Online Faculty Experiences with Implementing LLM and AI Tools in Online Academia: A Qualitative Exploratory Case Study

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Abstract

In fully online higher education, the use of large language model artificial intelligence (LLM-AI) tools created new instructional considerations related to teaching, learning, and academic integrity. The problem addressed in this study was that many faculty members teaching in online higher education viewed LLM-AI tools with skepticism, which often led to concerns regarding academic integrity, a perceived decline in instructional quality, and resistance to shifting pedagogical roles. The purpose of this qualitative exploratory case study was to investigate the experiences of online faculty members in successfully implementing LLM-AI tools in their classrooms to support student learning. Transformative Learning Theory served as the theoretical framework for the study. Data were collected through semi-structured interviews with eight online faculty participants representing varied disciplinary contexts, followed by a virtual focus group to support triangulation. Data were analyzed using Braun and Clarke's updated seven-phase reflexive thematic analysis framework. The study was guided by two research questions: (1) What strategies did online faculty use to implement LLM-AI tools? and (2) How did online faculty implement LLM-AI tools in their classrooms to support student learning? Four themes were developed from the analysis: Purposeful and Intentional AI Integration, Explicit Boundary-Setting for AI Use, AI as a Support for Student Learning Processes, and AI as a Tool for Instructional Efficiency and Support. The results showed that online faculty implemented LLM-AI tools through intentional, ethically grounded instructional practices that emphasized pedagogical alignment, transparency, scaffolding, and efficiency-oriented support. Implications for practice included the need for clearer institutional guidance, expanded faculty development, and structured approaches to ethically responsible LLM-AI integration in fully online higher education.

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Chapter 1: Introduction

Artificial Intelligence (AI) has evolved from a theoretical concept introduced during the 1956 Dartmouth Conference into a transformative force across sectors such as healthcare, finance, and education (McCarthy et al., 1955). While the foundational discipline of AI was established decades ago, the specific emergence of LLM-AI tools is a contemporary development driven by advancements in deep learning. Using neural network architectures, including the transformer model introduced by Vaswani et al. (2017), I focused on how the processing of large-scale language data was facilitated, which is a core factor in the development of modern LLM-AI tools.

As LLM-AI tools have become increasingly integrated into higher education, online faculty members encounter both opportunities and challenges in deploying these technologies (Alonso & Sánchez, 2024; Warschauer, 2022). Although initially viewed with skepticism or uncertainty, these tools have gained broader acceptance as practical applications have demonstrated clear pedagogical benefits in the virtual classroom (Zawacki-Richter & Jung, 2025). This shift in perception is often influenced by observed improvements in instructional efficiency, automated content generation, and enhanced learner support.

The integration of LLM-AI tools into online higher education environments presents a significant challenge for many educators, particularly regarding initial perceptions and attitudes toward technological change. While these tools demonstrate the potential to enhance teaching practices through personalization and efficiency, a segment of online faculty remains resistant to widespread adoption (Young, 2025). The guiding framework for this inquiry was Transformative Learning Theory (TLT), which posits that individuals undergo perspective shifts when faced with *disorienting dilemmas* that challenge existing professional norms (Mezirow, 1991). By

applying this framework, I examined how faculty navigate the disruption caused by LLM-AI tools to eventually reintegrate these technologies into their instructional practice.

Statement of the Problem

The problem to be addressed in this study was many faculty members teaching in online higher education viewed LLM-AI tools with skepticism, which often led to concerns regarding academic integrity, a perceived decline in instructional quality, and resistance to shifting pedagogical roles (Cotton et al., 2023; Young, 2025). Although the use of LLM-AI tools increased across higher education, many faculty members remained uncertain about how to implement these tools in ways that were ethically appropriate, pedagogically sound, and supportive of student learning because clear, empirically grounded implementation strategies remained limited (Binns, 2021; Warschauer, 2022).

In fully online settings, this problem was especially significant because teaching, communication, and assessment were mediated through digital platforms, which heightened concerns about authentic student work, the quality of learning interactions, and appropriate boundaries for AI use (Cotton et al., 2023; Young, 2025). Prior research documented that LLM-AI tools may support instructional efficiency, personalized learning, and feedback processes when integrated effectively, which indicated that meaningful instructional benefits may have remained underused when faculty skepticism persisted (Alonso & Sánchez, 2024; Zawacki-Richter & Jung, 2025). This problem affected faculty members, students, and academic leaders because inconsistent instructional practices and unclear expectations for acceptable AI use may have contributed to uneven learning experiences across online courses. What remained insufficiently understood was how online faculty members who had successfully implemented LLM-AI tools navigated these challenges and what strategies they used to support student

learning. If this problem had not been addressed, concerns about academic dishonesty, reduced student engagement, and inconsistent instructional quality may have persisted in fully online higher education.

Purpose of the Study

The purpose of this qualitative exploratory case study was to investigate the experiences of online faculty members in successfully implementing LLM-AI tools in their classrooms to support student learning. This study was conducted in response to the identified problem that many faculty members in online higher education viewed LLM-AI tools with skepticism, which contributed to concerns about academic integrity, a perceived decline in instructional quality, and resistance to shifting pedagogical roles. To address this purpose, I used purposive sampling to select eight online faculty members in the United States who taught in fully online higher education contexts and had direct experience implementing LLM-AI tools in instructional practice. Data were collected through eight semi-structured individual interviews and one virtual focus group to examine participants' experiences with instructional adaptation, pedagogical decision-making, and strategies to support student learning using LLM-AI tools. To protect confidentiality, I assigned pseudonyms to participants and described the institutional setting in general terms. I analyzed the data using Braun and Clarke's (2024) updated seven-phase reflexive thematic analysis framework to identify patterns and themes across participants' accounts, and I used member checking to support transcript accuracy and the credibility of the findings.

Introduction to Framework

Transformative Learning Theory (TLT), as established by Mezirow (1991), served as the guiding framework for this study. The framework is built upon key concepts such as the

disorienting dilemma, critical reflection, and perspective transformation, which explain how adults revise their frames of reference when faced with significant change. In the context of this study, the rapid emergence of LLM-AI tools represented a disorienting dilemma for online faculty, forcing a reconsideration of traditional teaching models and academic integrity standards.

The framework guided my research decisions by shaping the development of the problem statement, which focused on the *disorienting* nature of AI skepticism. It also informed the research questions by centering the inquiry on the reflective and adaptive strategies faculty used to transform their instructional practice to accommodate LLM-AI tools. Subsequent theorists, such as Cranton (2023), further developed the framework to emphasize the individualized and context-dependent nature of this transformation, which aligned with the qualitative, exploratory case study design of this research.

By applying TLT, this study employed a conceptual lens to examine how online faculty navigated the instructional use of LLM-AI tools in fully online higher education contexts. TLT supported the interpretation of participant accounts by maintaining an analytic focus on the cognitive, reflective, and professional shifts associated with adapting instructional practice in environments shaped by concerns about academic integrity, ethical use, and pedagogical effectiveness. In alignment with the study's problem and purpose, TLT framed an analysis of how faculty critically reassessed prior assumptions, implemented reflective and adaptive strategies, and enacted perspective transformation in response to the rapid emergence of LLM-AI tools.

Introduction to Research Methodology and Design

I chose a qualitative exploratory case study design to investigate the descriptive accounts of online faculty members as they implemented LLM-AI tools within fully online instructional environments. I selected a qualitative approach based on its capacity to support the in-depth exploration of complex, context-dependent instructional practices and the nuanced decision-making processes associated with emerging technologies (Creswell & Poth, 2024). This methodology and design were the most appropriate choices for the study because they aligned with the goal of exploring the *how* and *why* of faculty experiences within the real-world context of online higher education. Using an exploratory case study framework, I examined faculty experiences within a bounded instructional context to facilitate a rigorous analysis of how participants interpreted and navigated the integration of LLM-AI tools into their teaching practices (Yin, 2023).

To capture a comprehensive range of individual perspectives and collective experiences regarding the implementation of LLM-AI tools, I gathered data through semi-structured individual interviews and a virtual focus group. I established the participant pool through purposive sampling to ensure inclusion of faculty members with at least 3 years of direct experience in fully online instruction and engagement with LLM-AI tools. By adhering to these criteria, the methodology facilitated a granular examination of instructional decision-making while avoiding the presumption of uniform adoption, standardized outcomes, or consistent levels of implementation across the sample.

I conducted the data analysis using the reflexive thematic analysis approach established by Braun and Clarke (2024). This analytic procedure necessitated iterative engagement with interview and focus group transcripts, systematic coding, and the subsequent development and

refinement of themes aligned with the research questions. I used this methodology to discern patterned meanings across participants' accounts of the implementation of LLM-AI tools, thereby ensuring the analysis remained consistent with the study's exploratory objectives.

The use of both individual and group data collection methods enabled data triangulation, thereby enhancing the credibility of the findings. By comparing the detailed narratives from interviews with the focus group's shared insights, I gained a more robust understanding of the faculty experience. This multi-method approach ensured that the complexities of technological integration were captured from both personal and professional peer perspectives, contributing to the overall rigor of the research.

Research Questions

RQ1

What strategies do online faculty use to implement LLM-AI tools?

RQ2

How do online faculty implement LLM-AI tools in their classrooms to support student learning?

Initial skepticism and resistance among online faculty members toward LLM-AI tools in instructional settings were primarily grounded in concerns about the potential impact of these technologies on established pedagogical practices, academic integrity, and the quality of instructional interaction (Young, 2025). Faculty members expressed apprehension that integrating LLM-AI tools could alter traditional instructional roles, undermine assessment validity, and complicate efforts to ensure authentic student work. These concerns were not isolated to individual experiences but were consistently reflected in the scholarly literature, with indications that critical attitudes toward AI were prevalent across online higher education

contexts (Binns, 2021). In particular, faculty members teaching in fully online environments raised concerns that increased reliance on automated systems might diminish meaningful instructional engagement. As documented in prior research, such apprehension contributed to hesitancy in adoption and cautious experimentation with LLM-AI tools.

I focused the first research question to facilitate the examination of the strategies online faculty members employ to navigate these perceptions. Prior scholarship indicates that the successful adoption of LLM-AI tools typically involves addressing barriers through strategies such as professional development, peer collaboration, and small-scale pilot tests (Warschauer, 2022). Scholarly evidence suggests that when faculty members engage in transformative learning processes and critically reflect on the role of technology in their practice, they may be more likely to adopt these systems as supportive tools rather than threats (Mezirow, 1991). Institutional support was found to be a pivotal factor in this transition, as the provision of resources and training reduced resistance and built faculty confidence.

I designed the second research question to facilitate an examination of how online faculty members implemented LLM-AI tools in their classrooms to support student learning. These tools are increasingly utilized in online education to support various aspects of teaching, including content delivery, student engagement, and assessment (Warschauer, 2022). Faculty members have used LLMs to automate grading, provide timely feedback, and create personalized learning experiences (Schuetz, 2022). Existing research suggests that these tools were most effective when integrated into active learning strategies, such as project-based learning or peer collaboration (Binns, 2021; Johnson et al., 2023). Implementing AI in online classrooms requires a careful balance between human interaction and technology to maintain the quality of the educational experience (Garrison & Kanuka, 2020).

I selected these research questions to support the aim of examining educators' adaptive responses to emerging technologies in online education. By focusing on the strategies used to address perceptions of LLM-AI tools and their practical implementation, I developed a nuanced understanding of the cognitive and pedagogical shifts involved. This focus complemented the selected theoretical framework, which emphasizes transformative learning in response to significant professional disruption. By using these research questions, I ensured the inquiry remained centered on participants' experiences within their specific instructional contexts.

Significance of the Study

The significance of this study lies in its potential to advance the understanding of faculty adaptation during periods of rapid technological disruption in higher education. By addressing the skepticism surrounding LLM-AI tools, I have presented findings that contribute to a framework for faculty members to transition from resistance to purposeful integration. The completion of this study offers positive consequences by identifying actionable strategies that maintain academic integrity while leveraging the efficiency of LLM-AI tools. These insights provide a roadmap for other faculty members to enhance their instructional practice without compromising pedagogical standards.

For practitioners and institutional leaders, the results of this inquiry are significant, offering evidence-based approaches to professional development and policy formation. Rather than relying on top-down mandates, leaders can utilize these findings to foster a culture of peer collaboration and reflective practice among online faculty. This approach promotes a more consistent student experience by ensuring that LLM-AI tools are implemented to prioritize active learning and cognitive engagement. Furthermore, I identified the specific support structures, such as pilot programs and ethical guidelines, that facilitate successful technology adoption.

Theoretically, this research advanced Transformative Learning Theory (TLT) by applying Mezirow's (1991) concepts to the specific context of LLM-AI tools in digital environments. The findings demonstrated how the *disorienting dilemma* of emerging technology initiates a process of reflective meaning-making that leads to a reintegrated teaching philosophy. By documenting these shifts in perspective, I provided an empirical bridge between theoretical adult learning models and practical instructional application. This contribution enriches the literature on professional development, showing that transformation is achieved through the critical negotiation of LLM-AI tools within established instructional contexts.

Definitions of Key Terms

Academic Dishonesty

Academic dishonesty encompasses behaviors that violate established standards of educational integrity, such as plagiarism, fabrication, and unauthorized collaboration on assignments or examinations. Within the context of modern instructional environments, the term is applied to include the inappropriate or undisclosed use of LLM-AI tools to generate academic work. These behaviors are considered factors that may undermine intended learning outcomes and erode the trust essential to validating academic credentials (International Center for Academic Integrity [ICAI], 2021).

Artificial Intelligence (AI)

AI refers to machine-based systems capable of performing tasks that typically require human intelligence, such as reasoning, learning, and problem-solving (Moor, 2006). These systems are designed to generate content by analyzing data and adapting their behavior over time. In this inquiry, I examined these systems as tools that operate at varying levels of autonomy across industries and educational contexts.

Effectiveness

Effectiveness refers to the degree to which an activity, intervention, or process achieves its intended outcomes or objectives under real-world conditions (Frye & Hemmer, 2012). In educational and organizational contexts, effectiveness is a metric that measures how well goals are met in practice rather than under controlled conditions. I used the concept of effectiveness to evaluate how LLM-AI tools support student learning in the online classroom.

Large Language Model (LLM)

LLM tools are advanced artificial intelligence (AI) systems trained on vast amounts of text data to understand, generate, and manipulate human language in a coherent, contextually relevant manner (Vaswani et al., 2017). These models use deep learning architectures, particularly transformers, to process and predict text based on patterns learned from training data. Within the scope of this inquiry, LLM-AI tools serve as the primary unit of analysis for the exploration of faculty implementation and instructional decision-making.

Learning Management System (LMS)

A Learning Management System (LMS) is a web-based technology platform used to plan, deliver, manage, and assess educational courses (Ellis, 2009). This technology provides the digital infrastructure for creating content, tracking learner progress, and facilitating communication in virtual higher education environments. In this study, the LMS served as the primary environment in which I investigated faculty members' integration of LLM-AI tools.

Summary

The problem addressed in this study was introduced in Chapter 1, which involved the skepticism and resistance with which many faculty members teaching in online higher education contexts approach LLM-AI tools. These attitudes were often related to concerns regarding

academic integrity, instructional quality, and pedagogical roles. The purpose of this qualitative exploratory case study was to investigate the experiences of online faculty members in successfully implementing LLM-AI tools within fully online instructional environments to support student learning.

I utilized Transformative Learning Theory as the theoretical framework to examine how faculty members interpreted and responded to technological change through reflection, meaning-making, and instructional adaptation. I selected a qualitative, exploratory case study design as an appropriate approach to address the problem because it facilitated in-depth examination of faculty experiences, instructional decision-making, and context-specific implementation of emerging technologies. Through this design, I gained a deeper understanding of the complexities of online instruction.

I designed the research questions to focus on the strategies online faculty members used to implement LLM-AI tools and the ways these tools were incorporated into instructional practice to support student learning. Together, the problem statement, purpose, theoretical framework, and research design constituted a coherent foundation for examining faculty responses to emerging technologies in online education. A review of the literature is provided in Chapter 2 regarding LLM-AI tools in higher education, faculty perceptions of emerging technologies, and Transformative Learning Theory as it informs instructional adaptation and professional practice.

Chapter 2: Literature Review

The problem to be addressed in this study was many faculty members teaching in online higher education viewed LLM-AI tools with skepticism, which often led to concerns regarding academic integrity, a perceived decline in instructional quality, and resistance to shifting pedagogical roles (Cotton et al., 2023; Young, 2025). The purpose of this qualitative exploratory case study was to investigate the experiences of online faculty members in successfully implementing LLM-AI tools in their classrooms to support student learning. In this chapter, I provided a comprehensive evaluation of the scholarly literature surrounding these constructs, beginning with the documentation of the search strategy and the guiding theoretical framework.

Subsequent sections included a critical synthesis of existing research regarding faculty technology adoption, the evolution of academic integrity in digital environments, and the pedagogical implications of LLM-AI tools. These discussions were framed to highlight areas of convergence and divergence within the field of online higher education, thereby better situating the current inquiry. Through this systematic review, I established the need for the study by identifying specific gaps in the literature concerning the decision-making processes of online faculty members.

Documentation

I employed a systematic search strategy to identify relevant literature for this inquiry. I conducted a comprehensive literature review encompassing peer-reviewed articles, scholarly journals, and academic texts accessed through databases such as Google Scholar, ERIC, JSTOR, arXiv, PubMed, and the National University Library system. I applied filters to prioritize sources published between 2020 and 2026, ensuring that at least 80% of the citations remained within the five-year currency window required for this manuscript. I utilized Boolean operators to refine

search results, including combinations such as LLM-AI tools AND online teaching, faculty AND technology adoption, and academic integrity AND LLM-AI tools.

