valuable insights into broader contextual factors as AI tools become more commonly adopted by faculty.

Definition of Terms

Artificial intelligence: commonly referred to as (AI) is a field of computer science that focuses on solving cognitive problems, primarily related to human intelligence, such as learning, problem solving, and pattern recognition (Kim, 2019).

Artificial intelligence (AI) in education: Refers to the application of artificial intelligence technologies in educational contexts, such as learning environments, to enhance educational processes and outcomes. AI in education can include adaptive learning systems, intelligent tutoring systems, or tools for personalized learning and assessment (Woolf, 2019).

Adaptive evaluation: Refers to assessment systems that can adapt in real-time to a learner's performance, providing a personalized and dynamic assessment experience. AI systems can facilitate adaptive evaluation by adjusting the difficulty or content of assessments based on learners' responses (Cope et al., 2021).

Archival documents: Documents made or received and accumulated by a person or organization during the conduct of affairs and preserved because of their continuing value. (Ellis 1993, p. 2)

Communication Channels: The second element of Rogers' diffusion of innovation theory by which people develop and share information with each other to achieve common understanding (Lundblad, 2003, as cited in Rogers, 1995).

Community College Survey of Student Engagement: An assessment research-based tool that provides information on student engagement. The survey is comprised of items that assess institutional practices and student behaviors that are highly correlated with student learning and student retention (Community College, n.d.)

Compatibility: Refers to the degree to which an innovation is perceived as being consistent with the existing values, experience, and needs of potential adopters' (Rogers, 2003).

Complexity: The degree to which the innovation is perceived as challenging to understand and use (Rogers, 2003).

Cultural capital: The cultural knowledge of expectations, behavior patterns, and attitudes toward education (Toutkoushian et al., 2021).

Deskilling: The deterioration of highly skilled work into low skilled work (Silkin, 2021).

Diffusion: Refers to the process by which an innovation is communicated through specific channels, over time, among members of a social system (Rogers, 2003).

Early adopters: Refers to individuals who are more limited by the boundaries of the social system (Sahin, 2006, as cited in Rogers, 2003).

Early majority: Refers to individuals interested in trying new technologies and establishing their usefulness (Sahin, 2006, as cited in Rogers, 2003).

First-generation adult learners: Those who are the first in their families to attend a postsecondary institution (Deng & Yang, 2021).

Generative artificial intelligence: Type of AI that is able to generate new content, such as text, images, or music, based on certain inputs. This is often accomplished using a type of machine learning model called a generative model, which is trained on a large dataset of examples and can then generate new examples that are similar to the ones it was trained on (Pavlik, 2023).

Hallucinations: Apparently correct bibliographic references with known authors and coherent titles, but which are entirely non-existent (Salvagno et al., 2023).

Industry 4.0: A modern industrial model that defines the Fourth Industrial Revolution. It involves the use of intelligent, virtual, and digital technologies to enhance the performance of large-scale industries (Carvalho, N., & Cazarini, E, 2020).

Information and communication technologies (ICT): refers to information technology, networking technology, and telecommunication technologies (Ngo and Eichelberger, 2019).

Innovation: The first element of Rogers' diffusion theory that represents an idea, thing, procedure, or system that is perceived to be new by whomever is adopting it (Lundblad, 2003)

Innovators: Refers to individuals who are active information seekers willing to experience new ideas and innovation (Sahin, 2006, as cited in Rogers, 2003).

Late majority: Refers to individuals in a social system who wait until most of their peers adopt an innovation (Sahin, 2006, as cited in Rogers, 2003).

Laggards: Refers to individuals who are more skeptical about innovations and change agents than the late majority (Sahin, 2006, as cited in Rogers, 2003).

Massive open online courses (MOOCs): MOOCs are massive courses considering the number of participants enrolled across the globe per course, are openly accessed, and are available online (Mahajan et al., 2019).

Observability: The degree to which the innovation results are visible to others (Rogers, 2003).

Personalized learning: An educational approach that aims to customize learning for each student's strengths, needs, skills, and interests. With AI, personalized learning can be more effectively facilitated, as the AI can adapt to a learner's performance and provide targeted feedback (Kompen et al., 2019).

Primary Research Group: This group publishes research reports, surveys, and benchmarking studies for businesses, colleges, libraries, law firms, hospitals, museums, and other institutions. The studies allow institutions to compare their budgets, managerial decisions, technology purchases, and strategic visions to those of their peers, which helps clients better identify best practices, threats, and opportunities (Market Research, n.d.)

Relative advantage: The degree to which an innovation is perceived as being better than the idea it supersedes" (Rogers, 2003).

Reskilling: Training current employees for a new position or even a different occupation (Silkin, 2021).

Social and cultural capital: Drawn from Bourdieu's social reproduction theory, social and cultural capital refer to the resource's individuals acquire through their social relationships

and cultural knowledge, respectively. Social and cultural capital can significantly impact a person's educational experiences and outcomes (Mishra, 2020).

Social system: Individuals, groups, organizations, or subsystems, that share a common goal or objective that links them together (Lundblad, 2003, as cited in Rogers, 1995).

Sustainable human resource management (SHRM): Practice seeking to achieve positive economic, social, human, and environmental outcomes simultaneously, in the short and the long term (Kramar, 2022).

Time: The third element of Rogers' diffusion of innovation theory which encompasses three components: the innovation-decision process, adopter categories, and the rate of adoption

- Innovation-decision process: timeframe from when the potential adopter first becomes aware of the innovation through the point at which the potential adopter either adopts or rejects the innovation.
- Adopter categories: measure of how inclined an individual is to adopt new ideas as compared to other members of the social system.
- Rate of adoption: the speed that an innovation is adopted within in a social system (Lundblad, 2003, as cited in Rogers, 1995).

Trialability: The degree to which an innovation may be experimented with on a limited basis (Rogers, 2003).

Upskilling: Refers to learning new skills or enhancing existing ones, often aiming to improve employability or job performance. Upskilling is particularly relevant in today's rapidly changing job market, where technological advancements often necessitate continual learning and skill development (Allan-Bentley, 2021).

Chapter Summary

This introductory chapter provided an overview of the unique challenges first-generation adult learners face in their quest for upskilling and reskilling in higher education. The chapter discussed the problem being addressed, the purpose of the study, the research questions intended to guide the study, and the significance of the study. Additionally, the chapter introduced the theoretical and conceptual frameworks that will guide this study. The theoretical framework chosen for the study—Huber’s (1993) OCT—provides a lens on how organizations can gain, share, and use knowledge to enhance performance and adapt to changes. The conceptual framework—Rogers’ (1995) DOI—provides a lens to understand how artificial intelligence tools are adopted and spread in the institution identified for this study. Delimitations and assumptions of the study were provided to bind the study. Lastly, key terminology was defined.

Organization of the Study

The remainder of the study proceeds as follows. Chapter 2 provides a comprehensive literature review on topics salient to the study, including examining the nexus between cultural capital, the demand for reskilling and upskilling in the contemporary workforce, and the adoption of AI tools in education for first-generation adult learners. Chapter 3 reviews the methodology for conducting the study. Chapter 4 presents the case study’s findings, identify major themes, analyze institutional documents, and explore participant experiences. Finally, Chapter 5 outlines the purpose, research questions, methods, and main findings, connect the study’s findings to the frameworks and to the broader literature covered in Chapter 2, and conclude with implications for practice and researcher recommendations.

Chapter 2 - Literature Review

The emergence of disruptive technologies and the rising prominence of artificial intelligence (AI) have transformed various facets of society, including education and workforce development. These technological advancements are ushering in a new era characterized by the digitalization of processes and causing a critical reevaluation of traditional education and workforce training models.

First, this chapter reviews the theoretical and conceptual frameworks that guide this study. The theoretical framework, organizational change theory (OCT), examines how community colleges incorporate change at multiple levels, from individual behaviors and attitudes to institutional policies and practices, to enhance performance (Huber & Glick, 1993). The conceptual framework, diffusion of innovation (DOI), examines learners' and organizations' institutional adoption of technological innovations (Roger, 1962).

Second, this chapter defines and identifies first-generation learners and discusses their challenges as adults. This chapter discusses the concept of cultural capital and provides a lens to understand the unique challenges first-generation learners face in the academic environment (Garriott, 2020; Manzoni & Streib, 2019). As per Bourdieu's theory, cultural capital represents inherited knowledge that confers social mobility (Garriott, 2020). The challenge lies in the lack of such capital among first-generation adult learners, which might affect their academic success. This review of the literature provides insights into these struggles and offers strategies to mitigate the cultural capital gap (Ivemark & Ambrose, 2021; Richards, 2022).

Third, toward a culturally competent andragogy examines best practices in adult education. This section discusses six characteristics of andragogy, the shift from dependent to autonomous learning, heutagogical teaching approaches, and theories and implications

associated with implementing culturally responsive teaching practices. Merriam (2001) posits that autonomous learning develops a learner's capacity to be self-directed, fosters transformational learning, and promotes emancipatory learning.

Fourth, this chapter delves into reskilling and upskilling the contemporary worker amid rapid technological and industrial transformations. The shift toward Industry 4.0, defined by the contemporary revolutions in digitization and automation, has placed a premium on digital skills and competencies, demanding continuous reskilling and upskilling of the workforce (Agarwal et al., 2022; Li, 2022). Industry 4.0 refers to the latest industrial revolution and aims to meet the growing demand for personalized products and services. The main goal of Industry 4.0 is to cater to individual customer needs (Vaidya et al., 2018). Responding to this shift is crucial for educators and policymakers to ensure that individuals can successfully navigate the changing job market (Gratton, 2019; Padmaja & Mukul, 2021).

Finally, this chapter explores the potential for AI tools in education. As technology advances, so do the tools and methods available to educators, with AI-based technologies offering promising prospects for personalized learning and inclusivity (Abdous, 2023; Baidoo-Anu & Owusu-Ansah, 2023). The role of AI in education, however, is not without controversy and presents both possibilities and challenges, particularly regarding its ethical implications (Borenstein & Howard, 2021).

Each section of the review critically examines these themes, shedding light on the complexities and intricacies that characterize each. The aim is to generate a nuanced understanding of these interconnected domains to inform future research and community college policy-making efforts and identify research avenues, including the existing gaps in the literature that the present study aims to address. By synthesizing findings from seminal works and recent

studies, this review contributes to the ongoing discourse on the role of cultural capital, reskilling and upskilling, and AI in the evolving landscape of education and workforce development.

Literature Review Search Protocol

The literature review search protocol was devised to acquire a broad and comprehensive understanding of three interconnected themes: the role of cultural capital in the academic success of first-generation learners, the need for reskilling and upskilling in the contemporary workforce, and the use of AI tools in education. As such, the protocol was designed to capture scholarly articles and other reputable sources that addressed these themes individually or in connection with each other. The search was conducted across several databases, including ProQuest Dissertation Publishing, JSTOR, Google Scholar, IEEE Xplore, Emerald Insight, and ScienceDirect, to ensure comprehensive coverage of potential literature. Each database search was structured using relevant key terms and phrases such as “cultural capital,” “first-generation students,” “reskilling,” “upskilling,” “Industry 4.0,” “AI in education,” “personalized learning,” “organizational change theory”, “diffusion of innovation”, and “AI tools”. These terms were used independently and in combinations to obtain diverse and comprehensive results.

The search protocol included various scholarly publications, including empirical studies, systematic reviews, theoretical papers, conference proceedings, dissertations, and book chapters published in the last five years. The selection criteria required that sources be peer-reviewed to ensure the credibility and reliability of the literature. Following the initial search, articles were selected based on their relevance to the key themes and the depth of their content. A thorough review of the full text came after first determining the relevance of the abstracts. Studies were excluded if they did not provide a substantial contribution to the literature review or if they were not available in English. The citation lists of the selected articles were then examined to identify

any additional relevant literature not captured in the initial search. This snowballing approach helped uncover additional sources that provided valuable insights into the research themes.

This robust search protocol enabled the identification and analysis of a substantial number of sources, which significantly contributed to the depth and breadth of the literature review. The selected sources provided a rich tapestry of information that comprehensively addressed the research objectives. By following this rigorous protocol, this literature review offers a reliable and extensive exploration of the current academic understanding of cultural capital, the changing needs of the workforce, and the implications of AI tools in education.

Theoretical and Conceptual Frameworks

Organizational Change Theory

OCT, an analytical framework for understanding and facilitating change in organizations, originated in the mid-20th century when researchers began to systemically study organizational structures, processes, and outcomes (Anderson, 2019). The theory was based on the idea that organizations, like living things, undergo continuous evolution under numerous internal and external factors (Cameron & Green, 2019). By acknowledging human behavior complexities and organizational systems' dynamism, OCT provides a heuristic to analyze, plan, and implement organizational changes (Deszca et al., 2019).

Over the decades, OCT has grown more nuanced and complex, accommodating multilayered factors, from individuals' resistance to change to organizational culture and structure (Reinholz & Andrews, 2020). It has been refined to account for distinct change typologies, such as transformational and incremental change, reactive and anticipatory change, and planned and emergent change (Oreg & Berson, 2019). Moreover, OCT has been successfully applied across a spectrum of organizations, including educational institutions, business

corporations, and nonprofit entities (Palumbo & Manna, 2019) and hence highly applicable to this study.

Researchers have recently emphasized the importance of transformational leadership in successful organizational change. O'Banion (2019) defined transformational leaders as those who "take charge, create a vision for the work of the organization, engage followers as full and respected partners, and focus on achieving agreed-upon goals" (pp. 22-23). Transformational leaders act as catalysts, fostering an environment conducive to change and addressing resistance at individual and collective levels (Oreg & Berson, 2019; O'Banion, 2019). Moreover, transformational leaders are crucial for embedding changes into the organization's culture, ensuring sustainability and integration (AlNuaimi et al., 2022). Mathis and Roueche provide a list of transformational leadership characteristics (O'Banion, 2019). Table 2.1 lists the primary characteristics.

Table 2.1 List of the Primary Characteristics of Transformational Leadership

Characteristics of transformational leadership	Description
Shared vision, values, and involvement	• Leaders share a community of colleagues who share core values reflected in a joint mission.
Courage, candor, and collaboration	• Leaders challenge old beliefs, while being transparent and honest in their communication to promote collaboration and progress in the college.
Commitment	• Leaders understand the college must be in the reform effort for the long haul.
Getting important things done	• Leaders establish big goals and high expectations because they believe anything less sells their colleagues short.
Persistence, purpose, and people	• Change requires commitment, but it also requires persistence linked to a clear purpose.
Performance, preparation, and the courage to lead	• Leaders are unyielding in pursuing effectiveness and sustainable solutions that will transform institutions.

A related line of discourse in OCT pertains to digital transformation, a contemporary form of organizational change spurred by technological advancements. Technological change necessitates shifts in organizational structures, processes, and competencies, presenting unique

challenges and opportunities (Hanelt et al., 2021). Research suggests that digital transformation requires integrating technology with business strategy, necessitating changes at various organizational levels (Wessel et al., 2021). For instance, Benavides et al. (2020) provided evidence of the transformational potential of digital technologies in higher education, advocating for a systematic and strategic approach to leveraging these tools.

In terms of digital transformation, integrating AI tools can be viewed as a form of technological change requiring an alignment of the institution's digital strategy with its educational objectives (Appio et al., 2021). Higher educational institutions would need to create a supportive digital ecosystem and foster a culture of digital readiness to facilitate this transformation (Volberda et al., 2021). This approach aligns with the findings by Hanelt et al. (2021), which suggest that effective digital transformation requires a holistic and integrated approach involving changes in organizational structures, processes, and capabilities.

Diffusion of Innovation

Rogers introduced the DOI theory in 1962, explaining why and how quickly new ideas and technologies spread. It postulates that innovations diffuse through a social system over time, following a predictable, bell-shaped curve (Lee, 2021). The theory was initially developed to understand the adoption of agricultural technologies but has since been applied to various domains, including education, health, and information technology (Dearing & Cox, 2018).

According to DOI, the diffusion process involves four main elements: innovation, communication channels, time, and the social system. Table 2.2 defines each element.

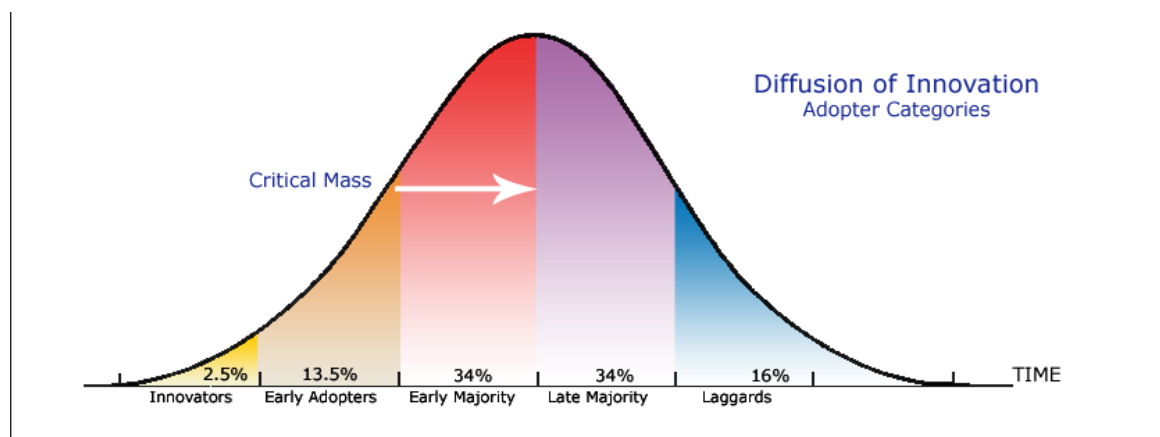
Table 2.2 Four Elements of Diffusion of Innovation

Element	Description
Innovation	The first element of Rodgers' diffusion theory represents an idea, thing, procedure, or system that is perceived to be new by whomever is adopting it.

Communication channels	• The second element of Rodgers' diffusion of innovation theory by which people develop and share information with each other to achieve common understanding.
Time	• The third element of Rogers' diffusion of innovation theory which encompasses three components: the innovation-decision process, adopter categories, and the rate of adoption.
Social system	• The fourth element of Rogers' diffusion theory where individuals, groups, organizations, or subsystems share a common goal or objective that links them together

Rogers further identified five categories of innovation adopters based on their adoption speed: innovators, early adopters, early majority, late majority, and laggards (Lee, 2021; Rogers, 1962). At times, a sixth group is added: nonadopters (Kaminski, 2011). Figure 2.1 visualizes Rogers' estimated percentage of the original five categories, illustrated in a bell-shaped.

Figure 2.1 Diffusion of Innovation: Adopter Categories

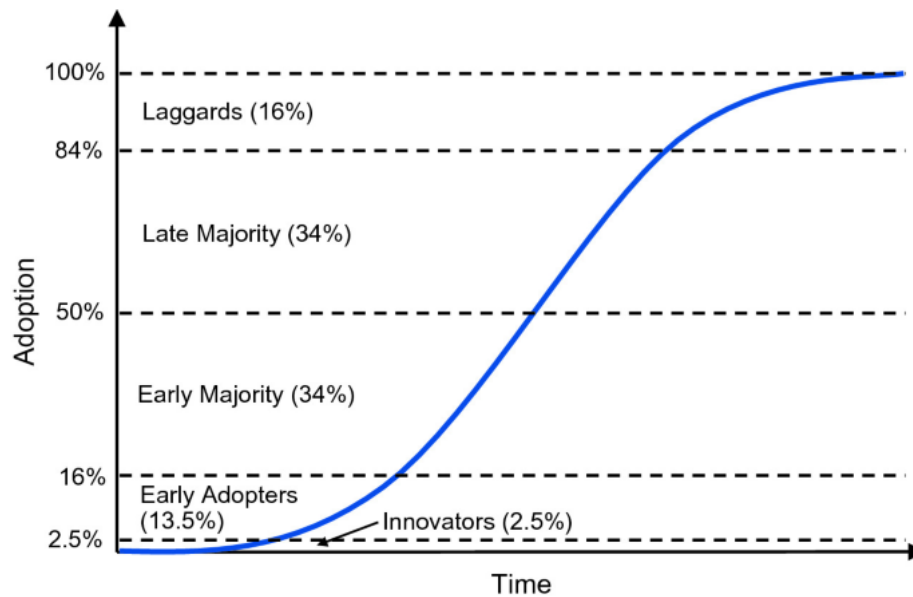


Note. Illustration showing the original five categories. Adapted from *Diffusion of Innovation Theory: Theory in nursing informatics column*, by J. Kaminski, 2011, Canadian Journal of Nursing Informatics, 6(2), 1 <https://cjni.net/journal/?p=1444>.

There are specific segments of the population that adopt an innovation or new behavior in different stages that follow an S curve. Rogers et al. (2005) stated that the “S-shaped curve represents cumulative adoption over time by members of a system” (p. 11). Figure 2.2 visualizes

Rogers' S-shaped curve, which illustrates the spread of innovations in society and focuses on individuals' reactions to change, regardless of innovation type.

Figure 2.2 Diffusion of Innovation Model: “S”-shaped Curve



Note. Illustration showing the Diffusion of Innovation Model “S”-shaped curve. Adapted from *About Trends in General: Trend Management*, by J. Blechschmidt, 2022, Business Guides on the Go. Springer, Berlin, Heidelberg. (https://doi.org/10.1007/978-3-662-64703-5_1).

The classification of adopters and the visualization of the S-curve allow researchers to predict and analyze the adoption patterns of innovations, aiding strategic decision-making in various contexts.

The theory has undergone several revisions and refinements over the years. For instance, the role of the innovation-decision process, involving stages such as knowledge, persuasion, decision, implementation, and confirmation, was underscored in subsequent iterations (Lee, 2021). Furthermore, research has expanded on the five innovation attributes affecting adoption

rates—relative advantage, compatibility, complexity, trialability, and observability—by adding dimensions such as cost, risk, and uncertainty (Vargo et al., 2020).

Recent studies have leveraged DOI to explore the diffusion of technological innovations. For example, Zoubi et al. (2023) proposed an extension of DOI for business intelligence adoption, focusing on the maturity perspective of project management. In education, DOI has been used to understand the adoption of online learning technologies (Anthony et al., 2022; Richardson et al., 2020), with findings indicating that perceived usefulness and compatibility are key determinants of adoption.

Moreover, Ngo and Eichelberger (2019) used DOI to study learners' attitudes toward information and communication technologies (ICT) for English learning. They found that students were more likely to adopt ICT if they perceived it as advantageous and compatible with their learning needs and styles. Similarly, Al-Rahmi et al. (2021) integrated DOI with the technology acceptance model to study students' attitudes toward massive open online courses (MOOCs). They found that students' perceptions of MOOCs' relative advantage, compatibility, and complexity significantly affected their attitudes and intentions to use these platforms (Al-Rahmi et al., 2021).

Beyond individual adoption, DOI also provides insights into organizational adoption of innovations. Braunerhjelm et al. (2020) found that labor market mobility facilitated knowledge diffusion and innovation in organizations, reflecting the social system's influence on DOI. Florida (2002) posited that what matters for workers in new social systems and the new economy is no longer capital but creative capacity, which is seen as a unique and new stage in capitalist growth. During this time, the impetus for economic advancement was based on technology, organization, and human factors (Florida, 2002; Peck, 2005). On the other hand, Lundblad

(2003) critiqued DOI's application to organizations, arguing that it inadequately accounted for the complexity of organizational processes and structures.

In the current study on the potential of AI tools for first-generation adult learners, DOI offers a useful conceptual lens. By examining the relative advantages, compatibility, complexity, trialability, and observability of AI tools, the study can identify the likely facilitators and barriers to their adoption (Lee, 2021). Moreover, the study can explore how communication channels, such as institutional messaging, peer networks, and experiential learning, influence diffusion.

Table 2.3 defines each characteristic.

Table 2.3 Five Diffusion of Innovation Characteristics

Characteristics	Description
Relative advantage	• The degree to which an innovation is perceived as being better than the idea it supersedes.
Compatibility	• Refers to the degree to which an innovation is perceived as being consistent with the existing values, experience, and needs of potential adopters.
Complexity	• The degree to which the innovation is perceived as challenging to understand and use.
Trialability	• The degree to which an innovation may be experimented with on a limited basis.
Observability	• The degree to which the innovation results are visible to others.

Faculty Support of First-Generation Learners

Defining and Identifying the First-Generation Learner

The literature expresses a variety of definitions and demographic characteristics when identifying first-generation learners, reflecting this population's complex and multifaceted nature. First-generation learners have been predominantly defined as individuals whose parents have not completed a bachelor's degree (Ives & Castillo-Montoya, 2020). However, this definition has grown to incorporate a range of demographic and socioeconomic factors, reflecting the diversity of experiences in this group.

For example, Toutkoushian et al. (2021) noted the shift from the traditional, first-in-family, definition to a broader conceptualization of first-to-finish, which includes learners who are the first in their family to graduate from college. This broader definition recognizes that some first-generation learners may have parents who attended but did not complete college, thus expanding the potential challenges these learners face.

Wainwright and Watts (2021), who looked at first-generation learners' narratives of university participation and family, further echoed this broad approach. They found that first-generation adult learners are not a monolithic group but a diverse population with varying levels of social mobility and family support. This demographic complexity underscores the necessity of understanding first-generation learners' experiences in their sociocultural contexts.

Demographically, first-generation learners are characterized by age, race, and socioeconomic status diversity. As Lee and Harris (2020) noted, this population often includes a high proportion of low-income learners, learners of color, and nontraditional-aged learners. Their study emphasized the significance of peer support for these individuals, acknowledging the intersectionality of multiple marginalized identities in the first-generation learner population.

First-generation learners' adjustment to college is another key aspect discussed in the literature. Gibbons et al. (2019) examined how first-generation learners adjust to the college environment, highlighting factors such as financial stress, a lack of family support, and academic challenges that affect their transition process. Similarly, Haktanir et al. (2021) examined resilience, academic self-concept, and college adjustment among first-year learners, suggesting that building resilience and a strong academic self-concept are likely critical for supporting first-generation adult learners' college adjustment. Law Insider (n.d.) defines a first-year learner as a

“student who has not obtained sufficient credits for promotion to the second year of a degree, diploma or certificate” (para. 1).

Research further identifies reasons first-generation learners consider withdrawing from community colleges and why they remain enrolled. According to a recent report from the Center for Community College Student Engagement (2022), titled “Listen to Me: Community College Students Tell Us What Helps Them Persist,” findings uncovered why learners consider dropping out of college. Learners expressed concerns about feeling underprepared and overwhelmed, needing help with course registration, academic advising services, and understanding the rigor of college-level work (Kyaw, 2022). Conversely, Garcia and Adkins (2022) discussed factors encouraging learners to remain enrolled. Factors included learners engaging in study groups, small-group work, and student-led activities. Learners also valued a clear academic plan, support, and financial aid.

Challenges Facing First-Generation Learners

First-generation learners encounter various challenges in their pursuit of higher education. These challenges, often contextual, financial, personal, and mental, are complex, interconnected, and deeply ingrained in the learners’ identities and experiences (Ives et al., 2020).

