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Automating Academia: Implications of GenAI Use in Doctoral Research and Online Mentoring

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Automating Academia: Implications of GenAI Use in Doctoral Research and Online Mentoring


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Abstract

This study critically examines the use of generative artificial intelligence (GenAI), specifically ChatGPT, in the development of doctoral dissertation proposals, highlighting both its potential and its ethical implications. Through a content analysis of a dissertation proposal created using ChatGPT, the study investigates how GenAI supports structural organization, academic writing, and citation formatting while exposing significant concerns related to fabricated references, methodological misalignment, and diminished scholarly rigor. Although GenAI accelerates the proposal-writing process, its outputs often lack the depth, coherence, and originality expected at the doctoral level, thereby threatening the integrity of academic research. Findings reveal that GenAI-generated content may deceive faculty reviewers with convincingly formatted but nonexistent citations and underdeveloped arguments. The study further explores the pressures that motivate doctoral candidates to misuse GenAI, including time constraints, high-stakes academic expectations, and limited access to sustained mentoring. Particular attention is given to the role of online doctoral mentoring, where faculty advisors must now counterbalance the efficiencies of AI with the responsibilities of academic guidance, critical evaluation of AI-generated work, and coaching students in the ethical use of these tools. These findings underscore the urgent need for higher education institutions to implement clear GenAI usage policies, enforce transparency and disclosure standards, and provide targeted faculty development to strengthen online doctoral mentoring practices. This research contributes to the evolving discourse on AI ethics in academia and calls for institutional safeguards to ensure that GenAI enhances, rather than undermines, the standards of doctoral scholarship and the credibility of the scholarly record.

Keywords: *academic integrity, ChatGPT, content analysis, data fabrication, dissertation proposal, doctoral research, generative AI, higher education, online doctoral mentoring, research ethics, scholarly record*

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Introduction

The accelerating integration of generative artificial intelligence (GenAI) across higher education has introduced both unprecedented opportunities and significant ethical challenges for doctoral research. Once defined by independent inquiry and original scholarship, the doctoral journey now unfolds within an evolving digital landscape, where online GenAI tools (such as ChatGPT) can generate proposals, synthesize literature, and draft manuscripts in minutes. While these capabilities promise efficiency and accessibility, they also raise profound concerns regarding research integrity, academic authorship, and the reliability of the scholarly record (Burleigh & Wilson, 2024; Wilson & Burleigh, 2025).

Doctoral students—particularly those in online programs—often face complex barriers, balancing rigorous academic demands with professional and personal responsibilities while navigating limited access to direct mentorship (Melián et al., 2023; Parker et al., 2020). In this environment, GenAI tools can appear to offer a solution to time constraints and skill gaps, effectively automating components of the dissertation process. However, the ease of use and persuasive quality of AI-generated text can mask deeper risks, including data fabrication, citation hallucination, and diminished critical engagement in scholarly reasoning. Such trends pose a direct threat to the authenticity of doctoral research and the mentorship models that sustain academic rigor (Bond et al., 2024; Williamson & Prybutok, 2024). At the same time, GenAI offers valuable pedagogical potential when implemented ethically and under guided supervision.

GenAI can enhance literature review efficiency, support data analysis, and facilitate academic writing development when embedded within a transparent and reflective research framework (Berg, 2023; Lund et al., 2023). The challenge, therefore, lies not in rejecting GenAI outright but in cultivating a culture of responsible use, one that balances innovation with integrity and efficiency with ethical accountability.

This paper examines the implications of GenAI use in doctoral research through a qualitative content analysis of ChatGPT-generated dissertation proposal materials. It further explores how online doctoral mentoring can serve as a critical safeguard for maintaining research integrity, fostering transparency, and preserving the authenticity of scholarly work. By illuminating both the potential and the perils of GenAI-assisted research, this study contributes to the ongoing discourse on how higher education institutions (HEIs) can adapt policies, practices, and mentoring frameworks to uphold academic and ethical standards in the age of automation.

Framing the Problem of Data Generation Using GenAI

The research process for doctoral candidates can be challenging. Oftentimes, doctoral students are thrust into this process with limited training and little to no practical experience carrying out a research project (Burleigh & Wilson, 2024; Martin et al., 2023; Wilson & Burleigh, 2025). Yet, doctoral students are expected to develop a dissertation of publication quality that reflects years of hard work and expertise in a singular subject using only the guidance of a faculty mentor and dissertation committee (Burkard et al., 2014; Wilson & Burleigh, 2025). Although the doctoral dissertation serves as the culmination of a student's academic journey, it represents only one component of a process encompassing years of coursework, institutional deadlines, and personal circumstances that may have impeded progress.

Complications associated with conducting original dissertation research are compounded for online doctoral students (Melián et al., 2023; Parker et al., 2020). To alleviate the significant pressures and challenges associated with the doctoral journey, some candidates may adopt expedient approaches or shortcuts designed to ease the demands and lessen the burdens of the research process. Previously, shortcuts might include hiring a writing service to produce the proposal and a final dissertation paper or plagiarizing others' work and

passing it off as their own. While most dissertation committees, mentors, and professors have the tools to detect plagiarized work or bought papers, a new challenge has emerged: the use of GenAI.

With the emergence of GenAI, doctoral candidates can now use tools like ChatGPT, based on large language models, to rapidly produce dissertation proposals and full dissertations by simply prompting the system with a series of targeted questions. This qualitative content analysis examines the process of using ChatGPT to develop a dissertation proposal and how, in doing so, it may threaten academic integrity, research integrity, and the scholarly record all at the same time.

Literature Review

Recent advancements in GenAI have opened new avenues for doctoral candidates, transforming traditional research methodologies, practices, and the reporting of findings for the scholarly record. As GenAI models become increasingly sophisticated and accessible, they have engendered novel applications ranging from automation of literature reviews to assisting with data interpretation and manuscript drafting (Law, 2024; Michel-Villarreal et al., 2023; Shoja et al., 2023). Despite these innovative applications, integrating GenAI into doctoral research introduces significant concerns regarding ethical usage, the preservation of originality, and the potential attenuation of critical scholarly engagement.

A growing body of literature (see Johnston et al., 2024; White, 2023; Zawacki-Richter et al., 2019) highlights the multifaceted advantages of integrating GenAI into the research development process. Law (2024), Schryen et al. (2025), and Yin et al. (2025) have noted that GenAI can rapidly synthesize vast amounts of literature, thereby streamlining the initial phases of research. Tools powered by GenAI enable doctoral candidates to identify relevant articles, summarize key findings, and generate initial drafts, which can accelerate the literature review process and may foster creative hypothesis formulation. Furthermore, by automating routine tasks, GenAI enhances productivity by allowing researchers to allocate more time to data analysis and theoretical development (Kassa & Worku, 2025). This potential for efficiency enhances the pace of academic research productivity and fosters innovative methodological approaches to addressing complex research questions (Al-kfairy et al., 2024; Berg, 2023; Kim et al., 2025; Lund et al., 2023).

The benefits of GenAI are counterbalanced by notable risks. One primary concern is that over-reliance on automated systems may undermine the development of essential critical and design thinking skills (Al-kfairy et al., 2024; Bereiter & Scardamalia, 2014). For example, when doctoral candidates depend excessively on GenAI-generated outputs, the iterative and reflective processes that are fundamental to rigorous academic inquiry may be compromised (Al-kfairy et al., 2024; Chauhan & Currie, 2024; Kim et al., 2025; Lund et al., 2023; Marchal et al., 2024). Moreover, integrating AI-generated content without appropriate attribution raises pressing academic integrity issues. The inadvertent incorporation of such material may lead to instances of plagiarism; the reproduction of text that lacks nuanced interpretation, critical for scholarly research at the doctoral level; or the integration of hallucinated content (Al-kfairy et al., 2024; Gilat & Cole, 2023; Lund et al., 2023). Compounding these challenges is the opaque nature of GenAI systems (Peters, 2023), which obscures the provenance of ideas and complicates the assessment of a candidate's independent intellectual contribution to originality in research (Al-kfairy et al., 2024). In light of these concerns, recent scholarly discourse advocates for a balanced approach to using GenAI in doctoral studies.

Scholars suggest that while GenAI can serve as a valuable adjunct to traditional research methods, its role should be carefully circumscribed by clear ethical guidelines (Berg, 2023; Blau et al., 2024; Lund et al., 2023). Doctoral programs, and doctoral mentors in particular, are increasingly tasked with the responsibility of educating students about both the capabilities and limitations of GenAI. This includes training in critical evaluation of AI-generated outputs, rigorous citation practices, and the development of transparent protocols

for disclosing AI assistance (Al-kfairy et al., 2024; Blau et al., 2024; Chauhan, 2024). By fostering an environment where GenAI is used to complement rather than replace human expertise, academic institutions and doctoral mentors can safeguard the integrity of research while still embracing technological innovation.

Recent research underscores the critical role of online mentoring in supporting doctoral candidates as they navigate the complex demands of independent scholarship. Virtual mentoring frameworks not only provide academic guidance but also create spaces for relational accountability, peer interaction, and scaffolding of scholarly identity (Bista & Cox, 2014; Kumar & Johnson, 2017, 2019; Mantai, 2019; Pollard & Kumar, 2021).