I conducted the search for relevant scholarship using a comprehensive list of keywords, including LLM-AI tools, large language models, LLM-AI tools in teaching, online faculty experiences, faculty technology adoption, technology resistance, academic integrity, digital transformation in higher education, and faculty professional development. I often limited these searches to titles and abstracts to ensure the closest relevance to the study's focus on instructional decision-making and faculty skepticism. Through this rigorous selection process, I identified the most applicable and recent studies for inclusion in the final synthesis. The inclusion of diverse databases ensured that both technical developments in LLM-AI tools and pedagogical shifts in higher education were represented.

To maintain the currency and depth of the review, the search process I used was iterative and continued throughout the investigation. This approach enabled the incorporation of emerging research on the rapid evolution of LLM-AI tools and their impact on instructional norms. By evaluating sources for methodological rigor and relevance to the online context, I established a robust foundation for the theoretical and empirical discussion. This systematic documentation ensures the replicability of the search process and confirms the alignment of the literature with the core research questions.

Framework

Transformative Learning Theory (TLT) provided the guiding theoretical framework for this study. Drawing on this theory's principles, I established a framework for understanding how adults critically reflect on experiences that challenge established assumptions and professional norms (Mezirow, 1991). Within the context of online higher education, the emergence of LLM-

AI tools prompted faculty to reconsider instructional roles and pedagogical priorities. I used this framework to facilitate a deeper exploration of the cognitive and professional transitions faculty members experience during technological disruption. By viewing LLM-AI tools integration as a potential disorienting dilemma, I used the framework to analyze how faculty members move from initial skepticism to a reintegrated teaching philosophy.

The origin of TLT is rooted in Mezirow's (1978) study of women returning to postsecondary education, which identified that significant learning involves a structural change in how individuals interpret their experiences. The framework is built on several core assumptions, primarily that adult meaning-making is shaped by *frames of reference* comprising habits of mind and points of view. Transformation occurs through specific propositions: the occurrence of a disorienting dilemma, critical self-reflection, participation in rational discourse, and the eventual implementation of a revised perspective. Over the decades, subsequent theorists such as Cranton (2023) and Taylor (2017) have further developed the theory to emphasize the importance of social context and emotional intuition alongside its original focus on rational logic.

Existing research supports the use of TLT in exploring educational technology adoption, particularly when the technology requires a fundamental shift in instructional identity. I considered alternative frameworks, such as the Technology Acceptance Model (TAM) or the Unified Theory of Acceptance and Use of Technology (UTAUT), for this study, but ultimately excluded them. While these models are effective at measuring perceived ease of use and utilitarian adoption rates, they do not account for the internal, cognitive *retooling* of a teacher's philosophy. I chose TLT because it provides the depth needed to examine how online faculty negotiate the ethical and pedagogical disruptions caused by LLM-AI tools.

The research problem of faculty skepticism is situated directly within the disorienting dilemma phase of the framework. This selected lens guided my development of the purpose statement and research questions by shifting the focus from which tools are used to how their use reflects a change in the educator's perspective. By utilizing TLT, I ensured that the investigation of the implementation of LLM-AI tools remained grounded in a robust understanding of adult development and professional evolution.

The Evolution of Online Education in Higher Academia

Research on online academia has converged on the understanding that the transition to digital and hybrid modes of instruction marks a fundamental shift in the structure of higher education. What was once viewed as a temporary or supplementary delivery model is now widely accepted as a core modality for expanding access, increasing flexibility, and rethinking traditional pedagogical frameworks (EDUCAUSE, 2023; Inside Higher Ed [IHE], 2023). Scholars broadly agree that this evolution has forced institutions to reconsider not only their technological infrastructure but also their teaching philosophies and academic policies (Hawkins et al., 2023). Similarly, researchers agree that the role of faculty has undergone a significant transformation. Online instructors are no longer perceived solely as content deliverers; rather, they are expected to serve as instructional designers, engagement facilitators, and community builders within virtual environments (Wang et al., 2023).

While there is consensus about the changing role of the educator, researchers differ on the extent to which faculty feel adequately prepared for these new expectations. Some studies indicate that instructors are adapting effectively to online demands by increasing their technological self-efficacy and willingness to integrate digital tools (EDUCAUSE, 2023). Conversely, other findings highlight ongoing challenges in workload, professional development,

and institutional support (IHE, 2023). A potential explanation for this divergence is provided by Hawkins et al. (2023), who found that faculty members newer to the profession or those introduced to online teaching more recently expressed greater comfort and adaptability compared to veteran faculty. This suggests that "digital fluency" may be as much a result of career timing as it is of institutional training.

Pedagogical practices unique to online instruction have also received sustained attention in the recent literature. There is consensus that effective online learning depends on active student engagement, timely feedback, and learner-centered instructional design (Martin et al., 2020). Practices such as scaffolded assignments, asynchronous discussions, and interactive tools have become essential to fostering meaningful learning in virtual settings (Zhu et al., 2023). These strategies are considered vital for fostering autonomy and critical thinking in the absence of physical classroom dynamics (UEN Pressbooks, 2023). However, the literature remains divided on the long-term impact of these digital strategies on student retention and deep cognitive processing.

Divergent findings emerge most sharply around the use of emerging technologies, particularly generative artificial intelligence. Some researchers support integrating AI tools, such as automated feedback systems and LLMs, to enhance efficiency and personalize the learning experience (Lang, 2025). Others express significant concern that such tools may compromise academic integrity, devalue critical thinking, or lead to an over-reliance on automation (Miller, 2025; Shah, 2025). Researchers disagree with conclusions that present AI integration as an unqualified benefit, arguing instead for a cautious, ethically grounded implementation that prioritizes human-in-the-loop oversight (New Yorker, 2025). This tension between efficiency

and integrity represents a primary gap that the current study seeks to explore through the lens of faculty experiences.

Online Academia: Challenges and Opportunities for Instructors

The rapid expansion of online academia has sparked critical research into how instructors experience and adapt to digital teaching environments, particularly regarding flexibility, isolation, communication norms, and reliance on platforms. Scholars have convergently recognized flexibility as a double-edged phenomenon in the modern university. On one hand, it has enabled instructors to design and deliver courses that accommodate personal and professional obligations, supporting more adaptive and inclusive pedagogies (Barzilai & Barzilai, 2025). Similarly, researchers agree that asynchronous formats reduce time constraints for students and allow for more reflective instructional responses. However, studies have diverged in their framing of the consequences of this flexibility. While some have upheld its potential to democratize access, others point to increased workloads and blurred work-life boundaries, especially in under-supported institutions (Hadullo et al., 2024). The literature convergently suggests that flexibility only translates into professional opportunities when accompanied by institutional trust and autonomy.

Instructor isolation has also emerged as a significant concern within the scholarly discourse, particularly in the wake of prolonged online and hybrid teaching. Research has similarly identified social disconnection, a lack of peer collaboration, and the erosion of collegial support as common stressors for virtual faculty (Tiruneh et al., 2025). While some faculty engaged meaningfully in online communities of practice, others reported that virtual interactions could not replicate the spontaneity and emotional connection of in-person academic life. These perspectives divergently reflect differences in institutional culture and faculty career stages. For

junior faculty, the loss of informal mentorship and hallway interactions often carries heavier professional consequences, whereas more established instructors primarily note a decline in scholarly engagement and innovation (Hadullo et al., 2024).

Digital communication norms have been significantly reshaped in online academia, requiring faculty to develop new forms of *instructional presence*. Instructors are often forced to recalibrate tone, presence, and response cadence, especially when engaging asynchronously. Barzilai and Barzilai (2025) found that instructors who adopted more expressive, humanizing digital strategies, such as personalized feedback and multimodal interactions, were more effective at building student rapport. Concurrently, researchers acknowledge that effective digital communication requires intentionality and ongoing adaptation to be successful. However, norms have diverged across disciplines, age groups, and cultural contexts. Some faculty embraced informal, tech-enabled interactions to bridge the distance, while others struggled to find a balance between professionalism and approachability in virtual spaces.

Scholars have converged on the centrality and inherent risks of platform reliance in higher education. While learning management systems and video conferencing tools have streamlined many administrative tasks, their rigid structures and surveillance features have drawn widespread criticism. Instructors have raised concerns about limited pedagogical flexibility, technological fatigue, and the ethical implications of data collection (Kimmons et al., 2025). Similarly, the widespread use of unsanctioned apps for grading or communication has created tension between institutional policy and instructional autonomy. These studies upheld the need for clearer guidelines, ethical safeguards, and training in platform literacy, while divergently debating whether current systems effectively serve instructors or ultimately constrain them.

Faculty Roles

As online higher education has become increasingly mainstream, scholars have converged on the understanding that faculty roles have undergone a fundamental transformation. What was once considered a temporary instructional alternative has evolved into a dominant and permanent fixture in higher education delivery (EDUCAUSE, 2023; Wang et al., 2023). Researchers agree that this shift requires faculty to assume expanded responsibilities, including designing digital courses, engaging online students, and continually adapting to technological advancements. This evolution necessitates a departure from traditional "sage on the stage" models toward roles that emphasize instructional design and virtual facilitation.

However, findings have diverged regarding how faculty experience these professional shifts. While some studies emphasize the importance of building faculty self-efficacy in educational technology, others highlight ongoing concerns about inadequate training, increased workload, and a lack of institutional support (Hawkins et al., 2023). Similarly, Hawkins et al. found that newer faculty members were often more optimistic and adaptable in virtual environments, whereas experienced instructors expressed resistance or fatigue, suggesting a generational or experiential divide. Researchers disagree with conclusions that portray faculty as uniformly prepared or eager to teach online; instead, the literature reveals a more nuanced and uneven adaptation process influenced by individual career stages.

Faculty challenges in online teaching remain multifaceted and structurally complex. Common obstacles identified in the literature include sustaining student engagement, ensuring academic integrity, and designing courses that are pedagogically sound yet manageable in scope (Martin et al., 2020). Conversely, some faculty view online environments as opportunities for more flexible, student-centered teaching, noting benefits such as increased accessibility and the

potential for deeper asynchronous discussions (Wang et al., 2023). This dichotomy suggests that faculty perception of online teaching as either a burden or an opportunity is often predicated on the specific digital tools and institutional resources available to them.

Pedagogically, researchers have converged on the effectiveness of certain practices unique to online instruction, such as scaffolding, asynchronous collaboration, and multimedia integration (Zhu et al., 2023). These strategies support autonomy, critical thinking, and engagement within the virtual classroom. Similarly, transformative learning approaches such as reflective activities, real-world problem-solving, and student-led discussions have proven effective in fostering deep learning online (UEN Pressbooks, 2023). On the contrary, some studies warn that online instruction can become transactional and impersonal if not intentionally designed for social and teaching presence (Shah, 2025).

Divergent findings also appear in the literature surrounding the use of artificial intelligence in online education. Some researchers advocate for AI-enhanced tools to streamline grading and personalize feedback, asserting that these technologies can reduce administrative burdens (Miller, 2025). Others raise significant ethical concerns, arguing that such technologies may erode academic integrity and reduce opportunities for authentic, human-led learning. Researchers disagree with conclusions that AI is inherently beneficial or neutral, urging a more critical, pedagogically grounded approach to implementation that centers on educators' judgment.

Integration of Technology in Online Teaching

Historically, faculty integration of educational technology has evolved in response to institutional demands, pedagogical shifts, and advances in digital infrastructure. Initially, technology in higher education was primarily used to supplement in-person teaching with tools

such as overhead projectors, computer labs, and early learning management systems (LMSs). Over time, as online learning gained legitimacy, faculty roles shifted from passive adopters to active designers of digital learning environments (Martin et al., 2020). Researchers have converged on the understanding that the historical adoption of technology was often reactive rather than strategic, driven more by institutional necessity than a proactive pedagogical vision (Koehler & Mishra, 2009).

With the rise of fully online and hybrid education, the competencies required for effective teaching have expanded significantly. Digital literacy alone is considered insufficient in the modern landscape; faculty must also demonstrate technological pedagogical content knowledge (TPACK), which includes specialized skills in course design, online facilitation, and tool evaluation (Koehler & Mishra, 2009). Researchers agree that the most effective online instructors are those who can successfully align technological choices with learning outcomes and student needs (Zhu et al., 2023). Similarly, faculty must be able to curate multimedia content, manage digital communication, and assess learning across diverse, tech-mediated formats to maintain instructional rigor.

The adoption of technology is shaped by a complex interplay of institutional and individual factors. Researchers have diverged in their assessments of whether faculty resistance stems primarily from personal reluctance or systemic barriers within the organization. On one hand, institutional infrastructure, leadership support, and formal policy directly affect the availability and consistent use of technology (EDUCAUSE, 2023). On the other hand, faculty attitudes, prior professional experiences, and individual teaching philosophies heavily influence a willingness to adopt new tools (Hawkins et al., 2023). Contrarily, while some instructors cite

autonomy and the spirit of experimentation as primary motivations for tech adoption, others report feeling coerced or overwhelmed by shifting institutional expectations (Lang, 2025).

The availability and quality of faculty training programs play a crucial role in the success of digital transitions. Researchers agree that robust professional development opportunities improve instructor confidence, digital competency, and overall course quality (Martin et al., 2020). However, divergent findings suggest that many training programs are either too generic in scope or lack contextual relevance to specific disciplines, which limits their overall impact (Wang et al., 2023). On the contrary, institutions that offer individualized, ongoing support and peer-to-peer mentoring often see significantly higher rates of technological adoption and sustainable innovation.

Faculty resistance remains a notable challenge within the scholarship of online education. While some resistance is rooted in technological discomfort or a lack of skill, researchers disagree with the conclusion that labels resistant faculty as simply unwilling to change. Instead, resistance is often viewed as a rational response to unclear expectations, limited time for preparation, and valid concerns about quality and workload (Hawkins et al., 2023). Similarly, instructors may resist when they perceive technology as diminishing their academic autonomy or potentially compromising the pedagogical integrity of the learning experience (Shah, 2025).

Faculty Motivation and Resistance Toward Technology Adoption

As the role of instructors in online academia evolves, research has convergently shown that faculty attitudes toward technology adoption are shaped by intertwined psychological, institutional, and practical factors. Psychologically, faculty members' self-efficacy, defined as their confidence in utilizing new digital tools, plays a pivotal role in the transition process. Those with higher self-efficacy, often fostered through targeted professional development, are more

willing to adopt distance learning tools than their less confident peers (Brown et al., 2024; eLearning Acceptance, 2022). Similarly, perceived usefulness and ease of use remain core constructs that promote adoption when faculty believe the technology will enhance teaching without requiring undue effort.

However, attitudes toward technology have diverged significantly when training and institutional support are lacking. In these contexts, many instructors described feelings of anxiety and overwork, especially since online teaching often demands more time and effort without adequate professional recognition (Allen & Penuel, 2015; Betts et al., 1998). While historical studies laid the groundwork for understanding these stressors, contemporary researchers emphasize that the increased pace of technological change has exacerbated this sense of fatigue (Nagashima & Hrach, 2021). Consequently, the literature suggests that the gap between high-efficacy *early adopters* and *laggards* is widening in the current higher education landscape.

At the institutional level, faculty members upheld that insufficient structural support significantly contributes to persistent resistance. Common barriers include inadequate training, limited release time for course development, and a misalignment between technology integration and formal promotion criteria (Barriers to Adopting Technology, 2023). While some institutions have convergently invested in pedagogical consulting and technology support groups, others have done so inconsistently, which further fuels faculty skepticism. Practical constraints, including inadequate infrastructure and poorly designed platforms, have differentially affected adoption rates, as instructors remain reluctant to rely on tools that may compromise course quality or instructional efficiency.

From a motivational standpoint, incentives such as recognition, stipends, or tenure credit have been shown to drive technology adoption. On the contrary, the lack of such incentives has

diverged in its impact, particularly for adjunct or early-career faculty who report receiving no additional workload compensation for the time required to master new systems (Nagashima & Hrach, 2021). Moreover, global studies of online teaching adoption identify that while perceived usefulness and satisfaction positively impact adoption, privacy concerns can divergently moderate those relationships (Frontiers Study, 2024). This indicates that the psychological barriers to adoption are often more nuanced than simple technical proficiency.

The rise of generative AI tools underscores these emerging institutional and psychological tensions. For example, faculty adoption of AI-enabled pedagogical agents depends heavily on trust, transparency, and the ability to retain instructional control (ArXiv AI Agent Study, 2024). These factors uphold human-centered design principles, which are essential for mitigating resistance among instructors who prioritize pedagogical integrity over automation. This synthesis reveals that for AI to be successfully integrated, institutional policies must address both the functional utility of the tools and the psychological need for faculty autonomy.

Digital Literacy and Faculty Preparedness for Educational Technology

Recent research on digital literacy and faculty preparedness has convergently identified that the successful adoption of educational technology hinges on more than just basic tool familiarity; it requires institutional backing, psychological readiness, and ongoing skill development. While faculty have similarly acknowledged the flexibility that digital platforms offer for asynchronous teaching and student-centered design, their capacity to leverage this flexibility varied significantly by prior professional experience and the specificity of the training received (Barzilai & Barzilai, 2025). Instructors who had access to structured, ongoing professional development adapted more confidently to new systems. Conversely, those without such resources reported feeling overwhelmed by the rapid pace of technological integration,

suggesting that institutional support is the primary moderator of digital preparedness. Professional isolation has also emerged as a significant barrier to faculty preparedness within the digital landscape. Although digital tools enable constant connectivity, many instructors reported feeling detached from their peers and students due to the transactional nature of online interactions. This sense of professional loneliness has been upheld in multiple studies, which warn that the psychological toll of digital teaching is often underestimated in institutional planning (Tiruneh et al., 2025). Conversely, faculty members embedded in collaborative teaching teams or active digital learning communities experienced greater engagement and perceived support. These divergent experiences highlight the need to foster social presence not just for students but also for faculty members.