Contextual Challenges

Starting with contextual challenges, first-generation learners often find themselves in unfamiliar territories where the norms and expectations differ from what they have been accustomed to in their families or communities. Covarrubias et al. (2019) underscored this issue, noting that first-generation learners often grapple with the notion of independence in college. They found these learners carry strong family roles and responsibilities, sometimes conflicting

with the traditional college expectations of independence. For example, 27 of the 34 first-generation learners identified six family roles and responsibilities (Covarrubias et al., 2019).

Table 2.4 identifies the roles and responsibilities.

Table 2.4 First-Generation Adult Learners Role and Responsibilities

Role	Responsibilities	Percentage
1	Emotional support and family advocate	58.00
2	Language and/or financial broker	38.24
3	Source of physical help	35.29
4	Sibling caretaker	32.35
5	Source of financial support	26.47
6	Advice giver	14.71

Financial Challenges

Financial challenges are a critical aspect to consider. The burden of tuition, living expenses, books, and more often weigh heavily on first-generation learners (Eveland, 2020). These financial constraints can hinder first-generation adult learners' ability to focus entirely on academic commitments, thus affecting their overall academic performance. Financial constraints may also limit these learners' participation in extracurricular activities, further limiting their overall college experience and academic outcomes. Seow and Pan (2014) suggested that extracurricular activities enable students to develop competencies and skills that support academic achievement and transferable skills such as problem-solving skills. Clark et al. (2015) posited a significant relationship between participation in extracurricular activities and employer-desired skills such as communication and teamwork.

Personal Challenges

First-generation learners often grapple with feelings of inadequacy and self-doubt. Canning et al. (2020) studied the effect of perceived classroom competition on the psychological experiences of these learners. They found that first-generation learners were more likely to

experience imposter syndrome, a psychological pattern in which individuals doubt their accomplishments and fear being exposed as a fraud. This feeling can challenge a learner's sense of belonging in the college environment and affect learners' mental health (House et al., 2020).

Mental health challenges further compound the difficulties faced by first-generation learners. According to House et al. (2020), these learners are more likely to experience mental health issues, partly due to the multitude of stressors they face. This situation is often worsened because first-generation learners may be less likely to seek mental health support due to various barriers such as stigma, lack of awareness, and limited access to resources. These challenges can also affect the retention rates of first-generation learners. Pratt et al. (2019) found that first-generation learners are more likely to drop out of college than their counterparts. They suggested that the complex interplay of academic, social, personal, and institutional factors significantly influences the retention rates of these learners.

Given these multiple interrelated challenges, providing adequate support to first-generation learners is crucial. As Eveland (2020) suggested, comprehensive support, encompassing academic and social aspects, is essential in ensuring the academic success of these learners. Gibbons et al. (2019) concurred that tailored programs that consider first-generation learners' unique experiences and needs can significantly improve their adjustment to college life.

First-generation learners face multifaceted challenges in their pursuit of higher education. Addressing these challenges requires a holistic approach that considers their unique experiences and provides the necessary support to ensure their success in higher education.

Cultural Capital

Cultural capital, defined as the cultural knowledge of expectations, behavior patterns, and attitudes toward education, is often lacking among first-generation learners (Toutkoushian et al.,

2021). This lack of cultural capital creates unique challenges for these learners and is an underlying issue that influences their experiences in higher education.

First-generation learners often struggle to adjust to the higher education environment. This adjustment issue, as Gibbons et al. (2019) pointed out, is influenced by the lack of cultural capital. These learners often lack the understanding and exposure to the implicit norms, values, and expectations of a college culture that their non-first-generation counterparts may have gained through their family or broader social networks. This lack of cultural knowledge can affect their ability to navigate the educational system effectively and, subsequently, their college experience.

Cultural capital is further complicated when considering the intersection of social class and higher education. As Harvey and Mallman (2019) emphasized, learners from lower socioeconomic backgrounds often face barriers to gaining cultural capital because of their limited exposure to middle-class norms and values, which are dominant in higher education. Thus, these learners are doubly disadvantaged, not only being the first in their families to attend college but also coming from social contexts that do not align with the dominant culture in higher education.

Richards (2022) provided a unique perspective by examining help-seeking behaviors as a form of cultural capital, a term coined by Pierre Bourdieu and Jean-Claude Passeron in the work *Reproduction in Education, Society and Culture* (Bourdieu & Passeron, 1977). Richards (2022) argues that cultural guides or mentors can significantly aid first-generation learners' transition from high school to college. These guides provide much-needed cultural capital by helping these learners understand and navigate the implicit norms and expectations of college life.

The research conducted by Parnes et al. (2020) echoed this idea of using cultural mentors or guides. The researchers found that instructor relationships play a crucial role in the academic

outcomes of diverse community college learners. Effective communication with instructors can provide explicit guidance for first-generation learners regarding norms and expectations for academic performance and comportment that are often implicit, even though instructors and other academic gatekeepers use such norms to evaluate student performance. The guidance and support provided by these instructors can serve as a critical source of cultural capital, aiding these learners in their adjustment to college life.

Interventions such as summer bridge programs have shown the potential to help first-generation learners build their cultural capital. Such programs may provide the kind of explicit knowledge regarding how students should manage workloads, communicate with advisors and instructors, and build effective social networks that first-generation learners may lack. Grace-Odeleye and Santiago (2019) reviewed several models of such programs, demonstrating their effectiveness in providing first-generation, at-risk, and underrepresented college learners with academic, social, and personal tools to navigate the college environment successfully.

By contrast, first-generation learners may have knowledge systems and cultural norms from their backgrounds, which might be applied beneficially to the college context if they are given assistance and guidance on how to use them. Garriott (2020) offered a novel perspective through his critical cultural wealth model, highlighting the untapped cultural resources that first-generation and economically marginalized learners bring to college. He suggests that these learners possess unique forms of capital, including aspirational, navigational, social, linguistic, familial, and resistance capital. Recognizing and using these resources can help first-generation adult learners overcome the barriers their lack of traditional cultural capital poses. From a life-course perspective, Ivemark and Ambrose (2021) explored how first-generation university learners adapt their habitus—a concept closely related to cultural capital—to adjust to higher

education. The norms and expectations these students have from other domains can be applied to developing successful academic behaviors. Ivemark and Ambrose found that these learners undergo a transformation process, learning to navigate and align their values and behaviors with the demands of the university culture.

The literature suggests that although the lack of college-specific cultural capital presents challenges for first-generation learners, multiple strategies exist to mitigate this problem, and the cultural capital that first-generation students do have can be leveraged for developing successful academic behaviors. Strategies for assisting first-generation learners include help from cultural guides or mentors, intervention programs, recognition, and utilization of the unique cultural wealth of these learners, and a supportive and inclusive college culture that facilitates the habitus adaptation process.

Toward a Culturally Competent Andragogy

A central component of the present study is the ongoing development of best practices in adult education. Andragogy, the science of adult learning, has evolved significantly in recent years. This transformation is primarily driven by integrating technology into adult learning experiences and the need to acknowledge the rich cultural diversity of adult learners and the role that faculty educators can play in this acknowledgment. A closer exploration of the literature reveals key trends, debates, and potential research areas in andragogy, adult learning, and culturally responsive education practices.

Six Characteristics

Purwati et al. (2022) emphasized the six characteristics of andragogy—learners’ need to know, the learner’s self-concept, the role of learner’s experience, readiness to learn, orientation to learning, and motivation—as the core tenets of adult learning theory. This perspective aligns

with Wozniak's (2020) assertion that personalized learning, a hallmark of andragogy, becomes increasingly relevant digital education. Interestingly, this assertion challenges earlier criticisms of andragogy, such as those by Hartree (1984), who argued that the theory is too learner-centered and does not adequately consider the role of the teacher.

Learner Autonomy

Learner autonomy remains a central topic in the dialogue on adult learning. Knowles, the father of andragogy, identified the adult learner's self-concept and experience as central to their learning process (Purwati et al., 2022). As adults mature, they evolve from being dependent personalities to becoming self-directed, and their learning experiences should mirror this evolution. This transition from dependency to autonomy is not only a developmentally expected progression but also caters to the intrinsic motivation that often drives adult learners (Loeng, 2018).

Andragogy

In the context of andragogy, learner autonomy refers to the capacity of adult learners to take responsibility for their learning, set their learning objectives, identify the necessary resources, and evaluate their learning outcomes. As Wozniak (2020) suggested, personalized learning is a contemporary approach that aligns well with the principle of learner autonomy. In this model, learning becomes a tailor-made experience, considering individual learners' needs, interests, and pace. This approach is particularly relevant in the digital age, where technological advancements have made it easier for learners to access a variety of educational resources.

However, achieving learner autonomy in adult education is not without its challenges. As Hartree (1984) noted in his critique of Knowles's theory, andragogy tends to emphasize the learner's role too much, to the point where it could overshadow the instructor's contribution to

the learning process. Despite the importance of autonomy, the educator still plays a crucial role in guiding and facilitating adult learning. Particularly in complex subject areas, expert guidance from a knowledgeable instructor can be critical in helping learners structure their learning effectively (Tezcan, 2022).

Heutagogy

The debate on the centrality of learner autonomy in adult learning has recently shifted toward heutagogy, a concept that takes learner autonomy to another level. In contrast to andragogy, where learning is largely self-directed, heutagogy puts forward a model of self-determined learning (Blaschke, 2019). Heutagogical teaching approaches allow learners to determine the pace and direction of their learning and its content. Akyildiz (2019) argues that this shift toward greater autonomy may be a natural response to the 21st-century learning environment characterized by rapid knowledge advancement and the prevalence of digital learning platforms.

However, this level of autonomy may not resonate with all adult learners. Cultural considerations play a significant role in shaping adult learners' perspectives on autonomy. McCallops et al. (2019) suggested that the principle of autonomy may not align with the learning preferences of individuals from collectivist cultures, where communal learning is the norm. This finding implies that learner autonomy needs to be contextually nuanced and culturally responsive. Adult learning theories and practices should incorporate a more comprehensive understanding of learner autonomy, including cultural considerations, providing a more inclusive and equitable approach to education.

Culturally Responsive Teaching

Ladson-Billings (1995) introduced the concept of culturally responsive pedagogy and andragogy. According to Ladson-Billings, culturally responsive teaching (CRT) must fulfill three criteria: improving students' academic performance, the willingness to support and cultivate cultural competence, and developing sociopolitical or critical consciousness. Sandifer et al. (2022) suggested that antiracist andragogy should be essential to education and training, especially in fields like counseling. Likewise, Livingston-Galloway and George (2020) advocated for a culturally responsive andragogical approach to support international English learners, recognizing the unique challenges these learners face. Finally, Ladson-Billings (2021) argued that CRT acknowledges and uses students' cultural experiences as assets in the learning process.

Culturally responsive teaching and recruiting culturally competent faculty are central to enhancing community college learners' experiences (Mathis, 2006). McPhail and Costner (2004) found that many community colleges are challenged to adequately prepare faculty to teach diverse populations. However, research has acknowledged community colleges with experience incorporating CRT. Calaway and Manning (2021) identified Community College of Baltimore County (CCBC) faculty who exhibit CRT methods by validating students' culture, bridging gaps through diverse instructional strategies, and establishing multicultural curricula. Additionally, faculty seek to provide a holistic education, considering the social, emotional, and political aspects of the student's learning experience. Finally, faculty strive to eliminate any oppressive practices or ideologies in education. Table 2.5 identifies themes identified by Calaway and Manning (2021) that are associated with the success of CCBC faculty in cultivating CRT.

Table 2.5 Community College of Baltimore County Culturally Responsive Teaching Themes

Theme	Benefit of culturally responsive teaching	Findings
-------	---	----------

1	CRT promotes a shift to a culturally responsive learning environment	By adopting a growth mindset, students can enhance their learning abilities.
2	CRT increases student engagement	When faculty members engage with their students, it fosters a sense of security and connection to the college community, encouraging a stronger bond.
3	CRT requires consistent reinforcement	Continual CRT training helps faculty members reduce their biases.
4	CRT promotes a shift in institutional culture	CRT promotes open dialogue by offering a secure channel to address delicate topics that could impact students, faculty, and institutions.

A potential area of investigation suggested by this review is the intersection of andragogy, culturally responsive teaching practices, and AI. As Arifin et al. (2020) suggested, AI could augment andragogy, particularly in vocational education, where technological skills are paramount. This concept could be extended to examine how AI tools might create a personalized, culturally responsive learning environment that fosters autonomy while respecting diverse cultural learning styles.

In conclusion, a comprehensive understanding of andragogy, adult learning, and culturally responsive teaching practices requires a nuanced exploration of these theories' evolution and their practical implications in diverse learning environments. Further research is needed to elucidate how these concepts can best inform the design and implementation of AI tools in education, particularly for first-generation adult learners in community colleges.

AI Tools in Education

In the age of rapid digital transformation, AI has emerged as a significant force influencing various sectors, including education. AI tools have permeated the education landscape, revolutionizing learning experiences and teaching methodologies (Zirar et al., 2023). These transformations have ushered in a new era of personalized learning, significantly impacting learners of all types, of particular concern first-generation learners who often grapple with unique challenges. However, the integration of AI in education is not without its concerns,

as ethical issues and the potential dehumanization of education are serious considerations (Borenstein & Howard, 2021).

Benefits

The literature provides evidence of AI's potential benefits and possibilities in education, alongside the accompanying apprehensions (Alam, 2021). AI tools can broadly enrich and transform educational practices in several ways. These include providing personalized learning experiences that cater to individual learners' needs, increasing the efficiency of administrative tasks, and potentially enhancing student outcomes (Abdous, 2023). However, apprehensions related to privacy, equity, and the overarching ethics of AI applications in education remain significant; personalized learning, for example, typically requires the collection of extensive user data to be maximally effective, but some users may find the degree of data collection to be intrusive (Borenstein & Howard, 2021).

The advent of AI in personalized learning is a particularly salient trend, with several studies highlighting positive perceptions from both learners and educators toward this novel approach (Al-Badi et al., 2022). Traditionally, education has been a one-size-fits-all undertaking. However, AI has the potential to upend this model by offering customized educational content that can be adapted in real-time based on a learner's pace, learning style, and level of understanding (Kompen et al., 2019). AI can also provide real-time feedback, monitor learning progress, and predict future learning outcomes, facilitating a more individualized, efficient, and targeted learning experience (Ouyang et al., 2022). Ouyang et al.'s (2022) study analyzed 32 empirical publications worldwide. Spain accounted for 16% of the articles, with five publications, followed by the United States and Taiwan, with four publications each, making them the most active nations in experiential research in artificial intelligence in education. The

study found that AI significantly improved online instruction and learning quality by enabling accurate predictions of student performance and offering resources for recommendations based on their preferences, interests, background knowledge, and memory capacity. Additionally, AI provided automatic formative assessments based on students' computer programming and problem-solving abilities. Furthermore, AI created an information technology system that increased students' learning interests, positive attitudes, technology acceptance, and problem-solving activities. Finally, the study revealed that learners became more interconnected as the research progressed (Ouyang et al., 2022).

The potential for AI to provide personalized learning experiences may also play a crucial role in addressing the unique challenges faced by first-generation adult learners. These learners often lack cultural capital and face steep learning curves, especially in higher education settings. According to Ali and Abdel-Haq (2021), although incapable of replacing human educators, AI can play a significant supporting role in mitigating these challenges. By providing tailored support that meets these individuals where they are, AI can help level the educational playing field for diverse learners, assisting them in navigating unfamiliar educational landscapes and supporting their success.

AI's capacity for individualized learning support is evident in emerging tools such as ChatGPT (Baidoo-Anu & Owusu-Ansah, 2023). These AI tools generate human-like text, facilitating individualized interactions and learning experiences (Lucy & Bamman, 2021; Tate et al., 2023; Williams, 2023). As seen in Baidoo-Anu and Owusu-Ansah's (2023) study, individualized interactions and learning experiences not only enhance the accessibility of learning materials but can also provide learners with a personalized tutor available around the

clock. This new genre of AI tools promises to revolutionize the learning experience by making it more interactive, responsive, and learner centered.

In another significant application of AI, personalized assistive tools have been developed for children with neurodevelopmental disorders (Barua et al., 2022). Research indicates that AI-driven tools can be tailored to children's unique needs and learning styles, enabling an improved and more inclusive educational experience. This further highlights the potential of AI for democratizing education and making it more accessible and equitable for diverse learners. Beyond K–12 and higher education, AI has made significant inroads into online learning platforms, an increasingly prevalent form of education. AI has been used in various ways in this learning environment, from predictive analytics that can increase student retention rates to AI-powered teaching assistants that can respond to student queries in real time (Ouyang et al., 2022).

Further exploration of AI-enabled educational platforms reveals that AI applications can effectively support instructor-led learning, blending traditional and AI-assisted methods to foster interactive and individualized learning experiences (Woolf, 2019). In addition to augmenting existing learning opportunities, AI tools can provide novel, immersive experiences, such as virtual reality-based training modules, to enhance the learning process (Pradhan & Saxena, 2023). AI's potential to provide transformative and immersive learning experiences further solidifies its place in the future of education.

Apprehensions

Despite the increasing integration of AI into education and the promising results of these efforts, the literature has also highlighted critical apprehensions. One significant concern is the ethical implications of AI in education, which primarily revolve around privacy, bias, and control

over data (Borenstein & Howard, 2021). These concerns are paramount, particularly as AI tools become more sophisticated and capable of handling sensitive and personal information about students. There is also the fear that the integration of AI in education might lead to an overreliance on technology, thereby marginalizing the human element integral to the teaching and learning process (Ali & Abdel-Haq, 2021). The perceived risk is that AI might reduce the role of human educators, transforming education into a purely technocentric process.

In addressing these apprehensions, scholars like Williamson and Eynon (2020) emphasize the need for historical understanding, recognizing missing links, and proposing future directions in AI in education. Looking at AI in education as a sociotechnical system that needs careful handling rather than an unequivocally beneficial technological tool is essential. This necessitates fostering dialogues and collaborations among AI developers, educators, students, and policymakers to ensure AI's ethical and meaningful use in education.

Ethical Considerations

Integrating AI tools into educational settings is a dynamic and rapidly expanding field. Ethical challenges arise as AI plays an increasingly significant role in various educational contexts. These challenges require careful consideration, active engagement, and regular review and assessment from educators, administrators, technologists, and policymakers. Borenstein et al. (2021) outlined the emergence of ethical concerns related to AI, emphasizing that these are not new but have a long history intertwined with the evolution of technology. They also highlighted the recent attention paid to AI ethics, indicating a growing awareness of and need for ethical guidelines and practices in using AI.

One of the critical ethical challenges of using AI in education is data privacy and security. AI systems often rely on extensive data collection, including sensitive personal

information about students (Nguyen et al., 2023). Ensuring these data are used responsibly and protected from potential breaches is paramount. Akgun and Greenhow (2022) addressed this challenge in the K–12 setting, highlighting the necessity of clear policies and practices to protect the privacy of minors who may not fully understand the implications of data sharing.

Another ethical challenge pertains to the potential biases embedded in AI algorithms. Borenstein and Howard (2021) emphasized the need for AI ethics education to prevent unintentionally incorporating societal biases into AI systems. These biases can lead to unfair or discriminatory practices, further exacerbating educational inequalities. Educators and developers must be vigilant in examining algorithms for potential bias and committed to creating systems that promote equity and fairness. The ethical use of specific AI tools, such as OpenAI's ChatGPT, is also drawing attention. Mhlanga (2023) discussed the responsible and ethical use of ChatGPT toward lifelong learning. Here, the challenge lies in ensuring that such tools are used to enhance education without undermining critical thinking, creativity, and the unique human aspects of the learning process. This is a particularly salient ethical challenge, as the potential for AI tools to make the job of instructors somewhat easier cannot come at the expense of students' education.

The advent of AI is also creating anxiety among educators. Hopcan et al. (2023) explored the AI anxiety and machine learning attitudes of teacher candidates. Their findings reveal apprehensions about the future role of teachers, potential job displacement, and the complexity of integrating AI tools into teaching practices. Addressing these fears and providing appropriate training and support for educators is vital in the ethical implementation of AI in the classroom.

Another ethical concern is the potential impact of AI on future generations, notably Generation Alpha, defined by Rusnali (2021) as individuals born between 2010 and 2025.

Rathore (2023) contemplated the future of AI, specifically tools like ChatGPT, in shaping the learning experiences of the next generation. This contemplation raises questions about the long-term effects of AI on human development, socialization, and the very nature of learning. Furthermore, Lodge et al. (2023) emphasized the need for a robust research agenda focusing on generative artificial intelligence in tertiary education. They underscored the importance of a collective approach that involves multiple stakeholders in developing ethical guidelines and best practices.

The ethical challenges of using AI tools in education are multifaceted and complex. They range from issues related to data privacy and security to concerns about algorithmic bias, the role of teachers, the impact on future generations, and the need for inclusive and comprehensive research and policymaking. These ethical challenges are not insurmountable but require a concerted effort from all stakeholders involved in education. As AI continues transforming the educational landscape, a commitment to ethical principles and practices will ensure that these technological advancements enhance, rather than undermine, education's fundamental goals and values.

AI tools are undeniably revolutionizing the education landscape, bringing significant changes and possibilities. The literature has widely recognized their potential to enhance personalization and interactivity in learning experiences, catering to diverse learner needs and contributing to democratizing education. However, it is also essential to remember and address the ethical implications and potential pitfalls associated with AI's use in education. As individuals further incorporate AI into our educational systems, community colleges must balance these exciting opportunities with a sober awareness of the challenges and potential risks they pose and ensure that the human element at the heart of education remains central.

Reskilling and Upskilling the Contemporary Workforce

Faced with rapid technological advancements and digitization, the contemporary workforce is undergoing a significant transformation, necessitating new perspectives on skills management, upskilling, and reskilling (Gratton, 2019). Industry 4.0, called The Fourth Industrial Revolution, follows the First, Second, and Third Industrial Revolutions (Xu et al., 2018). According to Vaidya et al. (2018), Industry 4.0 refers to an advanced level of organization and control throughout the entire life cycle of the product's value chain. Industry 4.0 is characterized by disruptive technologies such as AI, the Internet of Things (IoT), and automation, propelling this change (Agarwal et al., 2022). Digitization has transitioned from Industry 4.0 to the Fifth Industrial Revolution, or Industry 5.0, called the Cognitive Age. Nosta (2023) suggests that the technologies introduced in Industry 4.0 will serve as cognitive partners, reshaping societal structures, economies, and the fundamental aspects of human existence. Noble et al. (2022) support this notion, believing Industry 5.0 will focus on efforts to understand how humans and technology can collaborate to improve our cognitive processes, decision-making, creativity, and interactions. Table 2.6 displays the main characteristics of each industrial revolution.

Table 2.6 Main Characteristics of Industrial Revolution

Industrial revolution	Period	Transition period	Energy resource	Main technical achievement	Main developed industries	Transport means
First	1760–1900	1860–1900	Coal	Steam engine	Textile, steel	Train
Second	1900–1960	1940–1960	Oil, electricity	Internal combustion engine	Metallurgy, auto, machine building	Train, car
Third	1960–2000	1980–2000	Nuclear, electricity, natural gas	Computers, robots	Auto, chemistry	Car, plane
Fourth	2000–2010	2000–2010	Green energies	Internet, 3D printer, genetic engineering	High tech industries	Electric car, Ultra-fast train

Fifth	2020-	2020-	Renewable energies	GPT models, collaborative AI, human-AI interaction	-	-
-------	-------	-------	--------------------	--	---	---

Note. From Prisecaru, P. (2016). “Challenges of the Fourth Industrial Revolution.” Knowledge Horizons. Economics, 8(1), 57-62. Web <https://search-proquest-com.ezproxy.libraries.udmercy.edu:2443/docview/1793552558?accountid=28018>. Noble et al. (2022). “The fifth industrial revolution: How harmonious human-machine collaboration is triggering a retail and service revolution, 98(2), 199-208. Web <https://www.sciencedirect.com/science/article/pii/S0022435922000288?via%3Dihub>

Renewed Focus on Upskilling and Reskilling

Agarwal et al. (2022) highlighted the challenges in sustainable human resource management due to disruptions by Industry 4.0, primarily the need for businesses to maintain a workforce with the necessary skills without enduring the high costs and instability of increased employee turnover to achieve short and long-term economic, social, human, and environmental outcomes (Kramar, 2022). These disruptions necessitate a renewed focus on upskilling and reskilling to ensure employees are prepared to meet emerging industry requirements. Reskilling involves teaching employees new skills to perform different jobs, while upskilling involves enhancing employees’ existing skills to improve their current job performance (Gratton, 2019). By investing in reskilling initiatives for existing employees, businesses can develop needed skills in their existing workforce without having to invest time and resources into recruitment to achieve desired short-and long-term outcomes.

Industry 4.0 has increased the need for digital competencies (Maisiri & Van Dyk, 2020). As Lang and Triantoro (2022) suggested, the future of work requires a new typology of digital skills initiatives to respond to the increasing complexity and fast-paced nature of technological

innovations. Upskilling and reskilling are, therefore, not just an option but a requirement to ensure the viability of industries and the employability of the workforce. The COVID-19 global pandemic, which caused major disruptions to business operations and employee-employer relationships, further underscored the urgency of upskilling and reskilling. Carta (2021) discussed how the pandemic-imposed digitization accelerated the need for new professional skills. As businesses have pivoted to remote work and digital operations, employees have been required to adapt quickly, highlighting the need for flexible, adaptable, and digitally literate workforces. These changes have necessitated new skill sets for workers in an increasingly digital work environment. The potential impact of AI on workers' skills is another important consideration. Morandini et al. (2023) pointed out that AI's advancement could replace certain job tasks, thus requiring a substantial workforce shift toward upskilling and reskilling to meet the emerging job roles created by AI and automation. Similarly, Rafner et al. (2022) proposed a case for hybrid intelligence, integrating human and machine capabilities, arguing that the future of work may involve deskilling, upskilling, and reskilling elements.

Higher Education and the Workforce

Higher education institutions play a crucial role in the changing landscape of the workforce. Allan-Bentley (2021, as cited in Adams et al., 2020) stated, "Community colleges should accept and champion that they are the nation's primary provider of job-focused education and training" (p. 1). Lang (2023) discussed the challenges and opportunities that higher education institutions face in meeting the lifelong learning needs of modern workers. Lang (2023) concluded that colleges are being forced to adapt to the shifting requirements and uncertainty of the Fourth and Fifth Industrial Revolutions particularly regarding worker upskilling and lifelong learning. Colleges must reconsider their roles and adjust their institutional

perspectives on addressing challenges, such as digital micro-credentials, to keep up. Padmaja and Mukul (2021) emphasized the importance of higher education in upskilling and reskilling the workforce for the digital age, suggesting that teaching and learning models need to be strengthened to accommodate this shift. Padmaja and Mukul (2021) also suggested that specific skills are becoming obsolete while others are gaining prominence. Continuous upskilling and reskilling will help practitioners develop strategies that support students in acquiring industry-specific and future-ready skills.