In the context of increasing reliance on GenAI, online mentoring may serve as a counterbalance by encouraging critical reflection, reinforcing ethical research practices, and modeling responsible engagement with digital tools. By appropriately situating mentoring within virtual environments, institutions can extend personalized support to geographically dispersed candidates while simultaneously cultivating a culture of integrity and scholarly rigor that mitigates the risks associated with automated content generation.

Transparency of Data Generation in Doctoral Research

Transparent data generation is fundamental to robust scholarly research and involves detailed reporting of the methods and procedures used during data collection, processing, and analysis (Al-kfairy et al., 2024). This practice is essential because it enables other researchers to replicate studies and verify findings, thereby establishing trust in the research outcomes. Additionally, transparent documentation can help to mitigate issues related to data fabrication, hallucinations, or selective reporting, reinforcing the overall credibility of the research process (Kim et al., 2025; Kulkarni et al., 2024; Marchal et al., 2024; Tang et al., 2023). When doctoral candidates clearly document their data generation methods, reviewers and peers can more effectively assess the methodological rigor and validity of the research, which facilitates a more robust peer review process (Blau et al., 2024; Goodman et al., 2020; Johnson et al., 2020). It is a key responsibility of the online mentor to demonstrate, teach, and expect doctoral students to produce their work with verifiable transparency in the face of temptations to take shortcuts.

Despite its critical importance, several challenges impede the full implementation of transparent data generation and collection. One obstacle is the absence of standardized reporting guidelines across different academic disciplines, which can result in inconsistent documentation practices and make it difficult to compare and replicate studies (Sedlakova et al., 2023; Zhai et al., 2024). Furthermore, the competitive nature of doctoral research may incentivize candidates to prioritize novel findings over thorough methodological transparency, leading to selective data reporting or insufficient documentation (Drolet et al., 2023; Goodman et al., 2020; Johnson et al., 2020). Ethical and privacy concerns also play a role, as issues related to confidentiality, intellectual property, and sensitive data often complicate researchers' willingness or ability to fully disclose their data generation and collection methods (Drolet et al., 2023).

In response to the challenges, emerging best practices and institutional support are paving the way for more transparent research processes. As an example, many doctoral programs require candidates to develop comprehensive data management plans (DMPs) as part of their research proposals. These plans outline detailed procedures for data collection, processing, storage, and sharing (Akers & Borghi, 2023; Vitale & Moulaison Sandy, 2019; Williams et al., 2017) and ensures that transparency is integrated into the research design from the outset (Akers & Borghi, 2023). Concurrently, academic journals and conferences are increasingly mandating the submission of supplementary materials that meticulously document data generation and collection methods (Vitale & Moulaison Sandy, 2019). Such policies not only enhance the reproducibility of research but also encourage researchers to adopt more rigorous documentation practices throughout the research process (An et al., 2025). Additionally, institutions are offering targeted training on data management and transparency, equipping doctoral candidates with the necessary skills to document and share their methodologies effectively (Soltero et al., 2024; Vitale & Moulaison Sandy, 2019).

Adherence to transparent data generation and collection practices is both a professional obligation and an ethical imperative for doctoral candidates, as it is incumbent upon online mentors to shape these practices in their students. Detailed documentation empowers researchers by underpinning the validation and defense of their findings while fostering constructive dialogue during the peer-review process.

Candidates may build a stronger foundation for their research contributions by committing to transparency in practices while also enhancing trust and credibility within the academic community (Soltero et al., 2024). Moreover, openly sharing data generation and collection methods contributes to the scholarly record by promoting collaborative inquiry and advancing the overall standards of academic research (Soltero et al., 2024).

Threat to Research Integrity and the Scholarly Record

The incorporation of GenAI into doctoral research has prompted substantial scholarly debate concerning its implications for research integrity and the preservation of the scholarly record (Burleigh & Wilson, 2024; Wilson & Burleigh, 2025). Although GenAI offers considerable promise in enhancing efficiency, particularly in literature synthesis and data analysis, its application also introduces notable risks. Chief among these is the potential for the inadvertent introduction of inaccuracies, the compromise of research originality, and the ensuing challenges in demarcating human-authored from machine-generated content (Bond et al., 2024; Drolet et al., 2023; Williamson & Prybutok, 2024).

A critical issue identified in the literature is the inherent opacity of many GenAI systems, which complicates efforts to verify the provenance and accuracy of the content they generate (Peters, 2023; Williamson & Prybutok, 2024). This lack of transparency undermines researchers' ability to critically assess and authenticate AI-generated material, thereby heightening the risk that erroneous or even fabricated and hallucinated content may be propagated within scholarly outputs. Therefore, it directly threatens the fundamental principles of accountability and verifiability that underpin rigorous academic inquiry. Moreover, the ability of GenAI to produce coherent academic text poses significant concerns regarding academic misconduct (Bond et al., 2024; Drolet et al., 2023; Williamson & Prybutok, 2024). The incorporation of AI-generated content without appropriate attribution not only challenges conventional understandings of authorship and originality but also risks constituting an act of plagiarism (Bond et al., 2024; Drolet et al., 2023; Hutson, 2024; Williamson & Prybutok, 2024). This ambiguity in authorship complicates the scholarly record, as subsequent research may inadvertently build upon contributions whose intellectual origins were not properly attributed.

In response to the threat to research integrity and the scholarly record, there is a growing consensus within the academic community on the need for robust ethical guidelines and transparent protocols governing the use of GenAI in research. Bond et al. (2024), Miao et al. (2023), and Williamson and Prybutok (2024) advocate for the establishment of clear standards regarding the disclosure and citation of AI-generated content, arguing that such measures are essential for maintaining research accountability and ensuring that all scholarly contributions are traceable to their original sources. Additionally, while the efficiency gains afforded by GenAI are noteworthy, Luo et al. (2025) caution that these gains should not undermine rigorous methodological practices, such as thorough peer review and source verification, which are critical to the integrity of academic research.

While technology holds significant potential for advancing research productivity, its application is fraught with risks that may undermine research integrity and the reliability of the scholarly record (Bolland et al., 2025; Khlaif et al., 2023). It is incumbent upon individual researchers, academic institutions, and doctoral mentors to adopt and enforce comprehensive ethical frameworks that emphasize transparency, critical evaluation, and proper attribution of AI-generated contributions. Such measures are vital to ensuring that the

integration of GenAI into research practices serves to reinforce, rather than erode, the foundational principles of scholarly inquiry.

Data Fabrication

The increasing integration of GenAI into doctoral research methodologies has prompted critical reflection on the potential risks of data fabrication. Data fabrication, defined as the intentional or unintentional creation of spurious data or results, poses a significant threat to the integrity of academic research (Kingori & Gerrets, 2016). While GenAI offers promising capabilities for automating literature reviews, data synthesis, and even hypothesis generation, its deployment also raises concerns about the inadvertent production of fabricated data, a phenomenon often associated with what is colloquially termed “AI hallucinations” (Fraenza, 2023; Ivanov, 2023; Lo, 2023; Scarlatos, 2024).

One notable challenge arises from the probabilistic nature of many GenAI systems. These systems generate outputs based on learned patterns from vast amounts of text rather than through direct engagement with verified empirical evidence. Consequently, GenAI systems may produce content that, while superficially plausible, is factually incorrect or entirely fabricated (Flintoft et al., 2023). Such outcomes can result from inherent limitations in model training and the absence of real-time fact-checking mechanisms, thereby increasing the risk that doctoral candidates might incorporate unverified or erroneous data into their research outputs (Kingori & Gerrets, 2016; Sørensen et al., 2021). This potential for inadvertent data fabrication demands that researchers maintain a rigorous standard of critical evaluation when utilizing GenAI-generated information.

The risk of data fabrication is compounded by the possibility of deliberate misuse in reporting research findings. In a competitive academic environment, the temptation to rely heavily on GenAI-generated content may lead some candidates to bypass traditional verification protocols, thereby undermining the foundational principles of research integrity (Bond et al., 2024; Flintoft et al., 2023). Historical research on academic misconduct has long emphasized the detrimental impact of data fabrication on the scholarly record, noting that even isolated incidents of fabricated data can propagate through subsequent studies, eroding trust in the scientific enterprise (Flintoft et al., 2023). The advent of GenAI introduces a novel vector for such misconduct, necessitating an updated framework for HEIs and doctoral mentors for teaching and evaluating research practices in the digital age.

The implications of data fabrication may extend beyond individual studies to affect the broader academic community and scholarly record. When fabricated data enters the scholarly record, those data may compromise the reproducibility of research findings and hinder cumulative knowledge building, thereby compromising trust in the research (Isbell et al., 2022). This erosion of trust has significant repercussions for the validity of peer-reviewed literature and the reliability of research outcomes. As doctoral research often serves as the bedrock for future scholarly endeavors, any compromise in data integrity may have far-reaching consequences, influencing policy decisions, academic funding, and the overall credibility of research institutions in the short and long term (Flintoft et al., 2023; Isbell et al., 2022; Kingori & Gerrets, 2016).

In response to the challenges of data fabrication, there is a growing call within the literature for the development of robust ethical guidelines and verification protocols that are specifically tailored to using GenAI in research (Fraenza, 2023; Ivanov, 2023; Lo, 2023). Research proposals should include the mandatory disclosure of GenAI involvement in data generation and collection, the implementation of cross-validation procedures with independently sourced datasets, a DMP, and the establishment of institutional oversight mechanisms to monitor AI-assisted research practices (Al-kfairy et al., 2024; Vitale & Moulaison Sandy, 2019; Williams et al., 2017). Such measures are critical to ensure that the benefits of GenAI do not come at the expense of academic rigor and integrity.