In terms of digital communication norms, faculty often struggle to balance clarity, tone, and immediacy in virtual formats. While younger or technologically proficient faculty members adjusted similarly and rapidly to these shifting norms, more senior faculty diverged in their ease of adaptation, citing significant discomfort with the informal nature of digital discourse (Lee & Martinez, 2023). Despite these generational differences, the need for intentional, human-centered communication was convergently emphasized across the contemporary literature as a requirement for pedagogical effectiveness. This consensus indicates that digital literacy must encompass social-emotional intelligence alongside technical proficiency.

The issue of platform reliance has prompted mixed responses within the scholarship of online instruction. Faculty members have praised tools that simplify administrative tasks such as grading and announcement distribution, but criticized rigid systems that limit pedagogical creativity or instructional autonomy. A study emphasized the importance of user agency in platform selection and highlighted the heightened risks of burnout associated with platform

overuse and inadequate training (Kimmons et al., 2025). Ultimately, institutional support and continuous literacy development are viewed as essential pillars that help faculty navigate and thrive in increasingly tech-integrated teaching environments.

Emergence of AI in Higher Education

LLMs are a class of AI systems designed to understand and generate human-like text based on vast linguistic datasets. Built on transformer-based architectures, LLMs can perform a range of complex tasks, including summarizing content, answering questions, composing essays, and translating languages (Jin et al., 2024; Russell & Norvig, 2020). In higher education, these models are increasingly being embedded in academic, administrative, and student support systems to enhance teaching, learning, and cross-cultural communication. Researchers have recognized that LLMs represent a significant technological advancement in academic environments, shifting the focus from simple automation to cognitive augmentation (Gardiner, 2025).

Researchers agree that these tools can aid both students and faculty through writing assistance, personalized feedback, and the efficient generation of instructional materials (Gardiner, 2025; Pang & Wei, 2025). Similarly, LLMs offer notable inclusive benefits by helping non-native speakers and neurodiverse learners access and engage with dense academic content more effectively (Zhu et al., 2023). Recent studies in 2026 have highlighted a *decisive shift* in adoption, in which the conversation among scholars has shifted from whether LLMs should be permitted to how they can be pedagogically integrated to enhance analytical reasoning (Hassan-Taher, 2025). These findings suggest that, when used as *study partners*, LLMs can foster active engagement and help students confront complex problems through real-time dialogue.

However, opinions have diverged regarding the broader educational implications of widespread LLM adoption, particularly concerning student development. While some scholars emphasize the potential for enhanced student support and instructional efficiency, others raise concerns about academic dishonesty, dependency on AI-generated content, and the potential undermining of traditional cognitive skills (Dwyer & Laird, 2024). These divergent findings reflect contrasting pedagogical values regarding the definition of student authorship and the necessity of independent critical thinking. Critics argue that the ease of generating high-quality text may discourage original thought and intellectual rigor, potentially leading to a *homogenization* of academic writing style (Cong et al., 2025).

The process of introducing LLM tools to faculty and students has varied significantly across institutions. Some universities have proactively offered faculty development sessions, sandbox environments, and cross-functional committees to explore instructional use cases and ethical boundaries (Jin et al., 2024). On the contrary, institutions that lack clear AI governance structures often leave faculty members to navigate these tools independently, leading to inconsistent applications and uncertainty regarding academic policy (Tyton Partners, 2023). By 2026, research indicates that while administrators are often the fastest to adopt LLMs for task-based efficiency, faculty readiness remains a critical bottleneck due to a lack of discipline-specific training (Cengage Group, 2026).

While researchers disagree with conclusions that portray LLMs as a universal solution for all educational challenges, there is a growing consensus that their presence in academia will continue to expand. The critical challenge identified in the recent literature lies not in the decision to adopt LLMs, but in developing frameworks that ensure their integration is thoughtful, equitable, and ethical (O'Sullivan & Kelly, 2026). Scholars advocate for a *human-in-the-loop*

approach, in which LLMs augment rather than replace the essential human elements of critical inquiry and academic mentorship. This balanced perspective is necessary to sustain the university as a site of ethical and democratic inquiry in an increasingly automated world.

Differences Between General AI Tools and LLMs in Online Academia

Recent literature has convergently shown that general AI tools and LLMs differ markedly in scope, functionality, and instructional potential. While both technologies enhance operational efficiency, they diverge in their primary architectures and the nature of their outputs. General AI tools, including specialized image, audio, or video generators, typically serve narrow functions through rule-based or discriminatory algorithms, whereas LLMs such as ChatGPT, Claude, and Gemini are optimized for open-domain, language-based applications including tutoring, summarization, and dialogue simulation (TechTarget, 2024). In terms of functionality, LLMs are characterized as more adaptive and interactive, offering real-time responses that can scaffold learning processes in ways that specialized, non-generative AI systems cannot replicate (Faltýnková et al., 2024; Frolova & Mozhaeva, 2024).

The instructional impact of these tools has been further validated by recent studies, which emphasize that LLMs facilitate more than just automated grading; they provide individualized learning support and contribute to agile curriculum development (Alonso & Sánchez, 2024). Concurrently, researchers have found LLMs to be uniquely versatile in higher education contexts due to their ability to personalize feedback and simulate human-like interaction for neurodiverse and non-native learners (Zawacki-Richter & Jung, 2025). However, significant risks around *hallucinations*, in which a model confidently generates factually incorrect or fabricated information, have been discussed divergently in the 2025–2026 literature. Some scholars emphasize that these hallucinations can be effectively managed through user oversight and

chain-of-thought prompting, while others view them as persistent, systemic barriers that threaten the safety of academic inquiry (Duke University Libraries, 2026; TechTarget, 2024).

Moreover, ethical concerns surrounding bias, privacy, and cognitive overreliance have emerged as central challenges for online instructors. While general AI tools are typically task-limited and predictable, LLMs play a more central, adaptive role in the student's cognitive process, which raises concerns about the potential erosion of academic integrity and independent critical thinking (Zawacki-Richter & Jung, 2025). While enthusiasm for both toolsets remains high, the literature has diverged regarding the long-term pedagogical implications of integrating LLMs into core curricula. Ultimately, researchers have converged on the idea that careful policy development, enhanced digital literacy training, and constant instructor oversight are essential to uphold educational quality in the era of AI-augmented learning (O'Sullivan & Kelly, 2026).

Ethical and Practical Considerations of AI and LLM Integration

Recent discourse has convergently underscored that integrating AI and LLMs into educational contexts introduces complex ethical and practical dilemmas, particularly regarding bias, misinformation, transparency, and consent. In the domain of bias, both AI systems and LLMs have been shown to perpetuate entrenched stereotypes and demographic imbalances, a concern similarly echoed across multiple studies (Algorithmic bias analysis, 2025). While bias recognition is widely accepted, perspectives diverged on mitigation approaches. Some advocate for debiased training and inclusive datasets, while others stress the indispensable role of critical human oversight. Misinformation emerges as another area of disparity. AI-generated content, especially from LLMs, can result in confident but inaccurate outputs that challenge academic integrity and student learning. Although the need to guard against misinformation is universally

converging, strategies diverge. Some propose automated fact-checking and layered verification, while others point toward instructor-led oversight (Currie et al., 2023; Ray, 2023).

Transparency remains a cornerstone of responsible AI deployment. Researchers have convergently called for human-centered transparency measures to support stakeholder understanding and trust (Chaudhry et al., 2022; Liao & Vaughan, 2023). Transparency efforts diverge in implementation. Some institutions prioritize superficial disclosures, whereas more advanced frameworks uphold deeper transparency via stakeholder co-design and iterative feedback loops (Chaudhry et al., 2022). The issue of consent is ethically pivotal. The recent University of Zurich incident, in which AI bots were deployed without user consent, highlights how the practice starkly diverged from ethical ideals, triggering public backlash and institutional reform (Washington Post, 2025). In contrast, AI-powered chatbots have been shown to converge on enhancing informed consent processes in research by promoting agency through interactive explanations (Xiao et al., 2023).

Academic Integrity and Misuse of Generative AI

The emergence of LLMs has reshaped the academic landscape, especially in online learning, where students operate in unsupervised and asynchronous environments. Researchers have raised concerns that generative AI tools may facilitate academic dishonesty by enabling students to produce entire assignments with minimal effort or oversight (Cotton et al., 2023). Similarly, there is growing evidence that students view these tools not as cheating mechanisms but as academic aids, particularly when they feel overwhelmed or unsupported. However, scholars have diverged in their interpretations of the ethical implications of this behavior. Some argue that using AI for tasks such as grammar correction or brainstorming is acceptable, provided that proper disclosure is made, while others insist that any AI-generated content

submitted as original undermines academic integrity (Cotton et al., 2023). Researchers disagree with conclusions that equate AI tools with traditional aids, such as calculators, warning that such analogies risk minimizing the cognitive skills being bypassed (Bailey, 2023). By contrast, others suggest that banning AI outright may be unrealistic and counterproductive for preparing students for workplaces where these tools are becoming ubiquitous.

The effectiveness of AI detection tools has also sparked divergent findings. Most researchers agree that AI detectors often produce false positives, disproportionately affecting multilingual and neurodiverse students (Stokel-Walker, 2023). On the contrary, some institutions continue to enforce rigid detection-based policies, relying on imperfect tools to guide disciplinary action. Online faculty are particularly affected, as they must assess authenticity with limited support and often without processing artifacts such as drafts or live writing samples. Conversely, other institutions have advised against or disabled these tools altogether, citing concerns about fairness and accuracy.

Institutionally, there is a consensus on the urgent need for clearer policies and faculty development regarding the ethical use of AI. Similarly, scholars and administrators encourage the use of redesigned assessments, such as oral presentations, iterative drafts, and reflective writing, to mitigate the effectiveness of AI misuse (University of Massachusetts Amherst, 2024). Still, researchers diverge on whether formal AI-permitted versus AI-restricted coursework models the solution. While some advocate for flexible, context-driven approaches, others argue that inconsistent policies lead to confusion and inequity. Overall, the literature affirms that online faculty are at the forefront of enforcing academic integrity in an era shaped by rapidly evolving AI tools.

Institutional Policies and Support for Faculty Using AI

As generative AI tools become increasingly integrated into higher education, institutions are under pressure to create clear policies and support systems for faculty. Researchers have converged on the view that effective institutional guidance must go beyond general statements on academic integrity. While many universities have introduced guidelines in response to the rise of AI, these policies often lack clarity and practical direction specific to faculty use (Bailey, 2023). Ambiguities regarding permissible applications of AI in teaching, grading, and student support leave instructors navigating inconsistent expectations. Without detailed, discipline-sensitive guidance, faculty face challenges maintaining both academic standards and instructional innovation.

Beyond written policies, institutions must also provide structured training programs to support faculty adaptation to AI technologies. Researchers agree that professional development is essential to help instructors understand the capabilities of AI tools, design assessments that minimize misuse, and implement ethical practices. However, many faculty report a lack of access to ongoing, relevant training, especially in institutions where AI policies are still evolving (University of Massachusetts Amherst, 2024). The absence of formal training often forces instructors to self-educate or rely on peer networks, leading to inconsistent practices across departments and courses. Conversely, some institutions have begun offering workshops and learning communities focused on AI pedagogy, but these efforts remain the exception rather than the norm.

Debates also arise around the role of faculty autonomy in AI policy enforcement. Some scholars advocate centralized, standardized policies that apply uniformly across academic units to ensure fairness and institutional coherence (Cotton et al., 2023). On the contrary, others argue

that faculty should retain discretion over how and when to use AI in their courses, citing disciplinary differences and varied pedagogical approaches. This divergence reflects broader tensions between institutional oversight and instructional flexibility. Faculty autonomy is especially relevant in online teaching contexts, where instructors must often make real-time decisions about how to respond to AI-related issues such as content authenticity or student misuse.

In addition, institutional policies often overlook the importance of transparency between instructors and students. Guidelines rarely address how faculty should communicate their own use of AI in course design, grading, or feedback. In such cases, instructors must interpret vague institutional expectations and make independent decisions about how to disclose or regulate AI use. Researchers disagree with the conclusion that policy implementation alone is sufficient. Rather, effective support for faculty must combine clear, actionable guidelines with training and respect for professional judgment.

Equity, Access, and the Digital Divide in AI Tool Use

As AI becomes increasingly integrated into educational systems, scholars have raised critical concerns about equity, access, and the digital divide in the adoption of AI tools. Researchers have converged on the finding that access to AI tools is unevenly distributed across institutions, faculty, and students, often reflecting existing structural inequalities in higher education (Bailey, 2023). This divide not only includes disparities in access to hardware and reliable internet but also extends to differences in digital literacy, institutional support, and training. Similarly, institutions with fewer resources, such as community colleges or underfunded public universities, are less likely to offer faculty development programs or infrastructure that support the ethical and effective use of AI tools (Cotton et al., 2023).

Faculty and students from marginalized backgrounds, such as first-generation students, often face additional barriers to fully benefiting from AI integration. Researchers agree that without targeted institutional strategies, these groups are at greater risk of being left behind in an AI-driven academic environment. For example, while AI-powered tools may assist students with writing or language processing, those unfamiliar with such technologies or who lack access outside of class settings may fall further behind their peers (Stokel-Walker, 2023). On the contrary, proponents of AI often emphasize its potential to level the playing field by offering personalized feedback and tutoring; however, researchers dispute the claim that such benefits are automatic or universally experienced. In practice, unequal access to digital tools and support often diverges from the ideal of AI as a force for equality.

Furthermore, disparities also exist in faculty capacity to effectively implement AI tools. Faculty at well-resourced institutions are more likely to receive institutional guidance, grants, or protected time to explore AI integration, whereas others may lack the necessary training or resources to adapt their pedagogy. Conversely, instructors in underserved settings often express concern over student misuse or a lack of digital readiness, further complicating the adoption of AI in their courses. These inequities risk widening performance and engagement gaps across learning environments, especially in online education, where student-teacher interaction may be minimal and technological self-sufficiency is expected.

Professional Development for AI and LLM Use in Online Teaching

As AI and LLMs become more embedded in online education, researchers have converged on the belief that professional development is critical for faculty to effectively and ethically implement these tools. Online instructors, who often teach in asynchronous, text-heavy environments, require targeted training to adapt to these rapidly evolving technologies (Bailey,

2023). However, scholars have diverged on what constitutes sufficient professional development. While some advocate for formal, institutionally led training programs, others point to more flexible, faculty-driven learning opportunities. Researchers agree that limited or inconsistent training across institutions hinders effective implementation and places the burden on faculty to navigate unfamiliar tools without adequate support (Cotton et al., 2023).

The literature further highlights a distinction between formal training and ongoing support, with most researchers emphasizing the importance of both. One-time workshops may introduce faculty to AI concepts, but without continued guidance, the learning often fails to translate into sustainable, effective pedagogical practices. Online faculty, in particular, report feeling isolated in their attempts to integrate LLMs, citing a lack of institutional infrastructure for long-term support. On the contrary, when institutions offer resource hubs, peer collaboration spaces, or learning communities, faculty are more likely to adopt AI tools with confidence and purpose (University of Massachusetts Amherst, 2024). These environments foster not only skill-building but also ethical reflection and adaptation across teaching contexts. Regarding upskilling, researchers have converged on the view that faculty must be equipped not just with basic tool use but with deeper competencies in areas such as prompt design, AI ethics, data privacy, and AI-informed assessment design. Yet researchers diverge on whether institutions are adequately addressing these needs. Some offer comprehensive programs, while others fail to prioritize faculty development beyond student-focused AI policies. Conversely, when institutions assume that faculty can self-train or rely on informal communities, instructors may underutilize or misuse AI tools due to gaps in their understanding.

Faculty Peer Networks and Communities of Practice

In response to the evolving demands of technology-enhanced teaching, including the integration of AI and LLMs, faculty increasingly rely on peer networks and communities of practice (CoPs) for support. Researchers have converged on the notion that such informal structures foster professional growth through collaboration, resource sharing, and reflective dialogue. These networks often supplement or compensate for formal institutional training, especially when official support is lacking or unevenly distributed (Bailey, 2023). Faculty CoPs enable instructors to experiment with new tools, share pedagogical strategies, and co-construct knowledge in a trusted environment. Similarly, peer collaboration can help faculty members navigate uncertainty around emerging technologies, including ethical implications and best practices for student engagement.

Researchers agree that collaboration within peer networks fosters innovation and confidence in instructional design, particularly in online education, where isolation is common. CoPs serve as a space for resource sharing, where faculty exchange syllabi, AI prompts, assignment templates, and classroom policies. This collective knowledge-building often leads to more rapid dissemination of effective practices than traditional top-down training models. On the contrary, formal institutional policies may lag technological advances, causing faculty to turn to peer groups for immediate, actionable advice (University of Massachusetts Amherst, 2024).

When it comes to informal learning, CoPs offer a flexible, responsive alternative to rigid professional development formats. Faculty members engaged in these networks often report learning through discussion, observation, and problem-solving, rather than through structured workshops. Contrarily, institutions that overlook or undervalue informal faculty learning may miss opportunities to harness grassroots expertise. Researchers disagree with conclusions that

prioritize only formal professional development models, arguing that informal peer-driven learning is equally critical for fostering adaptive teaching practices, particularly with complex tools like AI (Trust & Horrocks, 2019).

However, researchers diverge in their assessments of how sustainable and inclusive these peer networks are. While some studies highlight their organic, community-building nature, others point to disparities in access, noting that contingent faculty or those at smaller institutions may lack the time or local colleagues needed to form such groups (Philpott & Oates, 2017). Without intentional institutional support, even the most productive peer networks can become siloed or unevenly developed.