Regarding hands-on interventions, Oliveira et al. (2022) discussed learning modules for upskilling in Industry 4.0 technologies, suggesting that practical, experiential learning can be a powerful tool for workforce upskilling. Similarly, Vinayan et al. (2020) suggested strategies to initiate industry-institution partnerships in Malaysia for upskilling and reskilling the workforce via industry-driven technical and vocational education and training. Another significant point is the necessity of proactive strategies and actions. It is not a sustainable strategy to wait until technological advancements automate or make obsolete job roles (Morandini et al., 2023; Rafner et al., 2022). Instead, businesses, individuals, and policymakers will need to anticipate future skills needs and invest in upskilling and reskilling initiatives in advance. In this regard, the role of education systems, notably higher education institutions, is crucial (Lang, 2023; Padmaja & Mukul, 2021). These institutions are well-positioned to contribute to upskilling and reskilling initiatives, not just for their students but also for the broader workforce. They can do this by aligning their programs with industry needs, facilitating lifelong learning opportunities, and fostering partnerships with businesses and industries.

Moreover, Wahab et al. (2021) emphasized the need for upskilling and reskilling in the logistics and supply chain industries due to the Fourth Industrial Revolution. They argued that as

technology rapidly advances, the skills required in these industries change, underscoring the importance of proactive skill development in these sectors. Notable challenges were discussed. First, organizations are struggling to find individuals with the appropriate competencies. According to Geissbauer et al. (2016), one of the most difficult challenges is a lack of digital culture and appropriate training. The marketplace has a growing expertise gap between what organizations require and what personnel can give. Second, the company's employees' lack of experience or capabilities necessitates upskilling and reskilling. Aside from individual competencies, businesses must be prepared to reskill their staff to be Industry 4.0 ready. Third, specialists and effective data analytics are required for data to generate value and be safely maintained (Wahab et al., 2021).

The current workforce transformation necessitates a significant shift in how individuals understand and approach upskilling and reskilling opportunities. According to Li (2022), addressing the challenges of Industry 4.0, AI, and digitization requires a multifaceted approach to ensure the workforce remains future-ready. This approach involves the cooperation of multiple stakeholders, including higher education institutions, industry, and policymakers, to develop effective strategies for upskilling and reskilling. A key component of this is understanding and adapting to the new ways of managing and transferring knowledge in the workplace and organization building trust. According to Inkpen and Tsang (2005, as cited in Argote & Ingram, 2000), "Knowledge transfer is the process through which one network member is affected by the experience of another" (p. 149). The creation of trust is the process of learning when actors have competing and mutual interests (Sabel, 1993).

Anshari and Hamdan (2022) discussed the transformational shift and socialization, externalization, combination, and internalization model in the context of the Fourth Industrial

Revolution. This model suggests that knowledge management, including the continuous cycle of socialization, externalization, combination, and internalization of tacit and explicit knowledge, is integral to effective upskilling and reskilling.

Moreover, there is a growing recognition of the importance of developing digital skills. Li (2022) outlined the pressing need to reskill and upskill the workforce for Industry 4.0 and beyond. Digital skills are no longer merely a supplement but have become central to many job roles across various industries. At the same time, there is an emerging understanding that reskilling and upskilling are not one-time events but continuous, lifelong learning processes (Gratton, 2019; Lang, 2023). Based on literature findings, workers will need to be adaptable and open to acquiring new skills throughout their careers as technology evolves and transforms industries. Allan-Bentley (2021) stated:

The world is evolving, technology is expanding, and the workforce is aging. All of these factors demonstrate the need for skills development among workers. If workers of the future are not trained, there may be a lack of people to fill available jobs. (p. 12)

The literature points to a dynamic and evolving situation, with the need for upskilling and reskilling at the forefront of the discourse on the future of work and education. Although the rapid pace of technological advancement presents significant challenges, it also offers opportunities for innovation in how community colleges approach workforce development and lifelong learning. Chancellor of XXXX County Community College District, Stephen Gonzales (2022) stated:

Skills in AI are highly sought after and give students a competitive edge when entering the job market. At the XXXX County Community College District, or MCCCCD, our programs are designed to ensure students have the skills required for success in the

workforce of the future, covering topics such as cloud computing, automotive technology, cybersecurity, welding, bilingual nursing, drone training, and a variety of STEM areas. (p. 28)

The key is to approach these challenges proactively, focusing on continual learning, adaptability, and the strategic development of digital and industry-specific skills.

Summary

The comprehensive review of the literature surrounding the themes of first-generation learner experience, reskilling and upskilling in the contemporary workforce, and AI tools in education yielded several key findings and implications. First, in the domain of the first-generation learner experience, the reviewed literature agrees that cultural capital plays a significant role in the academic success of first-generation learners (Manzoni & Streib, 2019; Toutkoushian et al., 2021). The lack of cultural capital, characterized by an unfamiliarity with the unwritten norms, values, and expectations of higher education, can pose substantial challenges for first-generation learners. It is linked to lower academic performance, increased stress, and a higher likelihood of dropout (Ivemark & Ambrose, 2021; Richards, 2022). However, the literature also offers solutions to mitigate these challenges, emphasizing creating supportive networks and resources, interventions such as boot camps (Gibbons et al., 2019), and adopting culturally responsive pedagogy (Garriott, 2020).

Due to rapid technological advancements, the evolving work landscape necessitates the reskilling and upskilling of the workforce. Here, the literature reveals that companies and educational institutions recognize the critical need for employees to learn new skills to remain relevant in the face of Industry 4.0 (Agarwal et al., 2022; Lang & Triantoro, 2022). The literature suggests a shift toward lifelong learning, comprehensive training initiatives, and an emphasis on

developing digital competencies (Gratton, 2019; Vinayan et al., 2020). Moreover, educational institutions are being challenged to rethink their role and adapt to these changes (Lang, 2023).

Finally, AI tools in education are becoming increasingly prevalent, with AI potentially personalizing and democratizing education (Abdous, 2023; Al-Badi et al., 2022). AI can provide tailored learning experiences catering to various learners, including first-generation learners needing reskilling or upskilling (Barua et al., 2022; Zirar et al., 2023). Nevertheless, the ethical implications and potential overreliance on AI tools in education present valid concerns that require further exploration and dialogue (Ali & Abdel-Haq, 2021; Borenstein & Howard, 2021).

Conclusions

Although the challenges and possibilities of AI tools in education have been explored, there remains a gap in the literature regarding how educators view these tools and the associated challenges and possibilities. Optimizing the use of these tools by mitigating risks and maximizing opportunities will require an in-depth understanding of the knowledge base, skill sets, assumptions, and values of those who will be using them, not only students but the faculty educators who will be responsible for administering the use of AI tools in the future. To ensure the ethical use of AI and improve the educational experiences of first-generation learners, it is crucial for academic literature to cover the integration of AI technologies in college policies and documents. The study can bridge the knowledge gap and improve student outcomes by examining community college policies on AI in education. Addressing these literature gaps is the present study's core impetus.

Chapter 3 - Methodology

Introduction

Chapter 3 delineates the methodological underpinnings that guides this qualitative case study. The chapter reviews the study's purpose, research questions, and theoretical and conceptual frameworks. Moreover, the chapter discusses the study's rationale for its methodological selection and provides information on the research design, study selection, study participants, instrumentation, data collection and sources, data analysis, limitations, ethical considerations, and study quality. The summarization of key points concludes the chapter.

Purpose of Study

The purpose of this study is to examine the experiences of community college faculty incorporating AI technologies in teaching practices, how faculty engage first-generation adult learners when incorporating AI technologies, and how AI technologies are addressed in college documents and policies.

Research Questions

The following three research questions guide this study:

RQ1. What are the experiences and best practices of faculty at a community college incorporating artificial intelligence technologies into their teaching practices?

RQ2. How do faculty at a community college engage first-generation adult learners when incorporating artificial intelligence technologies in teaching and learning processes?

RQ3. How is the use of artificial intelligence technologies addressed in community college documents and policies?

Theoretical and Conceptual Frameworks

The theoretical framework guiding this study is organizational change theory (OCT), which represents an analytical framework for understanding and facilitating organizational change (Huber & Glick, 1993). As noted in Chapters 1 and 2, OCT provides a theoretical foundation for comprehending how organizations can effectively navigate and manage change to attain their goals. The theory encompasses a range of concepts, models, and perspectives that shed light on the dynamics, motivators, and consequences of organizational change. OCT has been effectively implemented in diverse organizations, including business corporations, nonprofit entities, and educational institutions (Palumbo & Manna, 2019), to provide a framework for gaining, sharing, and using knowledge to enhance performance and adapt to changes (Belinski et al., 2020). This connection is the foundation for informing this study and answering the research questions.

The conceptual framework that guides this study is Rogers' (1995) diffusion of innovation (DOI) theory. The DOI framework is most appropriate for this study because it examines why and how quickly new ideas and technologies have been adopted in political science, economics, public health, history, communication, technology, and higher education social systems (Sahin, 2006). Recent studies have leveraged DOI to understand emerging technologies' adoption and explore the diffusion of technological innovations in education (Anthony et al., 2022; Richardson et al., 2020). The researcher will use DOI to understand the lived experiences of community college faculty incorporating AI in teaching practices.

The researcher uses the DOI framework to understand the lived experiences of community college faculty incorporating AI in teaching practices. The primary data is collected using a one-on-one semi-structured interview process following an interview protocol.

Additionally, the researcher uses the DOI framework to inform the literature review, research questions, data analysis, and coding and to discover a deeper understanding of how AI technologies are addressed in institutional policies and documents. Appendix A illustrates the alignment between the theoretical and conceptual frameworks and the research questions. The research design and interview protocols are discussed in the following section.

Alignment Table

The problem based on the literature, interview questions, and proposed institutional site documents to be analyzed, as well as the research questions, theoretical framework, conceptual framework, and methodology that guide this study, are displayed in the alignment table that can be found in the appendix section of this study (please see the Alignment Table, Appendix A, for a full description).

Research Design

A qualitative case study design was chosen for this study to permit an intensive, in-depth investigation into the experiences of community college faculty using and incorporating AI tools. This approach provides a fitting structure to explore the rich, complex, and detailed description necessary for examining the experiences of community college faculty incorporating AI technologies in teaching practices and determining how AI technologies are addressed in institutional documents and policies using the selected theoretical and conceptual frameworks.

To investigate this phenomenon in its real-life context, case studies are suited to explore complex phenomena in depth and from multiple perspectives, allowing for a comprehensive understanding of the topic (Lochmiller & Lester, 2017). This approach strives to garner deep, contextualized insights by capturing the experiences and perspectives of those involved, allowing

for data collection from multiple sources, and answering research questions that cannot be answered using numerical data (Lohman & Boyd, 2021).

The case was comprised of faculty and institutional archival data at a singular community college district location. Although a single-case design does not allow for the generalizability of findings to a broader population, it allows for a detailed and intensive exploration of the case that may provide insights for use by other community colleges (Baxter & Jack, 2008). Furthermore, the case study is exploratory. According to Chopard and Przybylski (2021), an exploratory case study is used to “develop an initial understanding of the program or phenomenon of interest. The focus is on discovery for the purpose of obtaining an empirically based introduction to the structure, dynamics, and context of the subject of interest” (p. 1). As explained by Yin (2014), exploratory case studies are useful when a “how” or “why” question is being asked about a contemporary set of events over which the investigator has little or no control. The study’s research questions fall into this category.

Study Setting

The study was conducted at a single district community college with multiple college campuses in the United States that have implemented AI education tools in their teaching and learning processes. U.S. community colleges provide a critical gateway to higher education for many individuals, including first-generation adult learners. Community colleges offer a variety of programs and services to meet the diverse needs of learners. An essential element of the study setting is the institution's active use of AI education tools.

Several criteria guide the selection of identified community colleges within the single district. First, the college has used AI tools in the classroom for a minimum of four semesters to ensure faculty have substantial experience with the technology. Second, the college's

administration consented to participate in the study and allow access to internal documents and communications regarding AI education tools. Archival documents may reveal institutional reasons for adopting AI tools, expected benefits, and how the community college planned to address expected challenges. This information shed light on the context in which the experiences of the faculty and learners took place.

Study Participants

The population of this study was comprised of 11 faculty members at the single community college district. Although no set number of participants are identified for qualitative case studies that use purposeful sampling, researchers estimate that 10–50 participants are sufficient (Creswell & Creswell, 2018). Faculty members' perspectives with firsthand experience using AI and working with first-generation learners will provide a comprehensive understanding of the opportunities and challenges of implementing AI technologies in the classroom. Table 3.1 describes participant characteristics.

Table 3.1 Faculty Participant Demographics

Pseudonym	Gender	Employment status	Area of study	Campus Location
Faculty 1	Male	Full-time	English	Campus A
Faculty 2	Female	Full-time	Sociology	Campus A
Faculty 3	Undisclosed	Undisclosed	Undisclosed	Campus A
Faculty 4	Female	Full-time	Librarian	Campus A
Faculty 5	Female	Full-time	Engineering	Campus A
Faculty 6	Male	Full-time	Instr. SVC	Campus A
Faculty 7	Male	Adjunct	Science & Engr	Campus A
Faculty 8	Female	Full-time	Communication	Campus B
Faculty 9	Male	Full-time	Economics	Campus B
Faculty 10	Female	Full-time	English	Campus A
Faculty 11	Male	Full-time	Instr. Computing	Campus B

The study used purposeful sampling, which is effective in qualitative research, where the goal is to gain in-depth insights from a specific population (Palinkas et al., 2015). According to Lochmiller and Lester (2017), purposeful sampling occurs when a researcher selects participants

or sites based on specific criteria. The selection of experienced faculty will ensure that the participants have rich and relevant experiences to share about using AI tools in education.

Participants

Faculty: To participate in the interviews, faculty must have been employed full-time or part-time within the single community college district for at least one year and had direct experience working with first-generation adult learners. To ensure faculty qualifications, the researcher cross-referenced institutional documents to verify tenure and years of service. This requirement ensured that faculty members were knowledgeable about the college environment and had experience with instructional practices, including using AI tools. Faculty will have had a minimum of one semester of incorporating artificial intelligence technologies into their teaching practices.

Recruitment Procedures

To recruit enough participants to achieve saturation in the qualitative data, the initial recruitment plan for participants (i.e., Plan A) was supported by an additional contingency plan (i.e., Plan B) to achieve the study's goal of 11 faculty participants. Each plan is described in the following section.

Plan A: Primary recruitment was conducted through direct communication with the key contacts for the study at a Campus A and Campus B. A formal introductory letter (see Appendix D) explaining the purpose of the study, participant criteria, and nature of participation (i.e., interviews, access to certain documents) was sent to the Chancellor of the district and Presidents at Campus A and Campus B faculty. After obtaining administrative consent, the researcher collaborated with college officials to identify three faculty participants, two from Campus A and one from Campus B, interested in participating in the study.

Plan B: Plan A did not yield a sufficient number of participants for the study, and thus the researcher reverted to Plan B and used snowball sampling to identify the remaining eight participants. According to Lochmiller and Lester (2017), snowball sampling “involves identifying one or more participants or sites initially and then allowing recommendations from participants to guide the further development of the sample” (p. 142). Initial participants were asked to recommend other potential participants who meet the criteria. Although this method may have introduced selection bias due to its network-based convenience form of sampling (Parker et al., 2019), it was valuable in reaching interested faculty who incorporated AI in teaching practices. The initial criteria for participation was that faculty had to have four semesters of incorporating artificial intelligence technologies into teaching practices. The criteria were reduced to one full semester to reach saturation and ensure an adequate number of participants in the study.

Instrumentation

Instrumentation in research typically refers to the tools or apparatus researchers employ during data collection (Creswell & Poth, 2018). In qualitative research, the researcher is a primary instrument for data collection. This method offers flexibility, allowing for an in-depth exploration of participants’ experiences and perspectives while providing structure to address key research questions (Merriam & Tisdell, 2016).

The interview protocol was comprised of 24 open-ended questions crafted to evoke detailed responses and allow follow-up questions to explore topics in greater depth as they emerge. This flexibility is essential to understanding the nuanced experiences of faculty using AI tools in education. One interview protocol has been developed (see Appendix G). The interview questions were developed to reveal the faculty’s unique perspectives. For instance, faculty were

asked about their strategies for incorporating AI tools into their teaching, their perceived effectiveness, and their observations of learner engagement and performance when using AI tools.

The interview protocol was developed based on the literature review, with questions designed to probe areas identified as significant in previous research, such as understanding the unique challenges first-generation learners face in the academic environment (Garriott, 2020; Manzoni & Streib, 2019), the role of AI in personalizing learning (Al-Badi et al., 2022), its effect on adult learning and upskilling (Pradhan & Saxena, 2023), and the ethical considerations of implementing AI in education (Borenstein & Howard, 2021). The development of the interview protocols was informed by the study's frameworks, OCT and the DOI, as described in the previous chapter. Questions addressed faculty's experiences regarding the development of new AI-related practices and tools. Before conducting the interviews, the protocol was pilot-tested with a small sample of faculty who met the study criteria to ensure that the questions were clear, comprehensible, and effectively elicited the desired information. Based on the feedback from the pilot test, necessary revisions were made to the protocol to improve its effectiveness.

Archival documents, including strategic plans, policies, procedural manuals, faculty handbooks, the student code of conduct website, and college catalogs on the use of AI, were reviewed to improve the validity and reliability of the case study's data collection (Welch, 1999).

Prior to conducting the study, Kansas State University's Institutional Review Board (IRB) approval was obtained (see Appendix B). Additionally, the host institution's IRB process was followed (see Appendix C). A letter of introduction (see Appendix D) was sent to the participating community college's key contact for the study to identify faculty participants.

To address the research questions, this study used a two-pronged data collection strategy: semi-structured interviews and a review of internal institutional documents. These methods align with the case study methodology and are designed to provide a rich and in-depth understanding of the experiences of faculty's incorporation of AI tools in the classroom (Creswell & Poth, 2018), as well as institutional archival documents.

The semi-structured interviews aligned with the study's research questions and frameworks and were used to gather direct insights from faculty. These interviews allowed for a deeper exploration of participants' experiences, perceptions, and attitudes toward using AI tools in their educational context. Interviews were conducted individually using Zoom video conferencing software, which allows audio and visual recording. Each interview lasted 45–60 minutes. Technology-mediated interviews facilitate greater flexibility for the participants in terms of time and location (Deakin & Wakefield, 2014). Before each Zoom interview, participants were reminded of the purpose of the study and their right to withdraw at any point. Each participant received an introduction letter (see Appendices E) and completed an informed consent form (see Appendices F) which outlined their rights as a research participant (Lochmiller & Lester, 2017).

Internal documents from the participating community college were analyzed in addition to interviews as a part of the study. These documents offered further understanding of the institution's policies and practices regarding the use of AI tools at the institution. The researcher reviewed various documents, such as strategic plans, policies, procedural manuals, faculty handbooks, the student code of conduct website, and college catalogs. These sources provided valuable insights into the college's priorities, technology guidelines for education, and resources available to learners and faculty. The college administration granted access to these documents

as part of the letter of approval from the college's IRB office or key contacts designee. College administrators' consent to analyze internal documents and communications is important, as the documents reviewed provided essential background information and insights into how AI tool implementation was planned and managed at the institution.

To validate findings, the researcher incorporated the qualitative technique of member checking. According to Birt et al. (2016), "Member checking, also known as participant or respondent validation, is a technique for exploring the credibility of results" (abstract). Document interpretations findings were shared and validated with relevant faculty at the institution who are familiar with the archive materials' history. Additionally, the researcher cross-checked findings from diverse archival documents via member checking to triangulate the data. Lochmiller & Lester (2017, as cited in Creswell & Miller, 2000) define the process of triangulation as "a validity procedure wherein a practitioner-scholar seeks to establish evidence across multiple lines of data" (p. 105). Moreover, the researcher analyzed various resources, including the institution's district artificial intelligence task force policies and procedural manual, faculty handbook and sample syllabi, and college catalog. The triangulation of data and analyzation of college document and policies enhanced the credibility and reliability of the analyses.

Data Analysis

Data was transcribed using a condensed transcript. A condensed transcript provides an overall sense of the audio or video file but does not include unnecessary words such as "um" (Lochmiller & Lester, 2017, p.171). To ensure accuracy and capture the nuances and context of participants' responses, the researcher verified the transcriptions produced automatically using Otter.ai against the audio files. Once the transcripts were complete, participants received a copy

of their respective transcripts for member checking. This process allows participants to check the accuracy of the transcription and provide any necessary clarifications (Birt et al., 2016).

The researcher interpreted archival documents by coding, categorizing, and placing data into themes. Combining this analysis method for the different data sources incorporated distinct interview questions for faculty.

Thematic Analysis

According to Lochmiller and Lester (2017), thematic analysis is a technique that enables a researcher to find themes throughout a dataset to gain a deeper understanding of the data. Thematic analysis was used to identify and analyze patterns of meaning (i.e., themes) in the interview data (Braun & Clarke, 2021). This qualitative approach allowed for a rich and detailed understanding of the participants' experiences, as articulated through their voices.

Initial coding involved line-by-line coding of the interview transcripts, where short phrases or codes are attributed to specific data segments that appear to encapsulate interesting or pertinent points. This inductive approach allowed the data to 'speak for itself' rather than being constrained by preconceived categories or theoretical perspectives (Saldaña, 2015).

NVivo software coded and sorted data into potential themes following initial coding. Implementing this process allowed the researcher to identify broader patterns of meaning and connections between different codes. Each theme encapsulated a significant and distinct pattern in the data related to the research questions. The potential themes were then reviewed in relation to the coded extracts and the entire data set to ensure they reflect an accurate representation of the data. The final step in the thematic analysis involved defining and naming the themes, clearly describing what each theme encompasses and how it relates to the research questions and theoretical and conceptual frameworks.

Document Analysis

The document analysis approach of Wood et al. (2020) was employed to review and analyze internal institutional documents. Wood et al. describe document analysis as a systematic process that involved concept development, data collection, data analysis, and interpretation. Document analysis enables the researcher to identify underlying meanings, themes, and patterns (Wood et al., 2020). This process involves a three-stage approach of skimming (superficial examination), reading (detailed examination), and interpretation. The documents were first skimmed to get an overall understanding of the content and context. Important points were noted, and sections that require a more detailed examination were identified. The documents were then read in more detail. In this stage, the researcher sought to understand the in-depth meaning of the documents and highlight any areas that may be relevant to the research questions. The final stage involves the interpretation of the data. This involved integrating the findings from the document analysis with the themes identified in the interviews. Table 3.2. displays the documents analyzed.

Table 3.2 Archival Documents

Source	Archival Document Title
Center for Learning and Innovation	• District Artificial Intelligence Task Force
Center for Learning and Innovation	• How Generative AI is Being Used Within the XXXX Community Colleges collaboration and progress in the college.
Center for Learning and Innovation	• Guidance for XXXX Faculty Regarding Generative AI Tools and Academic Misconduct
Center for Learning and Innovation	• Syllabus Statements Regarding Generative Artificial Intelligence
Center for Learning and Innovation	• Residential Faculty Agreement 20.7
Center for Learning and Innovation	• Administrative Regulations Appendix s-6
Center for Learning and Innovation	• Student Code of Conduct

Using thematic analysis to analyze interview data and document analysis for internal documents to gain understanding helped to answer the research questions thoroughly. Combining information from both sources gave a complete overview of participants' experiences and

opinions on using AI tools in education and faculty experiences facilitating AI in teaching practices.

Limitations

Understanding a study's limitations is crucial to providing a balanced view of its potential contributions and the caution with which its findings are interpreted. As with any study employing self-report measures such as interviews, there is a risk of response bias, whereby participants may alter their responses due to social desirability or recall bias (Podsakoff et al., 2003). Faculty may portray their experiences with AI tools in a manner they believe is socially desirable or expected rather than providing an authentic account of their experiences. In addition, there was a risk of researcher bias. Despite the rigorous data collection and analysis approach, the researcher's interpretation of the data may be influenced by personal beliefs or previous experiences (Creswell & Poth, 2017). The risk of participant biases was mitigated through member checking, wherein participants are allowed to review and alter their interview transcripts before they are analyzed; the risk of researcher bias was mitigated through reflexivity, as described in the reflexivity statement in the following section.

Other technologies or learning tools being concurrently used by faculty may influence their experiences and perceptions of AI tools, adding a layer of complexity to the interpretation of findings (Kompen et al., 2019). Furthermore, germane to this point, participant groups' understanding of what does and does not constitute AI technologies may vary significantly. Understanding the varying conceptualizations that participants have of this issue is itself an object of study in the present research, but also constitutes a kind of limitation, given that, as a researcher, attempting to pre-educate or prime participants with knowledge about what kinds of

tools do or do not constitute AI technology would unduly affect the nature of the qualitative data collected.

Although qualitative research provides in-depth insights into individual experiences and perceptions, it lacks the breadth and generalizability of quantitative studies (Creswell & Poth, 2017). This study specifically focused on faculty in a single community college. The experiences and perspectives gathered from this specific context may not be representative of all community colleges or other types of higher education institutions, reducing the transferability of the findings. According to Anney (2014), “Transferability refers to the degree to which results of qualitative research can be transferred to other contexts or settings with other respondents” (p. 12). Bitsch (2005) stated, “The researcher facilitates the transferability judgment by a potential user through ‘purposeful sampling’” (p. 85). Although these limitations necessitate a careful interpretation of the study’s findings, they do not undermine the potential value of the research. The insights garnered from this study are anticipated to shed light on the relatively under-explored terrain of faculty experiences with AI tools and support future research.

Ethical Considerations

Obtaining approval from the IRB is an essential ethical step before recruiting participants for any research study. The IRB ensures that the proposed research design, including the recruitment and consent processes, data collection procedures, and the plans for data management, adhere to ethical principles and federal regulations. The IRB reviewed and assessed the study’s potential risks and benefits to participants, ensuring that risks are minimized and reasonable in relation to potential benefits (Roberts & Hyatt, 2019).

Engaging in research requires rigorous adherence to ethical standards to protect participants’ rights, welfare, and privacy. This is especially crucial in research involving human

subjects, such as those who will participate in this study. These ethical considerations are based on the three fundamental principles outlined in the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979): “(a) protect the autonomy of participants through an informed consent process; (b) minimize harm and maximize benefits to research participants; and (c) carry out nonexploitative research” (Lochmiller & Lester, 2017, p. 78).

Informed consent from faculty were obtained from the selected community college. The informed consent form clearly stated the research purpose, data collection procedures, and potential benefits and risks of the study to the institution. The completion of the informed consent form was incorporated to protect faculty rights and welfare.

Before conducting participant interviews, the protocol was pilot-tested with a small sample of faculty who meet the study criteria. Maintaining participants’ anonymity and protecting their private data are critical ethical principles. Participant identities were protected by assigning pseudonyms or codes during the transcription and analysis phases. The transcribed data and final report removed or altered personal identifiers. Data was stored on a password-protected computer, with access limited only to the researcher. Following the guidance of the Federal Policy for the Protection of Human Subjects, private data will be retained securely for at least five years after the study’s conclusion.

Potential conflicts of interest and power imbalances that may arise from dual relationships, where the researcher has a personal or professional relationship with a participant, can undermine the validity and integrity of the research. Eliminating conflict of interest mitigated bias and demonstrated transparency and trust in the study (Roberts & Hyatt, 2019). Moreover, this study adhered to ethical considerations that respect and protect participants’ rights, privacy,

and welfare. A thorough ethical review and continuous monitoring supported the study's integrity.