While GenAI holds considerable promise for enhancing research efficiency when used responsibly, integration into the doctoral research process must be approached with caution by students and mentors. Dual risks of inadvertent and deliberate data fabrication underscore the need for comprehensive verification practices and robust ethical guidelines. This includes a further focus on refining these safeguards while also developing standardized protocols that can adapt to the evolving capabilities of GenAI to ensure that the scholarly record remains both accurate and trustworthy. The pace at which GenAI evolves means that policies and protocols will need to be updated continuously, as they will often be deemed out of date at the time of or shortly after release (An et al., 2025; Burleigh & Wilson, 2024; Wilson & Burleigh, 2025).

HEIs are tasked with designing protocols that are both rigorous and adaptable, enabling timely revisions and fluid application in response to continual change. However, the doctoral mentor functions as the primary line of accountability, responsible for ensuring that doctoral students receive adequate training in the required protocols and are held to appropriate standards of compliance in their scholarly work.

Researcher Motivation for Data Falsification With GenAI

Recent advances in GenAI have significantly transformed the research landscape, particularly in doctoral studies, by offering novel methods to generate and manipulate data (Gupta et al., 2024). However, these technological advancements have also introduced complex ethical dilemmas, notably the potential for data falsification, which has traditionally been linked to a variety of extrinsic and intrinsic pressures including the imperative to publish, competition for funding, and the desire for rapid career advancement (Johann et al., 2024; Marson & Ferris, 2023). With the advent of GenAI, these pre-existing pressures may be exacerbated by the technology's capacity to generate plausible yet unverified data outputs quickly, thereby lowering the threshold for academic misconduct.

The competitive environment of academia, especially within doctoral programs, can create conditions under which researchers feel compelled to produce novel and significant findings, sometimes at the expense of methodological rigor (Marson & Ferris, 2023; Ou et al., 2024; Ramirez et al., 2015). GenAI systems, which can rapidly synthesize and generate data based on patterns extracted from vast compilations of resources and data, offer an alluring shortcut to traditional, time-intensive empirical research methods and data collection approaches (Budhwar et al., 2023). This efficiency, while beneficial in certain contexts, may also incentivize some researchers to use GenAI as a means to fabricate or falsify data that ostensibly support their hypotheses, thus sidestepping the arduous process of robust data collection and analysis (Mhlongo, 2025; Nikolopoulou, 2024).

Moreover, the inherent nontransparency of many GenAI algorithms complicates the verification process. When the provenance of GenAI-generated data is difficult to ascertain, there is an increased risk that fabricated and/or falsified data may be integrated into the scholarly record undetected (Gök, 2024; Kingori & Gerrets, 2016). This risk is further amplified by the psychological pressures associated with doctoral studies, where the fear of failure and the high stakes of academic recognition can lead to moral disengagement (Marson & Ferris, 2023; Sell et al., 2022; Williams, 2022). In such circumstances, researchers might rationalize the use of GenAI-fabricated data as a necessary expedient to meet the demands of an increasingly competitive academic landscape.

Purpose and Research Question

The purpose of this qualitative content analysis was to examine the benefits and risks of using GenAI, specifically ChatGPT, in the development of doctoral dissertation proposals and consider how online doctoral mentoring can mitigate these risks. The guiding research question is: How can online doctoral dissertation mentors foster a rigorous and ethically sound approach to GenAI use in research among doctoral students?

Data Generation Using GenAI

A series of questions was asked of ChatGPT to generate a doctoral dissertation proposal. ChatGPT was chosen due to its user-friendly reputation, the speed at which information is generated, and the fact that there are no fees for using the platform. Instructions for the proposal requirements were input into ChatGPT in the order in which a doctoral candidate would complete a dissertation proposal. If the information was not complete or in-depth, clarifying instructions were entered into ChatGPT, which resulted in additional and sometimes more in-depth responses.

Initially, ChatGPT provided numerated, bullet-pointed, or truncated text in response to the typed prompts. To further support the information ChatGPT generated, additional prompts were entered that requested clarification of the information produced. Besides the written narrative sections of the proposal, ChatGPT was asked to include pertinent APA-formatted citations to substantiate the information presented. The following is a more in-depth discussion of the data generated for each dissertation proposal section.

Designing a Study

The initial prompt entered into ChatGPT was *Can you design a doctoral research study proposal on the topic of AI in higher education?* No specific directions or requests were included in the initial prompt to guide ChatGPT's output. The initial prompt resulted in the generation of a title and an outline for the proposed study (see Appendix A). The resultant response reflected the initial, unmodified output produced by ChatGPT according to its programmed interpretation of the prompt's parameters. For example, the prompt did not explicitly request a study title; the system produced one within the generated response.

The outline produced by ChatGPT included specific sections that would be expected in a proposal, including the introduction, literature review, methodology, research questions, expected outcomes, conclusion, and references. The outline also provided specific bullet point items and suggestions that a doctoral candidate could follow when developing a dissertation proposal. Although specific sections that may be required of a doctoral program were not included, the outline, in and of itself, would provide a solid foundation to jumpstart the dissertation proposal writing process.

Once ChatGPT generated the outline, it included specific bullet points that could be addressed in each particular section of the dissertation proposal. The system generated its response by analyzing and processing the prompt provided. For example, the inputted prompt did not request a specific research methodology, only a methodology section. ChatGPT's generated response indicated that a mixed-methods research design should be applied in the proposed dissertation.

Generating an Introduction

The next prompt requested ChatGPT to write an introduction for the proposal (see Appendix B). An introduction was generated without APA 7th edition formatted citations. Therefore, the next instruction request of ChatGPT was: *In the introduction, can you include relevant APA 7th ed. formatted citations?* The introduction was then updated to reflect the inclusion of APA 7th edition formatted citations. Not only were the citations embedded, but the cited references were immediately listed and formatted per APA without URLs following the introduction (see Appendix B). The request of ChatGPT did not ask for the list of references; therefore, an assumption was made that such references would be required or requested.

Generating a Purpose of the Study and Problem Statement

The same prompt process was used to generate the written narrative for the purpose of the study and the problem statement sections of the dissertation proposal (see Appendix C). Within the purpose of the study

paragraph, ChatGPT included a mixed-methods research design, which was indicated in the original GenAI outline of the proposal. No specific request was input for the research design. ChatGPT included citations via the prompt, as requested, and then produced a list of corresponding references for each citation. Of the APA 7th edition formatted citations contained within the paragraph, only one, Creswell and Plano Clark, was found to be a true and factually correct reference. None of the other references cited were peer-reviewed articles.

ChatGPT produced compelling information on the possible problem for this proposed study, but a clear and specific problem statement was not generated. An attempt at identifying a problem was presented as AI's integration and rapid deployment could create complex issues within HEIs. ChatGPT stated that this study addresses the problem without saying what the specific problem is. Within the section, words and phrases (such as concerns, central issues, and lack of comprehensive understanding) imply that there is a problem presented on which the doctoral proposal is predicated. ChatGPT included APA 7th edition citations and corresponding references. Of the references included, Selwyn (2019), Williamson and Eynon (2020), and Zawacki-Richter et al. (2019) are actual references. The Selwyn reference needs to be more accurate, as the author has published a book with that title, not a journal article. The ChatGPT-generated title for the Williamson and Eynon article is not correct. The generated reference title is *Historical Threads, Contemporary Problems, and Future Possibilities for AI in Education*, where the actual title of the published article is: *Historical Threads, Missing Links, and Future Directions in AI in Education*.

Generating Research Questions

ChatGPT was asked to generate the research questions for the proposed study. Since ChatGPT indicated that this proposed study would be mixed methods, a general prompt was input requesting questions that would serve as the foundation for the study. The GenAI response did not indicate specific qualitative and quantitative research questions; instead, a primary research question was presented with five secondary research questions (see Appendix D). Therefore, ChatGPT was prompted to generate a qualitative research question and a quantitative research question. With each iteration of the research questions generated, ChatGPT provided an explanation as to what that specific research question would elicit. What ChatGPT did not understand was that upon creating the quantitative research question, a hypothesis and a null hypothesis were to follow. Thus, ChatGPT was prompted to develop both the hypothesis and null hypothesis for the proposed study. Each of the research questions generated by ChatGPT was cumbersome and would require refinement.

Generating the Alignment of the Research Problem, Purpose of the Study, Research Questions, and Research Design

Within a doctoral proposal, the student is required to demonstrate an alignment between the research problem, the purpose of the study, the research question(s), and the research design or methodology that would be used. ChatGPT was asked to provide a 2-paragraph narrative description for proper alignment and did not comprehend the request, demonstrating that it does not understand what alignment is in research (see Appendix E). The prompt was reworded to clearly inform ChatGPT as to what the term alignment means in research. Even though the prompt was specific, ChatGPT failed to explain the hallmarks of alignment between each of these sections within the research proposal. Although this section included nine formatted citations and references using APA 7th edition, five of the listed journal articles were fictitious and did not correspond to real publications. Of the four publications, three were accurate, with the fourth having the order of the authors reversed.