The Future of AI-Augmented Faculty Roles in Online Academia

The rapid emergence of AI technologies, especially LLMs, is prompting higher education institutions to rethink faculty roles in online academia. Scholars have converged on the view that AI will not replace faculty but will significantly reshape responsibilities related to teaching, course design, and student support (Bailey, 2023). As generative AI tools become more embedded in learning environments, faculty are expected to shift from traditional content delivery to more strategic roles, such as learning designers, critical-thinking facilitators, and ethical mediators of AI integration. This evolution mirrors earlier shifts with the rise of digital platforms, but AI's generative capacity introduces new complexities and opportunities.

Researchers agree that course design will increasingly rely on AI-assisted tools to streamline content creation, generate assessments, and personalize learning pathways. While this automation can reduce repetitive tasks, it also requires faculty to develop new competencies in prompt engineering, oversight, and verification of AI-generated content (Cotton et al., 2023). Contrarily, some argue that over-reliance on automation may deskill faculty members or distance

them from the pedagogical core of their work. Maintaining human judgment, contextual understanding, and academic rigor remains a critical function of faculty even in AI-augmented systems.

When it comes to student support, literature reflects divergent expectations. Some scholars envision AI as a powerful co-instructor, capable of offering personalized tutoring, feedback, and engagement analytics to students around the clock (Selwyn et al., 2024). Others, on the contrary, warn that AI cannot replicate the emotional intelligence, mentorship, and nuanced understanding that human instructors provide, especially for underserved, neurodivergent, or first-generation learners. These concerns raise ethical questions about the appropriate balance between AI efficiency and human empathy in the educator's role.

Long-term literature suggests that faculty autonomy may evolve in tandem with institutional expectations. Researchers disagree with the conclusion that AI will diminish academic freedom; instead, many propose that faculty will be granted greater authority to adapt AI tools to reflect disciplinary norms and personal teaching styles (Stokel-Walker, 2023). However, there is a risk of policy imposition that standardizes AI use without regard for pedagogical diversity, potentially stifling innovation or leading to compliance-based teaching cultures.

Overall, the future of faculty roles in AI-augmented online academia appears to be one of transformation rather than displacement. Teaching will become increasingly strategic and human-centered, as routine tasks are delegated to intelligent systems. Faculty will need institutional support to improve, explore AI ethically, and maintain their roles as designers of meaningful, inclusive learning. Literature supports a vision in which AI enhances, rather than replaces, the educator's presence in online education.

Online Faculty's Experiences with AI and LLM Integration

As AI and LLMs rapidly permeate higher education, online faculty are at the forefront of experimenting with and integrating these tools into their teaching. The literature reveals a growing body of personal accounts and qualitative insights that reflect both enthusiasm and caution. Researchers have converged on the idea that faculty experimentation with AI is often driven by necessity, curiosity, or pedagogical innovation rather than formal institutional mandates (Bailey, 2023). Instructors report using LLMs to generate discussion prompts, scaffold student writing, design quizzes, and offer feedback more efficiently. This highlights early success stories that underscore increased productivity and improved student engagement.

Similarly, online faculty describe positive experiences with AI in enhancing course design, especially in asynchronous learning environments where the workload can be high and student interaction more complex. These success narratives often involve strategic, limited use of AI tools, with faculty maintaining control over instructional decisions. Researchers agree that such experimentation fosters professional growth and technological confidence among instructors, particularly those willing to test AI's capabilities through trial and error (Cotton et al., 2023). Conversely, some faculty express concern that these tools may introduce new challenges, such as student reliance on AI for academic tasks or blurring of authorship boundaries in written assignments.

The literature also reflects divergent experiences based on institutional context, disciplinary norms, and access to training. For example, faculty at research-intensive institutions or in technology-oriented fields often report more comfort and success with AI integration, while those in writing-intensive or humanities courses may be more skeptical or cautious (Selwyn et al., 2024). On the contrary, rather than universally embracing AI, some faculties raise concerns

about accuracy, ethical risks, data privacy, and equity, particularly for students with limited digital literacy or access to reliable AI tools. Moreover, researchers disagree with the conclusion that faculty resistance stems solely from technophobia or a lack of skill. Instead, many argue that faculty's concerns are often rooted in legitimate pedagogical and ethical questions about the role of automation in learning (Stokel-Walker, 2023). Faculty also reports a need for clearer institutional guidance and support, as well as spaces to share experiences and collectively refine best practices. Overall, the literature presents a nuanced portrayal of online faculty's experiences with AI and LLM integration, characterized by a balance of optimism, critical reflection, and a commitment to pedagogical integrity. As experimentation continues, these personal insights contribute significantly to shaping informed, ethical, and sustainable AI practices in online education.

Instructional Design and Curriculum Planning with AI Support

The integration of AI into instructional design and curriculum planning is transforming the processes for developing, organizing, and delivering learning experiences. Research indicates that AI tools can enhance instructional efficiency by automating routine design tasks, supporting personalized learning pathways, and producing content in varied formats (Bailey, 2023). Tools such as LLMs are being applied to draft learning objectives, design assessments, and generate multimedia resources. These applications reduce time spent on repetitive tasks, allowing instructional efforts to be redirected toward aligning curriculum with institutional goals and promoting critical thinking. As a result, AI is becoming a functional component in streamlining course development and advancing pedagogical strategies.

Researchers agree that AI-assisted instructional design can improve both scalability and responsiveness to student needs. Adaptive technologies can analyze student performance data to

suggest content adjustments or identify skill gaps, allowing for more tailored curriculum development (Cotton et al., 2023). Additionally, AI tools support curriculum mapping by identifying redundancies, scaffolding opportunities, and ensuring alignment across courses and programs. These capabilities are especially valuable in online learning environments where instructors must anticipate and plan for a wide range of learner needs.

However, some scholars argue that AI-driven curriculum planning may risk promoting standardized or homogenized instructional models. There is concern that overreliance on algorithmic suggestions could undermine innovation or overlook educators' nuanced pedagogical values. On the contrary, human-centered design principles remain essential for preserving contextual, cultural, and disciplinary relevance in course development (Selwyn et al., 2024). Faculty must maintain a critical stance toward AI-generated outputs to ensure that curriculum decisions reflect meaningful learning experiences rather than automated efficiency.

Researchers diverge on how equitably AI design tools are being adopted across institutions. While some universities have invested in integrated instructional platforms that offer built-in AI support, others have left the responsibility to individual instructors to seek out and implement third-party tools. This inconsistency results in varied levels of instructional quality and faculty readiness. Furthermore, researchers dispute the claim that AI inherently improves instructional design; rather, its effectiveness depends on thoughtful integration, adequate training, and faculty involvement in the design process (Stokel-Walker, 2023).

Overall, the literature reflects a growing enthusiasm for AI’s potential to support instructional design and curriculum planning, while also emphasizing the need for cautious and reflective implementation. AI should be seen as a tool that enhances educator judgment, creativity, and pedagogical expertise. As the role of technology in education evolves,

maintaining a balance between innovation and instructional integrity remains a central concern for faculty and institutions alike.

Summary

This literature review addressed the integration of LLM-AI tools in higher education, the prevalence of technological skepticism among faculty, and the broader implications of these tools on academic integrity and instructional design. The purpose of this qualitative exploratory case study was to investigate the experiences of online faculty members in successfully implementing LLM-AI tools in their classrooms to support student learning. Key areas of investigation included faculty perceptions, pedagogical strategies for implementation, and the specific challenges faced in the online instructional context. By synthesizing these elements, I highlighted the critical role of faculty-level decision-making in fostering resilient digital learning environments through the balanced use of LLM-AI tools.

The literature review emphasized that skepticism toward LLM-AI tools can have significant repercussions on instructional innovation and the evolution of online pedagogy. The research demonstrated a clear relationship between faculty perception and the successful adoption of new technologies. Using diverse online resources, including Google Scholar, ERIC, and JSTOR, I conducted an exhaustive review of topics such as LLM-AI tools in education and faculty technology adoption. These findings underscore the need to move beyond institutional-level analysis to understand educators' individual experiences.

Furthermore, I identified the need to adopt a framework capable of navigating the professional shifts faculty experience during technological disruption. While robust in many respects, alternative frameworks, such as Experiential Learning Theory, have limitations in addressing the deep-seated cognitive shifts that occur when traditional teaching methods are

challenged by LLM-AI tools. Therefore, the application of Transformative Learning Theory was deemed imperative, as it better reflects the interplay between critical reflection and perspective shifts. The use of this framework enhanced the understanding of how faculty professional judgment shapes the implementation of LLM-AI tools.

This discussion of the literature and the identified research gap logically leads to Chapter 3, which describes the research methodology and design. A detailed overview of the qualitative exploratory case study approach is provided in the subsequent chapter. This forthcoming methodological description includes the justification for selecting the research design, the identification of the target population, and the procedures established for data collection and analysis. By providing this procedural detail, I ensured a rigorous approach to addressing the problem of faculty skepticism in online higher education.

Chapter 3: Research Methodology

In the landscape of modern higher education, integrating artificial intelligence into instructional practice presented a significant challenge, particularly for faculty members navigating the complexities of digital instructional environments. The problem to be addressed in this study was many faculty members teaching in online higher education viewed LLM-AI tools with skepticism, which often led to concerns regarding academic integrity, a perceived decline in instructional quality, and resistance to shifting pedagogical roles (Cotton et al., 2023; Young, 2025). Within the online classroom, these challenges were often linked to the rapid proliferation of LLM-AI tools and a perceived lack of institutional guidance. The purpose of this qualitative exploratory case study was to investigate the experiences of online faculty members in successfully implementing LLM-AI tools in their classrooms to support student learning.

In this chapter, I explain the rationale for selecting a qualitative exploratory case study method and demonstrate why it was appropriate for examining the influence of technological skepticism on faculty instructional experiences in the specific context of online higher education (Creswell & Poth, 2024). I provide a detailed description of the qualitative methodology and exploratory case study design. I also explain why this method was suitable for examining how the implementation of LLM-AI tools influenced pedagogy from the faculty perspective, why firsthand accounts were essential for understanding professional adaptation in digital settings, and which criteria I used to select participants. In addition, this chapter presents the population and sample, the data collection procedures, the data analysis strategies, and the ethical considerations that guided the inquiry.

Research Methodology and Design

Qualitative methodology was chosen for this study because it supports an in-depth examination of instructional practices situated within specific institutional and professional contexts. Qualitative inquiry facilitated the exploration of complex, context-dependent phenomena and enabled the collection of rich, descriptive data on participants' experiences, perspectives, and decision-making processes (Creswell & Poth, 2024; Merriam & Tisdell, 2016). I chose this method because qualitative inquiry enables a deep exploration of subjective experiences, which quantitative methods based on statistical analysis cannot effectively capture (Braun & Clarke, 2022). Furthermore, the use of qualitative methods enabled the identification of patterns, challenges, and variations in how online faculty implemented and adapted LLM-AI tools within their instructional environments.

This methodology was appropriate given the exploratory nature of the research problem and the limited empirical scholarship on faculty implementation of LLM-AI tools in online higher education. Qualitative approaches are particularly suited to studies seeking to generate a foundational understanding of emerging practices and to examine phenomena where boundaries, norms, and instructional applications are still developing (Yin, 2023). I determined that a quantitative method would not have been suitable for this study because such an approach focuses on numerical data, whereas verbal data were required to provide new insights into the *disorienting dilemmas* faced by faculty (Braun & Clarke, 2022). Consequently, findings from qualitative inquiry can better inform future research, instructional design practices, and institutional decision-making related to the integration of LLM-AI tools.

I selected an exploratory case study as the research design for this investigation. Exploratory case study designs are appropriate for examining contemporary phenomena within

clearly bounded systems and for generating insight in areas where prior empirical research is limited (Yin, 2023). I bounded this study by geographic location (United States), instructional modality (fully online higher education), and the professional context of faculty implementing LLM-AI tools. These boundaries supported a focused investigation of instructional practices, perceived challenges, and emerging strategies related to the integration of LLM-AI tools in online teaching environments.

The exploratory case study design facilitated a detailed examination of faculty implementation practices in real-world instructional contexts, enabling consideration of both individual experiences and contextual influences. This design aligned with the research questions by supporting the analysis of how online faculty implemented LLM-AI tools and how these tools were used to support student learning. Using a case study design, the rich, subjective experiences of faculty were uncovered, providing insights into how LLM-AI tools shaped their educational journeys and professional lives.

While this method and design were highly suitable for capturing in-depth experiences, I also considered other designs. I rejected a quantitative method with an experimental design because it would not have captured the detailed narratives and personal experiences that are crucial to understanding the multifaceted role of LLM-AI tools in the specific context of online higher education. An experimental design might involve manipulating variables, such as providing training to some faculty while withholding it from others; such a design was considered less appropriate because it would fail to deliver the in-depth insights needed to understand the complexities of faculty skepticism and pedagogical adaptation.

I also examined phenomenology as a potential design because it focuses on understanding the essence of individuals' lived experiences (Moustakas, 1994). However, the

purpose of this study extended beyond capturing individual perceptions to include an examination of instructional practices and professional decision-making. Because phenomenology's emphasis on internal meaning-making limited its applicability for addressing the broader instructional dimensions central to this investigation, I deemed the exploratory case study approach the most appropriate for examining the implementation of LLM-AI tools within a bounded system.

Population and Sample

The study population comprised approximately 285,000 faculty members employed at accredited universities in the United States who delivered instruction exclusively within fully online learning environments (Bay View Analytics, 2023). These faculty members represented a diverse group in terms of disciplinary background and institutional affiliation but shared a common professional context regarding the necessity of digital tools for course delivery and student engagement. The representative sample size for this in-depth analysis was eight faculty members. Hirose and Creswell (2023) suggested that determining an appropriate sample size in qualitative research should be guided by the concept of saturation. I reached saturation after the eighth faculty member interview, which I will discuss in more detail below. They proposed that qualitative research should focus on achieving depth and richness of data rather than statistical representativeness, advocating a flexible, context-dependent approach to sample size determination.

I collected data from the faculty members until saturation was reached. Saturation occurred when no new information or themes emerged from the data, enabling a comprehensive exploration without overwhelming the data. I observed evidence of saturation when data collection from the faculty no longer yielded new information or insights relevant to the research

questions. Specifically, saturation was indicated by the repetition of information across multiple interviews and the focus group, where additional accounts did not introduce new codes or deepen the existing understanding of how online instructors responded to skepticism and implemented LLM-AI tools to support student learning.

I established the following inclusion criteria to ensure the selection of faculty members who possessed the specialized knowledge necessary to address the research questions: (a) current employment as a fully online faculty member at a United States institution of higher education, (b) a minimum of three years of online teaching experience, and (c) documented experience using LLM-AI tools within an instructional capacity. The use of these specific criteria allowed for the examination of educational influences within a structured, technology-mediated environment. These standards ensured that the gathered data reflected the professional and pedagogical development influenced by the integration of emerging technologies. Consequently, the sample and setting remained aligned with the research questions and the problem addressed in this study, which was that many faculty members teaching in online higher education view LLM-AI tools with skepticism, which often leads to concerns regarding academic integrity, a perceived decline in instructional quality, and resistance to shifting pedagogical roles (Cotton et al., 2023; Young, 2025).

Faculty members were selected through a purposeful sampling process combined with snowball sampling. I used a Recruitment Flyer and Information materials to engage with professional organizations and academic networks. The recruitment materials included the study's problem and purpose statements along with my contact information. Interested faculty members who responded to the recruitment materials were screened for eligibility based on the established inclusion criteria. After eligibility was confirmed, faculty members received a

Consent Email containing the necessary documentation for participation. Once consent was obtained, I arranged Zoom meetings to conduct one-to-one interviews using the established Interview Protocol and a focus group session guided by the Focus Group Protocol.

Materials and Instrumentation

The process of conducting a qualitative exploratory case study on the experiences of online faculty and the implementation of LLM-AI tools began with the development of specific materials to maintain ethical and methodological rigor. In this study, these materials consisted of the National University (NU) Institutional Review Board (IRB) exempt from further review approval letter (Appendix A), the Recruitment Flyer and Information materials (Appendix B), the Consent Email (Appendix C), the Interview Protocol (Appendix D), and the Focus Group Protocol (Appendix E). Using these materials, a structured framework for data collection and participant interaction was established.

I served as the primary instrument for data collection and analysis, which is consistent with qualitative research traditions that emphasize the interpretive role of the investigator in meaning-making processes (Bloomberg, 2019; Creswell & Poth, 2024). In this role, I engaged directly with participant accounts, enabling me to account for contextual nuances and document analytic decisions throughout the research process. To mitigate potential bias and maintain a neutral stance, I maintained a reflexive journal and used analytic memos across all phases of the study. These practices supported transparency and strengthened credibility by making the analytical process explicit and grounded in participants' reported experiences.

Data collection was guided by a semi-structured interview protocol comprising open-ended questions on professional background, perceptions of LLM-AI tools, and instructional implementation practices. This protocol was designed to ensure consistency across participant

interactions while allowing for the flexibility needed to explore individual pedagogical adaptations. To ensure data accuracy, all interviews were conducted virtually via Zoom and audio-recorded for verbatim transcription and thorough analysis. Each interview lasted approximately 1 hour, providing ample time to delve deeply into the instructional experiences of the faculty members.

In addition to individual interviews, a semi-structured focus group protocol was used to support triangulation and deepen the data collected. This protocol included prompts addressing shared challenges associated with LLM-AI implementation and reflections relevant to the broader online teaching community. The use of multiple data sources facilitated a comparison across individual and group perspectives, thereby strengthening the credibility and dependability of the findings (Creswell & Poth, 2024; Yin, 2023). The focus group session was uploaded to a secure site where the data were stored in accordance with university policy.

Before data collection commenced, an expert panel review was conducted to enhance clarity and alignment of the instruments. The panel consisted of three subject matter experts, including a doctoral-level qualitative researcher, an educational technology expert, and a professional qualitative interviewer. Panel experts assessed the relevance and data-collection potential of the questions to ensure the protocols could capture comprehensive faculty narratives. Feedback from the expert panel informed revisions that included removing redundant questions, improving word choice, and enhancing conceptual alignment with Transformative Learning Theory.