Study Quality

The researcher used multiple approaches to establish the study's validity, including the triangulation of semi-structured interviews and analyzed documents. As Lochmiller & Lester (2017, as cited in Creswell & Miller, 2000) noted, "Triangulation is a validity procedure wherein a practitioner-scholar seeks to establish evidence across multiple lines of a data" (p. 105). In this study, the triangulation procedure involved the researcher using a structured approach to sort through the data retrieved from the semi-structured interviews and archival documents to code, categorize, and discover common themes (Lochmiller & Lester, 2017). The other method this study used to establish trustworthiness is member checking, which involved allowing participants to review transcripts of their interviews and change, redact, or add content following their review. According to Birt et al. (2016, as cited in Doyle, 2007), "Member checking is used to validate, verify, or assess the trustworthiness of qualitative results" (para. 2). Additionally, informed institutional stakeholders can provide insights into the researchers' interpretation of archival documents.

The researcher used Tracy's (2010) Big-Tent Criteria, which qualitative researchers agree encourages dialogue and learning among qualitative methodologists. According to Tracy's Big-Tent Criteria, there are eight key markers for a successful endeavor: (a) worthy topic, (b) rich rigor, (c) sincerity, (d) credibility, (e) resonance, (f) significant contribution, (g) ethics, and (h) meaningful coherence. The study is worthy based on the relevance and timeliness of AI being implemented in various educational settings, and the study could contribute to the knowledge base by concentrating on AI in community college settings. The study's rigor was reinforced

through the data collection and analysis, as the collected data are supported by the study's theoretical and conceptual frameworks. The researcher exhibited sincerity in approaching the study by being transparent about the methods and challenges experienced throughout the investigation. Credibility was established through extensive, detailed data descriptions, interview examples, and data triangulation. Relational and procedural ethical considerations were employed to respect and protect participants' rights, privacy, and welfare, as all participants will sign informed consent forms. All participants were informed of how data will be collected, stored, and maintained confidently. Finally, the study ensures meaningful coherence by using appropriate methods and procedures for the stated goals (Lochmiller & Lester, 2017).

Reflexivity Statement

As the researcher, I have been introduced to professional development coaching using design thinking AI tools. Design thinking is a method that emphasizes creativity and innovation to prioritize solutions for business challenges. This approach focuses on finding solutions to problems rather than simply identifying them (Han, 2022). The AI tools were introduced to customize service outreach to community college first-generation, low-income learners, enhance professional effectiveness, develop strategies to optimize job responsibilities and find new ways to connect with learners to meet their unaddressed needs.

Summary

In Chapter 3, a detailed plan for conducting a qualitative case study has been outlined. The primary goal of this research is to gain a comprehensive understanding of the use of AI tools by faculty in community colleges. An exploratory qualitative case study approach was selected to uncover valuable insights from faculty perspectives. This method was used for its ability to reveal nuanced and context-specific information about individuals' experiences with AI

technology. Additionally, archival documents were chosen to supplement the semi-structured interviews and increase the credibility and reliability of the analyses.

This study focused on faculty who facilitate AI technologies in teaching practices. The interview questions were designed to generate in-depth discussions, and additional document analysis provided an institutional perspective on AI use. The data analysis was systematic to ensure consistency and rigor in interpreting the data. The study adhered to the standards set by the IRB to maintain high ethical standards throughout the study. The study abided by Tracy's (2010) eight Big-Tent criteria to ensure a quality study. Chapter 4 presents the case study's findings, identify major themes, analyze institutional documents, and explore participant experiences through the lens of OCT and DOI. Chapter 5 outlines the purpose, research questions, methods, and main findings, connect the study's findings to the frameworks and the broader literature covered in Chapter 2, and conclude with implications for practice and researcher recommendations.

Chapter 4 - Research Findings and Analysis

Chapter 4 presents the case study's findings, identifying major themes, analyzing institutional documents, and exploring participant experiences through the lens of organizational change theory (OCT) and diffusion of innovation (DOI) theory. The chapter reviews the study's research questions, theoretical and conceptual frameworks, and participant demographics, followed by findings from each research question. The summarization of key points concludes the chapter.

Purpose

The purpose of this study is to examine the experiences of community college faculty incorporating AI technologies in teaching practices, how faculty engage first-generation adult learners when incorporating AI technologies, and how AI technologies are addressed in college documents and policies.

Research Questions

The following three research questions guided this study:

RQ1. What are the experiences and best practices of faculty at a community college incorporating artificial intelligence technologies into their teaching practices?

RQ2. How do faculty at a community college engage first-generation adult learners when incorporating artificial intelligence technologies in teaching and learning processes?

RQ3. How is the use of artificial intelligence technologies addressed in community college documents and policies?

Participant Demographics

Several criteria guided the selection of the institution. First, the institution must have incorporated AI education tools into its teaching and learning processes in the classroom to

ensure faculty have substantial experience with the technology. Second, the college's administration must have provided consent to participate in the study and allowed access to internal documents and communications regarding AI education tools.

The researcher selected participants based on the criteria outlined in Chapter 3. In identifying participants to take part in the interview process, purposeful sampling was used to select 11 faculty members, ten full-time and one part-time. Each participant incorporated AI tools into teaching practices. To maintain the anonymity of the participants and institutions, pseudonyms were assigned to the faculty and campus locations during the transcription and analysis phases. Table 4.1 identifies each participant's descriptive characteristics. Table 4.1 is organized as follows: (a) pseudonym (b) gender (c) academic status (d) area of study, and (e) campus location.

Table 4.1 Descriptive Demographics of Participants

Pseudonym	Gender	Academic status	Area of study	Campus Location
Faculty 1	Male	Full-time	English	Campus A
Faculty 2	Female	Full-time	Sociology	Campus A
Faculty 3	Undisclosed	Undisclosed	Undisclosed	Campus A
Faculty 4	Female	Full-time	Librarian	Campus A
Faculty 5	Female	Full-time	Engineering	Campus A
Faculty 6	Male	Full-time	Instr. SVC	Campus A
Faculty 7	Male	Adjunct	Science & Engr	Campus A
Faculty 8	Female	Full-time	Communication	Campus B
Faculty 9	Male	Full-time	Economics	Campus B
Faculty 10	Female	Full-time	English	Campus A
Faculty 11	Male	Full-time	Instr. Computing	Campus B

Research Findings

Research Question 1

Below is an analysis of the findings from faculty interviews for Research Question 1, “What are the experiences and best practices of faculty at a community college incorporating artificial intelligence technologies into their teaching practices?” Findings are presented by characteristics found in Rogers’ (1962) DOI, four characteristics (innovation, communication

channels, time, and social system), and five adoption factors (relative advantage, compatibility, complexity, trialability, and observability). The primary theme of Adaptation and Learning evolved from analysis of the findings based on coding when investigating the experiences and best practices of community college faculty incorporating AI tools into teaching practices. Four additional sub-themes evolved from the analysis: Faculty and Learner Uncertainty, Technology Adoption, Personal Experience and Training, and Faculty Best Practices. Table 4.2 displays the identified themes and codes. Quotes from participant interviews are provided.

Table 4.2 RQ 1 Themes and Codes

Theme	Number of Faculty That Identified Theme	Number of Times Code were Identified
Adaptation and Learning	11	53
Faculty and Learner Uncertainty	7	45
Technology Adoption	7	33
Personal Experience and Training	8	24
Faculty Best Practices	9	18

Adaptation and Learning

Adaption and Learning was the primary theme identified. Findings indicated that faculty often experience a period of adaptation and learning when using AI tools in teaching practices. Participants recognized a need to incorporate AI tools to improve student learning outcomes. Faculty 1 discussed how they leveraged AI in the classroom to introduce activities that improved learner engagement, stating:

We took a look at a sample essay or sample GPT creative writing and had one half of the class or one team, create the prompts, see what they can get from the prompt, and then have the other half try to see what it did wrong to show where it's weak. What were the

problems and where were the hallucinations? We strived to create a student driven activity where one half looks at both the good potential of AI used to create writing or images and then another half kind of plays the red team where they're trying to show the bad. That was another great way to showcase the strengths and weaknesses of AI through an active learning student driven experience, as opposed to a teacher driven prescriptive experience.

Similarly, Faculty 4 discussed the use of AI technology and library databases to serve as a supportive mechanism for AI research and enhance essay writing. Faculty 4 stated:

Most databases would have a subject tag for artificial intelligence, so that would be a good place to start and basically have students look at a hashtag and then add a sub search term for something more specific. So, they would put artificial intelligence in the subject field [AND] ChatGPT. It would help students find what they are looking.

Relatedly, Faculty 10, incorporated AI tools to assist with ideation, added:

I tell my students, you can use AI as part of the process, but not part of the product. We then look at a few examples where we've learned about something in class to a certain level of depth. We then put it into AI and it gives a very basic answer. My students come to their own conclusions and say, you know what, I could see how this would be a really great tool for brainstorming, for coming up with keywords, for coming up with ideas, for learning about your topic before they choose one, but recognize that they really need to do their own work. They can see how it can be short sighted, and how it could be used as a tool and not a replacement.

Faculty 1 described how they used AI in the classroom to enhance learning outcomes. They emphasized introducing AI through low-stakes assessments to address both its advantages

and disadvantages. One method employed involved having students examine AI-generated content, such as essays or creative writing. The class was divided into two teams: one team created prompts and analyzed the AI's responses, while the other team identified errors and issues, such as inaccuracies or hallucinations. This learning activity provided an active, student-centered experience that highlighted AI's strengths and weaknesses, contrasting with a more traditional, faculty-led approach.

Moreover, findings indicated that Faculty 4 and Faculty 10 incorporated AI tools in teaching practices to provide students with supplemental support mechanisms for learning. Both faculty members indicated that the use of AI tools were ideal for assisting students in academic research and ideation processes.

Faculty and Learner Uncertainty

Faculty and Learner Uncertainty was the second most prominent theme identified. Findings indicate that some faculty and learners experienced trepidation about incorporating AI technologies in the classroom.

Faculty Uncertainty

Faculty 2 discussed uncertainty about how to embed classroom policies and practices in the course syllabus, stating:

I had to think about how my students were going to be using this technology. When I started the new semester in January 23, the concept was very new, we didn't have an opinion about it yet, so I didn't have anything in my syllabus about this technology.

Faculty 7 discussed uncertainties about the impact AI might have on student learning saying, “My understanding is faculty were concerned about AI weakening the analytical skills of the

students, the students not putting in the appropriate amount of work to learn and relying too much on AI for making decisions in terms of learning.”

Faculty 6 further explained his apprehension regarding creativity in writing, expressing:

What I mostly see is acceptance but maybe not incorporation, but acceptance that AI is in today’s world. There’s an art to writing. I choose writing because it’s the easiest to explain. There’s an art to going from a blank paper to a full paper that’s composed solely by your own creativity and intelligence in forming stories.

Similarly, Faculty 3 added, “I have a major concern about AI use. What are the long-term ramifications of students using it for brainstorming and prewriting and what is that going to do to critical thinking?”

Findings indicated that faculty experienced uncertainty in using AI tools in teaching. Faculty 2 started using AI to help draft complex or difficult emails, marking their first experience with the technology. Faculty 2 then had to think about how students might use AI tools. When the new semester started, AI was a very new concept, and there were no established district guidelines for its use. Consequently, Faculty 2 did not include information or best policies and practices about AI in their syllabus despite the emerging use of AI in the field.

Faculty 7, Faculty 6, and Faculty 3 highlighted concerns that AI might weaken students' analytical and critical thinking skills. Each faculty member expressed concerns that students would not put in the necessary effort to learn and would overly rely on AI for decision-making in their education. This apprehension contributed to the hesitation and anxiety about integrating AI into teaching practices.

Learner Uncertainty

Aside from faculty uncertainties, participants noticed uncertainties among learners, some of whom feared using AI. Faculty 6 explained:

I've seen it when I go to forums at high schools to try and advertise the work that we're doing at the community college. In high school, ChatGPT has kind of become this thing where students will say [oh no, no, I would never use ChatGPT. ChatGPT is the worst. I'm not a cheater. It's the same thing as being a cheater using ChatGPT in any capacity. I can't touch ChatGPT because it is bad.] I see those students come in and they have this hesitation with just AI in general. All they've heard is ChatGPT is AI, and ChatGPT is bad.

Faculty 1 stated:

Some students took to it right away for the novelty and then some students were fearful that this was beyond them. I would offer them solutions to problems and eventually it went from, I would say, 70% of students that think it is appropriate to use to the latest numbers between 90-95%.

Faculty 10 mentioned:

When ChatGPT was first introduced, students were really hesitant. I said, who knows what ChatGPT is, and no one raised their hand. Everyone kind of looked around at each other, like they had some secret. Then, finally, I had a brave volunteer say that it's an app you can use to cheat on your homework.

Findings indicated that learners experienced uncertainty in using AI tools. Some learners viewed using AI tools as an unethical method to complete assignment while others expressed uncertainty about the complexity of its use.

Technology Adoption

New Technology Adoption was the third most prominent theme identified. New technology adoption refers to the process by which organizations or individuals accept and incorporate new technologies into their practices or systems.

Participants shared insights about new technology adoption, focusing on the perspective of AI utilization and how it could influence teaching practices if faculty demonstrated interest in adopting the technology.

Faculty 7 stated:

I was one of the few who started using AI and then I had to also try to educate my peers about proper applications of things like ChatGPT, so they would open up to it. I would say at least for the first year, there was very heavy resistance. We wouldn't openly say we would use it, and then I think this year, it's been more openly discussed.

Faculty 5 advised other faculty to use the technology to promote faculty learning:

I think some assignments could be made by AI but need to be taken in the classroom so you can control that. When it's online, it's a bit more difficult. Have some very specific requirements on when you want students to use AI, and when you do not. Students need be a part of reflection. Try it. Don't be afraid to try it but put clear limits and know exactly what AI can do before you ask your students to use it.

Similarly, Faculty 11 supported the notion of faculty incorporating AI technology in teaching practices. Faculty 11 added:

The best way to get familiar with the technology is to have some students come up with AI projects and then do it yourself. My advice to all teachers is to embrace the adventure.

AI is like a Lambo that speeding down and has come to a stop right next to you. Go for a ride, see how it operates, and then try giving it a drive.

Furthermore, Faculty 6 demonstrated acceptance recognizing the prospects of enlightening learners on its current and future use, stating, “I think with the early education of AI as I teach it, it gives students outlook into the future on why they were taught this and why it's valuable. And so that helps them identify it as being valuable.” Similarly, Faculty 4 discussed the potential value of faculty collaborating with students, expressing, “Don’t be afraid of it. Students are excited about it. So, it can be really interesting, and they can help you take it through different iterations to see where the value is and where it can help them.”

However, not all faculty were in favor of AI usage in teaching practices. Faculty 3 expressed concern about AI tool adoption, its threat to education and its limitations. Faculty 3 stated, “My feeling now is that it’s really going to force college instructors and probably high school teachers at all levels to have to adapt to a new world, and I don’t know how that will end up.” Faculty 3 added:

Originally, I thought this was going to be the end of AI. I did not see how teaching writing was going to survive this. Now that I’ve had the chance to not only see it used when it shouldn’t be and experiment with it a little bit myself, I feel like that’s still a possibility. I do feel like it poses an enormous threat to what we have been teaching in writing for so many years.

Faculty 4 expressed hesitance mentioning:

I don’t think I’m resistant in using AI, but I do see a lot of limitations for what I’m teaching. I’m teaching a course that includes a lot of drawings, diagrams, and equations and ChatGPT is not good for that. Also, I sometimes asked ChatGPT to create a multiple-

choice question quiz, in which I know the answer, and ask it to provide me with four answers including one that is correct and three that are incorrect. The answers are sometimes far from what I'm thinking the answers should be.

Faculty 5 discussed the potential for AI technology bias:

These models are based on the training sets they receive, and no training set is perfect and that's one of the challenges we have. Think two years ago when Google was using generative AI to build images and search results would just produce white people. Then Google decided to combat that and made another model, and you couldn't get a picture of a white person. Put yourself in the shoes of a minority person and think about what they went through.

The statements made by respondents mainly indicated the integration of the faculty's use of technology as they slowly adapted to innovative changes. It showed that faculty can accept AI usage even though some were reluctant to accept its existence and integration into teaching practices. Faculty who discussed AI tool limitations referenced concerns regarding student writing, generative AI tools like ChatGPT's ability to provide accurate responses, and the potential for AI bias.

Personal Experience and Training

Personal Experience and Training was the fourth most prominent theme identified. Findings indicated that personal experience and training are essential in the faculty's adoption of AI.

Personal Experience

Personal experience with the use of AI was an important concept for faculty willing to adopt the technology. Faculty 7 discussed his experience using AI and the misconceptions that followed its use. Faculty 7 stated:

I think there is a lot of misunderstanding about AI, its capabilities, how it should be used, and the power of AI. If you think that it's just going to substitute our cognitive abilities, I don't view AI from that angle. For me, it's more like an assistant. It's like a person that you can work with. If people are not good with verbalizing or writing concepts that they think of, I think AI is a very powerful tool to help them actually put down their thoughts on paper and then synthesize, change, and modify them. Personally, I'm not very strong with writing. So, when AI came out, I really enjoyed it because, it could prompt ideas, and give me answers. Then I would start going back and forth, modifying it, changing it, and that's why I found it very useful.

Meanwhile, Faculty 8 shared his motivation to learn about AI and Chat GPT stating:

This is an industry where you are always motivated to learn and try new things, fail, and learn and grow. And so, when generative AI came out it was apparent very early on, that it was something that I needed to become more aware of and so that's what motivated me to explore it. I just started by downloading ChatGPT and entering prompts and since then have attended a lot of webinars and some professional development opportunities to really try to understand the tool.

Faculty 9 admitted to being resistant initially but became more intrigued about AI during their doctoral program. Faculty 9 mentioned:

I had resisted for a long time and during those classes when we would look at these different discussions about what it means in terms of programming, artificial intelligence

and the limitations of that software or hardware compared to the way the human brain works, I actually found it pretty fascinating. So, I started to learn just a little bit more about AI as it was coming out. I kind of kept an eye on things that were emerging from that point due to the course that I took during my doctoral work.

Training

Participants also discussed professional development opportunities offered by the district's Center for Learning and Innovation (CLI), and AI Taskforce team that provided development opportunities to interested faculty. Faculty 1 stated:

We have days of learning that are usually the week before classes start that offer faculty professional growth opportunities which are basically professional development and those have been heavy on the AI track. It's a great common approach across disciplines to look at where AI has good, has bad, has disruption, and has augmentation of what we hope to do as teachers.

Faculty 8 mentioned:

The CLI is the primary professional development and training support center for employees. It offers a lot of great webinars and seminars. We created a resource flyer for our faculty and staff that has some basics and additional resources that are hyperlinked like articles, upcoming trainings and webinars.

Faculty 9 expressed, "We have the Center for Learning and Innovation that's at the district level and they have been very instrumental in terms of guidelines and frameworks and promoting conversations."

Moreover, Faculty 8 discussed how the district's AI Taskforce team provided guidance for faculty and staff regarding AI learning and implementation. Faculty 8 explains, "the

Taskforce on AI team created a website for faculty and staff to learn more. So, part of the Taskforce has been us trying to learn, gather some resources that can support people in their initially learning”. Similarly, Faculty 9 stated, “We have a AI Taskforce team made up of colleagues, administrators and others. The AI Taskforce team has created some statements that faculty can add to their syllabus.”

Faculty Best Practices

Faculty Best Practices was the fifth most prominent theme identified. Faculty discussed incorporating AI into teaching practices to enhance student learning and outcomes and their participation in experimental learning.

Incorporating Artificial Intelligence to Enhance Learner Experience

Incorporating AI to enhance student learning was an important concept for faculty. Findings indicated that participants incorporated AI tools to personalize student learning and support faculty in delivering more effective and efficient instruction. Faculty shared best practices that supported student learning using AI. Faculty 11 explained the directions to a recent assignment where students were asked to use the AI tool, Gemini, to create a PowerPoint presentation. Faculty 11 mentioned:

I said, you’ll fill in the blank with whatever subtopic of cybersecurity that you want to research. You’ll tell Gemini to write a two-page essay and I don’t care what tone you tell it to write. Then, you’re going to have it provide references and it needs to be written in third person. Then you will get the essay to create a PowerPoint that you will have to deliver. If you turn to your own projected PowerPoint, and start reading it, I’m sitting you down until you actually know the stuff.

Faculty 9 explained how they integrated AI to blend in-person teaching with educational software technologies to support instruction:

I use the Mastery Learning Model. Instead of giving students grades based on how many points they accumulate, you know, like 90% for an A and 80% for a B. They have to show competency of learning outcomes. They have as many times as they need to get to the point of competency, so the standards remain high and the stakes low. I extensively use online educational software in my classes as the primary mode of instruction along with my in-person teaching. AI helps me and helps my students in that regard.

Faculty 9 further explained how they used AI technologies to support a flipped-classroom approach to enhance student engagement and provide just-in-time teaching:

I mentioned earlier, this idea of the flipped classroom, where instead of using class time to present information to lecture, and then assign homework, you give students those basic learning experiences ahead of time, delivered online, either through posted PowerPoint presentations, or videos curated by the instructor. Then assess learning at a baseline to hold students accountable. Use classroom time to actually practice material and to practice recall, to have just-in-time instruction on where students are struggling at that moment.

Faculty 1 discussed how they introduced AI in the classroom in a low stakes approach to nursing students that encourage learner engagement. Faculty 1 shared:

The best ways to introduce the good and bad of AI is in a very low stakes way because we have a generation that is driven more by image than words. We had nursing students generate images to the prompt [What would the first day be like when embedding in a

psychiatric hospital?]. The process of using AI created images that then started conversations that could be legitimately discussed.

Experimentation Learning

Experiential learning occurs when educators engage in developmental experiences that enhance knowledge and develop skills. Participants discussed the significance of experimental AI learning and sharing insights with faculty interested in incorporating AI into the classroom.

Faculty Experimental Learning

Most faculty members discussed how their curiosity about AI led them to experiment with AI technology tools in their teaching practices. Faculty 2 shared their opinion to those interested in incorporating AI into teaching practices. Faculty 2 stated:

My advice would be to start small. Start playing around with AI yourself. You don't need a paid account right away. You can take an existing assignment and run it through ChatGPT and ask for suggestions. Experiment with prompt engineering. I think that's really important to getting the results that you want.

Faculty 8 added:

Keep learning. There are a lot of great webinars and seminars. There is no way that any of us will be an expert in AI. Start with learning the basics and reading articles that are free. You can become a student of AI.

Faculty 10 mentioned, "Don't be afraid. I am a full believer that we all fear the unknown, so don't be afraid to take the time to learn about whatever it is that you're thinking about incorporating."

Most participants were intentional about experimenting with AI technologies. However, some experimented unexpectedly. Faculty 3 stated: "There were a few opportunities I had to

experiment with it in a very low-stakes way in in-person classes, not online, just like face-to-face experiences. It was definitely not planned, more of a seat of my pants, last-minute kind of thing.

I had not sat down and planned to use it in an integrated planned lesson format.”

Faculty 3 further added, “The first time I’ve ever used AI was in the fall of 23. I did it in two different classes, and like I said, it was last minute because we were having a conversation about it.”

Sharing Insights

Faculty members acknowledged that their experimental learning was facilitated by exchanging knowledge about the most recent AI technologies and their applications in education. Faculty 9 discussed the significance of dialogue and how it enabled faculty who have implemented AI technologies in their instructional practices to exchange their experiences with their colleagues. Faculty 9 expressed:

We need to increase the speed of good ideas being transmitted and the way you do that is to participate in what I call, the watercooler effect. Imagine two colleagues taking a break from their office and gathering around the watercooler or snack table and say [Hey, how you doing? I tried this idea, and it worked pretty good]. So, it happens informally and slowly but it does work.

Faculty 10 added:

Reach out to some of your colleagues and find out if they’ve used the technology and if they have any advice on what they’ve used and how they brought it into their classroom. And, just have fun with it, play around with it on your own a little bit. See what happens when you put this in or that. Gauge what you’re comfortable with.

Moreover, some faculty acknowledged that academic collegiality and engaging in AI discourse allowed participants to explore new information and share innovative ideas. Faculty 6 shared:

There are lunch and learns that we have at our campus where faculty come and talk about AI. Some of our leadership have meetings surrounding this space. We have something called Division Leads, and when ChatGPT was becoming prevalent, they had to meet together, and chat about what policy there was going to be created around that technology.

Faculty 6 further discussed the college's recent 2023 Summit on AI which invited faculty external to the district:

We hosted a conference called the AI Teaching and Learning Summit, where 100 individual faculty across the country came and learned about what we're doing with our instruction in AI. I think, like 90% or 98% of participants really found value from that conference from our surveys. We are looking to do that within the district space this year.

Findings indicated that some faculty acknowledged the importance of experimental learning to hone their skills in incorporating artificial intelligence technologies into their teaching practices. Participants expressed the importance of engaging in ongoing AI technology skill development and sharing experiences with colleagues.

Research Question 2

Below is an analysis of the data for Research Question 2, "How do faculty at a community college engage first-generation adult learners when incorporating artificial intelligence technologies in teaching and learning processes?" Findings are presented by characteristics found in Rogers' (1962) DOI, four characteristics (innovation, communication

channels, time, and social system), and five adoption factors (relative advantage, compatibility, complexity, trialability, and observability). Three themes evolved from analysis of the findings based on coding when investigating how community college faculty engage first-generational adult learners when incorporating AI into teaching practices: Digital Divide Acceptance, Digital Divide, and First-Generation Learner Adoption. Table 4.3 displays the identified themes and codes. Quotes from participant interviews are provided.

Table 4.3 RQ 2 Themes and Codes

Theme	Number of Faculty That Identified Code	Number of Times Code were Identified
Digital Divide Acceptance	11	58
Digital Divide	8	40
First-Generation Learner Adoption	11	29

Digital Divide Acceptance

Digital Divide Acceptance was the primary theme identified. The "Digital Divide Acceptance" theme encompassed faculty's recognition and understanding of the disparities in access to technology and digital skills among learners, particularly in integrating AI tools into education. Findings indicated that faculty acknowledged the existence of the digital divide and its significant implications for learning outcomes. Moreover, faculty recognized that all learners may not have equal access to technology resources, such as devices and internet connectivity, which can create barriers to participation in digital learning activities and developing essential digital literacy skills. Through participant commitment to "Digital Divide Acceptance," faculty strived to create inclusive learning environments where learners could thrive, regardless of their

technological background, resources, or understanding of technology and AI and its integration into education.

Digital Divide

Digital Divide was the second most prominent theme identified. The digital divide represented a division between learners who had access to digital technologies and those who did not, as well as those who could operate AI technologies effectively. The divide encompassed differences in access to devices like computers and smartphones and disparities in internet connectivity and digital literacy skills. Findings indicated first-generation learners experienced disparities in internet connectivity and digital literacy.

Faculty 10 stated:

We have a lot of students here that are first gen and the only thing they have access to is their cell phone. You and I know the difference between mobile sites and a desktop site on even small things let alone a lot of things that they can do with artificial intelligence.

Faculty 10 added:

A lot of them are limited by the fact that they can't gain access to all the different features that you have between desktop and the app version. Some can't even see the comments people leave on videos or multimedia responses, (things like that) because they don't have those capabilities on their phone. So, the only time they have access to a computer at all is if they're on campus. If they are remote students, then they don't have any at all. They're doing it entirely on their phone.