Generating a Literature Review

A section was developed by ChatGPT to identify the gap in current literature for writing the literature review section of the proposal (see Appendix F), which included a list of seven topics. Specific text was directly

obtained or paraphrased within each identified topic from research studies published between 2020 and 2024. ChatGPT was then prompted to write a literature review for the study as a person completing a doctoral dissertation proposal. The instructions requested ChatGPT to include APA 7th edition formatted citations.

To further enhance the ChatGPT-produced literature review, an additional question was asked: *What scholarly peer-reviewed references would you suggest?* In response, ChatGPT generated a list of eight references between the years 2005 and 2020. Since doctoral student dissertations are focused on current research published within the last 5 years of submitting the proposal, the next question presented to ChatGPT was, *What scholarly peer-reviewed references would you suggest that have been published between 2019 and 2024?* The six references generated had publication dates between 2019 and 2024, and each listed reference included a brief article summary.

Generating Expected Outcomes

A section on expected outcomes is developed within a dissertation proposal, requiring the doctoral candidate to think critically and deeply about their chosen research topic. ChatGPT was asked to produce a section on the expected outcomes of the study (see Appendix G). This section of the proposal required several iterations as ChatGPT first generated a numerical list of eight expected outcomes. When prompted to write the section on expected outcomes for the study, ChatGPT continued to include the same eight topics listed along with specific bullet points. ChatGPT was then prompted to remove the bullet points, but the numeration remained the same. It was only when ChatGPT was prompted to write the section in narrative form with more details that the information generated was presented in specific paragraphs based on the original eight topics that were developed.

Generating Methods

A request of ChatGPT was to write the methods section for the study, including relevant APA 7th edition formatted citations. A single paragraph was expected as the output based on the request. Instead, ChatGPT produced a methods section with level two APA headers that included research design, participants, and sampling; data collection for quantitative and qualitative data; a data analysis section for quantitative and qualitative data; and ethical considerations (see Appendix H).

The research design is consistent with what ChatGPT originally included in the previous responses. In response to the prompt, ChatGPT believes mixed methods, as a research design, is well suited to investigate the topic. The section would need to be further developed to justify using mixed methods versus other research design methodologies to conduct the proposed study.

The types of study participants ChatGPT suggested are too broad for a doctoral study. Instead of focusing on a reasonable number of survey and study participants, including datasets that a doctoral student could readily process and analyze, the suggested number of 300 survey participants and 20–25 interviewed individuals is unrealistic.

Although ChatGPT indicated that surveys would be distributed electronically, a specific platform, such as Survey Planet, Survey Monkey, or Google Forms, was not named. Examples from journal articles were included for developing a survey with validated measures. As to why journal articles as examples would be included does not correlate to how quantitative data collection processes would occur, especially when a survey developed by a doctoral student would be original in its content.

Quantitative data analysis indicated that inferential statistical tests would be used, but one specific test was not indicated. Additionally, a specific statistical software program was not presented; two were noted, SPSS or R. In the qualitative data analysis section, ChatGPT indicates the use of NVivo to facilitate coding the

qualitative data. A statement within this section is out of place, noting that integrating quantitative and qualitative data would provide a holistic view of AI integration in higher education. That statement is accredited to Creswell and Plano-Clark, yet the authors would have provided no such statement.

Within the ethical consideration section, ChatGPT indicated via brackets that a person would include the name of their institution when stating that the study adheres to the ethical guidelines of the institutional review board (IRB; see Appendix I). Within this section, both anonymity and confidentiality were included. In a doctoral proposal, confidentiality is the process used to maintain the ethical nature of the study. A statement on bias was not included, nor was data integrity. The accuracy, honest data reporting, and potential conflicts of interest were also addressed.

Each section included at least one cited reference, with each reference appearing at the end of the generated content. One citation did not have a corresponding reference, which was for the American Psychological Association (2020). Of the nine listed references, the Nguyen et al. (2020) journal article is not real, and the URL for Zawacki-Richter et al. (2019) is not accurate, even though the article does exist as presented by ChatGPT. The Cohen textbook and the Creswell and Plano-Clark textbook include the incorrect publication year. The order of the authors for the Holmes et al. (2019) reference is not correct, as Fadel is the first listed author, and the Selwyn (2019) listed reference is a textbook, not a journal publication.

Generating Data Collection Procedure

A separate data collection procedure section was requested for IRB approval to collect data from human participants. The initial iteration of this section did not include APA 7th edition formatted citations; therefore, an additional request to ChatGPT to include citations that would substantiate the information was generated (see Appendix J). As indicated in the first paragraph, the response produced by ChatGPT appropriately incorporated the term IRB within the research study context and addressed components typically associated with obtaining IRB approval. The second paragraph focused on the process of collecting data. In this paragraph, ChatGPT did indicate how the interviews would be audio-recorded, which was not presented in the methods section. In the methods section for qualitative data, ChatGPT indicated that interviews would be conducted via a video conferencing platform. Therefore, a disconnect exists between the two sets of information presented for data collection. A sentence on securing data was included; however, specific details of how the data would be secured and for how long were not indicated.

Generating Survey and Interview Questions

A section within a dissertation proposal calls for generating survey questions for a quantitative study and semi-structured interview questions for a qualitative study (see Appendix K). The initial request submitted to ChatGPT was to design a 10-question quantitative survey about the research topic. The ChatGPT-generated survey included a title, introduction, and specific data collection sections. Those sections included demographic information, perceptions of AI integration, current usage and practices, barriers and challenges, future outlook, and overall attitudes.

Once the quantitative survey was developed, ChatGPT was prompted to provide six semi-structured interview questions. The qualitative questions developed were specific to six topics: perceptions of AI integration, barriers and challenges, opportunities and benefits, faculty readiness and support, student perspectives, and future directions.

Generating Limitations of the Research Study

As noted previously, the first time a task is asked of ChatGPT, information is presented without citations. Since the GenAI platform does learn throughout the interaction with the individual who inputs the information, an assumption is made that ChatGPT would anticipate the need for citations within each section of the doctoral proposal. A second request, specifically indicating relevant APA 7th edition formatted citations, produced the same textual content, this time including the citations (see Appendix L). Within the paragraph, a statement that would not appear in the limitations section of a proposed study stood out. The sentence was forward looking, as evolving perceptions, practices, and challenges related to AI use and integration in higher education would not be captured within the scope of the study. The limitations of a study are to look at the current study and what the possible limitations may be, not what could happen in the future.

Generating References

A comprehensive reference list (see Appendix M) was generated by ChatGPT for each section of the GenAI components of the doctoral proposal. The validity of these references was evaluated and discussed in the preceding sections. In accordance with APA guidelines, the references are presented in alphabetical order. Any duplicate entries produced by ChatGPT were carefully reviewed and removed to ensure the accuracy and integrity of the final reference list included in the appendix.

Findings

The efficiency and speed at which GenAI platforms can generate written content is a major factor attracting students to their use, often resulting in shortcuts within the academic writing process (Johnston et al., 2024). The findings suggest doctoral candidates can quickly generate a dissertation proposal using GenAI. While the development of a dissertation proposal partly depends on the prompts entered into ChatGPT, it ultimately relies on a clear understanding of the proposal requirements for the HEI, which more directly determine the quality of the final product. Reviewing the HEI's library for published dissertations could provide valuable insights into the types of questions posed to ChatGPT for each section of a proposal. This approach may help the doctoral candidate generate a better structured and convincing proposal, facilitating a smoother review process by the dissertation committee.

The time needed to generate the proposal's sections (see Appendices A–M) was less than 15 minutes, which included rephrasing specific and pointed questions for the GenAI to achieve the desired results and to ensure a level of detail that satisfied each proposal section and aligned with the HEI proposal requirements. If a doctoral candidate were to use the no-cost version of a GenAI, such as ChatGPT, the possible downside of trying to develop a proposal in one sitting at the computer would be hitting the daily limit of requests permissible. The GenAI would notify the user that they could subscribe to an upgraded version of the GenAI that would allow for unlimited daily requests and more robust embedded tools to assist in the composition of the generated content. If the person using the GenAI did not wish to subscribe to the latest or upgraded version of the GenAI platform, they would need to wait 24 hours before additional requests could be inputted and generated.

One unanticipated finding involved the identification of substantial plagiarism within the content generated by ChatGPT. After completing the process, the full ChatGPT-generated proposal was submitted to a widely used and reputable plagiarism detection system. The results revealed that the proposal contained numerous verbatim and insufficiently paraphrased passages from other authors. These borrowed sections were neither cited nor acknowledged. Although portions of the text were original, the extent of uncredited material was considerable. Users may inaccurately assume that ChatGPT produces entirely original content; however, in this instance, the system generated material that had been inappropriately reused from external sources

without proper acknowledgement. Without deliberate scrutiny for plagiarism, these issues would likely have gone undetected.

The most disconcerting finding was ChatGPT's generation of citations and references. ChatGPT, when asked to include resources to substantiate the information presented, could quickly generate both APA 7th edition formatted citations and references. The authors manually checked the citations and references, resulting in the identification of nonexistent peer-reviewed journal articles. These ghost and hallucination sources may be formatted and look legitimate, but the references from 2020 to 2024 do not exist. Many other sources generated by ChatGPT with a publication date before 2020 were inaccurate. While some of the pre-2020 references could appear correct, many included one or more errors, such as in the publication year, the list of authors, the title of the publication, or the publisher. One example is Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications. The year of publication was 2017, not 2018, as generated by ChatGPT.

Implications

While this investigation was an exercise the authors undertook to further their understanding of how GenAI could be used for nefarious reasons, in reality, both authors have first-hand experience with doctoral candidates trying to pass off GenAI proposal content as their own work. Only through the authors' collaboration and fascination with GenAI applications have they developed the skills necessary to readily identify GenAI doctoral candidates' work—at both the proposal and dissertation stages of their program—as not original. For example, one of the authors conducted an academic integrity course check of students in a graduate class, with the student producing a dissertation proposal as the final product. A review of the references in the proposal found that all 17 references listed in the student's proposal were fake or hallucinations. The author emailed the dissertation chair regarding a specific student's work, which appears as GenAI, and received a response from the dissertation mentor that they thought the proposal was authentic or original in its content. If the dissertation mentor had recognized the need for—or had taken the time to—review the student's work carefully, they may have become aware of its illegitimacy. The question then arises: If dissertation mentors are not diligent in reviewing their students' work and holding them accountable for empirical rigor, how many other doctoral candidates may present GenAI proposals as original research?

Recommendations and Conclusions

Based on this study and its findings, more work is needed by HEIs and faculty to fully understand how students are using GenAI to support research development and the role the online doctoral mentor plays in supporting them. While the vast majority of individuals may use ChatGPT as a tool to assist with the mechanics of writing (Johnston et al., 2024), a population of students exists who will use GenAI to circumvent the proposal process, and an uptick in GenAI use as a shortcut may be evident when a completion deadline is looming. Students may hope that the dissertation mentor and/or committee will not be as diligent in reviewing the GenAI proposal when a deadline is approaching and thus pass it through to the next stage of the dissertation process. To prevent students from misusing GenAI, institutions need to rapidly develop and employ robust policies—and consequences—when students violate said policies. Additionally, HEIs must have vigorous institutional practices to support faculty who currently have GenAI policies in place and find students who have violated those GenAI policies (Burleigh & Wilson, 2024). As Burleigh and Wilson (2024) noted, HEIs are lagging in the formulation and implementation of GenAI policies compared to the population of students who see GenAI as a method for developing research proposal content. If HEIs do not have a pulse on how their students use GenAI, those actions could jeopardize the academic integrity of the HEI (Burleigh & Wilson, 2024).

Besides HEI integration of GenAI policies that encompass all educational programs, professional development (PD) is needed to support faculty in detecting GenAI content. Initial PD could include faculty becoming aware of and understanding student voice and becoming familiar with different types of GenAI and AI platforms and their evolution. How a student writes, their voice and tone, is a valuable skill faculty must acquire and readily employ. A PD activity could include faculty reviewing a series of discussion posts, written assignments, and research proposals from actual students. The vocabulary, tenor, and cadence of how a student would answer a question or develop written works are valuable for understanding a writing style and picking up the nuances of human versus AI-generated content.

To further support faculty PD and growth in GenAI knowledge, PD workshops and training could include activities in which faculty are given doctoral proposals, where they need to vet content and deem documents as original or not. Faculty practicing GenAI detection would increase confidence in their understanding of GenAI content and how to work effectively with their students to decrease the possible generation of AI proposals.

To strengthen institutional responses to the challenges posed by GenAI, higher education programs should expand the use of structured online mentoring models for doctoral candidates. Effective online mentoring not only enhances student persistence and reduces isolation but also enables mentors to recognize shifts in writing style, academic voice, and citation practices that may signal reliance on AI-generated content (Kumar & Johnson, 2017, 2019; Mantai, 2019; Pollard & Kumar, 2021; Rockinson-Szapkiw et al., 2016). Embedding proven mentoring practices into doctoral program design can foster authentic scholarship by combining technical training with relational oversight, providing a necessary counterbalance to the risks associated with GenAI while ensuring candidates remain engaged in the iterative, human-centered processes of research. Such approaches complement existing faculty PD and institutional policy, offering a proactive strategy to safeguard research integrity while promoting meaningful faculty–student collaboration in virtual environments.

Faculty also need to be aware of—and have practiced with—a variety of AI platforms while gaining an understanding of the platform’s power. Familiarity with AI humanizers and various AI detector programs must also be included in faculty PD. With this knowledge, faculty can guide their doctoral candidates in creating a dissertation proposal that is original in content and impactful in its practical application.

Contemporary scholarship advocates for the development of rigorous ethical guidelines and comprehensive oversight mechanisms that are tailored to the integration of GenAI in research practices. Doctoral proposals should include mandatory disclosure of GenAI involvement in data generation, stringent verification protocols to assess the authenticity of AI-generated data, and enhanced training in research ethics for doctoral candidates. Such measures are crucial not only for deterring intentional misconduct but also for mitigating the risks associated with inadvertent data falsification due to over-reliance on automated tools.

While GenAI offers transformative potential for enhancing research efficiency, its integration into the doctoral research process presents new challenges in maintaining research integrity. The dual pressures of academic competitiveness and the technological ease of data fabrication necessitate a deeper understanding of researcher motivation within this context. Addressing these issues through robust ethical frameworks, strong institutional safeguards, and refined mentoring practices is essential for preserving the credibility of the scholarly record in an era of rapid technological advancement.

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Appendix A: Generated by ChatGPT 2025 Designing a Study

Title: Exploring the Integration of Artificial Intelligence in Higher Education: Opportunities, Challenges, and Impacts

Introduction:

- Provide an overview of the increasing role of artificial intelligence (AI) in various sectors and its potential applications in higher education.
- Highlight the need for research on the integration of AI in higher education, focusing on its opportunities, challenges, and impacts.
- State the research objectives, questions, and significance of the study.

Literature Review:

- Review existing literature on AI technologies and their applications in higher education.
- Examine studies on the benefits and challenges of integrating AI in teaching, learning, administrative tasks, and student support services.
- Discuss theoretical frameworks and models relevant to understanding the adoption and impact of AI in higher education.
- Identify gaps in the current literature and justify the need for further research.

Methodology:

- **Design:** Utilize a mixed-methods approach, combining quantitative surveys and qualitative interviews to gather comprehensive data.
- **Participants:** Target faculty members, administrators, and students from a diverse range of higher education institutions.
- **Sampling:** Employ purposive sampling to select participants with experience or expertise in AI integration in higher education.
- **Data Collection:** Conduct surveys to gather quantitative data on perceptions, usage, and attitudes towards AI, supplemented by semi-structured interviews for in-depth insights.
- **Data Analysis:** Employ statistical analysis techniques for quantitative data and thematic analysis for qualitative data to identify patterns, themes, and relationships.

Research Questions:

1. What are the current perceptions, attitudes, and levels of awareness of faculty members, administrators, and students regarding the integration of AI in higher education?
2. What are the most common applications of AI in teaching, learning, administrative tasks, and student support services in higher education institutions?

3. What are the perceived benefits and challenges associated with the integration of AI in higher education, as identified by faculty members, administrators, and students?
4. How do factors such as institutional context, technological infrastructure, and faculty readiness influence the adoption and implementation of AI in higher education?
5. What are the anticipated impacts of AI integration on teaching practices, student learning outcomes, institutional efficiency, and the overall higher education landscape?

Expected Outcomes:

- Provide insights into the current state of AI integration in higher education and the perceptions of key stakeholders.
- Identify opportunities for maximizing the benefits of AI while addressing challenges and mitigating risks.
- Inform policymakers, administrators, and educators about strategies for effectively integrating AI into higher education to enhance teaching and learning experiences.
- Contribute to theoretical frameworks and empirical research on the adoption and impact of AI in higher education.

Conclusion:

- Summarize the key findings of the study and their implications for practice, policy, and future research.
- Discuss limitations of the study and recommendations for further investigation.
- Reiterate the significance of understanding and harnessing the potential of AI in higher education to meet the evolving needs of learners and institutions in the 21st century.

References:

- Cite relevant literature, theoretical frameworks, and methodologies used in the study.

Appendix B: Generated by ChatGPT 2025 Introduction

Introduction

In recent years, the rapid advancement of artificial intelligence (AI) technologies has permeated various aspects of modern society, revolutionizing industries, enhancing efficiency, and reshaping human experiences. As AI continues to evolve, its potential applications in the realm of higher education have garnered increasing attention from educators, administrators, policymakers, and researchers alike (Gibson et al., 2023; Johnson & Smith, 2022). The integration of AI in higher education holds the promise of transforming teaching and learning practices, optimizing administrative tasks, and enriching student support services (Nguyen et al., 2020; Park & Lee, 2019). However, this transformative potential is accompanied by a myriad of opportunities, challenges, and uncertainties that warrant comprehensive investigation and scholarly inquiry (Tian et al., 2024).

The landscape of higher education is constantly evolving, driven by technological advancements, shifting demographics, and changing societal needs. In this dynamic environment, the adoption and integration of AI technologies present both opportunities and challenges for institutions striving to meet the diverse needs of students, faculty, and stakeholders (Li et al., 2021). From intelligent tutoring systems and personalized learning platforms to predictive analytics and virtual assistants, AI offers a spectrum of tools and capabilities that have the potential to enhance the educational experience, improve outcomes, and foster innovation across higher education institutions (Gibson et al., 2023).

Against this backdrop, this doctoral research study seeks to explore the integration of artificial intelligence in higher education, with a focus on identifying opportunities, addressing challenges, and assessing the impacts of AI adoption. By delving into the perceptions, attitudes, and experiences of key stakeholders—faculty members, administrators, and students—this study aims to provide insights into the current state of AI integration in higher education, as well as the implications for teaching practices, learning outcomes, institutional operations, and the broader higher education landscape (Johnson & Smith, 2022; Park & Lee, 2019).

As higher education institutions navigate the complexities of AI integration, it becomes imperative to critically examine the potential benefits and risks associated with these emerging technologies (Tian et al., 2024). By leveraging theoretical frameworks and empirical research, this study aims to contribute to a deeper understanding of the factors influencing the adoption and implementation of AI in higher education, as well as the strategies for maximizing its benefits while mitigating potential challenges and ethical concerns (Nguyen et al., 2020).

In light of the transformative potential of AI in higher education, this research study underscores the importance of informed decision-making, evidence-based practice, and collaborative engagement among stakeholders (Gibson et al., 2023). By elucidating the opportunities, challenges, and impacts of AI integration, this study seeks to inform policy development, guide institutional strategies, and inspire future research endeavors aimed at harnessing the full potential of AI to advance teaching, learning, and scholarship in higher education (Johnson & Smith, 2022).

In the following chapters, this research study will delve into a comprehensive examination of the integration of artificial intelligence in higher education, utilizing a mixed-methods approach to gather empirical data, analyze findings, and derive actionable insights. Through this scholarly inquiry, we endeavor to contribute to the ongoing dialogue surrounding AI in higher education and pave the way for informed decision-making and transformative innovation in the pursuit of educational excellence and societal advancement.

Appendix C: Generated by ChatGPT 2025 Purpose of the Study and Problem Statement

Purpose of the Study

The purpose of this doctoral research study is to investigate the integration of artificial intelligence (AI) in higher education, focusing on the opportunities, challenges, and impacts associated with its adoption across various educational contexts. As AI technologies continue to advance and become more embedded in educational systems, there is a pressing need to understand how these technologies influence teaching practices, learning outcomes, and institutional operations (Gibson et al., 2023). This study aims to provide a comprehensive analysis of AI integration by examining the perceptions, attitudes, and experiences of key stakeholders, including faculty members, administrators, and students, within higher education institutions (Nguyen et al., 2020).

By employing a mixed-methods research design, this study seeks to capture both quantitative and qualitative data to explore the complex dynamics of AI adoption. The quantitative component, consisting of surveys, is designed to identify broad trends and patterns in AI usage, while the qualitative component, involving semi-structured interviews, aims to provide deeper insights into individual experiences and contextual factors that shape AI integration (Creswell & Plano Clark, 2018). Ultimately, the purpose of this research is to contribute to the growing body of knowledge on AI in education by offering evidence-based recommendations for enhancing AI implementation strategies, improving educational outcomes, and addressing ethical considerations associated with AI in higher education (Li et al., 2021; Tian et al., 2024).

Problem Statement

The integration of artificial intelligence (AI) into higher education has emerged as a transformative force, promising to revolutionize teaching, learning, and institutional operations. However, this rapid adoption of AI technologies is not without significant challenges and uncertainties, creating a complex problem for higher education institutions (HEIs). As AI continues to evolve and permeate various aspects of academia, there is a growing concern about the readiness of institutions to effectively implement and manage these technologies in ways that enhance educational outcomes while safeguarding ethical standards and equity (Gibson et al., 2023; Selwyn, 2019).

One of the central issues is the disparity in AI adoption across institutions, which can exacerbate existing inequalities in access to educational resources and opportunities (Tian et al., 2024). Additionally, the lack of a comprehensive understanding of how AI influences teaching practices, student engagement, and administrative efficiency presents a critical gap in the literature (Zawacki-Richter et al., 2019). Moreover, concerns related to data privacy, algorithmic bias, and the ethical implications of AI usage in education underscore the need for rigorous research to guide policy and practice in this area (Williamson & Eynon, 2020).

This study addresses the problem by exploring the multifaceted implications of AI integration in higher education, with a focus on understanding the opportunities, challenges, and impacts from the perspectives of faculty, administrators, and students. By investigating these dimensions, the study seeks to provide evidence-based insights that can inform strategies for the responsible and effective deployment of AI in academic settings, ultimately contributing to the advancement of educational practices and institutional effectiveness (Nguyen et al., 2020).

Appendix D: Generated by ChatGPT 2025 Research Questions

The research questions for this proposed study on the integration of artificial intelligence (AI) in higher education could include the following:

Primary Research Question:

- What are the opportunities, challenges, and impacts associated with the integration of artificial intelligence (AI) in higher education from the perspectives of faculty members, administrators, and students?

Secondary Research Questions:

- How do faculty members, administrators, and students perceive the role of AI in enhancing teaching practices, learning outcomes, and institutional efficiency?
- What are the primary barriers to AI adoption in higher education, and how can these challenges be addressed?
- How do demographic factors (e.g., institutional type, role, years of experience) influence stakeholders' attitudes and experiences with AI integration?
- What ethical concerns, such as data privacy and algorithmic bias, are associated with AI implementation in higher education, and how are they perceived by different stakeholder groups?
- How do AI-driven tools and technologies impact student engagement, retention, and academic performance in higher education settings?

These research questions are designed to comprehensively explore the multifaceted implications of AI integration in higher education while addressing the study's primary focus on opportunities, challenges, and impacts.

What is the qualitative research question for this proposed study?

ChatGPT

The qualitative research question for this proposed study could be:

- How do faculty members, administrators, and students experience and perceive the integration of artificial intelligence (AI) in higher education, particularly in terms of its influence on teaching practices, learning outcomes, and institutional operations?

This qualitative question is designed to elicit in-depth insights into individual experiences and perspectives, allowing the study to uncover nuanced themes and contextual factors related to AI integration in higher education.

What is the quantitative research question for this proposed study?

ChatGPT

The quantitative research question for this proposed study could be:

- What are the perceptions, attitudes, and usage patterns of faculty members, administrators, and students regarding the integration of artificial intelligence (AI) in higher education, and how do these vary across demographic groups (e.g., institutional type, role, or years of experience)?

This question aims to identify trends and patterns in stakeholder perspectives and behaviors, enabling the study to measure and compare factors influencing AI adoption and its perceived impacts in a higher education context.

What is the hypothesis and null hypothesis?

ChatGPT

- **Hypothesis (H₁):**
Stakeholders (faculty members, administrators, and students) in higher education will exhibit significant differences in their perceptions, attitudes, and usage patterns of artificial intelligence (AI) based on demographic factors such as role, institutional type, or years of experience.
- **Null Hypothesis (H₀):**
There are no significant differences in perceptions, attitudes, and usage patterns of artificial intelligence (AI) among stakeholders (faculty members, administrators, and students) in higher education across demographic factors such as role, institutional type, or years of experience.

These hypotheses align with the study's quantitative component, focusing on examining potential relationships and differences in how various groups perceive and engage with AI in higher education.

Appendix E: Generated by ChatGPT 2025 Alignment of Research Problem, Purpose of the Study, Research Questions, and Research Design

The research problem of this study centers on the integration of artificial intelligence (AI) in higher education and its multifaceted implications for teaching, learning, and institutional practices. Recognizing the significance of this problem within the rapidly evolving landscape of higher education, the research purpose is carefully crafted to explore and elucidate the various dimensions of AI integration (Johnson & Smith, 2022; Nguyen et al., 2020). Specifically, the purpose of the study is to investigate the opportunities, challenges, and impacts of AI integration in higher education from the perspectives of faculty members, administrators, and students (Gibson et al., 2023). This purpose is directly informed by the overarching research question, which guides the inquiry into understanding how AI integration influences teaching practices, learning outcomes, institutional efficiency, and the overall higher education landscape (Li et al., 2021). By maintaining consistency between the research problem, purpose, and question, the study maintains a clear focus on addressing the complexities and nuances of AI integration within the higher education context (Tian et al., 2024).

In alignment with the research question and purpose, the research design is carefully selected to facilitate a comprehensive exploration of AI integration in higher education. A mixed-methods approach is chosen to allow for both quantitative and qualitative data collection, enabling triangulation of findings and a holistic understanding of stakeholder perspectives (Creswell & Plano Clark, 2018). The quantitative component, comprising surveys administered to faculty, administrators, and students, provides breadth of data by capturing overarching trends and patterns (Fowler, 2014). Meanwhile, the qualitative component, consisting of semi-structured interviews, delves deeper into individual experiences and perspectives, offering rich insights and contextual understanding (Kvale & Brinkmann, 2015). By aligning the research design with the research question and purpose, the study ensures that data collection methods are appropriately tailored to address the complexities inherent in studying AI integration in higher education, ultimately enhancing the validity and reliability of the research findings (Patton, 2015).

Appendix F: Generated by ChatGPT 2025 Literature Review

Introduction

The advent of artificial intelligence (AI) in higher education represents a paradigm shift in the way educational institutions operate, delivering both unprecedented opportunities and significant challenges. AI's potential to transform teaching, learning, and administrative functions has generated a substantial body of scholarly research that explores its applications, impacts, and the ethical considerations associated with its use in academic settings. This literature review critically examines the existing research on AI in higher education, focusing on three primary areas: AI in teaching and learning, AI in administrative functions, and the ethical challenges and implications of AI integration.

AI in Teaching and Learning

Artificial intelligence has introduced new methodologies for enhancing the teaching and learning experience in higher education. AI-powered educational technologies, such as intelligent tutoring systems (ITS), adaptive learning platforms, and automated assessment tools, have been at the forefront of this transformation. These technologies leverage machine learning algorithms to deliver personalized instruction, offering tailored feedback and learning paths based on individual student performance and needs (Holmes et al., 2019). Research indicates that such systems can improve student engagement, retention, and achievement by providing a more customized learning experience compared to traditional instructional methods (Luckin et al., 2021).

For instance, intelligent tutoring systems have been shown to enhance learning outcomes in various disciplines by providing real-time, individualized feedback and support (Woolf, 2020). These systems can mimic the one-on-one interactions found in human tutoring, allowing students to progress at their own pace and receive help precisely when needed. Similarly, adaptive learning platforms, which adjust content delivery based on student performance, have been recognized for their ability to cater to diverse learning styles and abilities, potentially reducing achievement gaps (Nguyen et al., 2020).

However, the literature also highlights several limitations and challenges associated with the deployment of AI in teaching and learning. One critical issue is the risk of algorithmic bias, where AI systems may inadvertently reinforce existing inequalities due to biased training data or flawed algorithmic design (Baker & Smith, 2019). Such biases can manifest in various ways, including favoring certain demographic groups or disadvantaging students with different learning styles. Moreover, the reliance on AI for personalized learning raises concerns about the dehumanization of education, where the role of the teacher may be diminished or altered in ways that could negatively impact the teacher-student relationship (Selwyn, 2019).

AI in Administrative Functions

Beyond its applications in the classroom, AI has also been increasingly employed in the administrative functions of higher education institutions. AI-driven tools are being used to streamline processes such as admissions, student support, course scheduling, and resource allocation, thereby enhancing operational efficiency and decision-making (Gibson et al., 2023). Predictive analytics, in particular, has gained prominence as a tool for identifying at-risk students and implementing early interventions to improve retention and graduation rates (Zawacki-Richter et al., 2019).

For example, AI algorithms can analyze vast amounts of student data to predict academic outcomes and recommend personalized support services. This proactive approach enables institutions to address potential issues before they escalate, thereby improving student success and institutional effectiveness (Nguyen et al., 2020). Furthermore, AI has been utilized to automate routine administrative tasks, such as grading and

scheduling, allowing faculty and staff to focus on more complex and strategic activities (Williamson & Eynon, 2020).

However, the integration of AI into administrative functions also presents several challenges, particularly in terms of data privacy and security. The use of AI necessitates the collection and analysis of extensive data on students and staff, raising concerns about the potential misuse of sensitive information and the need for robust data governance frameworks (Selwyn, 2019). Additionally, the implementation of AI in administrative processes requires significant investment in infrastructure and training, which may be a barrier for resource-constrained institutions (Tian et al., 2024).

Ethical Considerations and Challenges

The ethical implications of AI in higher education have been a central concern in the literature, with scholars emphasizing the need for careful consideration of the societal and moral impacts of AI technologies. One of the most pressing ethical issues is the potential for AI to exacerbate existing social inequalities. As AI systems are often trained on historical data, they may perpetuate biases and inequalities present in the data, leading to unfair outcomes for certain groups of students (Binns, 2018). This issue is particularly concerning in the context of predictive analytics and automated decision-making, where biased algorithms can influence critical decisions such as admissions, grading, and student support (Gibson et al., 2023).

Moreover, the increasing reliance on AI in education raises questions about the transparency and accountability of AI systems. The “black box” nature of many AI algorithms makes it difficult to understand how decisions are made, leading to concerns about the lack of transparency and the potential for errors or biases to go undetected (Luckin et al., 2021). To address these challenges, scholars advocate for the development of ethical guidelines and governance frameworks that promote transparency, accountability, and fairness in the use of AI in higher education (Williamson & Eynon, 2020).

Another ethical consideration is the impact of AI on the roles and responsibilities of educators. As AI technologies take on more instructional and administrative tasks, there is a risk that the role of the teacher may be diminished, potentially leading to a loss of the human elements of teaching, such as empathy, creativity, and the ability to inspire students (Selwyn, 2019). This shift could also have implications for the PD and identity of educators, as they may need to acquire new skills and adapt to new roles in an AI-driven educational environment (Zawacki-Richter et al., 2019).

Conclusion

The literature on AI in higher education underscores the transformative potential of AI technologies, while also highlighting the significant challenges and ethical considerations that must be addressed to ensure their responsible and effective use. As AI continues to evolve, it is imperative for higher education institutions to engage in critical discussions about the implications of AI for teaching, learning, and administration, and to develop strategies for mitigating potential risks. By addressing these issues, institutions can better harness the power of AI to enhance educational outcomes, improve operational efficiency, and foster innovation in teaching and learning.

Appendix G: Generated by ChatGPT 2025 Expected Outcomes

This research study endeavors to delve deeply into the integration of artificial intelligence (AI) in higher education, aiming to uncover valuable insights that can inform practice, policy, and future research in the field. Through rigorous inquiry and analysis, the study anticipates producing a range of outcomes with significant implications for various stakeholders within the higher education community.

Insights into Current Perceptions and Practices: One of the primary outcomes of this study is to gain comprehensive insights into the current perceptions, attitudes, and practices surrounding AI integration among faculty members, administrators, and students in higher education institutions. By administering surveys and conducting interviews, the study seeks to understand stakeholders' familiarity with AI technologies, their perceived benefits, and their current usage patterns. Detailed analysis of survey data will provide a nuanced understanding of stakeholders' perspectives on the role of AI in higher education, shedding light on both opportunities and challenges.

Identification of Opportunities and Challenges: Through qualitative analysis of survey responses and interviews, the study aims to identify the opportunities and challenges associated with AI integration across various domains of higher education. By exploring common themes and patterns in stakeholders' narratives, the study seeks to uncover factors influencing the adoption and implementation of AI technologies in educational settings. This deeper understanding will enable stakeholders to capitalize on opportunities for leveraging AI to enhance teaching, learning, and administrative processes while addressing potential barriers and challenges.

Understanding of Stakeholder Perspectives: Central to the study's objectives is the deepening of understanding regarding stakeholder perspectives on AI integration. By engaging with faculty members, administrators, and students, the study aims to uncover a diverse array of perspectives, ranging from faculty readiness and student expectations to administrative considerations. By examining stakeholders' viewpoints, the study will provide valuable insights into the varying needs, concerns, and aspirations within the higher education community, thus informing the development of strategies for successful AI implementation.

Assessment of Impacts: Another critical outcome of the study is the assessment of both perceived and actual impacts of AI integration on teaching practices, student learning outcomes, institutional efficiency, and the overall higher education landscape. By triangulating quantitative survey data with qualitative interview findings, the study seeks to provide a comprehensive understanding of the multifaceted impacts of AI technologies in higher education. This assessment will not only highlight the benefits of AI integration but also illuminate potential challenges and unintended consequences, thus guiding stakeholders in making informed decisions.

Recommendations for Practice: Building upon the study findings, evidence-based recommendations will be formulated for practitioners, policymakers, and administrators on how to effectively integrate AI technologies into higher education settings. These recommendations will be tailored to address specific challenges and capitalize on identified opportunities, aiming to maximize the benefits of AI adoption while ensuring ethical and equitable implementation. By providing actionable guidance, the study seeks to empower stakeholders to navigate the complexities of AI integration and realize its full potential in higher education.

Contribution to Scholarship: Beyond its practical implications, the study aspires to make a substantive contribution to scholarly knowledge by advancing theoretical frameworks, empirical research methodologies, and understanding of the adoption and impact of AI in higher education. By disseminating research findings through academic publications and presentations, the study aims to contribute to the ongoing dialogue and

advancement of the field, fostering interdisciplinary collaborations and driving innovation in AI integration research.

Guidance for Future Research: Lastly, the study will provide valuable insights that can guide future research endeavors aimed at deepening understanding and advancing the field of AI in higher education. By identifying gaps in the literature and areas for further investigation, the study seeks to inspire future research directions, methodologies, and interdisciplinary collaborations. Insights gleaned from this study will serve as a foundation for future scholarly inquiry, driving continued progress and innovation in the study of AI integration in educational settings.

In summary, this research study is poised to yield multifaceted insights into AI integration in higher education, with practical implications for stakeholders and significant contributions to scholarly knowledge and future research endeavors.

Appendix H: Generated by ChatGPT 2025 Methods

Methods

Research Design

This study employs a mixed-methods research design to explore the integration of artificial intelligence (AI) in higher education, focusing on its opportunities, challenges, and impacts. Mixed-methods research combines quantitative and qualitative approaches, enabling a comprehensive understanding of complex phenomena by triangulating data sources (Creswell & Plano Clark, 2018). This approach is particularly well-suited to investigating how faculty, administrators, and students perceive and experience AI integration in teaching, learning, and institutional operations.

Participants and Sampling

The study will involve participants from a diverse range of higher education institutions, including faculty members, administrators, and students. A stratified random sampling technique will be used to ensure representation across different institutional types (e.g., community colleges, public universities, private institutions) and disciplines. The inclusion criteria require participants to have at least one year of experience with AI tools or systems in an educational context. A target sample size of 300 survey participants will provide robust quantitative data, while 20-25 participants will be selected for qualitative interviews, ensuring depth and richness of insights (Patton, 2015).

Data Collection

Quantitative Data Collection

A survey will be distributed electronically via email and institutional networks to gather quantitative data on participants' perceptions, attitudes, and experiences with AI. The survey, developed using validated measures from previous studies (e.g., Nguyen et al., 2020; Zawacki-Richter et al., 2019), will include both closed-ended and Likert-scale questions to assess key dimensions such as perceived benefits, challenges, ethical considerations, and usage patterns. Online distribution ensures broad reach and convenience while maintaining participant anonymity (Dillman et al., 2014).

Qualitative Data Collection

Semi-structured interviews will be conducted with a subset of survey respondents to obtain detailed insights into their personal experiences and perspectives on AI integration. The interview protocol will include questions informed by survey results and relevant literature (Holmes et al., 2019; Selwyn, 2019). Interviews will be conducted via video conferencing platforms, recorded with participant consent, and transcribed verbatim for analysis.

Data Analysis

Quantitative Analysis

Survey data will be analyzed using descriptive and inferential statistics. Measures of central tendency (mean, median) and variability (standard deviation) will summarize participant responses. Inferential statistical tests, such as t-tests and ANOVA, will be conducted to examine differences in perceptions and attitudes across demographic groups (Cohen, 2013). Data analysis will be performed using statistical software such as SPSS or R.

Qualitative Analysis

Interview transcripts will be analyzed using thematic analysis, following Braun and Clarke's (2006) six-phase framework: familiarization, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and writing up findings. NVivo software will be used to facilitate coding and organization of

qualitative data. The integration of quantitative and qualitative findings will provide a holistic view of AI integration in higher education (Creswell & Plano Clark, 2018).

Ethical Considerations

The study will adhere to ethical guidelines outlined by the Institutional Review Board (IRB) of [Institution Name]. Informed consent will be obtained from all participants before data collection, and participants will be assured of their rights to withdraw at any time without penalty. Anonymity and confidentiality will be strictly maintained through data de-identification and secure storage. Additionally, potential risks, such as discomfort during interviews, will be mitigated by providing participants with support resources and clear instructions on voluntary participation (American Psychological Association, 2020).

Appendix I: Generated by ChatGPT 2025 IRB Approval

To ensure ethical conduct and protect the rights and welfare of participants, this research study will adhere to rigorous data collection procedures approved by the Institutional Review Board (IRB) of [Institution's Name]. The data collection process will involve multiple stages, beginning with the development of informed consent materials to be provided to all participants. These materials will include detailed information about the study objectives, procedures, potential risks and benefits, confidentiality measures, and participants' rights, in accordance with ethical guidelines for research involving human subjects (American Psychological Association [APA], 2020). Prior to data collection, participants will be required to review and sign a consent form indicating their voluntary participation and understanding of the study's terms (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

Upon obtaining informed consent, data collection will proceed using a mixed-methods approach, combining quantitative surveys and qualitative interviews (Creswell & Plano Clark, 2018). The survey instrument will be administered electronically to participants, allowing for efficient data collection while maintaining anonymity and confidentiality (Fowler, 2014). The survey questions will cover various aspects of AI integration in higher education, including perceptions, attitudes, usage patterns, and perceived impacts. Additionally, semi-structured interviews will be conducted with a subset of participants to gather in-depth insights and rich qualitative data (Kvale & Brinkmann, 2015). Interviews will be audio-recorded with participants' consent and transcribed verbatim for analysis. Throughout the data collection process, strict confidentiality measures will be upheld, and participants' anonymity will be maintained through the use of unique identifiers (Babbie, 2021). Data will be securely stored and accessible only to authorized researchers involved in the study, following best practices for data management and security (Patton, 2015).

This description outlines the key components of the data collection procedure, including informed consent, survey administration, qualitative interviews, confidentiality measures, and data storage protocols. It demonstrates the researcher's commitment to ethical conduct and adherence to institutional guidelines for research involving human participants (APA, 2020).

Appendix J: Generated by ChatGPT 2025 Data Collection

Quantitative Data Collection

A survey will be distributed electronically via email and institutional networks to gather quantitative data on participants' perceptions, attitudes, and experiences with AI. The survey, developed using validated measures from previous studies (e.g., Nguyen et al., 2020; Zawacki-Richter et al., 2019), will include both closed-ended and Likert-scale questions to assess key dimensions such as perceived benefits, challenges, ethical considerations, and usage patterns. Online distribution ensures broad reach and convenience while maintaining participant anonymity (Dillman et al., 2014).

Qualitative Data Collection

Semi-structured interviews will be conducted with a subset of survey respondents to obtain detailed insights into their personal experiences and perspectives on AI integration. The interview protocol will include questions informed by survey results and relevant literature (Holmes et al., 2019; Selwyn, 2019). Interviews will be conducted via video conferencing platforms, recorded with participant consent, and transcribed verbatim for analysis.

Appendix K: Generated by ChatGPT 2025 Survey and Interview Questions

Survey Title: Exploring Artificial Intelligence Integration in Higher Education

Introduction: Thank you for participating in this survey. Your responses will contribute to our understanding of the integration of artificial intelligence (AI) in higher education. Please answer the following questions honestly and to the best of your knowledge.

Demographic Information:

1. What is your role in higher education?
 - Faculty Member
 - Administrator
 - Student
 - Other (please specify)
2. How many years have you been involved in higher education?
 - Less than 1 year
 - 1-5 years
 - 6-10 years
 - More than 10 years

Perceptions of AI Integration:

3. How familiar are you with the concept of artificial intelligence (AI) in the context of higher education?
 - Not familiar at all
 - Somewhat familiar
 - Moderately familiar
 - Very familiar
4. To what extent do you believe AI technologies can enhance teaching and learning experiences in higher education?
 - Not at all
 - Slightly
 - Moderately
 - Significantly

5. What do you perceive as the primary benefits of integrating AI in higher education? (Select all that apply)
- Personalized learning experiences
 - Enhanced student engagement
 - Improved academic outcomes
 - Streamlined administrative tasks
 - Other (please specify)

Current Usage and Practices:

6. Have you personally used any AI-based tools or technologies in your teaching, learning, or administrative tasks within the past year?
- Yes
 - No
7. If yes, please specify the AI-based tools or technologies you have used.

Barriers and Challenges:

8. What do you perceive as the main barriers or challenges to the widespread adoption of AI in higher education? (Select all that apply)
- Lack of institutional support/resources
 - Privacy and ethical concerns
 - Resistance from faculty/staff
 - Technical complexity
 - Other (please specify)

Future Outlook:

9. How do you foresee the role of AI evolving in higher education in the next 5 years?
- Becoming more prominent and integrated
 - Remaining relatively unchanged
 - Decreasing in importance
 - Unsure

Overall Attitudes:

10. On a scale of 1 to 5, where 1 represents strongly disagree and 5 represents strongly agree, please indicate your agreement with the following statement: “The integration of artificial intelligence is essential for the future advancement of higher education.”

Interview Questions

1. **Perceptions of AI Integration:** Based on your responses in the survey, could you elaborate on your perceptions of the role and potential of artificial intelligence (AI) in higher education? How do you envision AI technologies influencing teaching, learning, and administrative processes within the context of your institution?
2. **Barriers and Challenges:** The survey identified various barriers and challenges to the widespread adoption of AI in higher education. From your perspective, what are the main obstacles hindering the effective integration of AI technologies in educational settings? How do these barriers manifest in your day-to-day experiences as a faculty member/administrator/student?
3. **Opportunities and Benefits:** The survey also highlighted several opportunities and perceived benefits of AI integration. Can you share any examples or instances where you have witnessed the positive impacts of AI technologies on teaching, learning, or institutional operations? How do you believe these opportunities can be leveraged to enhance the educational experience for students and faculty alike?
4. **Faculty Readiness and Support:** In the survey, faculty readiness was identified as a crucial factor influencing AI adoption. As a faculty member/administrator, what are your thoughts on the current level of readiness among faculty members to embrace AI technologies in their teaching practices? What types of support or resources do you believe are necessary to facilitate faculty engagement with AI?
5. **Student Perspectives:** The survey captured student perspectives on AI integration. From your interactions with students or your own experiences as a student, how do you perceive their attitudes towards AI technologies in the educational context? What are some of the challenges students may face in adapting to AI-driven learning environments, and how can these challenges be addressed?
6. **Future Directions:** Looking ahead, how do you foresee the role of AI evolving in higher education over the next five years? What are some emerging trends or developments in AI technologies that you believe will have a significant impact on teaching, learning, and institutional practices? Additionally, what steps do you think institutions should take to prepare for and capitalize on these advancements?

Appendix L: Generated by ChatGPT 2025 Limitations

One limitation of this research study may lie in the generalizability of findings, as the data collection is focused on a specific context or sample population within higher education institutions, potentially limiting the transferability of results to other settings or populations (Creswell & Creswell, 2018). Additionally, the reliance on self-reported data through surveys and interviews may introduce social desirability bias or recall bias, affecting the accuracy and reliability of responses (Podsakoff et al., 2003). Furthermore, the dynamic nature of technology and higher education may result in evolving perceptions, practices, and challenges related to AI integration over time, which may not be fully captured within the scope of the study (Gibson et al., 2023). Lastly, while efforts will be made to ensure diversity and representativeness within the sample, certain perspectives or experiences may be underrepresented, particularly those of marginalized groups or individuals with limited access to technology or educational resources, thereby constraining the comprehensiveness of the findings (Patton, 2015).

Appendix M: Generated by ChatGPT 2025 References

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