Study Procedures

The data collection procedure for this study began with the receipt of formal approval from the National University (NU) Institutional Review Board (IRB) on November 10, 2025.

Following this approval, I developed and distributed a digital recruitment flyer through professional social media networks, including LinkedIn, Facebook, and Twitter (X), to invite potential faculty members. Individuals expressing interest were instructed to contact me via email, text message, or telephone, or to select an interview date and time through an encoded scheduling link included in the recruitment materials. These digital outreach methods ensured that the recruitment process was both accessible and systematic for online faculty members.

I conducted brief screening phone calls to determine eligibility based on the established inclusion criteria. Individuals who met these requirements were provided with an electronic informed consent form via email. Data collection commenced only after informed consent was obtained from each faculty member, ensuring that voluntary participation was maintained in alignment with ethical research standards. Through these rigorous screening and consent procedures, I established the integrity of the participant group prior to the engagement phase.

I scheduled and conducted individual interviews using the Zoom video conferencing platform. All interviews took place in a private home office to support confidentiality and to minimize external distractions during the sessions. These interviews were scheduled for approximately 60 minutes and followed the semi-structured interview protocol. The use of a consistent platform and a controlled environment ensured a standardized experience for all faculty members, thereby supporting the reliability of the data collection process.

To protect confidentiality, I assigned gender-neutral pseudonyms and removed all identifying information from interview transcripts and subsequent analytic materials. To support recruitment within relevant professional networks, I also employed snowball sampling by inviting faculty members to refer additional individuals who met the eligibility criteria (Creswell & Poth, 2018). These steps facilitated both protection and the development of an information-

rich sample. By implementing these measures, I maintained a focus on ethical safety while expanding the depth of the data.

Following the completion of the individual interviews, I invited faculty members to participate in a virtual focus group conducted via Zoom using a structured protocol. This focus group was scheduled for approximately 90 minutes to allow for the collective exploration of shared experiences and the group dynamics inherent in a communal setting. The focus group provided an additional data source to support triangulation and enabled the examination of shared and divergent perspectives within the group. This process deepened and broadened the data collected by capturing social interactions and collective reflections on LLM-AI tools. The integration of the focus group enriched the study by providing a communal dimension to the previously gathered individual accounts.

Both interview and focus group recordings were stored on a passcode-protected computer accessible only to me. Recordings were also temporarily stored on the Zoom platform, which utilized encryption and passcode protection to maintain data security. These procedures were implemented to ensure compliance with institutional and ethical requirements for data protection. My data management strategy remained focused on the long-term security and privacy of all contributions.

I continued data collection until saturation was achieved. Creswell and Poth (2018) defined data saturation as the point at which additional data no longer contribute new themes relevant to the research questions. I assessed saturation through an ongoing review of interview and focus group data during the analytic process. Upon the successful completion of all data collection activities, I formally notified the National University IRB and the dissertation

committee on March 3, 2026 (Appendix F). This notification marked the conclusion of the active data collection phase and the transition to final synthesis.

Data Analysis

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Assumptions

Assumptions in research studies are foundational beliefs or statements that underpin the research method, guiding the choice of data collection, analysis, and interpretation methods (Brink, 2018). These encompass beliefs about the nature of reality (ontological assumptions), how knowledge is gained (epistemological assumptions), and the nature of human behavior or values being studied (axiological assumptions). Such foundational positions influence every stage of the research process, from the conceptualization of the problem to the conclusions drawn (Brink, 2018; Denzin et al., 2024).

This qualitative, exploratory case study of the experiences of online faculty members implementing LLM-AI tools in the United States rested on several assumptions. I assumed that participants provided truthful, accurate accounts of their experiences, which was essential to the data's trustworthiness. I assumed that faculty members answered all interview and focus group questions honestly, without fear of professional consequence or a desire to provide what might be perceived as a *correct* answer. I also presumed that the technological and institutional context of the participating universities remained stable throughout the study, ensuring the relevance of findings to the 2026 educational environment. Additionally, I assumed that the insights from the small sample could highlight broader thematic trends within similar online higher education settings.

Ontologically, I grounded this study in a relativist position, recognizing that reality is multiple, context-dependent, and shaped by social and professional environments. From this perspective, I treated faculty accounts as situated experiences rather than representations of a single objective reality. Epistemologically, I adopted a constructivist perspective, which conceptualizes knowledge as developed through interaction, dialogue, and reflection rather than

discovered as an objective truth. Axiologically, I recognized that my own values and professional experiences as an online educator inherently shaped the research process and the interpretation of the data (Creswell & Poth, 2024).

The study also reflected assumptions consistent with Transformative Learning Theory regarding the nature of adult learning and change. Ontologically, I understood participants to hold varied interpretations of LLMs and AI tools based on their professional histories and instructional contexts. Epistemologically, I understood meaning-making to occur through the critical reflection and dialogue facilitated during the research process. The identification of these assumptions supported my selection of an exploratory qualitative design that emphasized contextual understanding, reflexive analysis, and depth of inquiry.

Limitations

Limitations in a research study refer to the factors and conditions that restrict the scope, depth, and overall generalizability of the research findings (Creswell & Poth, 2024). These can stem from the methodology, inherent constraints in the research design, sample size, or external factors that were not controlled during the study. Such constraints can affect the reliability and applicability of the research outcomes to wider populations. A common limitation in qualitative research is the potential bias introduced by the investigator's influence, which can skew results and interpretations, particularly in studies relying heavily on personal interactions and observations (Yin, 2018).

There were certain limitations in this qualitative exploratory case study that could affect the breadth and applicability of the findings. The limited sample size of eight faculty members prevented the capture of all possible experiences and perspectives regarding LLM-AI tools within the broader landscape of higher education. Because I conducted the interviews and a

focus group virtually via Zoom, I was limited in my ability to observe certain non-verbal cues. This limited ability to observe body language and subtle physical expressions can affect the interpretation of responses. Moreover, my professional background as an online educator may have introduced biases in data interpretation and in interactions with faculty members, potentially influencing the study's outcomes.

To mitigate these limitations, I implemented comprehensive measures to enhance the reliability and depth of the findings. Despite the small sample size, I conducted in-depth semi-structured interviews and a focus group to extract rich, detailed data and maximize insights from participants. Additionally, to address the challenge of observing non-verbal cues in a virtual environment, I encouraged video participation and used specific follow-up questions to clarify meaning. Recognizing the potential for personal bias, I embedded reflexivity practices into the study's methodology.

I maintained a reflexive journal to document and critically assess how my professional background may have influenced the research process and outcomes. Moreover, I conducted regular committee debriefing sessions with my Chair and Subject Matter Expert, who reviewed and critiqued the methodology and findings. These experts provided essential checks on assumptions and interpretations throughout the analytic process. These measures, taken collectively, ensured that the study, despite its limitations, maintained methodological integrity and contributed valuable insights into faculty skepticism and the implementation of LLM-AI tools.

Delimitations

Delimitations in a research study are specific choices made to set the boundaries of the inquiry (Al Husaeni et al., 2023). These choices determine the scope of the study, including the

variables included and excluded, the geographic area, the timeframe for data collection, and the population studied. Delimitations are essential for clarifying the study's focus and defining the limits of applicability of the results.

The delimitations I established for this study include its focus solely on faculty members within the United States who delivered instruction exclusively in fully online higher education environments. This geographic and institutional focus restricted the scope but allowed for an in-depth examination within the specific regulatory and technological frameworks governing American online education (Bay View Analytics, 2023). I utilized a qualitative exploratory case study design to limit the investigation to professional experiences and instructional practices, thereby excluding quantitative measures. Furthermore, I confined the investigation to the specific implementation of LLM-AI tools, excluding broader educational technologies or general artificial intelligence applications.

The study was confined to accredited higher education institutions in the United States, focusing specifically on faculty members who have navigated technological skepticism. I selected this boundary to allow for a focused examination of the successful implementation of LLM-AI tools in a defined, manageable professional setting. By limiting the scope to fully online faculty, I ensured a depth of understanding regarding how digital environments influence pedagogical adaptation. Additionally, I determined that interviewing participants via Zoom was necessary because of the geographically dispersed nature of online faculty across the United States. Establishing this perimeter enabled the interviews and the focus group to take place without geographical constraints.

I intentionally established these delimitations to address the specific skepticism and resistance currently surrounding LLM-AI tools in the academic community. By narrowing the

focus to these specific parameters, I provided a targeted analysis of how faculty negotiate a rapidly evolving technological phenomenon (Rainie, 2025). The identification of these boundaries facilitated the collection of contextually relevant data that aligned directly with the research purpose and questions.

Ethical Assurances

Ethical assurances in research studies are commitments to adhere to standards designed to protect participants' dignity, rights, and welfare (British Educational Research Association [BERA], 2018). These standards are crucial for conducting scientifically valid research while respecting human rights. Ethical assurances typically include obtaining informed consent, ensuring confidentiality, minimizing harm, and providing the right to withdraw from the study at any time. Research ethics committees review these protocols to ensure compliance with ethical guidelines, such as those outlined by the American Psychological Association (APA, 2020) and the British Educational Research Association (BERA, 2018). I maintained strict adherence to these established guidelines throughout every phase of the inquiry.

The study received formal approval from the National University (NU) Institutional Review Board (IRB) on November 10, 2025, before the commencement of data collection. I conducted this study in alignment with the ethical principles outlined in the Belmont Report, including respect for persons, beneficence, and justice (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). Respect for persons was upheld by ensuring voluntary participation and obtaining informed consent via the NU Informed Consent form. I reminded faculty members of their right to decline to answer any question or to withdraw from the study at any time without penalty.

I addressed beneficence by minimizing potential risks and ensuring participation involved no harm beyond everyday professional reflection. Justice was supported by applying recruitment procedures and inclusion criteria consistently across all participants to ensure fair selection. Although the inquiry posed minimal risk, I informed participants that any potential discomfort might stem from reflecting on instructional challenges or from skepticism about LLM-AI tools. These measures collectively ensured that participant autonomy was respected throughout the research process.

To preserve confidentiality, I removed all identifying information from the data and assigned gender-neutral pseudonyms to all faculty members. References to specific institutions, programs, or individuals that could lead to the identification of participants were omitted or generalized. Data collected during the study were securely stored on a password-protected computer and an encrypted external device, accessible only to me, in compliance with IRB requirements. Furthermore, I uploaded all digital recordings and transcripts to a secure university server to facilitate oversight by the dissertation committee.

My role included designing the study, collecting data through interviews and focus groups, and analyzing the findings. Acknowledging potential biases stemming from my professional experience in online education and my interest in integrating LLM-AI tools, I employed reflexivity practices. I maintained a reflexive journal throughout the study to document how professional experiences and biases might influence the research process. Additionally, I used committee debriefing as a strategy to provide checks and balances, ensuring these personal factors did not skew the analysis or findings. These strategies collectively supported transparency, credibility, and ethical rigor throughout the investigation.

Summary

Acknowledging inherent biases and limitations while maintaining rigorous ethical standards has ensured the integrity and validity of the findings. The purpose of this qualitative exploratory case study was to investigate the experiences of online faculty members in successfully implementing LLM-AI tools in their classrooms to support student learning. The population relevant to this study included approximately 285,000 higher education faculty members who taught in fully online contexts. The represented sample size was eight faculty members. I collected comprehensive data through semi-structured interviews and a focus group until thematic saturation was reached. This manageable sample size allowed for thorough analysis and detailed data collection.

The materials I used to conduct the study included a recruitment flyer, consent forms, a semi-structured interview protocol, and a focus group protocol. Study procedures were presented in detail to ensure replicability. For data analysis, I manually coded Zoom transcriptions using the seven-phase reflexive framework established by Braun and Clarke (2024) for thematic analysis. I verified the findings through member-checking techniques and presented them using various visual aids to enhance understanding. I maintained analytic memos and a reflexive journal throughout the process to ensure transparency and a robust audit trail. These steps were critical in maintaining the rigor of the qualitative inquiry.

The limitations identified in this study include a small representative sample size and potential biases, which could influence the breadth and applicability of the findings. The study was delimited to examining the influence of LLM-AI tools within specific online educational settings, focusing solely on the professional and subjective experiences of faculty with at least 3 years of experience. Ethically, the study upheld rigorous standards, securing informed consent

and ensuring participant confidentiality, with oversight from the NU IRB. I remained committed to these protocols to preserve the rights and welfare of all involved.

Chapter 4 presents the findings derived from the analysis of the interview and focus group data. These findings are organized in alignment with the research questions and the thematic framework guiding the study. The following chapter provides a structured presentation of participant perspectives and the thematic patterns that emerged from the data. I have structured the upcoming presentation to highlight the critical intersections between faculty skepticism and the successful implementation of LLM-AI tools

Chapter 4: Findings

The problem to be addressed in this study was many faculty members teaching in online higher education viewed LLM-AI tools with skepticism, which often led to concerns regarding academic integrity, a perceived decline in instructional quality, and resistance to shifting pedagogical roles (Cotton et al., 2023; Young, 2025). The purpose of this qualitative exploratory case study was to investigate the experiences of online faculty members in successfully implementing LLM-AI tools in their classrooms to support student learning. In the context of online higher education, these challenges were often intensified by the physical distance between instructor and student, which complicated the verification of authentic authorship and further increased faculty apprehension regarding automated tools. In this chapter, I present the data that directly address these professional concerns.

In this chapter, I present the study's findings, organized by the research questions. For Research Question 1, I examined the strategies online faculty members used to implement LLM-AI tools. For Research Question 2, I examined how online faculty members implemented these tools in their classrooms to support student learning. These findings were derived from eight semi-structured individual interviews and one virtual focus group, and they are presented thematically to reflect the patterns identified across the dataset. I organized the thematic structure to keep the disorienting dilemmas described by faculty central to the analytic narrative.

I analyzed the data collected from eight semi-structured individual interviews and one virtual focus group using Braun and Clarke’s (2024) updated seven-phase reflexive thematic analysis framework. This process followed the phases of data familiarization, systematic coding, initial theme generation, theme review, theme definition, report production, and reflexive verification. Findings are presented by research question to maintain alignment with the study

design and analytic approach. To protect participant confidentiality, raw interview and focus group data were not made publicly available; however, I included de-identified excerpts in this chapter to support analytic transparency and credibility. These excerpts provide evidence supporting the thematic conclusions.

Trustworthiness of the Data

Trustworthiness is a foundational criterion in qualitative research and refers to the extent to which findings are credible, transferable, dependable, and confirmable. It establishes rigor, transparency, and interpretive integrity by ensuring that findings are grounded in participant perspectives and analytic procedures rather than in bias or unsupported interpretation. In this qualitative study, I established trustworthiness through intentional strategies that address credibility, transferability, dependability, and confirmability, consistent with the qualitative research standards (Creswell & Poth, 2024). I implemented these specific measures to ensure that the resulting themes accurately reflected the faculty experiences documented during the inquiry.

Table 1

Table based on Lincoln and Guba's (1985) Chart of Trustworthiness

Criterion	Definition	Application in the study
Credibility	Confidence in the truth of the findings	Implementation of individual interviews, a focus group, triangulation of data sources, and two-stage member checking.
Transferability	Applicability of findings to other contexts	Provision of thick descriptions regarding instructional roles, disciplinary contexts, and online teaching environments involving LLM-AI.

Dependability	Consistency and stability of the findings	Maintenance of an audit trail of the analytic process, analytic memos, reflexive notes, and procedural documentation.
Confirmability	Objectivity and freedom from researcher bias	Utilization of reflexive journaling, verbatim participant quotations, and corroboration with existing literature

Credibility. Credibility refers to confidence in the truth of the findings, established through the accurate representation of participant-reported experiences (Lincoln & Guba, 1985). To ensure an accurate representation of perspectives, I maintained sustained engagement through individual semi-structured interviews and a focus group with online faculty members. I employed data triangulation by comparing these multiple sources to identify convergence in accounts. I conducted member checking in two stages: transcript verification and the confirmation of preliminary interpretations, to ensure the findings remained grounded in participant-verified data, as summarized in Table 1. This rigorous verification process ensured that the results accurately reflected the educators' experiences.

Transferability. Transferability refers to the applicability of findings to other contexts or settings (Lincoln & Guba, 1985). To facilitate this, I provided thick descriptions regarding participants' instructional roles, disciplinary contexts, and online teaching environments. I included detailed accounts concerning faculty experiences integrating LLM-AI tools within fully online higher education courses. These contextual details enable readers to determine the relevance of findings to comparable instructional settings, as summarized in Table 1. By providing a comprehensive view of the professional environments, I ensured that the findings can be assessed for their utility in similar educational landscapes.

Dependability. Dependability refers to the consistency and stability of research findings over time and across different investigators (Lincoln & Guba, 1985). I maintained procedural consistency by rigorously documenting the analytic process, from initial coding through theme development within the seven-phase reflexive thematic analysis framework. To support transparency, I established an audit trail using analytic memos, reflexive notes, and systematic documentation of every methodological step taken during the inquiry. These procedures ensured the traceability of all analytic decisions across multiple data sources and supported the overall stability of the analytic process, as summarized in Table 1. I prioritized this level of documentation to enable future researchers to follow the study's logic.

Confirmability. Confirmability refers to objectivity and the degree to which findings are grounded in participant accounts rather than bias (Lincoln & Guba, 1985). To ensure transparency, I utilized reflexive journaling to document my positionality and monitor potential assumptions during the analytic process. I further supported interpretations by including verbatim participant quotations, ensuring a direct link between the raw data and the final findings. As summarized in Table 1, I corroborated these interpretations by comparing results with existing literature to confirm the validity of the conclusions. The use of these strategies ensured that the findings reflected the participants' experiences and the professional context of LLM-AI tool integration rather than personal perspectives.