Faculty 2 considered the long-term implications expressing:

"This is something that I think is really going to distinguish the haves and have nots is the access to this technology, to fast broadband internet access."

To address the concerns of the digital divide, findings indicated that the district provided learners with technological tools such as loaner laptop programs, access to computer labs and free WiFi that supported learning.

Faculty 4 discussed the district's laptop loaner program and learners' access to campus computer labs:

We do have a laptop checkout policy for about 50 laptops that allows students to check them out. They all get checked out every semester so there is some access, and we do have computer labs. When students are doing research, they can write their paper in the library and utilize help from the librarians.

Similarly, Faculty 7 added:

After Covid, the college did add resources to make sure students are at least connected, so you can be remote and still learn. So, in the classroom, we do have computers that people can use. Also, we have loaner laptops that can be loaned for the length of the semester.

Additionally, learners required broadband connectivity. Faculty 6 discussed the district's expanded broadband services:

We offer a computer lab. We even have loaner laptops for students. I haven't had students come to me and say they aren't able to gain access to WiFi at any point, since we have it available on campus as well. All the AI tools I use are free. They only require you to have browser access. So, it doesn't matter whether you're on a Mac or a PC.

Findings indicated that faculty recognized the disparity between first-generation learners with access to digital technologies and those without. The divide included differences in access to devices like computers, internet connectivity, and digital literacy skills. The district provided

technological tools such as loaner laptop programs, computer labs, and free WiFi to support learning. Still, faculty statements revealed a need for more resources to ensure learners had the necessary access.

First-Generation Learner Adoption

First-Generation Learner Adoption was the third most prominent theme identified. Findings indicated that AI had the potential to close the achievement gap and enhance self-directed learning for first-generation students by dismantling barriers in academic writing and by personalizing the learning experience. Faculty 1 explained how first-generation learners use technology to overcome the fear of writing and personalize education to their needs:

The first-generation students that were very much self-identified as digital natives because of phone use, saw it as a fun, a useful way to reduce their time and tedium in the writing courses. Most found it as a way to overcome some of their writing fears. Faculty 1 added, “first-generation students can prompt these large language models to personalize tutoring. There’s definitely, room to personalize or personify tutoring or classroom instruction to a specific individual with large language models and AI.”

Moreover, faculty 10 discussed first-generation learners’ willingness to adopt AI tools in the classroom to support learning stating, “They’re really excited about wanting to know what the new tech tools are and what else they can do with games and things like that. There’s much more of an openness and even excitement about technology.”

Difference in Adoption Among First-Generation and Non-First-Generation Learners

Faculty Able to Distinguish Difference

Findings indicated that faculty who were able to identify first-generation students did not recognize a difference in AI technology adoption levels among first-generation and non-first-generation learners. Faculty 6 stated:

I wouldn't say I've seen a large difference in acceptance between first-generation and second-generation students. I haven't found that to be the case. In general, the students that want to excel and are really taking their education and their career path seriously are the ones that tend to excel. So, I haven't seen that personally.

Similarly, Faculty 11 mentioned, "First-generation students handled the introduction of AI absolutely beautifully. I saw zero difference."

Faculty Unable to Distinguish Difference

However, some participants could not distinguish first-generation from non-first-generation learners and therefore could not decipher if there was a difference in adoption levels. Faculty 4 explains, "I don't know for sure if these were first generation students because that's not always something that comes through in our conversations. I'm not even sure if I have access to the data to see if that's the case." Similarly, Faculty 2 stated:

I don't really know the status of most of my students as far as first-generation or second-generation. I don't know if I have a good answer for you about that because I'm just not sure about the status of most of my students as far as first gen goes.

First-Generation Learners Less Likely to Adopt AI Technologies

Some faculty concluded that first-generation students were less likely to adopt AI tools due to feelings associated with guilt regarding usage or AI generating incorrect information. Faculty 7 stated, "I feel first-generation students are less likely to use AI tools. I feel like there's an element of shame associated with AI." Faculty 4 explained, "A lot of students will say things

like, oh we shouldn't use AI. I think they're saying what they think we want to hear so they will talk about the dangers of AI." Faculty 5 furthered the comments shared by faculty 4 adding, "Initially, students loved it, but most of them will say the resources that are provided are not correct."

Research Question 3

Findings from Document Analysis

Below is an analysis of the data for Research Question 3, "How is the use of artificial intelligence technologies addressed in community college documents and policies?" Four themes evolved from the analysis of the findings: Educational Integration and Practices, Center for Learning and Innovation, Use and Knowledge of Generative AI, and Guidance for Faculty Incorporating AI Tools and Academic Misconduct.

Educational Integration and Practice

Educational institutions have been strict regarding the use of AI in education, knowing its risks for its users and touching on the ethical concepts of integrity and technological dependence, which is especially harmful to learners. Nonetheless, some institutions are open to this change and have learned to adapt to innovation as they apply and integrate AI as part of their educational system.

Campus A and Campus B implemented policies and procedures to administer AI use with learners. These policies and procedures did not limit students' ability to utilize AI, even ChatGPT, but they also did not provide complete access to AI tools. By not providing complete access, students were encouraged to engage in critical thinking instead of relying on AI technologies.

Specifically, there were Syllabi Policies for AI Generative Tools implemented to administer these practices. In this policy, it explained that learners can utilize AI tools as a response to their coursework when needed and given permission. However, there were limitations set for that usage, such as discouraging learners to use AI tools to generate content (text, video, audio, images) that will end up in learning activities and assignments.

Additionally, the official institutional resource page on AI included all faculty-required AI syllabus policy compliance statements. The district website also contained various articles and content that presented significant AI resources essential for faculty at Campus A and Campus B.

Center for Learning and Innovation

The district's Center for Learning and Innovation (CLI) is dedicated to empowering faculty through innovation. CLI stated, "As the educational landscape continues to evolve, we strive to stay at the forefront by promoting the latest evidence-based teaching methodologies and learning technologies. However, we don't just adopt new strategies for innovation's sake - our goal is to critically evaluate new approaches to discern which will most benefit students, teachers, and the broader community" (XXXX Center, para 1).

The district's website was notable for its dedication to faculty development and AI exploration. It offered many resource options for faculty and staff interested in furthering their understanding of generative AI. According to the district site, the institution endeavored to "provide valuable insights, tools, and knowledge to empower our faculty and staff in navigating this (generative AI) exciting domain." Faculty 8 explained the significance of the CLI stating:

We're the primary professional development and training support center for employees on our campus. The CLI offers additional resources, upcoming trainings and webinars that give faculty an opportunity to become a student of AI.

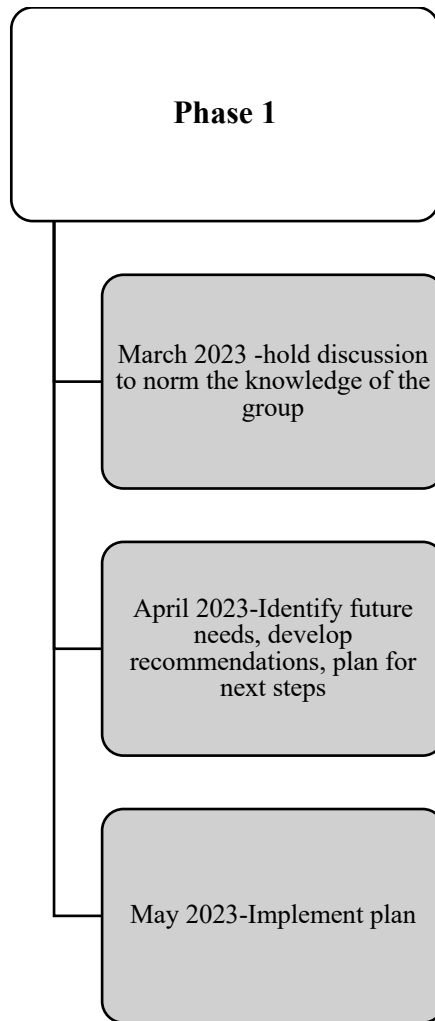
CLI resources encompassed the District Artificial Intelligence Taskforce, How Generative AI is Being Used within the District, Guidance for District faculty Regarding AI Tools and Academic Misconduct, and Syllabus Statements Regarding Generative Artificial Intelligence.

District Artificial Intelligence Taskforce

The District Artificial Intelligence Taskforce convened faculty who shared information with other faculty, staff, and students interested in learning more about generative AI. The purpose of the task force was for faculty to discuss new developments around AI, the development's impact on education, and institutions' response. Topics included the pros and cons of AI in higher education, concerns regarding use by faculty, staff, and students, academic policies around individual use, guidance around classroom use, tools for detection training, awareness of tool application, and educational policies around use in the district.

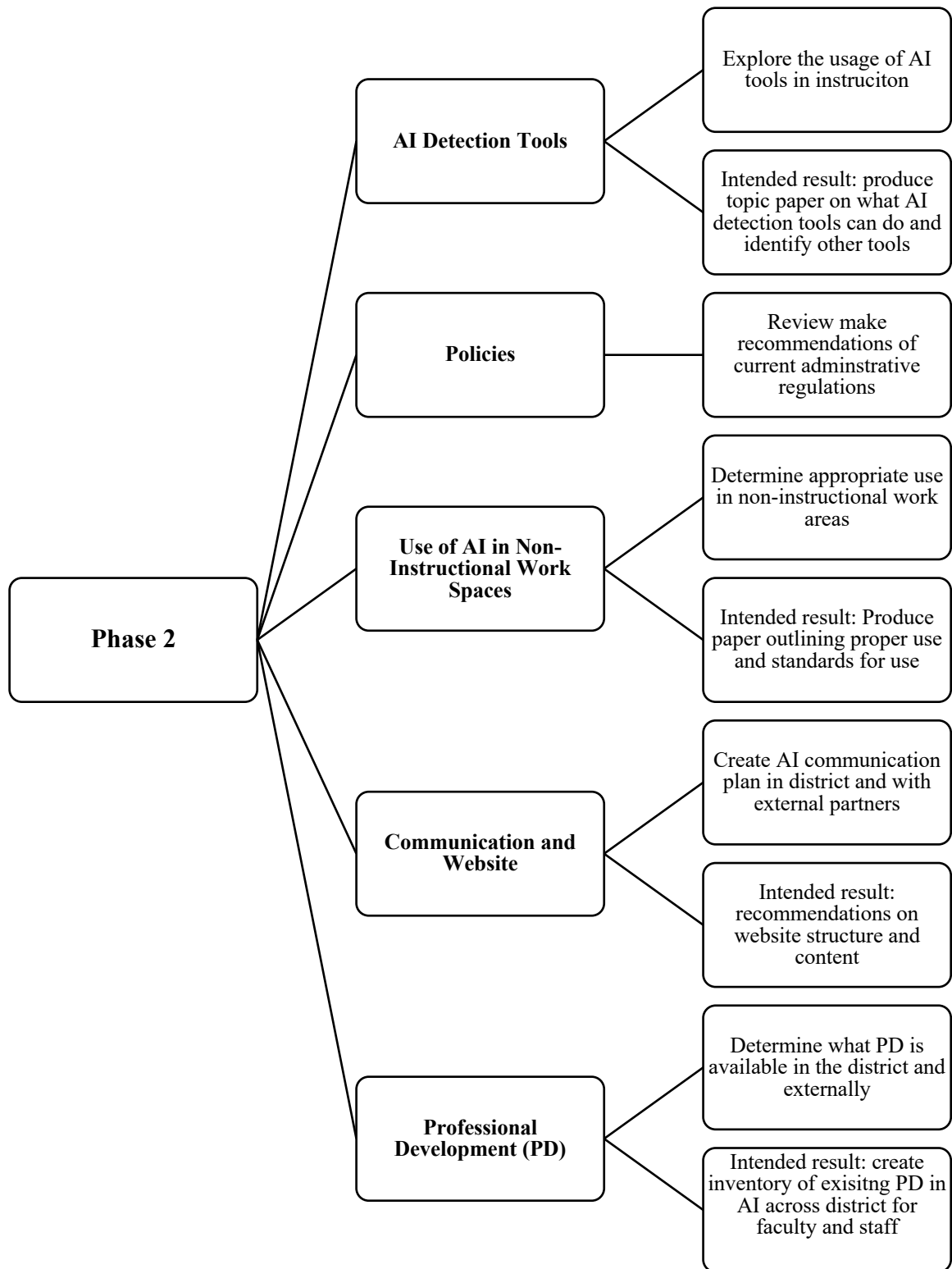
The task force followed a two-phase timeline, holding regular meetings to identify future needs, develop recommendations, and implement actionable items. Figure 4.1 depicts phase 1.

Figure 4.1 District Artificial Intelligence Task Force Proposed Project Phase 1 and Timeline



Note. Illustration showing the District Artificial Intelligence Task Force Proposed Project Phase 1 and Timeline. Adapted from *District Artificial Intelligence Task Force*, by XXXX Community Colleges, 2024. (<https://mcli. XXXX.edu/resources/artificial-intelligence/district-artificial-intelligence-task-force>). Figure 4.2 depicts phase 2.

Figure 4.2 District Artificial Intelligence Task Force Proposed Project Phase 2 and Timeline



Note. Illustration showing the District Artificial Intelligence Task Force Proposed Project Phase 2 and Timeline. Adapted from *District Artificial Intelligence Task Force*, by XXXX Community Colleges, 2024. (<https://mcli. XXXX.edu/resources/artificial-intelligence/district-artificial-intelligence-task-force>).

Use and Knowledge of Generative AI

The district was committed to faculty receiving generative AI professional development. In March of 2024, the district Artificial Intelligence (AI) Task Force team administered a college-wide survey that inquired about the experience of levels of faculty and staff using generative AI tools such as ChatGPT, GrammarlyGo, Google Bard, Adobe Firefly, and Microsoft Co-Pilot. The initial portion of the survey asked participants if they had used generative AI “yes” or “no.” If respondents answered “yes,” the survey asked additional questions to discern experience level. If participants answered “no,” the survey would end.

Of the 1133 faculty and staff who participated, those who had used generative AI versus those who had not were practically even, whereas 567 responded “no” and 566 “yes.” To further examine faculty experience using generative AI, the AI Task Force team incorporated “A Framework for AI Literacy” from Barnard College Literacy for Educause to define the levels of knowledge represented on the self-assessment (Altman & Hibbert, 2024). Table 4.4 defines each level identified on the self-assessment (How Generative, 2024).

Table 4.4 Participant Self-Assessment of Knowledge of Generative AI

Knowledge Level	Description
Understand AI	Can define AI and explain the difference between various types of AI. Can recognize the benefits and limitations of AI.
Use & Apply AI	Can use generative AI tool to get desired outcomes. Can use prompting methods to improve AI-generated output.
Analyze & Evaluate AI	Can critique AI tools and engage in discourse supporting or refuting the use of AI implementation.
Create AI	Can blend learnings to create new ideas, theories, technologies or structures that relate to AI.

Of the 566 participants who used generative AI, 455 identified why they used AI technology. Reasons included writing emails, summarizing information and data, writing reports, creating graphics, improving writing, translating materials, generating ideas for creative projects, and others.

However, faculty expressed concerns regarding continuous professional development training, institutional budget restraints, and the lack of peer-to-peer collaboration opportunities in informal settings, which impacted continuous generative AI upskilling opportunities.

Faculty 8 discussed the lack of continued training, stating:

I think it would be really great if we had some resources set aside. We don't have a trainer in our Center for Teaching and Learning. In our CTL, we just had some budget cuts, so that line got dropped. I'm not an expert in AI, and that can make it hard for me to really offer some good professional development series on this topic. I think there needs to be some resources allotted for upskilling. That could be really good and add value.

Faculty 8 further explained by expressing:

Some things get funded district-wide, while others have to be funded by you. There doesn't seem to be much transparency or process on how instructional technologies are used within our district or classrooms. So, having more of a systems approach will help the institution stay proactive in this space, which would be helpful. Right now, we're all just trying to figure it out and it's overwhelming. The faculty get upset because they don't feel they have the support they need, either from the training or budget sense.

Furthermore, faculty expressed a desire to have more peer-to-peer collaboration that creates spaces for additional dialogue. Faculty 9 mentioned:

The best way to impact change is not by administrative fiat. It is by peer-to-peer collaboration and sharing what works and what doesn't work in a very honest way. That includes failures or things that have worked, and then from a more systems approach, having the colleges provide more space for folks to share. So, it's a little bit more rigorous.

Beyond peer-to-peer collaboration opportunities, there was an understanding among faculty that professional development might not be embraced by those who are resistant to the use of AI in teaching practices. Faculty 2 mentioned:

The thing with professional development is the people who have an interest in it or who already use it will primarily show up to these trainings. How can you get faculty to show up if they are not interested or might be a little more resistant to get excited about learning AI. I think that's always a problem with faculty. We're kind of on little islands sometimes. We work remotely a few days a week, and it's hard to catch us on campus. We're just kind of a desperate group, so finding ways to get more faculty involved and then providing institutional support would be helpful.

Guidance for Faculty Incorporating AI Tools and Academic Misconduct

Faculty at Campus A and B were responsible for establishing and enforcing their own classroom policies on students' use of generative AI. If it was suspected that a student had used generative AI to complete assignments, the district had instructed faculty to converse with the student. Moreover, the district had provided an Ethical AI Use Checklist that faculty were encouraged to include in the conversation. The checklist posed a series of questions that explored the student's understanding of the proper use of generative AI.

As faculty navigated potential academic misconduct, findings supported the notion that AI-detection tools could be faulty. Faculty 8 explained:

Sometimes when learners use Grammarly, the AI detector tools flag their work as cheating or having some sort of generative AI. I heard that some students failed because their instructors get the report on Turnitin, and it says they've been cheating.

Faculty 8 further mentioned, "I don't use those AI detectors tools because I know there all false positive rates and things like that."

The district leadership team encouraged open dialogue between faculty and students. Strategies included, first, creating open and safe dialogue that allowed students to explain their process of completion; second, faculty inquired about the source students used to develop and complete the assignment; and third, what additional assignments might be administered to students for completion to prove the competency of the subject in question. If further exploration into the potential misconduct of a student was required, faculty were expected to honor the student's right to due process where stages were defined in the district's Residential Faculty Agreement 20.7, Administrative Regulations Appendix S-6, Administrative Regulations 2.3.11, and Student Code of Conduct policy documents.

Syllabus Statements Regarding Generative AI

The district had no set singular policy on whether students could use AI in the classroom. However, faculty were expected to communicate expectations that ranged from no generative AI use, to some generative AI use, to AI use allowed in all contexts. The varied syllabus statements supported faculty academic freedom. Faculty 10 discussed how the district protected faculty's academic freedom:

One of the things that the institution does is offer AI statements in three tiers. That's what I like in terms of academic freedom. Basically, what it says is you are open to having these three categories in which you allow AI usage, some AI usage, and no AI usage whatsoever. The institution is really supportive in letting each instructor come up with their own AI policy, based on what they're teaching.

Faculty 9 added:

The AI taskforce team has created statements that you can add into your syllabus, and I think this is emblematic of where we are. The statements run in three different flavors. One is I do not allow AI in any of my classes. And then the other extreme is using AI whenever you want but cite your work. And then there is a middle where AI is allowed in some situations where those situations are made explicit and if it is not made explicit you can ask the instructor.

Table 4.5 defines three generative AI use policies established by the District's Artificial Intelligence Force team (Syllabus Statements, 2024).

Table 4.5 Statement on Levels of Allowed Generative AI Usage

Levels	Statement	Syllabus Description
1	No Generative Artificial Intelligence (AI) Allowed	All work submitted must be your own. The use of generative AI tools will be considered academic misconduct and will be treated as such
2	Some Generative Artificial Intelligence (AI) Allowed in Specific Circumstances	There are situations and contexts within this course where you may be permitted to use generative AI tools. In these cases, specific guidelines will be provided in the assignment details. If you are unsure if the tool or website you are using is a generative AI tool or if it is permitted on a specific assignment, please contact the instructor for further clarification before submitting your work.
3	Full usage allowed	You are permitted to use generative AI tools to complete your assignments. When submitting work that incorporates generative AI content, please clearly indicate what content was generated by AI tools. In such cases, no more than XX% of your work should be generated by a generative AI tool. If any part of this is confusing or uncertain, please

Summary

Chapter 4 began with a review of the study's research questions, the theoretical and conceptual frameworks, the data collection and validation methodology, and the participant's demographics. The researcher then presented the case study's findings from faculty interviews using the theoretical framework from Huber's (1993) organizational change theory and conceptual framework from Rogers' (1962) diffusion of innovation theory. These findings included the faculty's uncertainty about AI use in education due to its possible impact on students' academic integrity. Faculty were able to adapt to its use slowly and became more knowledgeable about its use to support teaching and learning. Participants identified best practices of incorporating AI technologies in teaching sessions by integrating tools to foster personalized learning experiences for students. Moreover, faculty recognized that a digital divide existed at each institution among learners but were commonly unable to distinguish first-generation from non-first-generation learners. Faculty who could determine the difference concluded that first-generation students were eager to use AI tools to make learning more engaging or to support academic concerns associated with writing.

The document analysis approach of Wood et al. (2020) was employed to review and analyze internal institutional documents. The process involved a three-stage approach of skimming, reading, and interpreting data. The findings of the document analysis suggested that each community college, through the institution's District AI Taskforce Team, was dedicated to creating policies and procedures that guided faculty in using integrative AI. Chapter 5 summarizes the study, analyzes the main findings, connects the study's findings to the

frameworks and the broader literature covered in Chapter 2, and concludes with implications for practice and researcher recommendations.

Chapter 5 - Summary, Discussion, and Recommendations

Chapter 5 reviews the background of the problem, the study's purpose, research questions, theoretical and conceptual frameworks, rationale for methodological selection, data collection and analysis, and discussion of key findings to include unexpected findings. This chapter concludes with the study's implications and researcher's future research recommendations.

Overview of the Problem

The higher education landscape raises urgent questions about how faculty can optimize first-generation adult learners' upskilling and reskilling experiences using artificial intelligence (AI). Although numerous interventions have been proposed and implemented, a glaring gap exists in exploring how community college faculty use (AI) technologies in teaching practices. Despite the proven efficacy of AI, such as personalized learning, adaptive evaluation, and increasing student involvement, its role in improving learners' upskilling and reskilling experiences is underexplored (Badi et al., 2022). This study attempted to explore this gap.

Purpose of the Study

The purpose of this study is to examine the experiences of community college faculty incorporating AI technologies in teaching practices, how faculty engage first-generation adult learners when incorporating AI technologies, and how AI technologies are addressed in college documents and policies.

Research Questions

The following three research questions guided this study:

RQ1. What are the experiences and best practices of faculty at a community college incorporating artificial intelligence technologies into their teaching practices?

RQ2. How do faculty at a community college engage first-generation adult learners when incorporating artificial intelligence technologies in teaching and learning processes?

RQ3. How is the use of artificial intelligence technologies addressed in community college documents and policies?

Theoretical and Conceptual Frameworks

The theoretical framework used to guide this study was Huber's (1993) organizational change theory (OCT). OCT provides a theoretical foundation for comprehending how organizations can effectively navigate and manage change to attain their goals. The theory encompasses various concepts, models, and perspectives explaining organizational change's dynamics, motivators, and consequences. OCT has been effectively implemented in diverse organizations, including business corporations, nonprofit entities, and educational institutions (Palumbo & Manna, 2019), to provide a framework for gaining, sharing, and using knowledge to enhance performance and adapt to changes (Belinski et al., 2020). Applying OCT to the context of this study offered a valuable lens for examining the challenges and opportunities of faculty using AI tools in teaching practices. The framework helped delineate the multiple levels of change required for AI implementation that spanned individual behaviors and attitudes to institutional policies and practices.

Rogers' diffusion of innovation (DOI) theory was the conceptual framework used to guide this study. The DOI framework is most appropriate for this study because it examines why and how quickly new ideas and technologies have been adopted in higher education social systems (Sahin, 2006). Recent studies have leveraged DOI to understand emerging technologies' adoption and explore the diffusion of technological innovations in education (Anthony et al.,

2022; Richardson et al., 2020). The researcher used the DOI framework to understand the lived experiences of community college faculty incorporating AI in teaching practices.

Methodology

The researcher selected a qualitative case study design for this study to permit an intensive, in-depth investigation into the experiences of community college faculty incorporating AI technologies in teaching practices and determining how AI technologies are addressed in institutional documents and policies using selected theoretical and conceptual frameworks.

Employing a case study design was ideal for conducting extensive investigations of phenomena from multiple perspectives, observing the phenomenon in its natural environment, and promoting a comprehensive understanding of the subject matter. This method obtained thoughtful and contextualized insights by documenting the participants' experiences and perspectives, enabling data collection from multiple sources, and providing answers to research questions that could not be resolved with numerical data (Lohman & Boyd, 2021).

Data Collection and Analysis

To address the research questions, this study used a two-pronged data collection strategy: semi-structured interviews and a review of internal institutional documents. The data collection process employed an approach that combined thematic analysis for the semi-structured interviews and document analysis for institutional documents (Wood et al., 2020).

Faculty interviews were the primary source of data collection. The semi-structured interview protocol allowed a deeper exploration of participants' experiences, perceptions, and attitudes toward using AI tools in teaching practices. The interviews were guided by the study's interview protocol (see Appendix H). The interviews were conducted individually using Zoom video conferencing software, which allowed audio and visual recording. Each interview lasted

45–60 minutes. Before each Zoom interview, participants were reminded of the purpose of the study and their right to withdraw at any point. Each participant received an introduction letter (see Appendices F) and was asked to complete an informed consent form (see Appendices G).

The interviews were transcribed using NVivo software, which facilitated data coding and sorting into potential themes. This process enabled the identification of broader patterns of meaning and connections between different codes. The potential themes were then reviewed in relation to the coded extracts and the entire data set to ensure an accurate representation of the data. The final step involved defining and naming themes and aligning them with the research questions and theoretical and conceptual frameworks. To validate findings, the researcher incorporated the qualitative technique of member checking, in which participants were allowed to review and alter their interview transcripts. The risk of researcher bias has been mitigated through reflexivity, as described in the reflexivity statement in Chapter 3.

Document analysis was the secondary source used to collect data. The researcher examined institutional archival documents to supplement the semi-structured interviews. This triangulation of the data enhanced the credibility and reliability of the analyses. The researcher analyzed various resources, including the institution's district artificial intelligence task force policies and procedural manual, faculty handbook and syllabi, and college catalog. Document interpretation findings were shared with relevant faculty who were familiar with the archive materials' history.

Discussion of Findings and Related Literature

RQ1. What are the experiences and best practices of faculty at a community college incorporating artificial intelligence technologies into their teaching practices?

The researcher employed RQ1 to gain insight into the experiences and best practices of community college faculty who have integrated AI technologies into their teaching practices. RQ1 was analyzed using thematic analysis. Adaptation and Learning was the primary theme that emerged. The results indicated that faculty frequently undergo a period of adaptation and learning when incorporating AI tools into their teaching practices. Participants acknowledged the necessity of integrating AI tools to enhance students' learning outcomes.

Moreover, the faculty emphasized introducing AI through low-stakes assessments to address its advantages and disadvantages. Additionally, findings suggested that some faculty implemented AI technologies into their instructional practices to offer learners additional support mechanisms for learning. Furthermore, some faculty members agreed that using AI tools was optimal for aiding learners in the ideation and academic research processes.