Results

Eight faculty members, all teaching in higher education online environments, participated in this study and were assigned gender-neutral pseudonyms to protect their identities. The faculty members represented a range of instructional contexts and disciplinary areas, with experience regarding LLM-AI tools varying from initial exploration to more intentional instructional

integration. All participants reported engaging with these tools in ways that informed instructional decision-making and pedagogical adaptation. I ensured that the selection of these faculty members provided a diverse array of perspectives necessary to address the research questions.

I collected data through individual semi-structured interviews, and a subset of the faculty also participated in a virtual focus group. The use of this design supported cross-participant comparison and triangulation across individual and collective data sources. Table 2 presents participant demographic and instructional characteristics, ensuring that no potentially identifying information is reported. I utilized these descriptions to establish the professional context for the thematic findings presented in the following sections.

Table 2

Participant Demographic Characteristics

Gender Neutral Pseudonyms	Highest Degree	Doctoral Degree	Discipline	Years Teaching Online
Avery	Doctorate	Ph.D.	Technology and Computing	9
Jordan	Doctorate	Ed.D.	Education	10
Riley	Doctorate	Ed.D.	Education	8
Quinn	Master's	—	Business and Management	4
Morgan	Doctorate	Ed.D.	Business and Management	10
Casey	Master's	—	Health and Medicine	7
Taylor	Doctorate	Ph.D.	Creative Media	5
Cameron	Master's	—	Language	7

Avery holds a doctorate (Ph.D.) in Technology and Computing and has nine years of experience teaching online. Avery's academic preparation reflects doctoral-level training in a technology-focused discipline. This background indicates sustained engagement in fully online instructional environments.

Jordan holds a doctorate (Ed.D.) in Education and has ten years of experience teaching online. Jordan's academic preparation reflects doctoral-level training in an education-focused discipline. This background indicates sustained engagement in fully online instructional environments.

Riley holds a doctorate (Ed.D.) in Education and has eight years of experience teaching online. Riley's academic preparation reflects doctoral-level training in an education-focused discipline. This background indicates continued engagement in fully online instructional environments.

Casey holds a master's degree in Business and Management and has four years of experience teaching online. Casey's academic preparation reflects graduate-level training in a business-focused discipline. This background indicates developing engagement in fully online instructional environments.

Quinn holds a doctorate (Ed.D.) in Business and Management and has ten years of experience teaching online. Quinn's academic preparation reflects doctoral-level training in a business-focused discipline. This background indicates sustained engagement in fully online instructional environments.

Parker holds a master's degree in Health and Medicine and has seven years of experience teaching online. Parker's academic preparation reflects graduate-level training in a health-focused discipline. This background indicates ongoing engagement in fully online instructional environments.

Rowan holds a doctorate (Ph.D.) in Creative Media and has five years of experience teaching online. Rowan's academic preparation reflects doctoral-level training in a creative

discipline. This background indicates continued engagement in fully online instructional environments.

Skyler holds a master's degree in Language and has seven years of experience teaching online. Skyler's academic preparation reflects graduate-level training in a language-focused discipline. This background indicates sustained engagement in fully online instructional environments.

Table 3

Research Questions and Emerging Themes

Research Question	Theme	Frequency	Participants
RQ1: What strategies do online faculty use to implement LLM-AI tools?	Theme 1a: Purposeful and intentional AI integration	8/8	Avery, Jordan, Riley, Casey, Quinn, Parker, Rowan, Skyler
	Theme 1b: Explicit boundary-setting for AI use	6/8	Avery, Jordan, Riley, Casey, Quinn, Skyler
RQ2: How do online faculty implement LLM-AI tools in their classrooms to support student learning?	Theme 2a: AI as support for learning processes	8/8	Avery, Jordan, Riley, Casey, Quinn, Parker, Rowan, Skyler
	Theme 2b: AI for instructional efficiency and support	5/8	Avery, Jordan, Quinn, Parker, Rowan

RQ1: What strategies do online faculty use to implement LLM-AI tools?

The first research question examined the strategies online faculty used to implement LLM-AI tools within fully online instructional environments. I analyzed the interview and focus group data, which yielded two primary themes addressing this question. As summarized in Table 3, Theme 1a reflected purposeful, intentional AI integration aligned with instructional goals, and

Theme 1b reflected the use of explicit boundaries to guide acceptable AI use. I identified these themes as the primary strategic pillars faculty use to navigate technological adoption.

The identification of these themes indicates that faculty strategies were characterized by a balance between pedagogical innovation and academic stewardship. Theme 1a highlights the deliberate nature of selecting AI applications that complement specific learning outcomes. Meanwhile, Theme 1b underscores the importance of establishing clear boundaries to mitigate risks associated with academic integrity and student reliance on automated tools. I found that these findings suggest the successful implementation of LLM-AI tools required a dual focus on instructional design and policy development. Faculty participants consistently described a shift away from passive technology adoption toward more active, critical engagement with AI capabilities. This strategic approach provided a foundation for addressing initial skepticism while fostering an environment conducive to student learning.

Theme 1a: Purposeful and Intentional AI Integration

Theme 1a addressed strategies online faculty used to implement LLM-AI tools through purposeful and intentional instructional planning. All eight participants described decision-making processes aligned with course goals, learning outcomes, and assessment expectations, consistent with the participant representation reported in Table 3. I noted that participants described instructional planning processes, positioning AI as supportive of learning objectives rather than as a driver of instruction.

Across the eight participants, alignment with lesson objectives was described as a primary condition for AI integration. Avery and Riley framed AI use as contingent upon its specific contribution to instructional goals. Avery evaluated, “AI actually supported the lesson's goal rather than where it was merely convenient to use.” Riley explained, “if a tool did not

support learning outcomes, it was not built into the course. I observed that this focus on outcomes ensured the technology remained a secondary support to the curriculum."

Jordan and Quinn described selective implementation based on task relevance and assessment alignment. Jordan reported, "utilizing AI only when the technology directly supported specific learning activities, explaining that the application must make sense for the tasks students are asked to perform." Quinn noted, "LLM-AI tools were considered useful only when they aligned with the specific constructs intended for academic assessment. I identified this as a critical strategy for maintaining the validity of online assessments."

Casey and Parker described maintaining instructional rigor when integrating LLM-AI tools. Casey explained, "the placement of AI was determined in advance to ensure it fit the curriculum rather than letting the technology drive instruction." Parker described, "a process for considering how AI could support learning without lowering the course's academic expectations or those of the students. I concluded that this proactive planning was essential for faculty to maintain their roles as instructional leads."

Rowan and Skyler described AI as a supplementary instructional resource within the virtual classroom. Rowan reported "using AI only when it added demonstrable value to the learning process." Skyler described, "AI as one instructional tool among many rather than the central focus or driver of the course. I recognized that this perspective allowed faculty to integrate new tools without abandoning established pedagogical strengths."

Across all eight participants, descriptions reflected a strong alignment between AI use and established instructional goals. While individual approaches varied by discipline and instructional priorities, participants consistently described deliberate decision-making processes guiding AI implementation. These descriptions provide thick evidence of how faculty

intentionally navigated the integration of LLM-AI tools to enhance the online learning environment. I utilized these accounts to establish the deliberate nature of faculty engagement with emerging technology.

Theme 1b: Explicit Boundary-Setting for AI Use

Theme 1b focused on the strategies participants described for establishing explicit boundaries to guide the acceptable use of LLM-AI tools within fully online instructional environments. Six participants (Avery, Jordan, Riley, Casey, Quinn, and Skyler) described boundary-setting practices focused on clarifying expectations, defining appropriate use, and supporting academic integrity, consistent with the participant representation reported in Table 3. I found that two participants, Parker and Rowan, did not describe explicit boundary-setting as a central component of their AI implementation.

Avery and Jordan described defining acceptable and unacceptable AI use as a method to reduce ambiguity for students. Avery explained, “practice of providing concrete examples of acceptable and unacceptable use so that students understood the exact expectations.” Jordan described, “importance of clearly communicating limits, noting that without defined expectations, the presence of AI could become a pedagogical problem rather than a support. I noted that this transparency was viewed as a preemptive measure against academic misconduct.”

Riley and Quinn described how boundary-setting practices are directly linked to assignment design and assessment integrity. Riley explained, “the process of developing structured guidelines to differentiate between what AI could assist with and what required the student’s independent work.” Quinn noted, “When an instructional assignment evaluates specific reasoning skills, AI use must be restricted to ensure the validity of the learning outcome.” Casey and Skyler described boundary-setting as a strategy for supporting instructional control and

student accountability. Casey emphasized, “establishment of limits to prevent AI from performing the cognitive work intended for the students.” Skyler described, “outlining explicit rules so that students understood the parameters of acceptable engagement within the virtual classroom. I observed that these participants viewed boundaries as a necessary framework for digital citizenship.”

Parker and Rowan described AI implementation primarily in relation to instructional use rather than through formal boundary-setting. Both participants focused on the practical applications of AI tools within their specific teaching activities. Neither participant described the development or communication of formalized, written boundaries for acceptable AI use during the data collection process. I included these perspectives to provide a balanced view of how different faculty prioritize the administrative versus the practical aspects of AI.

Across the participant group, explicit boundary-setting for AI use was described by six participants and not described by two participants. Six participants detailed practices involving clearly defined expectations, policy language, or structured guidance directing student engagement with LLM-AI tools. Two participants emphasized the instructional integration of AI within learning activities without describing the consistent use of formalized written boundaries. I have organized these findings to demonstrate the diversity of faculty approaches to academic stewardship in the age of AI.

RQ2: How do online faculty implement LLM-AI tools in their classrooms to support student learning?

The second research question examined how online faculty implemented LLM-AI tools within fully online instructional environments to support student learning. I analyzed the interview and focus group data, which yielded two primary themes addressing this question, as

summarized in Table 3. These themes described how faculty positioned AI tools to support learning processes while maintaining expectations for student responsibility and instructional rigor. I found that these findings suggest implementation was primarily characterized by a shift toward process-oriented learning.

Theme 2a explores how AI tools functioned as scaffolds for cognitive tasks, while Theme 2b examines the role of AI in increasing instructional efficiency. Together, these themes provide a comprehensive view of how I observed faculty leveraging technology to meet diverse student needs in a virtual setting. I structured this analysis to highlight the intersection of pedagogical support and administrative efficiency.

Theme 2a: AI as Support for Learning Processes

Theme 2a focused on how eight online faculty participants (Avery, Jordan, Riley, Casey, Quinn, Parker, Rowan, and Skyler) implemented LLM-AI tools to support student learning processes within fully online instructional environments. Participants described AI tools as instructional supports used to facilitate engagement, exploration, and cognitive development while maintaining expectations for student thinking. Descriptions included the use of AI to scaffold learning activities, support idea development, and assist students in engaging with course content, consistent with the participant representation reported in Table 3. I noted that these participants positioned AI as a facilitator of the learning journey rather than a shortcut to a final product.

Avery and Riley described reinforcing student responsibility for analysis and reflection when integrating AI. Avery explained, “AI functioned as a scaffold rather than a substitute for thinking, noting that students remained responsible for the final analysis and reflection.” Riley described, “AI as a support tool rather than an answer generator, explaining that the technology

assisted students in organizing ideas and refining understanding while maintaining expectations for independent work. I identified this as a core strategy for preserving student agency in the digital classroom."

Jordan and Quinn described using AI to guide students through learning processes without diminishing instructional intent. Jordan described, "AI as a tool for guiding students through the thinking process, positioning it as a learning aid rather than a mechanism for producing final responses." Quinn described, "application of AI as being useful only when the implementation aligned with specific instructional intent and established expectations for student reasoning. I observed that this alignment was critical to the participants' sense of instructional integrity."

Casey and Parker described how to maintain instructional rigor and student agency while integrating AI to support learning. Casey explained, "a pedagogical approach centered on how AI supported learning rather than replacing the fundamental role of teaching." Parker described, "using AI to clarify concepts while maintaining high expectations for student cognitive engagement. I interpreted these accounts as evidence of a *pedagogy-first* approach to technology adoption."

Rowan and Skyler described AI as supporting creative, reflective, and organizational aspects of learning. Rowan explained, "AI-assisted students in exploring new ideas while preserving their individual agency throughout the creative process." Skyler described, "AI as a supplemental resource supporting learning processes while maintaining clear expectations for independent student effort. I recognized that these diverse applications across disciplines highlighted the versatility of LLM-AI tools when guided by intentional instruction."

Across all eight participants, descriptions reflected a consistent use of AI to support student learning processes. Participants described instructional uses facilitating engagement, reflection, and comprehension while maintaining student responsibility for the final learning outcomes. AI was positioned as a supplemental instructional resource supporting the mastery of content while preserving expectations for independent student thinking and original work. I utilized these patterns to conclude that the participants successfully integrated the technology without compromising academic standards.

Theme 2b: AI for Instructional Efficiency and Support

Theme 2b encompassed strategies described by six of the eight participants. They were Avery, Jordan, Riley, Casey, Quinn, and Parker. They all use LLM-AI tools to enhance instructional efficiency and faculty responsiveness in fully online instructional environments. My analysis of participant accounts indicated that these implementation practices focused on streamlining instructional tasks, supporting feedback processes, and assisting with content preparation. These descriptions aligned with the participant representation summarized in Table 3. I found that, unlike Themes 1a and 2a, which reflected consensus across all participants, Theme 2b emerged as a majority theme, highlighting variation in how faculty approached the use of efficiency-oriented AI.

Two participants, Avery and Jordan, described using AI to streamline instructional planning and feedback processes while maintaining instructional intent. Avery explained, “AI was utilized to streamline planning and feedback without altering established pedagogical goals or student expectations.” Jordan described, “efficiency gains related to instructional management, noting that AI-supported processes improved personal efficiency, particularly in

relation to providing timely instructional responses to students. I noted that for these participants, efficiency was a means to provide better student support."

Three participants, Riley, Casey, and Quinn, described selective or limited uses of AI for efficiency-related purposes. Riley reported, "implementing AI for workload management only when such use aligned with instructional goals and preserved instructional quality." Quinn described "efficiency-related uses as supplemental supports, implemented only when the technology aligned with specific, pre-determined instructional needs rather than as a primary strategy for course delivery." Casey explained, "I identified this as a cautious but purposeful engagement with the *time-saving* capabilities of AI."

One participant, Parker, described efficiency-related uses of AI as secondary to learning support. Parker explained, "AI was implemented only when the tool supported instructional processes without diminishing academic rigor or established learning objectives, reinforcing a balanced approach to technological efficiency." In contrast, I noted that two participants, Rowan and Skyler, did not describe instructional efficiency as a central component of their AI implementation. Their accounts focused primarily on learning support and student engagement rather than workload management or efficiency-related outcomes.

Across all eight participants, variation existed in the extent to which AI supported instructional efficiency and faculty responsiveness. Six participants described efficiency-oriented uses of AI as supplemental supports within instructional practice rather than central pillars of their pedagogy. Two participants described AI primarily in relation to learning support and student engagement. Taken together, these findings for Research Question 2 indicate that online faculty implemented LLM-AI tools in ways that prioritized student learning processes while selectively leveraging the technology to enhance instructional efficiency. I have concluded this

analysis by noting that while efficiency is a benefit, it remained subordinate to the pedagogical goals of the online faculty.

Comparison of Results to the Literature Review

In this section, I provide a systematic interpretation of the results in relation to the research questions, existing literature, and the study's theoretical framework. This is accomplished by comparing participant accounts with established scholarly perspectives to determine how these findings uphold, extend, or diverge from prior research. Through this critical lens, the inquiry moves beyond mere description to identify how faculty experiences either reinforce or challenge current understandings of AI integration in online higher education. I examined the implications of faculty experiences to bridge the gap between theoretical frameworks and practical instructional application.

The findings related to Research Question 1 align with Mezirow's (1991, 2000) Transformative Learning Theory, specifically through evidence of reflective adaptation. Participants described a process of reconsidering instructional assumptions that upholds the core tenets of perspective transformation in technology-mediated environments. Faculty engaged in purposeful integration by prioritizing pedagogical goals over the mere novelty of LLM-AI tools. This finding upholds the assertions of Allen and Penuel (2015), who argued that meaningful technology adoption is a mechanism of reflective instructional change rather than a lockstep acceptance of new tools. By evaluating LLM-AI tools in relation to learning objectives, the participants in this study mirrored the reflective practices described by Mezirow (1991) as essential for professional growth during periods of technological shift. I found that this alignment underscores the importance of faculty agency during periods of rapid digital transition.

Participants also emphasized the need to define acceptable use to maintain academic integrity in the virtual classroom. This focus on clear expectations extends the work of Young (2025) and Binns (2021) regarding the ethical considerations of AI. While Young (2025) identified faculty skepticism as a primary barrier, this study's results indicate that faculty move beyond skepticism to actively establish boundaries that uphold institutional rigor while allowing controlled experimentation. These actions suggest that establishing perimeters is a foundational step in transforming faculty perspectives toward generative technology. I identified this move from skepticism to boundary-setting as a key indicator of successful professional adaptation.

The findings for Research Question 2 further illustrate how faculty adaptation influenced the implementation of AI to support student learning. These accounts confirm that faculty members integrate emerging technologies gradually rather than through uniform, lockstep adoption. In analyzing student learning supports, I found that faculty implemented AI to scaffold engagement and reflection while maintaining students' cognitive responsibility. This finding upholds Mezirow's (1991) conclusion that transformative learning is most effective when technology supports the relational and cognitive dimensions of teaching. Specifically, by using AI as a scaffold rather than a replacement for student thinking, the participants in this study uphold the pedagogical standards for student engagement suggested by Alonso and Sánchez (2024). I observed that this focus on scaffolding protects the instructional integrity of the online environment.