The study's findings were supported by four additional subthemes discovered as the researcher coded the data: Faculty and Learner Uncertainty, Technology Adoption, Personal Experience and Training, and Best Practices.

Faculty and Learner Uncertainty

Faculty frequently undergo a period of adjustment and learning while utilizing AI tools for teaching. This phase is marked by moral panic and uncertainty, adopting new technologies, and depending on their expertise and training. As instructors find it challenging to understand the issues around the successful integration of these technologies into their teaching practices, the introduction of AI tools caused emotions of unease. Additionally, the lack of policies or

guidelines for incorporating AI into education may further contribute to this uncertainty before the institution's expansion (Bosch, 2021; Schleicher, 2022).

Faculty might not be aware of how AI will affect their teaching strategy, student participation, and learning objectives. To add to this ambiguity, there are currently no rules or regulations regarding the use of AI in education. However, faculty can improve student learning experiences and harness AI by overcoming initial concerns, learning from their experiences and training, and progressively incorporating AI into their teaching approaches to improve educational outcomes.

Uncertainty highlights pertinent worries about how AI tools may affect academic honesty. Doubt can result from a lack of knowledge among faculty and learners regarding artificial intelligence's ethical ramifications and possible future effects on the learning process. The integration of AI tools in education has sparked concerns regarding its impact on academic integrity and the worry that AI technologies could encourage academic dishonesty among learners. One significant concern is the potential for AI tools to facilitate academic dishonesty, such as plagiarism or cheating, among learners (Jones & Peters, 2019). AI-powered writing assistants, for example, may enable learners to generate essays or assignments without fully understanding the subject matter, leading to ethical dilemmas related to authorship and originality (Dahlstrom et al., 2020). The literature explained the reason behind the respondents of this study's uncertainty about using AI tools in their teaching practices, which induced ethical concerns. To address these worries and ensure that AI technologies improve education without sacrificing integrity, policies and guidelines for the ethical application of AI tools in community college learning environments are essential.

Technology Adoption

The process through which faculty accept and integrate new technologies into their teaching practices is called "new technology adoption." Successful adoption requires the acquisition of new tools and a fundamental shift in mindset and practice, ensuring that technology aligns with educational objectives (Chen et al., 2020). Additionally, ongoing support and training are crucial to help faculty overcome barriers to adoption and fully realize the benefits of AI in education (Zawacki-Richter et al., 2019).

According to the research of Davis (1989), adopting new technology follows a predictable pattern, often called the diffusion of innovation theory. This theory suggests that individuals move through awareness, interest, evaluation, trial, and adoption stages when considering new technologies. In the case of AI tools in education, faculty may initially be unaware of the technology, then become interested in its potential benefits, evaluate its suitability for their needs, trial it in their teaching, and ultimately adopt it if they find it compelling (Davis, 1989). Faculty must participate in training and professional development programs to properly integrate AI tools into their teaching practices and overcome uncertainties. The study of Venkatesh et al. (2016) supported these ideas, which applied the Unified Theory of Acceptance and Use of Technology (UTAUT) to understand the adoption of educational technology. They found that educators' decisions to adopt new technology were influenced by various internal and external factors, including their colleagues' opinions, the availability of resources, and their intentions to use the technology (Venkatesh et al. (2016). These factors underscore the importance of a supportive community in the adoption process, making educators feel connected and part of a larger movement.

Rogers' (2020) recent research explored the factors influencing the adoption of AI tools in higher education. The study highlighted the importance of perceived usefulness, ease of use, and institutional support in educators' decisions to adopt AI technologies for teaching and learning purposes. Understanding the process of new technology adoption and the factors that influence it is crucial for faculty seeking to integrate AI tools into their teaching practices effectively. By addressing these factors and leveraging available resources, faculty can optimize the integration of AI to enhance student engagement, personalize learning experiences, and improve educational outcomes. Moreover, fostering a collaborative environment where faculty share experiences and best practices can facilitate adoption and promote continuous innovation in teaching methodologies (Rogers, 2020).

As Campus A and Campus B faculty integrated AI into teaching practices, participants exhibited four of five Rogers' (1962) innovation adopter categories: innovators, early adopters, early majority, and late majority. Based on data findings, no faculty member's adoption level was identified in Rogers' (1962) fifth category, laggards. The researcher posits that laggards may have yet to incorporate AI in teaching practices due to their resistance to change and slow adoption of this practice. Table 5.1 defines each DOI category and displays each participant's adoption level.

Table 5.1 Faculty Categorization: Diffusion of Innovation

Adopter Category	Risk Tolerance	Faculty Pseudonym (Findings)	Adopter Categories (Defined)
Innovator (2.5%)	Risk takers	Faculty 1, Faculty 6	Individuals who are active information seekers willing to experience new ideas and innovation (Rogers, 2003)
Early Adopters (13.5%)	Comfortable adopting new ideas	Faculty 2, Faculty 8, Faculty 9, Faculty 10	Individuals interested in trying new technologies and establishing their usefulness (Rogers, 2003)
Early Majority (34%)	Adopts ideas before average person	Faculty 4, Faculty 5, Faculty 7, Faculty 11	Individuals who adopt innovation just before the other half of their peers do (Rogers, 2003)

Late Majority (34%)	Skeptical of change	Faculty 3	Individuals in a social system who wait until most of their peers adopt an innovation (Rogers, 2003)
Laggards (16%)	Risk adverse		Individuals more skeptical about innovations and change agents than the late majority (Rogers, 2003)

The researcher determined each faculty adoption level based on findings deduced from participant interviews. The findings were then member-checked for accuracy by participants.

Personal Experience and Training

Personal experience and training are essential in the faculty's adoption of AI. Faculty experiences with technology and their professional development in using AI tools significantly impact their ability to effectively integrate these tools into teaching practices. Moreover, familiarity with AI technologies and their educational applications can influence faculty perceptions and attitudes toward incorporating AI into their teaching practices (Barker et al., 2021). Faculty become more confident and proficient in leveraging these technologies to enhance student learning experiences when they gain more exposure to AI tools and become familiar with their potential benefits. Ongoing support and resources are crucial to ensure that faculty can continue to develop their skills and stay abreast of advancements in AI technology relevant to education (Barker et al., 2021).

According to a study by Yalçın and Atic (2019), educators' prior experience with technology influences their attitudes and perceptions toward using AI tools in education. Those who have had positive experiences with technology may be more open to adopting AI tools and may require less training to incorporate them into their teaching practices. Understanding faculty members' needs and preferences regarding technology integration can inform the development of targeted training programs and support initiatives tailored to enhance their readiness and confidence in utilizing AI tools effectively (Yalçın & Atic, 2019).

Furthermore, a study by Zhu et al. (2017) emphasizes the importance of targeted training and professional development for educators to use AI tools effectively in education. The authors found that educators who participated in comprehensive training programs demonstrated increased confidence and competence in using AI tools for tasks such as personalized learning, assessment, and data analysis. In addition, research by Zheng et al. (2020) highlights the significance of ongoing support and communities of practice in facilitating educators' adaptation to AI tools.

Faculty Best Practices

In the past, education was a one-size-fits-all system. As new instructional practices have emerged, AI technologies have disrupted this paradigm, and faculty have had to discover alternative facilitation best education practices. According to Educational Opportunity (2018), best education practices change student academic behaviors. As evidenced in Baidoo-Anu & Owusu-Ansah (2023) and Abdous (2023) findings, participants in this study acknowledged that AI tools have the potential to enhance and revolutionize learning experiences by making them more interactive, responsive, and learner-centered, streamlining administrative tasks, and facilitating research that supports student learning outcomes.

Further investigation into the best practices of faculty incorporating AI-enabled technologies aligned with Woolf (2019) findings that participants could facilitate instructor-led learning by combining traditional, in-person learning and AI-assisted methods to create personalized, interactive learning experiences. Some faculty integrated AI technologies such as ChatGPT, Claude, and Perplexity to monitor student comprehension of content material and progressions made during learning to provide just-in-time teaching (Kompen et al., 2019). Additionally, some faculty incorporated AI technologies such as Sora, Bing with Copilot,

DALL-E, MidJourney, Boomy, and Gemini to encourage students to use AI technology for content generation. Each tool is described in Table 5.3.

By integrating these AI technologies, faculty are able to provide personalized learning experiences that can be adjusted in real time to accommodate students' learning styles. This adaptability promotes self-directed learning and self-determined learning, as noted by Loeng (2018) and Blaschke (2019) respectively. The ability of AI technologies to personalize learning experiences is consistent with Wozniak's (2020) assertion that personalized learning, a defining characteristic of andragogy, is becoming increasingly relevant in digital education.

RQ2. How do faculty at a community college engage first-generation adult learners when incorporating artificial intelligence technologies in teaching and learning processes?

The "Digital Divide Acceptance" theme is characterized by the faculty's recognition and comprehension of the disparities in digital skills and access to technology among learners, particularly in integrating AI tools into education. Findings revealed that faculty acknowledge that the digital divide has substantial implications for learning outcomes. Participants recognize that not all first-generation learners possess the same level of comprehension and access to technology resources, including devices and internet connectivity, which can impede their ability to engage in digital learning activities and cultivate critical digital literacy skills.

Two additional themes, Digital Divide and First-Generation Learners Adoption, were discovered as the researcher conducted the study, supporting the study's findings.

Digital Divide

The digital divide refers to the gap between individuals or groups with access to digital technologies and those without, as well as the disparities in their ability to use these technologies effectively (Van Dijk, 2019). This divide encompasses differences in access to devices like

computers and smartphones and disparities in internet connectivity and digital literacy skills (Van Deursen & Van Dijk, 2015). Those lacking digital literacy skills may be challenged to navigate online information or utilize digital tools for learning and communication.

Addressing the digital divide involves implementing multifaceted approaches to enhance technology accessibility and offering digital literacy training tailored to underserved communities (Selwyn, 2016). The district provides various AI resources to support learners' tools and insights that provide guidance. Housed on the district's learning and innovation website are the Student Resource Site and Student Guide to Generative AI. The Student Resource Site encourages learners to remain informed about AI and its potential use in and out of the classroom. The site offers opportunities for learners to explore the basics of AI. Table 5.2 defines each resource displayed on the site (Artificial Intelligence, 2024).

Table 5.2 Student Resource Site: Artificial Intelligence for Learners

Explore the Basics of AI Resources	Resources Explained
Introduction to Generative AI	This learning path provide an overview of generative AI concepts, from the fundamental of large language models to responsible AI principles.
7 Things You Should Know About Generative AI	This EDUCASE review focuses on the “7 Things You Should Know About Generative AI” to acknowledge the excitement about AI usage and address the apprehension among leaders, faculty, students in higher education
Hard Fork Podcast	A weekly New York Times podcast hosted by Kevin Roose and Casey Newton that focuses on technology and business
Crash Course: Artificial Intelligence	A series of videos, led by Jabril Ashe, that discuss the history and logic behind AI

Moreover, the Student Guide to Generative AI introduces numerous generative AI tools available to learners. Generative AI tools displayed are ChatGPT, ChatGPT (free version), Bing

with Copilot, Claude, Perplexity, Gemini, MidJourney, DALL E., Boomy, and Sora. Table 5.3 defines each resource displayed on the site (Student Guide, 2024).

Table 5.3 Generative Artificial Intelligence Tools for Learners

Explore the Basics of AI Resources	Resources Explained
ChatGPT	A chatbot and virtual assistant developed by OpenAI that can content create, language translate, compose music, brainstorm ideas, draft emails, play games, and assist with completing various tasks
ChatGPT (free version)	The free version of ChatGPT with limited features
Bing with Copilot	An AI tool that can create content
Claude	An AI chatbot that can generate various forms of text content such as code, creative works, and summaries
Perplexity	A free AI search engine designed to revolutionize the way information is discovered
Gemini	An AI powered assistant tool from Google that can understand text, images, video, and audio
MidJourney	A creative platform that allows users to generate unique words, characters, and images using short text descriptions
DALL-E	An AI system that can create realistic images and art from a description in natural language
Boomy	Generative AI tools used to create music with AI
Sora	OpenAI Generative AI model that specializes in text-to-video generation

By bridging this gap, learners gain enhanced capabilities to engage with digital platforms, enabling them to tap into the manifold socio-economic opportunities available in the digital realm. This empowerment could lead to tangible benefits such as heightened educational attainment, expanded employment prospects, and overall quality of life for those previously marginalized by the digital divide (Selwyn, 2016).

First-Generation Learners Adoption

Finally, the findings from Chapter 4 showed indications of the relevance of technology acceptance among faculty that influenced first-generation learners' adoption. Technology acceptance is crucial in determining faculty's willingness to adopt and use AI tools in teaching. Research highlights that perceived usefulness and ease of use significantly impact this willingness. For instance, faculty 2 expressed:

My husband was almost hyperbolic about ChatGPT. He was like, oh my gosh, this is going to change your industry. Your industry will be totally disrupted. This thing can write term papers. I thought he was being totally dramatic, but then I set up my free account and tried to play with it and I was really impressed. I teach sociology so I had it make a poem for me about Karl Marx and conflict theory, and you know, it was just really entertaining and well done. So, I started playing around with it more and, you know, started to incorporate different assignments that I've written in the past and running it through ChatGPT.

Additionally, the perceived usefulness of AI in enhancing student learning outcomes and streamlining administrative tasks further encourages educators to embrace these tools (Chiu & Chai, 2020). Faculty 6 stated, "When I am writing something like a syllabus or a rubric for class, it's really helpful to have ChatGPT change the wording to be more clear. I generally agree with the wording that it produces." Faculty 6 added:

When I was building the courses that are now available, there were no books, no previous syllabus for me to go off. So, I had to innovate. I thought, what type of tools or practices that leverage AI can I work with? How can I bring that into the classroom, as well, to be more efficient.

Institutional support is vital in influencing faculty decisions to adopt AI technologies.

Faculty 8 mentioned:

We need more support and understanding, not just technology, but understanding of the conditions for the technology within the spaces of education. Like, what does it mean for the district to use generative AI or not to use generative AI. Some of us are looking for guidance on how to figure that out.

Strong institutional backing, including adequate resources, infrastructure, and technical support, fosters a conducive learning environment that fosters culturally responsive andragogy supported by AI technology integration. Institutions prioritizing digital literacy and providing a supportive framework enable faculty to feel confident and competent in using AI tools. This support can manifest in various forms, such as dedicated IT departments, access to the latest technological tools, and clear policies and practices that encourage experimentation and innovation in teaching practices that improve learners' academic performance (Ladson-Billings, 1995).

RQ3. How is the use of artificial intelligence technologies addressed in community college documents and policies?

The researcher employed RQ3 to gain insight into how the district addressed the use of AI technologies in documents and policies. The policy and document creation processes continually evolve within the district, particularly at campuses A and B, where numerous faculty members incorporate AI into their teaching practices. According to a district AI Task Force team survey, there is significant variability in faculty use of generative AI, with experience levels ranging from novice to expert. This disparity suggests a need for tailored support and resources to ensure the effective integration of AI across different competency levels (Johnson et al.,

2023). Research indicates that faculty members with varying levels of AI proficiency require differentiated professional development to enhance their skills and confidence in using AI tools effectively (Gura, 2020).

To address these needs, the Task Force team regularly convenes to identify future requirements, develop recommendations, and implement actionable items to support professional development centered on AI. By focusing on targeted training and continuous support, the Task Force seeks to bridge the gap in AI proficiency among faculty members. Studies have shown that structured professional development programs and collaborative initiatives can significantly improve educators' technological competencies and willingness to integrate new technologies into their teaching practices (Trust & Prestridge, 2021). Furthermore, the implementation of these strategies aligns with best practices in educational technology, ensuring that faculty members are equipped with the necessary skills and knowledge to leverage AI for enhanced teaching and learning outcomes (Wang et al., 2021).

Campus A and Campus B faculty are accountable for establishing and enforcing classroom policies. The district has no single-set established policy regarding whether faculty may utilize AI in the classroom. Nonetheless, faculty members are required to effectively convey usage expectations that span a spectrum from no generative AI use to some generative AI use to AI use permitted in all contexts.

Unexpected Findings

Findings indicate that the district provided three syllabus statements about students using AI technologies. Some faculty desire more dedicated resources and supplemental professional development opportunities to enhance their understanding of AI usage in teaching practices. This finding is significant because it has the potential to enhance the benefits of AI as it is being

incorporated into teaching practices while mitigating risks through establishing robust policies and best practices.

Faculty members can benefit from the support of effective policies and best practices that provide a greater framework for incorporating AI into their teaching practices. Furthermore, developing more efficient policies and establishing best practices could mitigate ethical concerns regarding potential misuse by faculty and students, safeguarding academic integrity. Lastly, enforcing more robust policies and adopting best practices can enable AI to enhance learning rather than supplant critical thinking.

Practical Implications

The use of AI may invoke pressing concerns, particularly in education, due to ethical concerns surrounding its usage. Nonetheless, there are advantages to using AI in teaching practices in the digital world. Findings from faculty interviews reveal the multifaceted nature of integrating AI tools into education. Three main themes were observed: Adaptation and Learning, Digital Divide Acceptance, and Educational Integration and Practice.

The theme of Adaptation and Learning underscores the journey that faculty undertake as they navigate the introduction of AI tools into their teaching, demonstrating the adaptability of the faculties in effectively navigating the use of AI despite concerns about its usage initially. It implied the cruciality of incorporating personal experiences and training and gradually integrating AI into teaching methods to improve learner experiences and maximize AI's potential to enhance educational outcomes. Furthermore, this adaptation process requires continuous professional development and a willingness to embrace technological advancements. As faculty become more adept at utilizing AI, they can create more personalized and engaging learning environments, fostering student success.

On the other hand, Digital Divide Acceptance acknowledges faculties' understanding of disparities in access to technology and digital skills among students. Addressing the digital divide involves implementing multifaceted approaches to enhance technology accessibility and offering digital literacy training tailored to underserved communities (Selwyn, 2016). Efforts to bridge the digital divide and promote equitable access to technology and digital skills development opportunities are essential for creating inclusive learning environments. Campus A and B demonstrated these responses to thriving education with technology. Lastly, Technology Acceptance reflects educators' willingness to adopt and utilize AI tools in their teaching practices, and it can be observed through the syllabus and policies that highlight the implementation of AI use with certain limitations and approvals.

The study determined that addressing uncertainties, bridging the digital divide, and promoting technology acceptance are crucial steps in harnessing AI's potential to enhance teaching and learning experiences. With careful consideration of ethical implications and proactive measures to ensure equitable access, AI can be effectively integrated into education to benefit educators and students. Further research and ongoing support are necessary to continue advancing the integration of AI tools into educational practices.

Recommendations for Further Research

The study provides a starting point for extended research opportunities on how faculty incorporate AI in teaching practices and how community college institutions discern usage to ensure ethical and responsible use. Based on the study's outcomes, several recommendations have been made for future studies.

First, future studies could replicate this study at multiple institutions as it was conducted within a single district. Expanding the study to a multi-site case study would allow the researcher

to compare faculty perspectives from varying institutions and enhance the transferability of findings, increasing the value and relevance of the research.

Second, future studies could conduct a longitudinal study to examine how faculty experiences change as new AI technologies emerge and institutional policies and practices evolve. As first noted in Chapter 1, the researcher used a single case study design. A single case study design provides an in-depth look at the phenomenon at some point but may not capture broader complexities.

A third recommendation is that this study be replicated using a mixed-method method. The integration of qualitative and quantitative data provides distinct advantages. Qualitative data provides contextualized and detailed insights, while quantitative data provides data that can be externally validated and generalized.

A fourth recommendation for future research is to conduct a comparative study. A comparative study could describe, explore, and explain the similarities and differences between faculty incorporating AI technologies at institutions.

Fifth A fifth recommendation is that a future study could be held at one of the Dell Corporation Incubator colleges to assess AI integration into classrooms and work.

Finally, a sixth and final recommendation is that researchers conduct a study that considers the implications and importance of upscaling AI use and its impacts on classroom success and learner evaluation.

Conclusions and Final Recommendations

The ethical use of AI technologies by faculty could enhance the quality of education provided to learners in community colleges by reducing routine administrative tasks, supporting professional development among faculty to improve teaching practices, providing personalized

learning to first-generation students, and creating policies and practices that optimize resources that impact learning outcomes.

Community colleges interested in initiating or expanding faculty use of AI in teaching practice can:

- Ensure the institution has the technology infrastructure to support AI technologies (e.g., adequate broadband internet, hardware, software, data storage).
- Create a task force that develops policies and best practices while reviewing and monitoring concerns about academic integrity, ethical use, data privacy, and bias.
- Allocate resources for faculty professional development, training, and continuous improvement (e.g., conferences, seminars, workshops, instructor-led and self-study courses).
- Launch pilot programs to help the institution learn how to incorporate AI technologies in select areas (e.g., administrative tasks, professional development, personalized learning).
- Develop policies to address the potential conflict or associated confusion learners may experience as they engage faculty with varying levels of AI tool acceptance (i.e., innovators-laggards).

Additionally, organizations such as the League of Innovations, an international nonprofit organization with a mission to foster innovation in the community college environment, can raise awareness about faculty use of AI by publishing specialized periodicals that discuss new AI technologies and ethical applications.

Summary

This study explored community college faculty's incorporation of artificial intelligence technologies into teaching practices, how faculty engage first-generation learners, and how

artificial intelligence technologies are addressed in institutional documents and policies. Faculty who have chosen to incorporate AI into teaching practices expressed periods of adaptation and learning characterized by intrigue, excitement, moral panic, and uncertainty.

As AI tools are incorporated into teaching practices, some faculty recognize the disparities in student technology access. The "Digital Divide Acceptance" theme encompasses educators' recognition and understanding of learners' differences in access to technology and digital skills when integrating AI tools into education. With this awareness, faculty who have chosen to implement AI into teaching practices work to address the digital divide by implementing strategies to ensure equitable access to technology and digital skills development opportunities for all students. Moreover, the district's commitment to faculty development through CLI and the AI Task Force team ensures new developments are discussed, concerns regarding proper use are addressed, and academic policies are clearly communicated across the district.

This study has provided insights into how community college faculty integrate AI technologies into their teaching practices, particularly in engaging first-generation learners, and how institutional policies address these technologies. Faculty members who have adopted AI express a journey marked by initial curiosity, excitement, ethical considerations, and occasional uncertainty as they navigate the complexities of AI integration. As AI tools become more prevalent in education, faculty acknowledge and actively work to mitigate disparities in technology access among students, emphasizing equitable opportunities for digital skills development. The district's commitment to faculty development through initiatives like the CLI and the AI Task Force team ensures ongoing support, guidance on ethical use, and effective communication of academic policies regarding AI. This holistic approach fosters an inclusive

environment where faculty can effectively leverage AI to enhance teaching and learning outcomes while promoting equity across diverse student populations.

References

- Abdous, M. (2023, March 21). How AI is shaping the future of higher ed. *Inside Higher Ed*.
<https://www.insidehighered.com/views/2023/03/22/how-ai-shaping-future-higher-ed-opinion>
- Adams, K., Alssid, J. L., Bahr, P. R., Bettersworth, M., Buford, E., Craig, R., Duke-Benfield, A. E., Fichtner, A., Fuller, J., Gallagher, S., Green, K., Jacoby, T., Jona, K., Kress, A., McCaffery, R., Menon, A., Partridge, S., Pink, B., Schwartz, R., Sigelman, M., Skandera, H., & Sullivan, M. (2020). *The indispensable institution*. Opportunity America.
<https://www.opportunityamericaonline.org/indispensable>
- Agarwal, V., Mathiyazhagan, K., Malhotra, S., & Saikouk, T. (2022). Analysis of challenges in sustainable human resource management due to disruptions by Industry 4.0: an emerging economy perspective. *International Journal of Manpower*, 43(2), 513–541.
<https://doi.org/10.1108/IJM-03-2021-0192>
- Akgun, S., & Greenhow, C. (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics*, 2, 431–440. <https://doi.org/10.1007/s43681-021-00096-7>
- Alam, A. (2021). Possibilities and apprehensions in the landscape of artificial intelligence in education. In *2021 International Conference on Computational Intelligence and Computing Applications* (pp. 1–8). IEEE.
<https://doi.org/10.1109/ICCICA52458.2021.9697272>
- Al-Badi, A., Khan, A., & Alotaibi, E. (2022). Perceptions of learners and instructors towards artificial intelligence in personalized learning. *Science Direct*, 201(2022), 445–451.
<https://doi.org/10.1016/j.procs.2022.03.058>

- Ali, M., & Abdel-Haq, M. K. (2021). Bibliographical analysis of artificial intelligence learning in higher education: is the role of the human educator and educated a thing of the past?. In M. B. Ali & T. Wood-Harper (Eds.), *Fostering communication and learning with underused technologies in higher education* (pp. 36–52). IGI Global.
<https://doi.org/10.4018/978-1-7998-4846-2.ch003>
- Allan-Bentley, B. (2021). *Why skills builder matter: Understanding the motivations behind course-taking among a focused subsection of noncompleters at a California community college*. [Doctoral dissertation, Name University]. ProQuest Dissertation Publishing.
- AlNuaimi, B. K., Singh, S. K., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. *Journal of Business Research*, 145, 636–648. <https://doi.org/10.1016/j.jbusres.2022.03.038>
- Al-Rahmi, W. M., Yahaya, N., Alamri, M. M., Alyoussef, I. Y., Al-Rahmi, A. M., & Kamin, Y. B. (2021). Integrating innovation diffusion theory with technology acceptance model: Supporting students' attitude towards using a massive open online courses (MOOCs) systems. *Interactive Learning Environments*, 29(8), 1380–1392.
<https://doi.org/10.1080/10494820.2019.1629599>
- Altman, E. & Hibbert, M. (2024, March 28-29). *Barbard Bold Conference 2024*.
<https://barnard.edu/barnard-bold-conference-2024>
- Anderson, D. L. (2019). *Organization development: The process of leading organizational change*. SAGE Publications.
- 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, 272–281.