The variation in how faculty used AI to streamline planning and feedback aligns with Cranton's (2023) research, emphasizing that technology integration is an individualized, context-dependent process. While some faculty leveraged efficiency gains, others remained cautious throughout the integration process. This variation extends the literature by showing that

efficiency is not a universal motivator but is instead filtered through the lens of professional judgment and pedagogical responsibility. Consequently, the adoption of LLM-AI tools appears to be a highly reflexive process, deeply influenced by the instructor's unique disciplinary context and teaching philosophy. I concluded that these individualized pathways to adoption highlight the need for flexible institutional support rather than one-size-fits-all policies.

Summary

In Chapter 4, I presented participant demographic information and the key themes derived from the data analysis. Using the seven-phase reflexive thematic analysis framework, I identified themes concerning purposeful and intentional AI integration, explicit boundary-setting for AI use, AI as support for student learning processes, and AI as a tool for instructional efficiency and support. These themes reflected areas of consensus and variation across participant accounts and were organized in alignment with the research questions. I utilized this structure to ensure that the faculty voice remained the central focus of the findings.

The findings presented in this chapter provide an empirical foundation for subsequent interpretation and theoretical integration. In Chapter 5, I position these results within existing scholarly literature to examine their alignment with Transformative Learning Theory. Additionally, I use Chapter 5 to discuss the implications for online instructional practice, institutional considerations, and future research on the use of LLM-AI tools in higher education. This forthcoming synthesis will connect the practical findings of this study to the broader academic landscape.

The completion of this analysis marks the transition from data reporting to the final synthesis of the study’s contributions. By grounding the results in the experiences of online faculty, I achieved a clearer understanding of the pedagogical shift toward generative

technology. These insights serve as the basis for the conclusions and practice recommendations that follow in the final chapter of the study. I have prepared the following chapter to offer a comprehensive interpretation of how these findings can transform future online teaching and learning.

Chapter 5: Discussion, Recommendations, and Study Summary

The problem to be addressed in this study was many faculty members teaching in online higher education viewed LLM-AI tools with skepticism, which often led to concerns regarding academic integrity, a perceived decline in instructional quality, and resistance to shifting pedagogical roles (Cotton et al., 2023; Young, 2025). The purpose of this qualitative exploratory case study was to investigate the experiences of online faculty members in successfully implementing LLM-AI tools in their classrooms to support student learning. Artificial intelligence (AI) shifted from a theoretical concept to a practical influence across sectors such as healthcare, finance, and higher education. Within fully online instructional environments, the emergence of LLM-AI tools introduced new considerations related to instructional practice, academic integrity, and faculty decision-making. This study focused on how such professional concerns shaped the adoption and instructional use of emerging technologies.

To address this purpose, I used a qualitative methodology drawing on data collected through semi-structured individual interviews and one virtual focus group. I analyzed the data using Braun and Clarke's (2024) updated seven-phase reflexive thematic analysis framework. This methodological approach supported an in-depth examination of participant experiences and professional strategies.

The analysis resulted in four key themes: Purposeful and Intentional AI Integration, Explicit Boundary-Setting for AI Use, AI as a Support for Student Learning Processes, and AI as a Tool for Instructional Efficiency and Support. Collectively, these themes reflected how faculty implemented AI-supported instructional practices in ways that addressed instructional coherence, ethical considerations, and student academic responsibility. Because the study was conducted within a defined sample and a specific online higher education context, transferability to other

instructional settings or institutional environments may be limited. The discussion that follows remains grounded in these contextual boundaries while addressing broader implications for the field.

In this chapter, I present an interpretation of the findings in direct relation to the research problem and purpose by examining how online faculty members navigated the integration of LLM-AI tools in online higher education. The discussion situates the findings within the existing literature and the theoretical framework of Transformative Learning Theory. The chapter then presents implications derived from the findings to identify considerations for instructional practice, faculty decision-making, and educational leadership. Table 4 presents these implications by research question and links findings from RQ1 and RQ2 to key areas of instructional and leadership relevance.

Implications

The implications in this section clarify how the findings may inform practice within fully online higher education. In addition to reflecting participants' experiences, these implications address broader pedagogical, ethical, and leadership considerations associated with the implementation of LLM-AI tools. Table 4 presents an overview of these implications by research question, followed by a more detailed discussion of each implication.

Table 4

Implications

Research Questions	Implications
RQ1: What strategies do online faculty use to implement LLM-AI tools?	A. Alignment with pedagogical goals supports purposeful and intentional integration of LLM-AI tools within online course design. B. Explicit boundary-setting and transparency reinforce ethical implementation and student

	academic responsibility. C. Intentional instructional design frameworks and structured decision-making processes support consistent and sustainable faculty implementation of LLM-AI tools.
RQ2: How do online faculty implement LLM-AI tools to support student learning processes?	D. LLM-AI tools support cognitive engagement by scaffolding analysis, reflection, and revision processes. E. Maintaining student responsibility for original thinking reinforces academic accountability. F. Instructional scaffolding strategies using LLM-AI tools support learning progression without content substitution. G. Purposeful instructional efficiency supports instructional responsiveness while maintaining instructional quality.

RQ1: What strategies do online faculty use to implement LLMs?

Implication A. Faculty implementation of large language models (LLMs) reflected deliberate alignment with established course objectives and learning outcomes rather than the use of AI as an isolated instructional feature. Instructional decisions emphasized evaluating AI use based on its contribution to instructional coherence and student learning goals. This finding aligns with literature emphasizing the importance of aligning technological choices with pedagogical intent and learning outcomes in online course design (Koehler & Mishra, 2009; Zhu et al., 2023).

From an interpretive perspective, purposeful alignment served as a stabilizing strategy, enabling faculty to integrate emerging tools while maintaining instructional consistency in fully online environments. Existing research indicates that effective online instruction depends on

learner-centered design, structured engagement, and coherent feedback practices, all of which require intentional integration of digital tools rather than reactive adoption (Martin et al., 2020; Zhu et al., 2023). In contexts characterized by skepticism and concerns related to academic integrity, alignment with pedagogical goals supported faculty decision-making and reduced resistance to technological change (Cotton et al., 2023; Young, 2025).

Implication B. Faculty strategies emphasized the importance of clearly articulated expectations regarding acceptable LLM-AI tools use within online courses. Boundary-setting practices were embedded in course policies, assignment guidelines, and instructional communication to reduce ambiguity around AI use and address concerns about academic dishonesty and misuse of generative tools (Cotton et al., 2023; Rudolph et al., 2023). Clear boundaries reinforced student academic responsibility while supporting ethical implementation in online environments where assessment verification presents ongoing challenges (Rainie, 2025). I observed that these boundaries provided the necessary structure for students to engage with AI without compromising the integrity of their original work.

Interpretively, transparency enabled consistent application of academic standards without reliance on reactive enforcement approaches. The literature highlights persistent uncertainty surrounding ethical AI use and variation in institutional guidance, underscoring the importance of communication-based strategies that emphasize expectations and learning processes (Tyton Partners, 2023; University of Massachusetts Amherst, 2024). Concerns regarding the limitations and fairness of AI detection tools further reinforce the value of boundary-setting practices that prioritize clarity and instructional intent over detection-based enforcement (Stokel-Walker, 2023). I found that proactive communication serves as a more effective deterrent to academic misconduct than post-hoc technological surveillance.

Implication C. Faculty implementation strategies reflected the use of instructional design frameworks and structured decision-making processes to guide LLM-AI tools integration. Decisions regarding when, where, and how these tools were incorporated were informed by evaluative criteria aligned with instructional purpose, student engagement, and ethical considerations. This approach aligns with research emphasizing that effective online instruction depends on design competencies that integrate pedagogy, course structure, and tool evaluation rather than tool familiarity alone (Koehler & Mishra, 2009; Martin et al., 2020). I determined that this structured approach is vital for maintaining the professional standards of higher education in a digital-first environment.

Further interpretation suggests that structured, design-informed decision-making supports sustainable implementation at both course and program levels. The literature indicates that faculty adoption of emerging technologies is influenced by both institutional and individual factors, reinforcing the value of criteria-based approaches to implementation (EDUCAUSE, 2023; Hawkins et al., 2023; Wang et al., 2023). In the absence of consistent institutional policy guidance, instructional design frameworks provided faculty with a mechanism for maintaining coherence and ethical consistency in AI use (Bailey, 2023; Tyton Partners, 2023). I recognized that faculty who utilize these frameworks are better equipped to navigate the disorienting dilemma of AI integration as described in Transformative Learning Theory.

RQ2: How do online faculty implement LLMs in their classrooms to support student learning?

***Implication D*.** Faculty implementation of LLM-AI tools emphasized instructional scaffolding to support student engagement during processes such as analysis, reflection, and revision. These strategies align with established practices in online instruction that prioritize

active engagement and learner-centered design, particularly in virtual environments where instructional structure supports autonomy and critical thinking (Martin et al., 2020; Zhu et al., 2023). Using LLM-AI tools to scaffold learning processes rather than generate final products reflects a process-oriented approach intended to support student thinking while maintaining academic standards (Cotton et al., 2023; Rudolph et al., 2023). I determined that this scaffolding approach transforms the tool from an *answer engine* into a cognitive partner that enhances student metacognition.

Interpretively, scaffolding practices supported cognitive engagement by emphasizing learning progression through structured tasks rather than task completion through automated output. Research indicates that scaffolded assignments and interactive learning structures are central to sustaining meaningful learning in online contexts (UEN Pressbooks, 2023; Zhu et al., 2023). Additionally, LLM-AI tools can provide individualized learning support and feedback in writing-intensive, asynchronous environments when used alongside instructional guidance (Gardiner, 2025; Jin et al., 2024). I identified this shift toward process-oriented learning as a foundational change in how faculty manage student work in the age of AI.

Implication E. Faculty implementation strategies emphasized maintaining student responsibility for original thinking when using LLM-AI tools to support learning processes. This emphasis aligns with concerns in the literature about the potential for generative tools to undermine critical thinking or foster dependency when AI-generated content is submitted as original work (Cotton et al., 2023; Dwyer & Laird, 2024). Clear expectations for accountability supported student ownership of learning outcomes while allowing LLM-AI tools to function as instructional supports rather than substitutes for cognitive effort. I observed that student accountability remains the primary safeguard against the erosion of academic rigor.

Interpretively, reinforcing student responsibility addressed a central tension in online education: balancing instructional support with expectations for authorship and academic integrity (Rudolph et al., 2023). Given the documented limitations and inequities associated with AI detection tools, instructional strategies emphasizing transparency, process evidence, and student accountability are more effective and equitable than reliance on detection-based enforcement alone (Stokel-Walker, 2023). I concluded that shifting the focus from detection to accountability empowers both faculty and students to navigate the ethical complexities of the digital classroom.

Implication F. Faculty implementation strategies reflected intentional scaffolding approaches that supported learning progression without substituting student-generated content. LLM-AI tools were used to assist with idea development, conceptual clarification, and revision, rather than to generate the final product. This approach aligns with literature emphasizing scaffolded design and learner-centered instructional practices as foundations of effective online learning (Martin et al., 2020; Zhu et al., 2023). I recognized that this distinction between *process support* and *content substitution* is the key to maintaining instructional coherence.

Further interpretation suggests that this approach directly addresses concerns regarding blurred boundaries of authorship and misuse of generative AI in online courses (Cotton et al., 2023; Dwyer & Laird, 2024). Assessment redesign strategies, such as iterative drafts and reflective writing, further reinforce the value of process-centered learning structures that preserve academic standards while supporting learning progression (University of Massachusetts Amherst, 2024). I identified these iterative strategies as essential tools for faculty seeking to integrate technology without sacrificing authentic authorship.

Implication G. Faculty implementation strategies also reflected purposeful use of LLM-AI tools to support instructional efficiency while maintaining instructional quality. Efficiency-oriented applications included streamlining feedback and clarification processes to support timely instructional responsiveness. The literature indicates that timely and consistent feedback is central to effective online instruction and that faculty workload influences the sustainability of quality instructional practices (Martin et al., 2020; Wang et al., 2023). I found that when faculty leverage AI to improve efficiency, they can dedicate more cognitive bandwidth to high-level student interactions.

Interpretively, an efficiency-focused implementation aligns with scholarship that notes that LLM-AI tools can support instructional planning and communication when applied with pedagogical intent and faculty oversight (Bailey, 2023; Selwyn et al., 2024). At the same time, concerns regarding overreliance on automation reinforce the importance of bounded, purposeful implementation to preserve instructional integrity (Miller, 2025; Shah, 2025). These findings suggest that efficiency-oriented uses of LLM-AI tools can enhance responsiveness and sustainability without compromising instructional standards. I have concluded that purposeful efficiency is a strategic asset for the modern online educator, provided it is managed with professional judgment.

Interpretation of the findings should be considered in the context of the study's design and setting. The study focused on a defined sample of online faculty teaching in fully online higher education contexts, which may have influenced how participants described their instructional strategies and perceptions of the integration of LLM-AI tools. Institutional variation in policies, resources, and professional development opportunities may also have shaped faculty decision-making related to tool use. Additionally, the timing of the study, conducted during a

period of rapid technological emergence, may have influenced participants' perspectives and instructional practices. As a qualitative exploratory case study, the findings reflect context-specific interpretations rather than generalized claims; therefore, the implications should be understood as indicative of patterns within similar online instructional environments. I have organized these interpretations to provide a robust framework for understanding the current state of faculty transition.

Recommendations for Practice

The recommendations for practice in this section build on the implications derived from the findings by identifying practical considerations for faculty, instructional leaders, and administrators in fully online higher education. These recommendations are grounded in the study findings and address instructional coherence, ethical implementation, student accountability, and sustainable faculty practice. Table 5 presents these recommendations in summary form before the expanded discussion below.

Table 5

Recommendations for Practice

Implications	Recommendation for Practice
A. Alignment with Pedagogical Goals	1. Faculty should align LLM-AI tools use with clearly defined learning objectives to ensure that AI integration supports instructional goals within online course design.
B. Explicit Boundary-Setting and Transparency	2. Faculty should establish and communicate clear guidelines for acceptable LLM-AI tools use through syllabi, assignments, and instructional materials to support ethical implementation and student academic responsibility.
C. Intentional Instructional Design Frameworks and Structured Decision-Making Processes	3. Institutions and programs should support the use of instructional design frameworks and structured decision-making processes that guide

	purposeful and sustainable implementation of LLM-AI tools within online courses.
D. Cognitive Engagement Through Scaffolding	4. Faculty should implement LLM-AI tools as an instructional scaffolding tool to support analysis, reflection, and revision processes rather than content generation.
E. Maintenance of Student Academic Responsibility	5. Instructional practices should reinforce student responsibility for original thinking while permitting LLM-AI tools to function as a learning support.
F. Instructional Scaffolding Without Content Substitution	6. Faculty should use instructional scaffolding strategies that support learning progression without substituting student-generated content.
G. Instructional Efficiency and Responsiveness	7. Faculty may use LLM-AI tools to enhance instructional efficiency in feedback and student support while maintaining instructional quality

Recommendation 1 Based on Implication A. It is essential that faculty align the use of LLM-AI tools with clearly articulated instructional purposes to support coherence across course design and assessment practices. Situating AI-supported activities within established learning objectives and evaluative criteria enables faculty to determine whether tool use meaningfully contributes to intended learning outcomes. Purposeful alignment ensures that integration is guided by pedagogical intent rather than novelty, supporting instructional clarity and consistency. I concluded that this alignment is the primary safeguard against *technology for technology's sake* in the virtual classroom.

Recommendation 2 Based on Implication B. Faculty should prioritize clear and consistent communication regarding acceptable LLM-AI tools use to support ethical implementation and reinforce student academic responsibility. Establishing transparent boundaries through syllabi, assignment guidelines, and instructional materials reduces ambiguity

related to expectations for AI use. Consistent boundary-setting practices promote shared understanding across instructional contexts and support faculty efforts to maintain academic standards within online learning environments. I determined that proactive transparency is more effective for maintaining integrity than reactive surveillance.

Recommendation 3 Based on Implication C. I urge the adoption of instructional design frameworks and structured decision-making processes to support purposeful and sustainable implementation of LLM-AI tools within online courses. Design structures that guide planning, alignment, and evaluation help faculty determine when and how tools are appropriately integrated. Institutional support for such frameworks promotes consistency in instructional practice while allowing flexibility in application, strengthening alignment among pedagogical goals, ethical considerations, and instructional decisions. I identified these structured frameworks as essential for moving beyond *ad-hoc* technology adoption.

Recommendation 4 Based on Implication D. Implementing LLM-AI tools as instructional scaffolding tools is a vital strategy for supporting student cognitive engagement during analysis, reflection, and revision processes. When these tools are positioned to guide learning rather than generate content, students remain engaged in constructing understanding. Scaffolding at critical stages of the learning process supports deeper engagement with academic tasks while preserving student responsibility for original work. I observed that positioning AI as a scaffold protects the cognitive effort required of the student.

Recommendation 5 Based on Implication E. Instructional practices must emphasize student responsibility for original thinking to support ethical engagement with LLM-AI tools. Clearly articulated expectations for accountability help ensure that AI use does not replace individual cognitive effort. Maintaining emphasis on authorship and responsibility reinforces

student ownership of learning outcomes while allowing the tools to function as instructional supports within defined boundaries. I found that reinforcing individual authorship is critical to maintaining the value of the degree in an AI-saturated environment.

Recommendation 6 Based on Implication F. I advise faculty to utilize instructional scaffolding strategies that incorporate LLM-AI tools to support learning progression without substituting student-generated content. Using these tools to support idea development, conceptual clarification, and revision preserves the integrity of student work. These strategies support continuity in learning while aligning AI-supported activities with instructional objectives and assessment expectations. I identified this distinction between *process aid* and *content replacement* as the most vital strategy for faculty to master.