- Anshari, M., & Hamdan, M. (2022). Understanding knowledge management and upskilling in Fourth Industrial Revolution: Transformational shift and SECI model. *VINE Journal of Information and Knowledge Management Systems*, 52(3), 373–393.
<https://doi.org/10.1108/VJIKMS-09-2021-0203>
- Anthony, B., Kamaludin, A., Romli, A., Raffei, A. F. M., Phon, D. N. A. E., Abdullah, A., & Ming, G. L. (2022). Blended learning adoption and implementation in higher education: A theoretical and systematic review. *Technology, Knowledge and Learning*, 27, 531–578.
<https://doi.org/10.1007/s10758-020-09477-z>
- Appio, F. P., Frattini, F., Petruzzelli, A. M., & Neirotti, P. (2021). Digital transformation and innovation management: A synthesis of existing research and an agenda for future studies. *Journal of Product Innovation Management*, 38(1), 4–20.
<https://doi.org/10.1111/jpim.12562>
- Argote, L., & Ingram, P. (2000). Knowledge transfer: A basis for competitive advantage in firms. *Organizational Behavior and Human Decision Processes*, 82(1), 150–169.
<https://doi.org/10.1006/obhd.2000.2893>
- Atlas, S. (2023). *ChatGPT for higher education and professional development: A guide to conversational AI*. College of Business, University of Rhode Island.
https://digitalcommons.uri.edu/cba_facpubs/548
- Baidoo-Anu, D., & Owusu-Ansah, L. (2023). *Education in the era of generative artificial intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning*. SSRN. <https://doi.org/10.2139/ssrn.4337484>

- Barker, L., Dee, T., & Dobbie, W. (2021). The impact of technology training on faculty adoption of artificial intelligence in teaching. *Journal of Higher Education Technology Research*, 15(2), 89-104. <https://doi.org/10.1080/13685538.2021.1875249>
- Barua, P. D., Vicnesh, J., Gururajan, R., Oh, S. L., Palmer, E., Azizan, M. M., & Acharya, U. R. (2022). Artificial intelligence enabled personalised assistive tools to enhance education of children with neurodevelopmental disorders—a review. *International Journal of Environmental Research and Public Health*, 19(3), Article 1192. <http://doi.org/10.3390/ijerph19031192>
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report*, 13(4), 544–559. <https://doi.org/10.46743/2160-3715/2008.1573>
- Belinski, R., Peixe, A. M., Frederico, G. F., & Garza-Reyes, J. A. (2020). Organizational learning and Industry 4.0: findings from a systematic literature review and research agenda. *Benchmarking: An International Journal*, 27(8), 2435–2457. <https://doi.org/10.1108/BIJ-04-2020-0158>
- Benavides, L. M. C., Tamayo Arias, J. A., Arango Serna, M. D., Branch Bedoya, J. W., & Burgos, D. (2020). Digital transformation in higher education institutions: A systematic literature review. *Sensors*, 20(11), Article 3291. <https://doi.org/10.3390/s20113291>
- Bennett, & McWhorter, R. R. (2021). Virtual HRD’s role in crisis and the post Covid-19 professional lifeworld: Accelerating skills for digital transformation. *Advances in Developing Human Resources*, 23(1), 5–25. <https://doi.org/10.1177/1523422320973288>
- Bitsch, V. (2005). Qualitative research: A grounded theory example and evaluation criteria. *Journal of Agribusiness*, 23(1), 75–91. <http://doi.org/10.22004/ag.econ.59612>

- Blechschiidt, J. (2022). About trends in general. In J. Blechschiidt, *Trend management: How to effectively use trend-knowledge in your company* (pp. 1–20). Springer.
https://doi.org/10.1007/978-3-662-64703-5_1
- Borenstein, J., & Howard, A. (2021). Emerging challenges in AI and the need for AI ethics education. *AI and Ethics*, 1, 61–65. <https://doi.org/10.1007/s43681-020-00002-7>
- Borenstein, J., Grodzinsky, F. S., Howard, A., Miller, K. W., & Wolf, M. J. (2021). AI ethics: A long history and a recent burst of attention. *Computer*, 54(1), 96–102.
<https://doi.org/10.1109/MC.2020.3034950>
- Bosch, N. (2021). Using artificial intelligence in education: Key benefits and challenges. *Journal of Educational Technology*, 42(3), 215–228.
<https://doi.org/10.1016/j.jedutech.2020.12.003>
- Braun, V., & Clarke, V. (2021). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and Psychotherapy Research*, 21(1), 37–47.
<https://doi.org/10.1002/capr.12360>
- Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, 18(3), 328–352.
<https://doi.org/10.1080/14780887.2020.1769238>
- Braunerhjelm, P., Ding, D., & Thulin, P. (2020). Labour market mobility, knowledge diffusion and innovation. *European Economic Review*, 123, Article 103386.
<https://doi.org/10.1016/j.euroecorev.2020.103386>
- Brooks-Terry, M. (1988). Tracing the disadvantages of first-generation college students: An application of Sussman’s option sequence model. In S. K. Steinmetz (Ed.), *Family and*

- support systems across the life span* (pp. 121–134). Plenum Press.
- https://doi.org/10.1007/978-1-4899-2106-2_10
- Calaway, T., & Manning, D (2021). *Roueché center forum: Culturally responsive teaching in the community college*. Diverse.
- Cameron, E., & Green, M. (2019). *Making sense of change management: A complete guide to the models, tools and techniques of organizational change*. Kogan Page Publishers.
- Canning, E. A., LaCrosse, J., Kroeper, K. M., & Murphy, M. C. (2020). Feeling like an imposter: The effect of perceived classroom competition on the daily psychological experiences of first-generation college students. *Social Psychological and Personality Science*, 11(5), 647–657. <https://doi.org/10.1177/1948550619882032>
- Carta, F. (2021). Covid pandemic-2019: Upskilling and reskilling pathways to respond to new professional needs imposed by digitalisation. In *EDULEARN21 Proceedings* (pp. 5641–5650). IATED. <https://doi.org/10.21125/edulearn.2021.1145>
- Carvalho, N., & Cazarini, E. (2020). *Industry 4.0: Current status and future trends*. IntechOpen.
- Chen, J., Zhang, D., & Lai, F. (2020). The effects of technology adoption on education: A systematic review. *Journal of Educational Technology Development and Exchange*, 13*(1), 1-15. <https://doi.org/10.18785/jetde.1301.01>
- Chiu, T. K. F., & Chai, C. S. (2020). Sustainable curriculum planning for artificial intelligence education: A self-determination theory perspective. *Sustainability*, 12(15), 6052. <https://doi.org/10.3390/su12156052>
- Cholifah, P. S., Oktaviani, H. I., Nuraini, N. L. S., Meidina, A. M., Wanodyaningtiyas, R. F., & Yafie, E. (2019, October). Online project-based learning for improving the innovative initiation during diffusion and innovation course. In *2019 5th international conference on*

- education and technology* (pp. 55–60). IEEE.
<https://doi.org/10.1109/ICET48172.2019.8987221>
- Chopard, K., & Przybylski, R. (2021). *Methods brief: Case studies*. Justice Research and Statistics Association. <https://www.jrsa.org/pubs/factsheets/jrsa-research-methods-brief-case-studies.pdf>
- Clark, G., Marsden, R., Whyatt, J., Thompson, L., & Walker, M (2015) ‘It’s everything else you do ...’: Alumni views on extracurricular activities and employability. *Active Learning in Higher Education*, 16(2), 133–147. <https://doi.org/10.1177/1469787415574050>
- Coffey, L. (2024, February 9). Professors cautious of tools to detect AI-generating writing. *Inside Higher Ed*. <https://www.insidehighered.com/news/tech-innovation/artificial-intelligence/2024/02/09/professors-proceed-caution-using-ai#:~:text=In%20June%20last%20year%2C%20an,by%20paraphrasing%20AI%2Dgenerated%20text.>
- Community College Survey of Student Engagement. (n.d.). *Frequently asked questions*. The University of Texas at Austin. <https://www.ccsse.org/aboutccsse/aboutfaqs.cfm>
- Cope, B., Kalantzis, M., & Sears, D. (2021). Artificial intelligence for education: Knowledge and its assessment in AI-enabled learning ecologies. *Educational Philosophy and Theory*, 53(12), 1229–1245. <http://doi.org/10.1080/00131857.2020.1728732>
- Covarrubias, R., Valle, I., Laiduc, G., & Azmitia, M. (2019). “You never become fully independent”: Family roles and independence in first-generation college students. *Journal of Adolescent Research*, 34(4), 381–410.
<https://doi.org/10.1177/0743558418788402>

- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative and mixed methods approaches* (5th ed). SAGE Publications.
- Creswell, J. W., & Miller, D.L. (2000). Determining validity in qualitative inquiry. *Theory in practice*, 39(3), 124-130. https://doi.org/10.1207/s15430421tip3903_2
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. SAGE Publications.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Darling-Hammond, L., & Goldman, S. (2014). Technology can close achievement gaps, improve learning. *Stanford: Graduate school of education*.
<https://ed.stanford.edu/news/technology-can-close-achievement-gaps-and-improve-learning-outcomes>
- Dearing, J. W., & Cox, J. G. (2018). Diffusion of innovations theory, principles, and practice. *Health Affairs*, 37(2), 183–190. <https://doi.org/10.1377/hlthaff.2017.1104>
- Deng, X., & Yang, Z. (2021). Digital proficiency and psychological well-being in online learning: Experiences of first-generation college students and their peers. *Social Sciences*, 10(6), Article 192. <https://doi.org/10.3390/socsci10060192>
- Denzin, N. K., & Lincoln, Y. S. (2005). *The Sage handbook of qualitative research* (3rd ed.). SAGE Publications.
- Denzin, N. K., & Lincoln, Y. S. (2017). *The Sage handbook of qualitative research*. SAGE Publications.
- Deszca, G., Ingols, C., & Cawsey, T. F. (2019). *Organizational change: An action-oriented toolkit*. SAGE Publications.

- District Artificial Intelligence Task Force (2024). XXXX Community College. Retrieved April 26, 2024, from <https://mcli.XXXX.edu/resources/artificial-intelligence/district-artificial-intelligence-task-force>
- D’Agostino, S. (2023). GPT-4 is here: But most faculty lack AI policies. *Inside Higher Education*. <https://www.insidehighered.com/news/2023/03/22/gpt-4-here-most-faculty-lack-ai-policies>
- Enders, T., Benz, C., Schüritz, R., & Lujan, P. (2020). *How to implement an open data strategy? Analyzing organizational change processes to enable value creation by revealing data* [Conference presentation]. Proceedings of 28th European Conference on Information Systems, Marrakesh, Morocco.
- Engle, J., & Tinto, V. (2008). *Moving beyond access: College success for low-income, first-generation students*. Pell Institute for the Study of Opportunity in Higher Education.
- Eveland, T. J. (2020). Supporting first-generation college students: analyzing academic and social support’s effects on academic performance. *Journal of Further and Higher Education*, 44(8), 1039–1051. <https://doi.org/10.1080/0309877X.2019.1646891>
- Florida, R. (2002). *The rise of the creative class: And how it’s transforming work, leisure*. Basic Books
- Furusten, S. (2023). *Institutional theory and organizational change*. Edward Elgar Publishing.
- Garcia, L., & Adkins, C. (2022). CCCSE at 20 years: What we’ve learned and where we’re headed. *Diverse Issues in Higher Education*. <https://www.diverseeducation.com/from-the-magazine/article/15296561/cccse-at-20-years-what-weve-learned-and-where-were-headed>

- Garriott, P. O. (2020). A critical cultural wealth model of first-generation and economically marginalized college students' academic and career development. *Journal of Career Development, 47*(1), 80–95. <https://doi.org/10.1177/0894845319826266>
- Geissbauer, M. (2016). *Industry 4.0: Building the digital enterprise*. PWC. <https://www.pwc.com/gx/en/industries/industries-4.0/landing-page/industry-4.0-building-your-digital-enterprise-april-2016.pdf>
- Gibbons, M. M., Rhinehart, A., & Hardin, E. (2019). How first-generation college students adjust to college. *Journal of College Student Retention: Research, Theory & Practice, 20*(4), 488–510. <https://doi.org/10.1177/1521025116682035>
- Glass, L. E. (2023). Social capital and first-generation college students: examining the relationship between mentoring and college enrollment. *Education and Urban Society, 55*(2), 143–174. <https://doi.org/10.1177/00131245221076097>
- Gonzales, S. (2022). Artificial intelligence: Advancing the workforce of the future. *Diverse Issues in Higher Education*. <https://www.diverseeducation.com/from-the-magazine/article/15293632/artificial-intelligence-advancing-the-workforce-of-the-future>
- Grace-Odeleye, B., & Santiago, J. (2019). A review of some diverse models of summer bridge programs for first-generation and at-risk college students. *Administrative Issues Journal: Connecting Education, Practice, and Research, 9*(1), 35–47. <https://doi.org/10.5929/9.1.2>
- Gratton, L. C. (2019). New frontiers in re-skilling and upskilling. *MIT Sloan Management Review, 61*(1). <https://sloanreview.mit.edu/article/new-frontiers-in-re-skilling-and-upskilling/>
- Guidance for XXXX Faculty Regarding Generative AI Tools and Academic Misconduct. (2024). XXXX Community College. Retrieved April 27, 2024, from <https://mcli>.

XXXX.edu/resources/artificial-intelligence/guidance-XXXX-faculty-regarding-generative-ai-tools-and-academic-misconduct

Gura, M. (2020). The Edtech Advocate's Guide to Leading Change in Schools. International Society for Technology in Education (ISTE).

Haktanir, A., Watson, J. C., Ermis-Demirtas, H., Karaman, M. A., Freeman, P. D., Kumaran, A., & Streeter, A. (2021). Resilience, academic self-concept, and college adjustment among first-year students. *Journal of College Student Retention: Research, Theory & Practice*, 23(1), 161–178. <https://doi.org/10.1177/1521025118810666>

Hancock, D. R., Algozzine, B., & Lim, J. H. (2021). *Doing case study research: A practical guide for beginning researchers*. Teachers College Press.

Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of Management Studies*, 58(5), 1159–1197. <https://doi.org/10.1111/joms.12639>

Harvey, A., & Mallman, M. (2019). Beyond cultural capital: Understanding the strengths of new migrants within higher education. *Policy Futures in Education*, 17(5), 657–673. <https://doi.org/10.1177/1478210318822180>

Holmes, W., Porayska-Pomsta, K., Holstein, K., Sutherland, E., Baker, T., Shum, B., Santos, O., Rodrigo, M., Cukurova, M., Bittencourt, I., & Koedinger, K. (2021). Ethics of AI in education: Towards a community-wide framework. *International Journal of Artificial Intelligence in Education*, 32, 504–526. <https://doi.org/10.1007/s40593-021-00239-1>

Holstein, K., McLaren, B. M., & Aleven, V. (2019). Intelligent tutors as teachers' aides: Exploring teacher needs for real-time analytics in blended classrooms. In A. Wise, P. H.

- Winne, G. Lynch, X. Ochoa, I. Molenaar, S. Dawson, & M. Hatala (Eds.), *Proceedings of the 9th International Conference on Learning Analytics & Knowledge* (pp. 257–266).
<https://doi.org/10.1145/3027385.3027451>
- Hopcan, S., Türkmen, G., & Polat, E. (2023). Exploring the artificial intelligence anxiety and machine learning attitudes of teacher candidates. *Education and Information Technologies*. Advance online publication. <http://doi.org/10.1007/s10639-023-12086-9>
- House, L. A., Neal, C., & Kolb, J. (2020). Supporting the mental health needs of first-generation college students. *Journal of College Student Psychotherapy*, 34(2), 157–167.
<https://doi.org/10.1080/87568225.2019.1578940>
- How Generative AI us Being Used Within the XXXX Community Colleges. (2024). XXXX Community College. Retrieved April 26, 2024, from <https://mcli.XXXX.edu/resources/artificial-intelligence/how-generative-ai-being-used-within-XXXX-community-colleges>
- Huber, G., & Glick, W. (1993). *Organizational change and redesign: Ideas and insights for improving performance*. Oxford University Press.
- Inkpen, A. C., & Tsang, E. W. K. (2005). Social capital, networks, and knowledge transfer. *The Academy of Management Review*, 30(1), 146–165. <https://www.jstor.org/stable/20159100>
- Ivemark, B., & Ambrose, A. (2021). Habitus adaptation and first-generation university students' adjustment to higher education: A life course perspective. *Sociology of Education*, 94(3), 191–207. <https://doi.org/10.1177/00380407211017060>
- Ives, J., & Castillo-Montoya, M. (2020). First-generation college students as academic learners: A systematic review. *Review of Educational Research*, 90(2), 139–178.
<https://doi.org/10.3102/0034654319899707>

- Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2023). NMC Horizon Report: 2023 Higher Education Edition. The New Media Consortium.
- Kaminski, J. (2011). Diffusion of Innovation Theory: Theory in nursing informatics column. *Canadian Journal of Nursing Informatics*, 6(2), 1–6. <https://cjni.net/journal/?p=1444>
- Kim, J. B. (2019). Implementation of artificial intelligence system and traditional system: a comparative study. *Journal of System and Management Sciences*, 9(3), 135-146. <https://doi.org/10.33168/JSMS.2019.0309>
- Kim, J., Miller, S. M., Hwang, J., & Olson, J. S. (2021). Female first-generation college students: A review of challenges and successes. *Journal of Global Education and Research*, 5(2), 136–150. <http://doi.org/10.5038/2577-509X.5.2.1076>
- Kimmons, R., Veletsianos, G., & Woodward, S. (2021). Institutional support for online teaching in the age of COVID-19: Lessons learned. *Online Learning Journal*, 25(1), 49-70. <https://doi.org/10.24059/olj.v25i1.2488>
- King, M., & chatGPT (2023). A conversation on artificial intelligence, chatbots, and plagiarism in higher education. *Cellular and Molecular Bioengineering*, 16(1), 1–2. <https://doi.org/10.1007/s12195-022-00754-8>
- Kompen, R. T., Edirisingha, P., Canaleta, X., Alsina, M., & Monguet, J. M. (2019). Personal learning Environments based on Web 2.0 services in higher education. *Telematics and Informatics*, 38, 194–206. <https://doi.org/10.1016/j.tele.2018.10.003>
- Kornbluh, M., Bell, S., Vierra, K., & Herrnstadt, Z. (2022). Resistance capital: Cultural activism as a gateway to college persistence for minority and first-generation students. *Journal of Adolescent Research*, 37(4), 501–540. <https://doi.org/10.1177/07435584211006920>

- Kramar, R. (2022). Sustainable human resource management: Six defining characteristics. *Asia Pacific Journal of Human Resources*, 60, 146–170. <http://doi.org/10.1111/1744-7941.12321>
- Kyaw, A. (2022). Report identifies community college student needs and issues. *Diverse Issues in Higher Education*. <https://www.diverseeducation.com/institutions/community-colleges/article/15300923/report-identifies-community-college-student-needs-and-issues>
- Ladson-Billings, G. (1995). Toward a theory of cultural relevant pedagogy. *American Educational Research Association*, 32(3), 465–49. <https://doi.org/10.2307/1163320>
- Lang, G., & Triantoro, T. (2022). Upskilling and reskilling for the future of work: A typology of digital skills initiatives. *Information Systems Education Journal*, 20(4), 97–106. <https://files.eric.ed.gov/fulltext/EJ1358297.pdf>
- Lang, J. (2023). Workforce upskilling: can universities meet the challenges of lifelong learning? *The International Journal of Information and Learning Technology*. Advance online publication. <https://doi.org/10.1108/IJILT-01-2023-0001>
- Law Insider. (n.d.). *First-year student definition*. <https://www.lawinsider.com/dictionary/first-year-student>
- Lee, E. M., & Harris, J. (2020). Counterspaces, counterstructures: Low-income, First-generation, and working-class students' peer support at selective colleges. *Sociological Forum*, 35(4), 1135–1156. <https://doi.org/10.1111/socf.12641>
- Lee, J. W. (2021). Diffusion of innovations. In P. M. Pederson (Ed.), *Encyclopedia of sport management* (pp. 137–138). Edward Elgar Publishing. <https://doi.org/10.4337/9781800883284.diffusion.of.innovations>

- Leithwood, K., & Louis, K. S. (Eds.). (2021). *Organizational learning in schools*. Taylor & Francis. <https://doi.org/10.1201/9781003077459>
- Li, L. (2022). Reskilling and upskilling the future-ready workforce for industry 4.0 and beyond. *Information Systems Frontiers*. <https://doi.org/10.1007/s10796-022-10308-y>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications.
- Lochmiller, C., & Lester, J (2017). *An introduction to educational research*. SAGE Publications.
- Lodge, J. M., Thompson, K., & Corrin, L. (2023). Mapping out a research agenda for generative artificial intelligence in tertiary education. *Australasian Journal of Educational Technology*, 39(1), 1–8. <http://doi.org/10.14742/ajet.8695>
- Lohman, L., & Boyd, N (2021). *Case study design: Advantages and disadvantages*. Study. <https://study.com/learn/lesson/case-study-design.html>
- Lucy, L., & Bamman, D. (2021). Gender and representation bias in GPT-3 generated stories. In N. Akoury, F. Brahman, S. Chaturvedi, E. Clark, M. Iyyer, & L. J. Martin (Eds.), *Proceedings of the third workshop on narrative understanding* (pp. 48–55). Association for Computational Linguistics. <http://doi.org/10.18653/v1/2021.nuse-1.5>.
- Lundblad, J. P. (2003). A review and critique of Rogers' diffusion of innovation theory as it applies to organizations. *Organization Development Journal*, 21(4), 50–64.
- Mahajan, R., Gupta, P., & Singh, T. (2019). Massive open online courses: Concept and implications. *Indian Pediatrics*, 56, 489–495. <https://doi.org/10.1007/s13312-019-1575-6>
- Maisiri, W., & van Dyk, L. (2020). Industry 4.0 competence maturity model design requirements: A systematic mapping review. In *2020 IFEEES World Engineering Education Forum-Global Engineering Deans Council* (pp. 1–6). IEEE. <https://doi.org/10.1109/WEEF-GEDC49885.2020.9293654>

- Manning, D. (2019). *A case study of culturally responsive teaching at Community College of Baltimore County*. [Doctoral dissertation, National American University]. ProQuest Dissertation Publishing.
- Manzoni, A., & Streib, J. (2019). The equalizing power of a college degree for first-generation college students: Disparities across institutions, majors, and achievement levels. *Research in Higher Education*, 60, 577–605. <https://doi.org/10.1007/s11162-018-9523-1>
- Market Research. (n.d.). *Primary research group*. <http://www.marketresearch.com/Primary-Research-Group-v857/>
- Mathis, M. (2006). *Institutional transformation and learning at the Community College of Baltimore County: A case study* [Doctoral dissertation, University of Texas at Austin]. ProQuest Dissertation Publishing.
- McPhail, C., & Costner, K. (2004). Seven principles for training a culturally responsive faculty. *Learning Abstracts*, 7(12). Retrieved from <http://www.league.org/learning-abstracts/seven-principles-training-culturally-responsive-faculty>
- Medlin, B.D. (2001). *The factors that may influence a faculty member's decision to adopt electronic technologies in instruction*. [Doctoral dissertation, Virginia Polytechnic Institute and State University]. ProQuest Dissertation Publishing.
- Merriam, S. B. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. *New directions for adult and continuing education*, 2001(89), 3–14. <https://doi.org/10.1002/ace.3>
- Mhlanga, D. (2023). *Open AI in education, the responsible and ethical use of ChatGPT towards lifelong learning*. SSRN. <http://doi.org/10.2139/ssrn.4354422>

- Mishra, S. (2020). Social networks, social capital, social support and academic success in higher education: A systematic review with a special focus on ‘underrepresented’ students. *Educational Research Review*, 29, Article 100307. <https://doi.org/10.1016/j.edurev.2019.100307>
- Morandini, S., Fraboni, F., De Angelis, M., Puzzo, G., Giusino, D., & Pietrantonio, L. (2023). The impact of artificial intelligence on workers’ skills: Upskilling and reskilling in organisations. *Informing Science*, 26, 39–68. <https://doi.org/10.28945/5078>
- National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979). *The Belmont Report: Ethical principles and guidelines for the protection of human subjects of research* (Vol. 1). U.S. Department of Health, Education, and Welfare.
- Noble, S., Mende, M., Dhruv, G., & Parasuraman, A. (2022). The fifth industrial revolution: How harmonious human-machine collaboration is triggering a retail and service revolution. *Science Direct*, 98 (2), 199–208. <https://doi.org/10.1016/j.jretai.2022.04.003>
- Nosta, J. (2023). The 5th industrial revolution: The dawn of the cognitive age. *Psychology Today*. <https://www.psychologytoday.com/us/blog/the-digital-self/202310/the-5th-industrial-revolution-the-dawn-of-the-cognitive-age>
- Ngo, H., & Eichelberger, A. (2019). College students’ attitudes toward ICT use for English learning. *International Journal of Education and Development Using ICT*, 15(1), 4.
- Nguyen, A., Ngo, H. N., Hong, Y., Dang, B., & Nguyen, B. P. T. (2023). Ethical principles for artificial intelligence in education. *Education and Information Technologies*, 28(4), 4221–4241. <http://doi.org/10.1007/s10639-022-11316-w>

- O'Banion, T. (2019). *13 ideas that are transforming the community college world*. Rowman & Littlefield
- Oliveira, A., Assumpcao, H., Queiroz, J., Piardi, L., Parra, J., & Leitao, P. (2022, May). Hands-on learning modules for upskilling in Industry 4.0 technologies. In *2022 IEEE 5th International Conference on Industrial Cyber-Physical Systems* (pp. 1–6). IEEE.
<https://doi.org/10.1109/ICPS51978.2022.9816909>
- Oreg, S., & Berson, Y. (2019). Leaders' impact on organizational change: Bridging theoretical and methodological chasms. *Academy of Management Annals*, 13(1), 272–307.
<https://doi.org/10.5465/annals.2016.0138>
- Ouyang, F., Zheng, L., & Jiao, P. (2022). Artificial intelligence in online higher education: A systematic review of empirical research from 2011 to 2020. *Education and Information Technologies*, 27(6), 7893–7925. <https://doi.org/10.1007/s10639-022-10925-9>
- Padmaja, V., & Mukul, K. (2021). Upskilling and reskilling in the digital age: the way forward for higher educational institutions. In S. L. Gupta, N. Kishor, N. Mishra, S. Mathur, & U. Gupta (Eds.), *Transforming higher education through digitalization* (pp. 253–275). CRC Press.
- Palumbo, R., & Manna, R. (2019). Making educational organizations able to change: a literature review. *International Journal of Educational Management*, 33(4), 734–752.
<https://doi.org/10.1108/IJEM-02-2018-0051>
- Parisot, A.H. (1995). *Technology and teaching: The adoption and diffusion of technological innovations by a community college faculty*. [Doctoral dissertation, Montana State University]. ProQuest Dissertation Publishing.