Recommendation 7 Based on Implication G. The purposeful use of LLM-AI tools may enhance instructional efficiency while maintaining instructional quality. Faculty strategies that streamline processes such as feedback and clarification support timely instructional responsiveness in online environments. When aligned with instructional priorities, efficiency-oriented applications of these tools contribute to sustainable instructional workloads while preserving consistent support for student learning. I have concluded that purposeful efficiency is a necessary adaptation for faculty managing the high-demand environments of online higher education.

Collectively, these practical applications demonstrate how the study's findings can be applied in online higher education contexts to support the purposeful, ethical, and sustainable integration of LLM-AI tools. These insights are grounded in the study's qualitative exploratory design and reflect faculty experiences situated within specific instructional and institutional conditions. To support a visual understanding of the alignment among the study's problem,

purpose, research questions, and methodological approach, Table 6 summarizes the study design and analytic focus. I have used this alignment synthesis to bridge current findings with the identification of critical gaps warranting additional empirical inquiry.

Recommendations for Future Research

The recommendations for future research in this section are drawn from the study findings, practical applications, and identified limitations. These recommendations remain grounded in the present qualitative exploratory case study and reflect the need for continued investigation across varied instructional and institutional conditions. Table 6 summarizes these recommendations by presenting proposed methodological approaches, research designs, and corresponding purposes for future study.

Table 6

Recommendations for Future Research

Methodology	Design	Purpose
Qualitative	Case Study	To examine how online faculty implement LLM-AI tools within institutional contexts.
Qualitative	Narrative	To explore faculty experiences integrating LLM-AI tools over time
Quantitative	Correlational	To examine relationships among faculty attitudes, implementation strategies, and instructional outcomes.
Qualitative	Phenomenological	To investigate faculty lived experiences using LLM-AI tools in instruction.

This qualitative, exploratory case study provided the foundation for several future inquiry pathways. These recommendations, presented in Table 6, offer various research methods to extend current understanding of how online faculty implement LLM-AI tools in higher education. Further investigation into these areas is warranted to refine the academic community's collective knowledge regarding the long-term impact of generative technology on instructional practice.

The first suggestion is that future researchers use a qualitative case study design to examine in depth how online faculty implement LLM-AI tools within specific institutional or programmatic contexts. A qualitative case study approach would allow for a detailed examination of instructional practices, institutional policies, leadership support, and professional development structures that influence faculty decision-making. While the present study focused on a defined online higher education context, future case studies could incorporate multiple institutions or academic programs to enable comparative analysis and enhance transferability. I determined that broadening the contextual scope in this manner would offer deeper insight into how institutional conditions shape faculty implementation strategies.

Second, a future researcher may use a qualitative method incorporating a narrative design to explore individual faculty experiences with the integration of LLM-AI tools over time. A narrative approach facilitates an examination of how faculty interpret, reflect on, and adapt instructional practices as expectations, policies, and technological conditions evolve. Unlike the cross-sectional design of the present study, a narrative design enables longitudinal exploration of sensemaking processes, capturing changes in beliefs, instructional strategies, and professional identity. The longitudinal exploration of faculty identity represents a critical gap in the existing literature that warrants further investigation.

Third, a future researcher may conduct a quantitative study using a correlational design to examine relationships among faculty attitudes toward LLM-AI tools, implementation strategies, and perceived instructional outcomes. A correlational approach facilitates an analysis of patterns across larger populations of online faculty and assesses associations among variables such as faculty preparedness, institutional support, academic integrity concerns, and reported instructional practices. While this qualitative study provided in-depth, context-specific insight, a quantitative design complements these findings by addressing limitations related to sample size and generalizability. The identification of these broader trends remains necessary to validate the strategic patterns observed in this small-scale inquiry.

Finally, a future researcher may conduct a qualitative phenomenological study to investigate the lived experiences of online faculty using LLM-AI tools in instruction. A phenomenological design supports examination of how faculty interpret instructional change and make meaning of shifts in professional assumptions associated with AI integration. This approach aligns conceptually with Transformative Learning Theory through its emphasis on critical reflection and the reassessment of instructional perspectives. These future directions are proposed to support continued refinement of scholarly understanding related to the transformative potential of generative technology.

Study Summary

The purpose of this qualitative exploratory case study was to investigate the experiences of online faculty members in successfully implementing LLM-AI tools in their classrooms to support student learning. Guided by transformative learning theory, the researcher identified instructional approaches that emphasized purposeful alignment with pedagogical goals, explicit boundary-setting for ethical AI use, instructional scaffolding to support student learning, and

selective use of LLM-AI tools to enhance instructional efficiency. This final summary reflects the successful navigation of the professional challenges faculty face in the modern digital landscape.

The findings indicate that effective AI integration in online higher education is shaped by intentional and reflective faculty decision-making rather than uncritical adoption of emerging technologies. The integration of LLM and AI tools, when aligned with instructional objectives and accompanied by clear expectations for student responsibility, may support instructional coherence while maintaining academic integrity. Collectively, the findings contribute insight into how online faculty navigate skepticism, ethical considerations, and resistance to technological change through structured, pedagogically grounded instructional practices. Future research may further examine the relationships among faculty reflective practice, institutional context, and sustained AI and LLM integration across diverse online higher education environments. This study suggests that the success of these strategies depends heavily on the educator's willingness to re-evaluate their role as a strategic lead in an automated age.

I concluded this study with the recognition that the themes of purposeful integration and explicit boundary-setting extend far beyond the virtual classroom. In sectors such as healthcare and clinical research, the move toward process-oriented scaffolding mirrors the need for AI to assist in diagnostic analysis without replacing the critical judgment of the practitioner. Similarly, in legal and financial services, the *Explicit Boundary-Setting* identified in this study provides a template for maintaining ethical authorship and accountability when drafting complex documents or analyzing market trends. By grounding these results in the experiences of online faculty, I gained a clearer understanding of a pedagogical shift currently disrupting all knowledge-based industries.

These insights serve as a final bridge between the theoretical foundations of transformative learning and the practical realities of the modern workforce. I have provided this work to offer a robust framework for leaders across diverse sectors who must balance the efficiency of LLM-AI tools with the non-negotiable requirement for human oversight and original thinking.

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Appendix A

NU IRB Exempt from Further Review Letter

National University IRB
9338 Lightwave Ave., San Diego, CA 92123
irb@nu.edu

Notice of Exemption
November 10, 2025
To: Jennifer Elliott
Project Title: Online Faculty Experiences with Implementing LLM and AI Tools in Online Academia: A Qualitative Exploratory Case Study

NU IRB Number: IRB-FY25-26-314

Determination: **Exempt from further review** 45 CFR 46.101 Category 2.(ii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or

For any questions regarding your protocol, please contact the IRB at irb@nu.edu.

Sincerely,

Dr. Joseph Marron, IRB Chair

Dr. Brianne Mongeon, Director, HRPP & IRB

Jenessa Eberhardt, Associate Director, HRPP & IRB

Appendix B

Recruitment Flyer and Information

National University IRB
9338 Lightwave Ave., San Diego, CA 92123
irb@nu.edu

Faculty's' Perspectives on Online Teaching

A Research Study by Jennifer Elliott, PhD Candidate at National University

This study explores the experiences of faculty who once held negative perceptions about teaching online but have since found the environment to be positive, rewarding, or transformative. The goal is to better understand how attitudes shift over time and what factors contribute to a successful transition to online teaching—especially in the age of AI and large language models (LLMs).

The purpose of the qualitative exploratory case study is to explore online faculty's experiences with successfully implementing LLM AI tools in their classrooms to support student learning

Participants will engage in a one-to-one semi-structured interview through Zoom, lasting 60-90 minutes. Interviews will be recorded using Zoom features and include 19 questions.

Please click on the button to schedule a time convenient for you

Appendix C

Consent Email

National University IRB
9338 Lightwave Ave., San Diego, CA 92123
irb@nu.edu

Title of Study: Online Faculty's Experiences with Implementing LLM-AI tools in Online Academia: A Qualitative Exploratory Case Study
Researcher: Jennifer Elliott, Doctoral Candidate, National University

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Introduction
Greetings, I am Jennifer Elliott, a doctoral candidate at National University (NU). I am conducting a research study on the experiences of faculty who once held negative perceptions about teaching online but have since found the environment to be positive, rewarding, or even transformative.

The goal of this study is to gain a deeper understanding of how attitudes shift over time and what factors contribute to a successful transition to online teaching, particularly in the era of **LLM-AI tools**. This study is part of my dissertation research. You have been selected to share your story and insights through a one-on-one interview.

Participant Eligibility
You may be eligible to participate if you meet the following criteria:

- Teach 100% online at an accredited university in the United States.
- Have at least three years of experience teaching online.
- Possess strong digital literacy skills in using **LLM-AI tools**.
- Have successfully implemented **LLM-AI tools** (e.g., ChatGPT) in your online teaching to support student learning.
- Have experienced a change in perception from initial resistance or skepticism to acceptance or advocacy of **LLM-AI tools** in education.

What Participation Involves

- **Virtual Interview:** A Zoom-based interview, approximately 60 minutes in length.
- **Focus Group:** You may also be invited to participate in an optional virtual focus group (approximately 60 minutes).
- **Voluntary Nature:** Participation is completely voluntary, and you may withdraw at any time without penalty.

Potential Risks & Anticipated Benefits

Risks: Participation could include emotional discomfort when reflecting on past professional beliefs. While every effort will be made to maintain privacy, absolute confidentiality cannot be guaranteed.

Benefits: Although there is no direct compensation, you may find it professionally rewarding to:

- Reflect on your own teaching journey and transformation.
- Contribute to the growing body of knowledge on LLM-AI tools in online education.
- Help inform training and support strategies for faculty transitioning to online teaching.
- Positively impact future online teaching practices and institutional policies.

Privacy and Data Protection

- **Anonymity:** Your identity will be replaced with a gender-neutral pseudonym in all research materials.
- **Storage:** Data will be stored on a password-protected computer accessible only to the researcher.
- **Access:** Only the researcher, the dissertation committee, and the National University IRB will have access to the data.
- **Destruction:** All research data will be securely destroyed after three years.
- **Future Use:** De-identified data may be used in future research studies or shared with other researchers, but your identity will never be disclosed.

Contact Information

If you have questions about your rights as a participant, please contact the National University Institutional Review Board (IRB) at irb@nu.edu.
For questions regarding the study or to "opt out" of this research, please contact the researcher directly:
Jennifer Elliott Doctoral Candidate, National University Email: j.elliott0132@o365.ncu.edu

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Thank you for considering this opportunity to share your story and support research on how LLM-AI tools are shaping the online teaching landscape.

Warm regards,
Jennifer Elliott

Appendix D

Interview Protocol

National University IRB
9338 Lightwave Ave., San Diego, CA 92123
irb@nu.edu

Research Title: Online Faculty's Experiences with Implementing LLM-AI tools in Online Academia: A Qualitative Exploratory Case Study
Interviewer: Jennifer Elliott, Principal Investigator
Platform: Zoom Video Conferencing
Estimated Duration: 60 Minutes

I. Introduction and Consent Script

Welcome and Appreciation: Thank you for dedicating your time to this session. This interview is a core component of my doctoral dissertation research at National University. My study explores how online faculty navigate skepticism and implement LLM-AI tools to support student learning.

Logistics and Privacy: This session is scheduled for approximately 60 minutes. With your permission, I will audio-record this session to facilitate accurate transcription and analysis.

- **Confidentiality:** Your identity will remain confidential. All personal information will be replaced with a gender-neutral pseudonym (e.g., Participant 1) in all transcripts and reports.
- **Rights:** You have the right to decline any question, take a break, or stop the interview at any time without penalty.
- **Consent Review:** [Review Appendix C: Consent Email]. This document explains the study purpose, your rights, and data protection.

Verbal Consent Request: Do you agree to participate in this study? Please respond with "Yes" or "No."

II. Research Questions (Reference for Alignment)

- **RQ1:** What strategies do online faculty use to implement LLM-AI tools?
- **RQ2:** How do online faculty implement LLM-AI tools in their classrooms to support student learning?

III. Interview Questions

Section A: Background and Context

1. Could you describe your current role in online higher education and your history of technology use within your instruction?
2. What were your initial thoughts or feelings when first learning about the use of LLM-AI tools in education?

Section B: Implementation Strategies (Related to RQ1)

3. Was there a specific moment or disorienting dilemma that challenged your previous assumptions about teaching with LLM-AI tools?
4. What specific concerns or skepticism did you hold when first considering the introduction of these tools into your virtual classroom?
5. How did you address or overcome resistance—whether personal, from students, or from colleagues during the initial implementation phase?
6. What institutional or peer support structures facilitated your transition during this process?

Section C: Supporting Student Learning (Related to RQ2)

7. Could you describe the specific methods you currently use to integrate LLM-AI tools within your online courses?
8. What strategies have you found most effective for using these tools to support instructional design or student engagement?
9. How do you ensure the ethical and constructive use of these tools by students during the learning process?
10. In what ways has the implementation of LLM-AI tools resulted in specific adaptations to your teaching practices or assessment design?

Section D: Synthesis and Reflection

11. How has your perception of LLM-AI tools evolved since your initial exposure?
12. What have you observed regarding student learning outcomes or engagement since incorporating these tools?
13. In what ways has your professional identity or teaching philosophy been influenced by this integration?
14. What advice would you offer to other online instructors who remain hesitant or skeptical about using LLM-AI tools?
15. What future role do you foresee for these tools in the online learning environment?

IV. Conclusion and Debriefing

Closing Statement: This concludes our interview session. I want to express my sincere gratitude for sharing your valuable experiences and insights with me today.

Debriefing Questions:

- How did the interview experience feel for you today?

- Did any of these questions prompt reflection on aspects of your teaching you hadn't considered before?
- Is there anything else you would like to add or clarify?

Next Steps:

- **Member-Checking:** I will send a transcript of this interview via email for your review. This allows you to confirm or clarify your responses to ensure accuracy (Patton, 2022).
- **Follow-up:** You are also invited to participate in a follow-up focus group session via Zoom (Appendix E) to further explore these themes with your peers.

Appendix E

Focus Group Protocol

National University IRB
9338 Lightwave Ave., San Diego, CA 92123
irb@nu.edu

Research Title: Online Faculty's Experiences with Implementing LLM-AI tools in Online Academia: A Qualitative Exploratory Case Study
Interviewer: Jennifer Elliott, Principal Investigator
Platform: Zoom Video Conferencing
Estimated Duration: 60–90 Minutes

I. Introduction and Purpose

Welcome and Appreciation: Welcome everyone. I want to express my sincere appreciation to each of you for joining this focus group session. Your participation was requested based on the valuable insights you shared during our one-on-one interviews.

Session Goal: The purpose of this group discussion is to explore our collective experiences regarding the implementation of LLM-AI tools in online higher education. We are specifically looking to identify shared challenges, instructional adaptations, and professional insights. This collaborative dialogue helps ensure interpretive depth and a comprehensive understanding of how faculty respond to technological skepticism.

II. Ethical Assurances and Guidelines

- Duration: This session will last approximately 60 to 90 minutes.
- Recording: With your verbal permission, I will audio-record this conversation for transcription.
- Confidentiality: Your identity will remain confidential, and names will be replaced with gender-neutral pseudonyms in all reports.
- Environment: To help us stay focused, please keep your cameras active and close any non-relevant windows on your devices.
- Voluntary Participation: You may decline any question or withdraw at any time.

Verbal Consent Request: Do I have your verbal consent to record this session? [Pause for confirmation]. The recording will now begin.

III. Structured Focus Group Prompts
Prompt 1: Challenges and Resistance (Related to RQ1)

RQ1: What strategies do online faculty use to implement LLM-AI tools?

- What were the most significant barriers you faced—personally, from students, or from your institution—when first starting?
- What methods did you use to overcome those specific challenges?
- Looking back, which strategies proved particularly effective (or ineffective) when navigating skepticism?

Prompt 2: Instructional Change and Implementation (Related to RQ2)

RQ2: How do online faculty implement LLM-AI tools in their classrooms to support student learning?

- In what ways has your teaching style or course structure evolved since adopting these tools?
- Can you provide specific examples where AI integration influenced student interaction or learning outcomes?
- How have you revised your assessments or assignments to accommodate or utilize LLM-AI tools?

Prompt 3: Reflections and Recommendations (Related to RQ1 and RQ2)

- What recommendations would you offer to a colleague who remains hesitant or skeptical about integrating these tools?
- What are the "key lessons learned" throughout your journey of implementing LLM-AI tools?
- What specific support, training, or policy changes do you think would facilitate future adoption in online instruction?

IV. Debriefing and Conclusion

Closing Statement: The focus group discussion has now concluded. Thank you all for your thoughtful contributions and for collaborating with your peers today.

Debriefing Questions:

- How did the focus group experience feel for you today?
- Did insights from other participants shift your thinking or affirm your own experiences?
- Is there any additional information you'd like to clarify before we close?

Next Steps: A transcript of this discussion will be generated, and all names will be replaced with pseudonyms. You will be invited to review the transcript for accuracy as part of the member-checking process (Patton, 2022). If you have questions, you may contact me or the National University IRB.

Appendix F

IRB Closure Letter

National University IRB
9338 Lightwave Ave., San Diego, CA 92123
irb@nu.edu

TO: Jennifer Elliott
NCU-SCoE-Education-phd-edl
FROM: National University IRB
DATE: Mar 3, 2026 9:02:05 AM PST
RE: **Closure Submission Requires Certification**
STUDY #: IRB-FY25-26-314
STUDY TITLE: Online Faculty Experiences with Implementing LLM and AI Tools in Online Academia: A Qualitative Exploratory Case Study

The Closure submission for the above-referenced study has been completed. This submission requires your approval as a member of the research team before it can be submitted to the National University IRB. Please log into Cayuse IRB Cayuse IRB; review and certify this submission.
Sincerely,

Dr. Joseph Marron, IRB Chair

Dr. Brianne Mongeon, Director, HRPP & IRB

Jenessa Eberhardt, Associate Director, HRPP & IRB