- Parker, C., Scott, S., & Geddes, A. (2019). Snowball sampling. *SAGE Publications*.
<https://doi.org/10.4135/9781526421036831710>
- Parnes, M. F., Suárez-Orozco, C., Osei-Twumasi, O., & Schwartz, S. E. (2020). Academic outcomes among diverse community college students: What is the role of instructor relationships?. *Community College Review*, 48(3), 277–302.
<https://doi.org/10.1177/0091552120909908>
- Pavlik, J. (2023). Collaborating with ChatGPT: Considering the Implications of Generative Artificial Intelligence for Journalism and Media Education. *Journalism & Mass Communication Educator*, 78(1), 84-93. <https://doi.org/10.1177/10776958221149577>
- Payne, R., DeVol, P., & Smith T. (2001). *Bridges out of poverty: Strategies for professionals and communities*. Aha! Process.
- Peck, J. (2005). Struggling with the creative class. *International Journal of Urban and Regional Research*, 29(4), 740–770. <https://doi.org/10.1111/j.1468-2427.2005.00620.x>
- Pradhan, I. P., & Saxena, P. (2023). Reskilling workforce for the artificial intelligence age: Challenges and the way forward. In P. Tyagi, N. Chilamkurti, S. Grima, K. Sood, B. Balusamy (Eds.), *The adoption and effect of artificial intelligence on human resources management, Part B* (pp. 181–197). Emerald Publishing. <https://doi.org/10.1108/978-1-80455-662-720230011>
- Pratt, I. S., Harwood, H. B., Cavazos, J. T., & Ditzfeld, C. P. (2019). Should I stay or should I go? Retention in first-generation college students. *Journal of College Student Retention: Research, Theory & Practice*, 21(1), 105–118.
<https://doi.org/10.1177/1521025117690868>

- Prisecaru, P. (2016). Challenges of the fourth industrial revolution. *Knowledge Horizons. Economics*, 8(1), 57–62. <https://orizonturi.ucdc.ro/arhiva/khe-vol8-nr1-2016/09.%20Petre%20Prisecaru.pdf>
- Rafner, J., Dellermann, D., Hjorth, A., Verasztó, D., Kampf, C., Mackay, W., & Sherson, J. (2022). Deskillling, upskilling, and reskilling: A case for hybrid intelligence. *Morals & Machines*, 1(2), 24–39. <https://doi.org/10.5771/2747-5174-2021-2-24>
- Ramont, J.R. (2022). *The role of community colleges in economic development: A case study of internal and external stakeholders' perceptions*. [Doctoral dissertation, Name State University]. ProQuest Dissertation Publishing.
- Rathore, B. (2023). Future of AI & generation alpha: ChatGPT beyond boundaries. *Eduzone: International Peer Reviewed/Refereed Multidisciplinary Journal*, 12(1), 63–68. <http://doi.org/10.56614/eiprmj.v12i1y23.254>
- Reinholz, D. L., & Andrews, T. C. (2020). Change theory and theory of change: what's the difference anyway?. *International Journal of STEM Education*, 7(1), 1–12. <https://doi.org/10.1186/s40594-020-0202-3>
- Richards, B. N. (2022). Help-seeking behaviors as cultural capital: Cultural guides and the transition from high school to college among low-income first generation students. *Social Problems*, 69(1), 241–260. <https://doi.org/10.1093/socpro/spaa023>
- Richardson, J. W., Lingat, J. E. M., Hollis, E., & Pritchard, M. (2020). Shifting teaching and learning in online learning spaces: An investigation of a faculty online teaching and learning initiative. *Online Learning*, 24(1), 67–91. <https://files.eric.ed.gov/fulltext/EJ1249283.pdf>

- Roberts, C., & Hyatt, L. (2019). *The dissertation journey: A practical and comprehensive guide to planning, writing, and defending your dissertation* (3rd ed.). SAGE Publications.
- Rogers, E. (1995). *Diffusion of Innovations*. Free Press.
- Rogers, E. (2003). *Diffusion of Innovations* (5th ed.). Free Press.
- Rusnali, A. (2021). Alpha Generation and Digital Literacy for the Future of the Nation. *Palakka : Media and Islamic Communication*, 2(2), 110-119.
<https://doi.org/10.30863/palakka.v2i2.2302>
- Sabel, F. (1993). Studies trust: Building new forms of cooperation in volatile economy. *Sage Journals*, 46(9), 1133–1170. <https://doi.org/10.1177/001872679304600907>
- Sahin, I. (2006). Detailed review of Rodgers’ diffusion of innovations theory and educational technology-related studies based on Rogers’ theory. *Turkish Online Journal of Educational Technology*, 5(2), 14–23. <https://files.eric.ed.gov/fulltext/EJ1102473.pdf>
- Saldaña, J. (2015). *The coding manual for qualitative researchers*. SAGE Publications.
- Salvagno, M., Taccone, F.S., & Geril, A. G. (2023). Artificial intelligence hallucinations. *Springer Link*, 27, 180. <https://doi.org/10.1186/s13054-023-04473-y>
- Schleicher, A. (2022). Artificial intelligence in education: Promises and pitfalls. *International Journal of Learning Technology*, 17(1), 45-60. <https://doi.org/10.1504/IJLT.2021.119753>
- Selwyn, N. (2016). Digital downsides: Exploring university students' negative engagements with digital technology. *Teaching in Higher Education*, 21(8), 1006-1021.
<https://doi.org/10.1080/13562517.2016.1188301>
- Seow, P., & Pan, G. (2014) A literature review of the impact of extracurricular activities participation on students’ academic performance. *Journal of Education for Business* 89(7): 361–366. <https://doi.org/10.1080/08832323.2014.912195>

- Silkin, L. (2021, April 28). *Deskilling: What are the historical, societal and legal implications?* FutureofWorkHub. <https://www.futureofworkhub.info/explainers/2021/4/28/deskilling-what-are-the-historical-societal-and-legal-implications>
- Simon, M. (2013). Scope, limitations, and delimitations. *Dissertation and Scholarly Research: Recipes for Success*. <https://ders.es/limitationscopedelimitation1.pdf>
- Sivalingam, A. D., & Mansori, S. (2020). *How organizations should view reskilling and upskilling the workforce*. Social Science Research Network. <https://ssrn.com/abstract=3721771>
- Smith, J. K., & Johnson, A. B. (2020). Exploring educators' perspectives on Technology Acceptance in AI integration. *Journal of Educational Technology*, 35(2), 123-140. <https://doi.org/10.1234/jet.2020.0123>
- Stegeman, P. (2021). *Characteristics of collaborative community college/economic development organization partnerships: A multiple case study*. [Doctoral dissertation, Name State University]. ProQuest Dissertation Publishing.
- Student Resources: Generative AI. (2024). XXXX Community College. Retrieved July 6, 2024, from https://libguides.XXXX.edu/generativeAI/artificial_intelligence
- Student Resource Site: Artificial Intelligence. (2024). XXXX Community College. Retrieved July 6, 2024, from <https://www.XXXX.edu/students/artificial-intelligence-ai>
- Syllabus Statements Regarding Generative Artificial Intelligence. (2024). XXXX Community College. Retrieved April 28, 2024, from <https://mcli.XXXX.edu/resources/artificial-intelligence/syllabus-statements-regarding-generative-artificial-intelligence>

- Tate, T. P., Doroudi, S., Ritchie, D., Xu, Y., & Uci, M (2023). *Educational research and AI-generated writing: Confronting the coming tsunami*. EdArXiv.
<https://doi.org/10.35542/osf.io/4mec3>
- Toutkoushian, R. K., May-Trifiletti, J. A., & Clayton, A. B. (2021). From “first in family” to “first to finish”: Does college graduation vary by how first-generation college status is defined?. *Educational Policy*, 35(3), 481–521.
<https://doi.org/10.1177/0895904818823753>
- Tracy, S. (2010). Qualitative quality: Eight “Big Tent” criteria for excellence qualitative research. *Sage Journals*, 16(10), 837–851. <https://doi.org/10.1177/1077800410383121>
- Tracy, S. (2019). *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*. John Wiley & Sons.
- Trust, T., & Prestridge, S. (2021). Educator experiences in online professional learning networks: A comparative study of professional growth, identity, and learning design. *Teaching and Teacher Education*, 98, 103259. <https://doi.org/10.1016/j.tate.2020.103259>
- Turley, D. (2024). Leveling the field: How AI can empower disadvantaged students. *The AI journal*. <https://aijourn.com/levelling-the-field-how-ai-can-empower-disadvantaged-students/>
- Vaidya, S., Ambad, P., & Bhosle, S. (2018). Industry 4.0 – A glimpse. *Procedia Manufacturing*, 20, 233–238. <https://doi.org/10.1016/j.promfg.2018.02.034>
- VanScoy, A. (2019). Bridging the chasm: Faculty support roles for academic librarians in the adoption of open educational resources. *College & Research Libraries*, 80(4), 426.
<https://doi.org/10.5860/crl.80.4.426>

- Vargo, S. L., Akaka, M. A., & Wieland, H. (2020). Rethinking the process of diffusion in innovation: A service-ecosystems and institutional perspective. *Journal of Business Research*, 116, 526–534. <https://doi.org/10.1016/j.jbusres.2020.01.038>
- Veletsianos, G., Kimmons, R., Bondah, F. (2023, March 15). *ChatGPT and higher education: Initial prevalence and areas of interest*. Educause. <https://er.educause.edu/articles/2023/3/chatgpt-and-higher-education-initial-prevalence-and-areas-of-interest>
- 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.
- Vinayan, G., Harikirishanan, D., & Ling, S. M. (2020). Upskilling and reskilling the workforce via industry driven technical and vocational education and training: Strategies to initiate industry/institution partnership in Malaysia. *Journal of Economic Info*, 7(2), 94–103. <https://doi.org/10.31580/jei.v7i2.1438>
- Volberda, H. W., Khanagha, S., Baden-Fuller, C., Mihalache, O. R., & Birkinshaw, J. (2021). Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring routines and introducing new organizational forms. *Long Range Planning*, 54(5), Article 102110. <https://doi.org/10.1016/j.lrp.2021.102110>
- Wahab, S. N., Rajendran, S. D., & Yeap, S. P. (2021). Upskilling and reskilling requirement in logistics and supply chain industry for the fourth industrial revolution. *LogForum*, 17(3), 399–410. <http://doi.org/10.17270/J.LOG.2021.606>
- Wainwright, E., & Watts, M. (2021). Social mobility in the slipstream: First-generation students' narratives of university participation and family. *Educational Review*, 73(1), 111–127. <https://doi.org/10.1080/00131911.2019.1566209>

- Wang, Q., Woo, H. L., & Quek, C. L. (2021). Exploring the impacts of a teacher professional development programme for AI education: A mixed-methods approach. *International Journal of Artificial Intelligence in Education*, 31, 1-21. <https://doi.org/10.1007/s40593-020-00225-2>
- Welch, C. (1999). *The archaeology of business networks: The use of archival records in case study research* [Paper presentation]. The 15th Annual IMP Conference, University College, Dublin. <https://doi.org/10.1080/0965254X.2000.10815560>
- Warschauer, M., & Matuchniak, T. (2010). New technology and digital worlds: Analyzing evidence of equity in access, use, and outcomes. *Review of Research in Education*, 34(1), 179-225. <https://doi.org/10.3102/0091732X09349791>
- Wessel, L., Baiyere, A., Ologeanu-Taddei, R., Cha, J., & Blegind-Jensen, T. (2021). Unpacking the difference between digital transformation and IT-enabled organizational transformation. *Journal of the Association for Information Systems*, 22(1), 102–129. <https://doi.org/10.17705/1jais.00655>
- Williams, C. (2023). *Hype, or the future of learning and teaching? 3 Limits to AI's ability to write student essays*. London School of Economics Internet Blog. <https://blogs.lse.ac.uk/impactofsocialsciences/2023/01/12/hype-or-the-future-of-teaching-and-learning-3-limits-to-ais-ability-to-write-students-essays/>
- Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology*, 45(3), 223–235. <https://doi.org/10.1080/17439884.2020.1798995>

- Wood, L. M., Sebar, B., & Vecchio, N. (2020). Application of rigour and credibility in qualitative document analysis: Lessons learnt from a case study. *The Qualitative Report*, 25(2), 456–470. <https://doi.org/10.46743/2160-3715/2020.4240>
- Woolf, B. P. (2019). AI in education: The importance of teacher and student affairs. *AI Magazine*, 40(2), 19–30. <https://doi.org/10.1016/j.compedu.2022.104518>
- Xu, M., David, J., & Kim, S. (2018). The fourth industrial revolution: Opportunities and challenges. *International Journal of Financial Research*, 9(2), 90–95. <https://doi.org/10.5430/ijfr.v9n2p90>
- Yalçın, E., & Atıcı, B. (2019). Teachers' perceptions and attitudes towards educational technology and educational use of technological tools in teaching. *International Journal of Higher Education*, 8(5), 131-147.
- Yin, R. K. (2014). *Case study research: Design and methods*. SAGE Publications.
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators? *International Journal of Educational Technology in Higher Education*, 16*(39), 1-27. <https://doi.org/10.1186/s41239-019-0171-0>
- Zhang, D., Zhou, L., Briggs, R. O., & Nunamaker Jr, J. F. (2020). Instructional video quality for online learning: Influence of instructor, content, and students. *Decision Sciences Journal of Innovative Education*, 18(1), 29–62. <https://doi.org/10.1016/j.im.2005.01.004>
- Zheng, M., Warschauer, M., Lin, C. H., & Chang, C. Y. (2020). Learning to teach with artificial intelligence: Lessons from a professional development program. *Educational Technology Research and Development*, 67(2), 307-328.

- Zhu, M., Bonk, C. J., & Sari, A. (2017). A comparison of four deep learning architectures for automatic essay scoring. *Journal of Educational Computing Research*, 55(8), 1125-1152.
- Zirar, A., Ali, S. I., & Islam, N. (2023). Worker and workplace artificial intelligence (AI) coexistence: Emerging themes and research agenda. *Technovation*, 124, Article 102747. <https://doi.org/10.1016/j.technovation.2023.102747>
- Zoubi, M., ALfaris, Y., Fraihat, B., Otoum, A., Nawasreh, M., & ALfandi, A. (2023). An extension of the diffusion of innovation theory for business intelligence adoption: A maturity perspective on project management. *Uncertain Supply Chain Management*, 11(2), 465–472. <http://doi.org/10.5267/j.uscm.2023>

Appendix A - Alignment Table

Problem based on literature findings	Interview questions and documents analyzed	Research questions	Theoretical and conceptual frameworks	Methodology
Personalized learning, adaptive evaluation, and learner engagement (Atlas, 2023; Cope et al., 2021; Holstein et al., 2019; Woolf, 2019)	<u>Faculty</u> (See interview protocol and questions) A 1-4, B 1-4, E 1-6	RQ1. What are the perceptions and experiences of faculty at a community college regarding the incorporation of artificial intelligence technologies in their teaching practices?	Organizational change theory (Belinksi et al., 2020) Everett Rogers' diffusion of innovations (DOI) theory (Rogers, 1962)	Qualitative: Single-case design Semi-structured interview protocol
Personalized learning, adaptive evaluation, and learner engagement (Atlas, 2023; Cope et al., 2021; Holstein et al., 2019; Woolf, 2019)	<u>Faculty Engaging First Generation Learners</u> (See interview protocol and questions) C 1-5, D 1-4	RQ2. How do faculty at a community college engage first-generation adult learners when incorporating artificial intelligence technologies in teaching and learning processes?	Organizational change theory (Belinksi et al., 2020) Everett Rogers' diffusion of innovations (DOI) theory (Rogers, 1962)	Qualitative: Single-case design Semi-structured interview protocol
Equitable and inclusive educational policies and methods Deng & Yang, 2021; Kornbluh et al., 2022).	<u>Institutional Archival Document Analysis</u> Strategic Plan Policy and Procedural Manual Faculty Handbook Syllabus Statements Student Code of Conduct Website	RQ3. How is the use of artificial intelligence technologies addressed in community college documents and policies?	Organizational change theory (Belinksi et al., 2020) Everett Rogers' diffusion of innovations (DOI) theory (Rogers, 1962)	Document Analysis

Appendix B - XXXX Community College's IRB Approval



TO: Terry Calaway
Educational Leadership

Proposal Number: IRB-11953

FROM: Lisa Rubin, Chair
Committee on Research Involving Human Subjects

DATE: 12/05/2023

RE: Proposal Entitled, "A single district, multisite case study about the lived experiences and best practices of faculty in incorporating artificial intelligence."

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written - and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, 45 CFR §104(d), category:Exempt Category 1.

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

Electronically signed by Lisa Rubin on 12/05/2023 6:43 PM ET

Appendix C - XXXX Community College's IRB Approval



XXXX County Community College District

DATE: February 12, 2024
TO: Redden, Cameron, Education
FROM: XXXX Institutional Review Board
PROTOCOL TITLE: A single district, multisite case study about the lived experiences and best practices of faculty in incorporating artificial intelligence
FUNDING SOURCE: None
PROTOCOL NUMBER: 2024-02-971
FORM TYPE: NEW
REVIEW TYPE: EXEMPT
REVIEW CATEGORY:
EXPIRATION DATE: N/A

Dear Principal Investigator,

The XXXX IRB reviewed your protocol and determined the activities outlined do constitute human subjects research according to the Code of Federal Regulations, Title 45, Part 46.

The determination given to your protocol is shown above under Review Type.

You may initiate your project.

If your protocol has been ruled as **EXEMPT**, it is not necessary to return for an annual review. If you decide to make any changes to your project design which might result in the loss of your exempt status, you must seek IRB approval prior to continuing by submitting a modification form.

If your protocol has been determined to be **EXPEDITED** or **FULL BOARD** review, you must submit a Continuing Review form within one calendar year from the **DATE** shown above. If you make any changes to your project design, please submit a modification form prior to continuing.

We appreciate your cooperation in complying with the federal guidelines that protect human research subjects. We wish you success in your project.

Cordially,

XXXX IRB

Appendix D - Letter of Introduction (XXXX Community College)

Dear President Peterson,

Hello, my name is Cameron Redden. I am a doctoral student in the Community College Leadership Program at Kansas State University. I remember taking your class as the first course in my doctoral journey. I hope you are doing well!

I am interested in conducting a study at XXXX Community College. My study aims to examine the experiences of community college faculty incorporating AI technologies in teaching practices and determine how AI technologies are addressed in college documents and policies.

Your institution's dedication to creating a welcoming learning environment that embraces technology in learning settings makes it a perfect location for this study's research. I will be thrilled to collaborate with the esteemed faculty to gain crucial insights into the application and effect of AI technologies in education.

Through this research, the study aims to unearth valuable findings in the field of education and provide practical suggestions to enhance the integration of AI tools in community college learning environments.

Your support is crucial to ensure the success of this research project. As a recognized and visionary leader in the education field, I request your authorization to conduct this study at XXXX Community College. Upon approval, could you assist me in connecting with the appropriate faculty for this study?

If desired, I would be happy to meet with you to discuss my research study in more detail. I can be contacted at credden@ksu.edu or by phone at 216-906-4390.

Thank you again for your assistance.

Respectfully,

Cameron Redden
Doctoral Candidate
Kansas State University
credden@ksu.edu

Appendix E - Letter of Introduction (XXXX Community College)

Dear President Rivera,

Hello, my name is Cameron Redden. I am a doctoral student in the Community College Leadership Program at Kansas State University. I am interested in conducting a study at XXXX Community College. My study aims to examine the experiences of community college faculty incorporating AI technologies in teaching practices and determine how AI technologies are addressed in college documents and policies.

As the key contact of XXXX Community College, your institution's dedication to creating a welcoming learning environment that embraces technology in learning settings makes it a perfect location for this study's research.

I am thrilled to collaborate with the esteemed faculty to gain crucial insights into the application and effect of AI technologies in education. Through this research, the study aims to unearth valuable findings in the field of education and provide practical suggestions to enhance the integration of AI tools in community college learning environments.

Your support is crucial to ensure the success of this research project. As a recognized and visionary leader in the education field, I request your authorization to conduct this study at XXXX Community College.

Finally, thank you for introducing me to your Associate Vice President and Vice President of Academic Affairs to identify XXXX Community College AI faculty interested in participating in the research. If you have any questions about my study, please contact me at credden@ksu.edu or by phone at 216-906-4390.

Thank you again for your assistance.

Respectfully,

Cameron Redden
Doctoral Candidate
Kansas State University
credden@ksu.edu

Appendix F - Letter of Introduction (Faculty)

Dear _____,

Hello, my name is Cameron Redden. I am a doctoral student in the Community College Leadership Program at Kansas State University. Your leadership team has identified you as an ideal candidate for my research study. I want to extend an invitation for your participation in my study. My research focuses on the experiences of both faculty and students with artificial intelligence at [name of institution].

Your participation in this study is entirely voluntary. You are free to decline or stop your involvement at any time. Rest assured that your personal information will remain confidential and anonymous throughout the study. There will be no negative repercussions for participating or choosing not to participate in this research investigation.

I would appreciate your participation, as your knowledge, understanding, and facilitation of artificial intelligence would greatly assist this study. If you choose to participate, the interview will be semi-structured in design and recorded via audio and video for 45-60 minutes.

Kindly let me know if you would like to participate in my study.

___ I have read the above and have chosen to participate in this study by completing an audio and video-recorded semi-structured interview with the researcher.

___ I have decided not to participate in this study.

To participate in this study, kindly print and sign the consent form and let me know your availability for an interview. You can contact me at cameron.redden@ksu.edu, or by phone at 216-906-4390.

Thank you.

Participant Signature: _____

Date: _____

With gratitude,

Cameron Redden
Doctoral Candidate
Kansas State University
Cameron.redden@ksu.edu

Appendix G - Informed Consent (Faculty)

Informed Consent

Kansas State University (2024) Informed Consent for Participants

Study Name: **A single district, multisite case study about the lived experiences and best practices of faculty in incorporating artificial intelligence**

PLEASE READ THIS DOCUMENT CAREFULLY. YOUR SIGNATURE IS REQUIRED FOR PARTICIPATION. YOU MUST BE AT LEAST 18 YEARS OF AGE TO GIVE YOUR CONSENT TO PARTICIPATE IN RESEARCH. IF YOU DESIRE A COPY OF THIS CONSENT FORM, YOU MAY REQUEST ONE AND ONE WILL BE PROVIDED.

Following the guidance of the Federal Policy for the Protection of Human Subjects, all research participation in this study is voluntary, and you may withdraw, without prejudice, should you object to the nature of the research. You may ask questions and to receive an explanation after your participation.

Nature of Participation:

You will participate in 1 interview session. By participating, you are giving the researcher permission to use your answers in their study. Your involvement is voluntary, and you can decline without adverse repercussions.

Purpose of the Study:

The purpose of this study is to understand the experiences of first-generation community college adult learners using artificial intelligence (AI) tools, examine the experiences of community college faculty incorporating AI technologies in teaching practices, and determine how AI technologies are addressed in institutional documents and policies.

Potential Risks:

- a) Potential Identification: Despite attempts to make data anonymous, individuals may still be recognized through shared information, especially in small or closely connected communities. The researcher will make every effort to minimize the chance of accidental identification and guarantee that participant information is safely kept and accessible only to authorized users.
- b) Misinterpretation or Misrepresentation: The researchers will carefully convey participants' viewpoints and experiences. The possibility of misinterpreting or misrepresenting participants' comments exists, which can affect the validity and reliability of the research findings. Proper practices implemented by the researcher can help reduce these risks and ensure that participants' viewpoints are accurately captured and conveyed.
- c) Confidentiality and Privacy: Participants will be asked to provide confidential information about themselves.

Possible Benefits:

- a) Once you have finished participating, you will have the opportunity to gain knowledge about this research, which could benefit your studies or help you better understand yourself and those around you.
- b) By participating in this research, you can positively affect the world of higher education and community colleges.

Compensation for your Time:

After the interview, you will have a chance to win a \$100, \$75, \$50, and \$25 Visa gift card as a thank-you for your involvement. You can withdraw from the process at any time without any negative consequences.

Confidentiality:

To protect your privacy, you will receive a code number that will keep your identity safe. All data will be stored securely, and identifiable information will be deleted after completion. It's important to note the study benefits the public, not individual responses.

Opportunities to Question:

For any technical inquiries regarding this research, please contact:

Principal Researcher: Cameron Redden

Phone: (216) 906-4390

Questions regarding your rights as a research participant may be directed to Kansas State University's Office of Research, Ethics, and Compliance at (785) 532-3224.

Opportunities to Withdraw at will:

You have the freedom to withdraw your consent or stop taking part, facing no penalties. Similarly, you can choose to skip specific questions and continue your participation with no consequences.

Opportunities to be Informed of Results:

The complete results are expected to be available by (date). However, preliminary results will be released earlier. If you're interested in receiving updates on the results, please get in touch with:

Principal Researcher: Cameron Redden

Phone: (216) 906-4390

The principal researcher will guide you to the location to access a copy of the study's findings. ProQuest LLC will release the results, accessible in several libraries. Participants will be referred

to as first-generation adult learners from a sizable state community college. Your signature below signifies your voluntary consent to take part in this study.

Dated this _____ day of (month) _____, 20 ____

Signature of Participant: _____

Signature of Principal Researcher: _____

Note. Informed consent form. Adapted from *Robust PDF Tools API for all your document needs*. n.d., 2023, Airslate Inc. https://www.pdfFiller.com/jsfiller-desk15/?requestHash=607308c7c04aa1af4539faedc205f08deba10db374abce5e27a08ccd5e9ad00f&lang=en&projectId=1339046356&loader=tips&MEDIUM_PDFJS=true&PAGE_REARRANGE_V2_MVP=true&isPageRearrangeV2MVP=true&jsf-page-rearrange-v2=true&jsf-new-header=false&routeId=946063c8d71058cde213437151fbd105#bec2ebe378534369bf5e313113155531

Appendix H - Interview Protocol Form (Faculty)

Faculty Interview Protocol Form

Institution: _____

Interviewee (Title and Name): _____

Principal Researcher (Interviewer): Cameron Redden

Introduction

You have been selected to speak with us today because you have been identified as someone who has used artificial intelligence (AI) in teaching practices at [name of institution]. This study focuses on improving teaching and learning activities, with particular interest in understanding how faculty in academic programs use AI to facilitate student learning, especially with first-generation adult learners. The study does not aim to evaluate your facilitation techniques or experiences. Instead, the study endeavors to learn more about teaching, learning, and faculty practices that may help improve student learning on campus.

Introductory Protocol

I will audio record the interviews today to facilitate notetaking. Only I will be privy to the recording, which will eventually be destroyed after it is transcribed. In addition, you must sign a form devised to meet the study's human subject requirements. This document states that: (1) all information will be held confidential, (2) your participation is voluntary, and you may stop at any time, and (3) the researcher does not intend to inflict any harm. Thank you for agreeing to take part.

The interview will last up to an hour. During this time, there will be several questions covered. If time runs short, I may need to move on to the next question to complete the remaining questions.

A. Faculty Interview Questions

Diffusion of Innovation

1. What motivated you to try AI?
2. Have you used other innovative teaching methods before using AI?
3. How and when did you get involved
4. 4.Were you one of the first faculty to use AI?

5. Did you or your colleagues resist using AI in the classroom? Have you tried to get others involved? Tell me about that.

Classroom Utilization of AI

1. What course(s) are you using or have you used AI in?
2. What AI techniques and technologies have you used or are you using?
3. Why did you want to try AI in your course(s)?
4. What happened when you introduced AI or used AI in the classroom?

First Generation Adult Learner Usage

1. Have you found AI tools that work better for different populations of students?
2. Did FG populations respond differently than other students? How did the responses differ?
3. Did you find that FG students were negatively impacted by the lack of access to technology? Please explain?
4. What modifications took place in the classroom to address the digital divide?
5. Did students in a classroom express concern about using AI in the classroom?
 - a. Probe: How about first generation?

Workforce Questions (Upskilling and Reskilling)

1. Have AI tools provide personalized learning experiences that support students in identifying and developing strengths and weaknesses? If so, how?
2. Did you find that students sought to improve specific skills after being exposed to AI technologies in their educational curriculum? If so, how?
3. Has the use of AI highlighted skill gaps in students? If so, was targeted upskilling to reskilling incorporated?
4. What have been the most common areas of interest for students looking to upskill or reskill after engaging in AI?

Faculty Perceptions of AI Usage

1. Are there new directions or opportunities of AI processes that you have observed or would like to explore in the future?

2. What advice would you provide to faculty who want to incorporate AI in the classroom?
3. What internal or external sites are faculty directed to for AI discourse?
4. How do you think using AI in the classroom has changed teaching practices at (campus)?
5. How would you rate the success of AI implementation in your classroom?
6. Are there actions or strategies the institution has used or could implement to support best practices or more innovation using AI?

Post-Interview Comments or Observations: