

Empowering Educational Leadership Research with Generative AI:

Insights and Innovations from a Qualitative EdD Dissertation

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ABSTRACT

This study explores the integration of generative artificial intelligence (AI) into qualitative research within a higher education context. Through a collaborative self-study, a doctoral candidate and their dissertation supervisor examined the application of Google's Gemini 1.5 to analyze interview data from a dissertation of practice (DiP) focused on interinstitutional partnerships. The findings demonstrate that AI can enhance the depth and efficiency of qualitative analysis, revealing hidden complexities and patterns while augmenting the researcher's analytical skills and fostering reflexivity. However, challenges related to data integrity, potential biases, and the need for careful human oversight are also discussed. This research offers insights into the transformative potential of AI in qualitative research, particularly within doctoral education, while raising important ethical considerations and prompting a re-evaluation of traditional dissertation practices in the context of emerging technologies.

KEYWORDS

generative Artificial Intelligence, qualitative research, educational leadership, collaborative self-study, AI ethics in education

Technological adoption and adaptation have long posed challenges to methodologists. As far back as the 1980s, qualitative data analysis (QDAS) programs were being introduced as aids to narrative and textual-based research (Wolski, 2018). The development of these digital tools resulted in a proliferation of platforms designed to support empirical analyses. Programs like Atlas.ti, NVivo, MAXQDA, Dedoose, and Quirkos not only replaced the time-consuming and arduous manual approach to coding and analysis, they also offered built-in features such as the pre-loading of codes, importing diverse file formats, as well as a litany of visualizing and reporting features. However, methodological scholars also viewed these platforms with a degree of skepticism. The famous qualitative methodologist Max Van Manen (2014) claimed that QDAS software was incompatible with phenomenological work. He argued that QDAS software might be philosophically congruent with grounded theory or ethnography; however, automation of any digitally-driven re-reading of text, codification, and/or generating of new texts was philosophically incompatible with phenomenological traditions. Others critiqued the use of QDAS platforms as barriers to authentic learning, arguing that they are better conceived as data management and retrieval tools, particularly in the context of the qualitative dissertation (Maher, et al., 2018). In response, Kaczynski (2006) offered important (and seemingly prescient) admonishments to these methodological purists, insisting that they adapt to these new analytical advances. As for the resulting impact upon

dissertation research, Kaczynski (2006) was also quite clear. Dissertation supervisors and doctoral candidates must re-orient their assessments of methodological rigor with the reality that QDAS programs were here to stay.

Not surprisingly, we find ourselves at a similar crossroads. Educators now face an even more decisive challenge in navigating the far-reaching implications of generative Artificial Intelligence (AI) on qualitative research – and particularly on AI's role in supporting the analytical aspects of the dissertation of practice (DiP). Questions over the potential influence of these technologies on the fundamental aims of the DiP promise to recalibrate expectations surrounding novice qualitative research as perceived by the scholar-practitioner as well as their dissertation supervisor (Storey & Maughan, 2016). As AI continues to influence how/in what way we engage in the research process, it has the potential to alter how dissertation research is conducted, analyzed, and even implemented. This transformation should compel Carnegie Project on the Education Doctorate (CPED) programs to take a pause in order to reconsider the resultant impact on traditional dissertation models. By proactively engaging with these issues, CPED programs can equip scholar-practitioners with the skills and knowledge necessary to harness AI's capabilities responsibly. This ensures that dissertations remain rigorous and relevant in an increasingly AI-driven educational landscape. Furthermore, addressing these questions will help to bridge the gap between theory and practice, fostering innovative



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solutions to complex educational challenges and preparing future leaders to be adept at navigating the technological advancements that will undoubtedly shape the field in the years to come.

Paper Overview

How we might begin this process serves as the central aim of this paper. The author and co-author, a doctoral candidate and dissertation supervisor, respectively, document use of the Preview version of Google's Gemini 1.5 Pro (Gemini 1.5) within the context of a DiP. More specifically, we examine the doctoral candidate's application of Gemini 1.5 (subscription required) as a means for reducing qualitative data collected in support of a higher education-oriented DiP. We do this by documenting how Gemini 1.5 Pro served to elevate and deepen the doctoral student's thinking about the themes that emerged from both the QDAS-based analysis of her collective narrative data and AI-driven analysis. Questions we sought to address through this paper were:

- *In what ways does AI-driven data analysis produce new, unanticipated ways of thinking about the problem of practice at the heart of this dissertation in practice?*
- *In what ways does the use of AI-driven tools strengthen the doctoral student's understanding of the data analysis process? The potential bias (or avoidance of bias)?*
- *How does the use of AI-driven tools shape/inform researcher positionality?*
- *In what ways does the use of AI generated tools push upon, expand, or delimit the boundaries for what constitutes dissertation-level research as determined by the dissertation supervisor?*

This paper addresses these questions in dialogical fashion, whereby both a doctoral candidate and a dissertation supervisor reflect upon the analytical process and the underlying learning produced through the introduction of AI into the analysis phase of the candidate's emergent DiP. Our shared intent was to document the actual experiences of a scholar-practitioner as she attempted to carry out a high quality DiP while using AI generated data tools for the first time. For her part, the doctoral supervisor engaged in her own reflective process by considering how the use of AI aligned with the programmatic expectations of the DiP and the learning process undertaken by the doctoral candidate. We conclude our discussion by examining how the AI-informed dissertation work aligns with CPED principles pertaining to learning and impact.

AI AND QUALITATIVE ANALYSIS

In the case of social science research, generative AI has led to the emergence of a number of AI-driven analytical platforms, such as Scholarcy, dscout, Domo, Consensus, Elicit.org, Scite.ai, Chat PDF, as well as longstanding writing aids like Grammarly, copy.ai, and others (Johnson, 2023a; Patel, 2022). Tools such as Scholarcy and Chat PDF have emerged as the forerunners of a powerful line of AI-driven fast learning tools that serve to aid in the digestion of research literature (Lee & Kim, 2021; Morgan, 2023). Other services such as Akkio, Power BI, as well as Chat GPT provide the means by which to analyze vast amounts of data in order to identify trends and patterns that might lead to empirical claims (Morgan, 2023; Smith & Nguyen, 2022).

AI technologies, such as machine learning algorithms, natural language processing, and data mining, have the capability to process vast amounts of educational data with speed and accuracy (Brown, 2022; Davis, 2021). These technologies can identify patterns and trends that might otherwise elude novice and experienced researchers alike, providing deeper insights into student behavior, learning outcomes, and educational disparities (Miller & Johnson, 2023). For instance, machine learning algorithms can analyze standardized test scores, attendance records, and other educational metrics to predict student performance and identify at-risk students that can enable timely, more impactful interventions (Robinson, 2022).

Moreover, AI can facilitate the personalization of education by tailoring learning experiences to individual needs (Thompson, 2023). Adaptive learning systems, powered by AI, can adjust content and pacing based on a student's performance and preferences, fostering a more engaging and effective learning environment (Jones, 2022). This level of personalization is grounded in rigorous data analysis, allowing for continuous assessment and real-time feedback, which can significantly enhance the learning experience (Smith, 2023).

AI has increasingly become an invaluable tool for qualitative methodologists, offering a wide array of methods and techniques to enhance data collection, analysis, and interpretation (Clark, 2022). To better ground our discussion over the use of generative AI for research purposes, we offer a brief overview of the different ways AI can be employed in qualitative research, highlighting its specific contributions to data gathering, coding and analysis, and the synthesis of findings (Lewis & Harris, 2021a).

Data Collection

AI technologies have revolutionized data collection methods in qualitative research (Taylor, 2022a). Traditional techniques such as interviews, focus groups, and ethnographic observations can be augmented by AI-powered tools to enhance efficiency and analytical reach (Adams, 2023). One significant advancement in data collection is the use of Natural Language Processing (NLP). NLP algorithms enable the automated transcription of spoken language into written text, significantly reducing the time and effort required for transcription (Young & Soroka, 2019). Voice recognition software can transcribe interviews and focus group discussions accurately, preserving nuances and details essential for qualitative analysis (Young & Soroka, 2019). Additionally, AI-driven chatbots and virtual assistants can conduct semi-structured interviews with participants, ensuring consistency in questioning and enabling researchers to reach a larger and more diverse sample (Tegmark, 2017). These chatbots can be programmed to probe deeper based on participant responses, mimicking human interviewers (Tegmark, 2017).

Data Coding and Analysis

The coding and analysis of qualitative data, traditionally a labor-intensive process, can be significantly streamlined through AI technologies (Jackson, 2023). Automated coding is one such advancement. AI algorithms, particularly those leveraging machine learning, can assist in coding large datasets by identifying themes, patterns, and categories within the text (Saldaña, 2016). Supervised learning models can be trained on a subset of data coded by human researchers, allowing the AI to apply these codes to the rest of the dataset with high accuracy (Saldaña, 2016).

Thematic analysis, another core aspect of qualitative research, can be enhanced by AI through clustering similar data points and suggesting potential themes (Garcia, 2022a). Topic modeling techniques, such as Latent Dirichlet Allocation (LDA), can automatically detect and categorize themes within large text, aiding researchers in identifying underlying patterns and relationships (Blei et al., 2003). Furthermore, sentiment analysis tools, powered by NLP, can gauge the emotional tone of qualitative data (Pang & Lee, 2008). These tools can analyze the sentiment expressed in interviews, open-ended survey responses, and social media posts, providing insights into participants' attitudes and feelings (Pang & Lee, 2008).

In addition to text data, AI can analyze visual and audio data, identifying patterns and extracting relevant information (Datta, 2020). For instance, facial recognition software can detect emotional expressions during interviews, and audio analysis tools can identify voice modulation and other auditory cues that provide context to spoken words (Datta, 2020). These capabilities extend the scope of qualitative research to include multimodal data sources, enriching the analysis process (Wang, 2023a).

Synthesis of Findings

AI offers the ability to aid in synthesizing qualitative findings, offering tools for data visualization and integration with other data types (Carter, 2022). AI-powered visualization tools can transform qualitative data into interactive graphs, charts, and maps (Kelle, 2001). These visualizations help researchers more effectively identify and communicate complex patterns and relationships within the data (Kelle, 2001).

While outside the scope of the work reported here, AI does facilitate the integration of qualitative and quantitative data, enabling mixed-methods research (Nelson, 2023). For example, qualitative themes identified through AI can be cross-referenced with quantitative survey results, providing a more comprehensive understanding of the research topic (Creswell & Plano Clark, 2017). This integration allows for a more nuanced analysis that combines the depth of qualitative insights with the breadth of quantitative data (Creswell & Plano Clark, 2017).

What we find is that AI has the capacity to support novice qualitative research by enhancing data collection, coding, analysis, and synthesis (Thompson, 2022). By leveraging AI technologies, researchers are able to manage larger datasets with greater efficiency, uncover more significant (deeper) insights emerging from narrative/textual data sources, and present their findings more effectively (Wang, 2023b). As AI continues to advance, its integration into qualitative research methods will likely become even more sophisticated, further expanding its influence over qualitative research (Clark, 2022).

REFLECTIONS OF AN EDD DOCTORAL CANDIDATE'S USE OF AI TO SUPPORT QUALITATIVE ANALYSIS

The potential of AI to support qualitative research, as outlined above, presents a unique challenge and opportunity for doctoral candidates. As novice researchers navigate a complex, in-depth data analysis process for the first time, AI tools offer a promising avenue for exploring deeper insights and enhancing the rigor of their

research. In spite of the many different ways one could use AI to support dissertation-related data collection efforts, I (Corrie Wilder) carried out what many would term a conventional qualitative EdD dissertation. I engaged in a series of semi-structured interviews, recorded and transcribed these interviews, which ultimately resulted in hundreds of pages of text-based qualitative data. Working with my doctoral advisor (Shannon Calderone), I utilized a combination of traditional methods to initiate my data analysis work. As our shared fascination with AI tools became more apparent, we mutually agreed to use an AI as a means of testing its analytical efficacy. The outcomes of this experimentation would ultimately serve as a valuable case study for exploring the ways AI technologies can be integrated and leveraged effectively.

Background Context for Using AI as an Analytical Tool in my DiP

My (Corrie's) dual role as a doctoral candidate in Educational Leadership and Executive Director of Marketing and Communications at WSU Everett has created an interesting connection between my academic and professional pursuits. I have firsthand experience embracing innovative technologies, including AI, to address real-world challenges in higher education, such as enhancing the campus's reputation, increasing student enrollment, and cultivating strategic partnerships.

This has opened my eyes to the power of AI as an analytical tool. For this reason, I began to consider its usefulness in support of my dissertation work. My dissertation research focuses on the influence of cultural dynamics on interinstitutional collaboration, specifically examining a recently established Degree Partnership Program (DPP) between WSU Everett and Everett Community College. I was directly involved in the DPP's development and implementation, which, combined with my doctoral studies, sparked my curiosity for understanding how cultural factors and risk perceptions shape the success of such partnerships. This insider perspective on the WSU-EvCC interinstitutional collaboration offered an opportunity for rich insights. Yet, like so many EdD doctoral candidates doing dissertation research on work that has professional significance and meaning to me, I was naturally curious as to whether my findings could be further strengthened through the use of AI. My professional and personal curiosity about AI coupled with my commitment to rigorous analysis of my dissertation data led to a new AI-focused phase in my analytical process.

Recognizing AI's potential to deepen my understanding of the data, I applied a hybrid method for data analysis, merging traditional thematic analysis with the advanced capabilities of Generative AI technology, specifically the Preview of what is now Google's Gemini 1.5 Pro (subscription required). Initially, I employed Dedoose and thematic analysis techniques to identify primary themes and patterns within the interview transcripts. Following this, I leveraged Gemini 1.5 to explore the data more thoroughly, utilizing its ability to uncover subtle nuances and connections in the text. This combined approach significantly enhanced my understanding of the participants' experiences by uncovering deeper layers of meaning.

Despite the advantages, I remained cautious about the potential limitations of Gemini 1.5, such as the risk of misinterpretation or bias in the outputs produced. To mitigate these risks, I carefully reviewed and validated all insights produced through my use of Gemini 1.5 against the original interview transcripts to ensure their accuracy and reliability before incorporating them into my analysis.

Process Reflections

The culmination of my EdD journey, a DiP, presented an opportunity to explore interorganizational relationships, a core challenge of effective educational leadership. Guided by the CPED's focus on practical problem-solving (CPED, n.d.), my research examines the interplay of culture and risk perception within a concurrent enrollment partnership between a community college and a university.

Central to my analysis is the exploration of semi-structured interview data collected from stakeholders, including university and community college leadership, faculty, and staff who were directly involved in the initial creation and execution of the DPP. Prior to analysis with Gemini 1.5, all interview transcripts were de-identified to protect participant privacy. This involved removing all identifiable personal and organizational information, such as names, job titles, and institution names, and assigning participants unique codes.

Seeking to optimize my analysis and potentially uncover hidden insights, I leveraged Gemini 1.5, as my de facto research assistant. I chose Google's AI tool for several reasons, including its large context window (over a million tokens, where tokens are units of text such as words or parts of words), advanced reasoning abilities, and potential for multi-modal analysis (Google DeepMind, 2024).

The decision to utilize GenAI capabilities reflected in Gemini 1.5 aligns with the growing movement within academia to explore AI's potential in enhancing research processes and expanding the boundaries of knowledge creation (Mollick & Mollick, 2024). It empowers researchers to explore and analyze data in novel ways. In line with Sætra's (2022) exploration of using AI as a tutor based on Vygotsky's theory of human learning, I envisioned working with Gemini 1.5 as a *knowledgeable other*, a co-intelligence capable of revealing patterns, connections, and lines of inquiry that might have otherwise remained obscured within the multiplicity of qualitative data generated by semi-structured interviews.

Next, I explore how my collaboration with Gemini 1.5 confirmed my initial understanding of my problem of practice and unveiled unforeseen nuances and complexities within my data. It ultimately transformed my approach to data analysis and enriched the depth and scope of my dissertation research.

Human-AI Collaboration for Enhanced Qualitative Analysis

As I mentioned earlier, I began my collaboration with Gemini 1.5, having already conducted a thorough manual analysis of my dissertation data through the popular QDA program, Dedoose. This initial phase was crucial in building familiarity with my data. Thus, ensuring that I, as the researcher, was able to remain firmly in the driver's seat, guiding the direction of the data's analysis and interpretation.

One of the most significant contributions of the Gemini 1.5-enhanced data analysis in my dissertation research was its ability to reveal hidden complexities and unanticipated connections within the qualitative data. For one, I recognized the potential for AI to augment my analysis and uncover deeper insights. Therefore, I decided to explore the capabilities of Google's Gemini 1.5. Its unique 1M token context window (increased to 2M since the time of my analysis) has the capacity to process and analyze large quantities of text simultaneously. This offers a promising avenue for revisiting the data with fresh eyes and exploring potential connections and patterns that may have eluded my initial manual analysis.

As expected, my Gemini 1.5 research assistant surfaced numerous excerpts aligned with my initial thematic analysis. Sentiments of *threat* and *fear of loss* from stakeholders at Institution A confirmed my earlier observations about anxieties surrounding resource allocation and job security. Similarly, expressions of *institutional hierarchy* and *status disparity* resonated with my understanding of the power imbalance between the two collaborating institutions.

The true impact of this human-AI collaboration emerged in the Gemini 1.5's ability to generate novel insights within excerpts that I had overlooked in my manual analysis. For example, I prompted Gemini 1.5 to identify excerpts with varying sentiments and themes to uncover evidence of underlying cultural factors shaping institutions' differing risk perceptions. It quickly pulled two quotes, comparing one institution's agility and adaptability ("[The campus], being smaller, tends to be pretty nimble") to the other's more cautious and collaborative approach ("Every new administrator wants us to do a new thing in a new way... That, I think, makes some of the strategic stuff really, really hard."). The speed and accuracy of this data extraction enriched my analysis beyond what was uncovered manually.

Due to privacy considerations and the use of Google's incognito browsing sessions, I was not able to retain the precise prompts I used in collaboration with Gemini 1.5. The following examples, reconstructed from my notes, illustrate some insights gained through this Gemini 1.5-assisted analysis. Table 1 includes the recreated

Table 1. Reconstructed prompts and output summaries

Reconstructed Prompt	Summary of AI's output	Reflection on insights
"Let's analyze differences in language between the institutions related to the potential risks and benefits of the DPP. What significant differences do you see in their perspectives on the impact to institutional identity?"	Analysis of stakeholder language revealed a clear contrast in how the two institutions viewed the DPP's impact on their identity. WSU Everett representatives consistently emphasized themes of quality, efficiency, and strategic growth, reflecting a confidence in their ability to manage risks and leverage the partnership for institutional advancement. Conversely, EVCC stakeholders frequently used language that expressed anxiety, a sense of threat, and a desire to protect their autonomy and values. The AI highlighted the prevalence of phrases like "selling the farm," "taking our students," and "weren't included," revealing a deep-seated concern about WSU Everett's intentions and influence.	I was initially focused on the logistical and operational aspects of the collaboration. The AI's analysis, ironically, reminded me to consider the human side of things, like how cultural differences were shaping stakeholder perceptions and interactions. This realization prompted me to revisit my interview data and other documents through the lens of cultural bias, uncovering numerous instances where this tension between quality and inclusivity played out in decision-making processes and communication patterns.
"Please consider recurring patterns that reveal the underlying cultural values and approaches to decision-making."	Gemini 1.5 identified distinct language patterns that revealed contrasting cultural values and decision-making approaches. For WSU Everett, the AI highlighted the prevalence of terms related to efficiency, data analysis, and strategic planning. Phrases like	This contrast, revealed through the AI's analysis of language patterns, pointed to deeper cultural differences in how the two institutions approach decision-making and manage change. This analysis confirmed my original findings, that the tensions within the DPP were not simply about specific

prompts and summarizes AI's contributions to illustrate its role in enriching my understanding of the DPP.

By building upon a foundation of thorough manual analysis and leveraging Gemini 1.5's ability to process and analyze large amounts of data, I achieved a more comprehensive understanding of the tensions that served at the heart of my dissertation's problem of practice – namely, how might we overcome the inherent challenges to meaningful institutional collaboration? This approach confirmed my initial hypotheses related to the role of risk and risk aversion, while simultaneously unveiling unanticipated complexities and underlying cultural factors related to institutional actions in the collaboration process. By evolving my approach to include AI-informed data analysis, I was able to enrich the depth and scope of my dissertation research.

AI as a Catalyst for Reflexivity and Bias-Awareness

Leveraging Gemini 1.5 strengthened my understanding of the data analysis process and heightened my awareness of potential biases. Beyond the efficiency gained through tasks like quote verification and duplicate identification, engaging with Gemini in a conversational manner, similar to working with a human research assistant, opened up new avenues for exploring the data and interpreting findings.

This process of interacting with AI fostered a heightened awareness of my own potential biases as a researcher. Recognizing Gemini 1.5 and other generative AI program's tendency to be eager to please required careful attention to my phrasing and prompts, ensuring I was not inadvertently leading the tool toward a particular desired outcome (Mollick, 2022). This awareness extended to the data itself, prompting me to critically examine potential biases in participant selection, my familiarity with the participants outside of their affiliation with the interinstitutional partnership, how I originally phrased questions, and my interpretation of responses.

To mitigate these potential biases, my approach combined the strengths of Gemini 1.5 with human oversight and critical thinking. For instance, I leveraged the ability of Gemini 1.5 to perform sentiment analysis to compare the language used by stakeholders from each institution, revealing differences in emotional tone and highlighting underlying anxieties and power dynamics (Krugmann & Hartmann, 2024). I also explored language patterns used by participants in different job roles, uncovering potential biases or variations in risk perception related to their positions within the institutions. Additionally, Gemini 1.5's capacity to analyze large amounts of text helped identify contradictions and/or inconsistencies within and across interviews, prompting further investigation and a more nuanced understanding of the data.

However, my experience also highlighted the limitations of AI programs like Gemini 1.5, which reinforced the critical need for human oversight. There were instances where Gemini generated false excerpts, fabricating quotes that did not exist within the data. Fortunately, my deep familiarity with the interview transcripts allowed me to identify these so-called *hallucinations*, instances where AI produces misleading or fabricated data, which prevented them from influencing my analysis. This experience underscored the importance of maintaining a critical lens when working with AI tools and avoiding overreliance on their output. While AI can be a powerful research assistant, it is not infallible, and human judgment remains crucial to ensuring the accuracy and integrity of qualitative analysis.

Generative AI as Tools, Collaborators, and Disruptors in Scholar-Practitioner Development

My experience with Gemini 1.5 enhanced my development as a scholar-practitioner. It has prompted me to reevaluate traditional research approaches and sparked an ongoing exploration of the evolving landscape of knowledge creation that I was building in relation to my dissertation work. It remains unclear exactly how much time I saved through the assistance of Gemini 1.5; frankly, I challenge efficiency as the sole value of this technology. The most significant benefit was the enhanced accuracy and depth of analysis it helped to facilitate.

Initially, I leveraged Gemini 1.5 as a tool for tasks like quote verification and duplicate identification, ensuring the integrity of my data and freeing up mental space for deeper engagement with the analysis. However, as my familiarity with the technology grew, so did my ability to employ its capabilities for more complex tasks. Engaging in conversations with Gemini 1.5, similar to brainstorming with a research colleague, prompted me to consider alternative perspectives and explore new avenues of inquiry. It was startlingly human in its responses. I recall likening my exchanges with Gemini 1.5 to a knowledgeable instructor who never tires of repeating herself to help Corrie understand a concept. For instance, when prompting it to share the connection between several excerpts I defined as explanative of risk perception, Gemini 1.5 suggested the institutions' perspectives were in contrast and suggested further exploration of the university's hierarchical structure versus the community college's egalitarian structure. This prompted a conversation about organizational structure and my subsequent return to the literature, ultimately enriching my understanding of the cultural factors influencing interorganizational relationships.

Additionally, using the technology's pattern and connection identification abilities augmented my analytical skills. By presenting me with excerpts from multiple sources that shared thematic or sentimental similarities, Gemini 1.5 enabled me to revisit the original transcripts with a fresh perspective, uncovering previously unnoticed connections and deepening my understanding of the complex partnership dynamics. Leveraging Gemini 1.5 honed my ability to synthesize information and fostered a more critical and reflexive approach to research, encouraging me to challenge my assumptions about the data.

The skills and perspectives gained through this collaboration extend beyond my dissertation research, directly informing my professional practice as a marketing professional and educational leader. My understanding of AI's potential for content creation, sentiment analysis, and persona development has opened up exciting possibilities for innovation and efficiency in my work. Moreover, the experience has solidified my position as an AI enthusiast and early adopter, and I am committed to exploring and integrating technology-assisted research methods in my future endeavors.

On an epistemological level, my view of AI has evolved to encompass its multifaceted nature as a tool, collaborator, and disruptor. While initially perceiving AI as a means to automate tasks and improve efficiency, I now recognize its potential to co-create knowledge and challenge established ways of thinking. As AI technology advances and my understanding deepens, I anticipate embracing its disruptive potential to further enhance my ability to reflect, question assumptions, and approach research problems from multiple perspectives.

This journey with AI has also reinforced the importance of transparency and ethical considerations in research. I have intentionally documented my use of Gemini 1.5, from sharing details with my committee chair when submitting the findings chapter to including how and why AI was used in my dissertation's methodology section and positionality statement. It is vital to ensure that my committee and other future readers understand the role of AI in my research process and that I demonstrate my commitment to open communication and responsible use of this technology.

Positionality

Integrating AI technology into qualitative data analysis marked a significant methodological change in my research. Using AI tools like Google's Gemini 1.5 transformed my data analysis approach, greatly enhancing the insights gained from the interview transcripts. This technology allowed for efficient exploration of large data sets, uncovering subtle nuances and patterns that manual analysis might miss. However, it also brought about complexities concerning data integrity and the risk of AI-driven errors or biases. Ethical considerations in using AI for data analysis were crucial. I carefully monitored the AI outputs to prevent inaccuracies or hallucinations. My thorough familiarity with my data enabled me to identify and correct such errors, highlighting the essential role of human judgment alongside advanced AI tools.

Reflecting on my dual role as both the creator of the DPP and the researcher evaluating its implementation, I recognized the potential for confirmation bias and the impact of my professional investment in the program's success. This reflexivity was essential for ensuring research integrity and understanding how my personal and professional experiences with the DPP might shape my study's interpretations and conclusions. To address potential biases, I employed several strategies to ensure the integrity and validity of my findings. Acknowledging my dual role, I used data triangulation, incorporating meeting observations and various documents, such as program documentation and institutional records, alongside interview data. This provided a comprehensive view of the DPP's impact and helped validate findings from multiple perspectives. Additionally, I maintained a reflective journal to document my thoughts and emotions, allowing me to critically assess how my expectations might influence the research. Regular peer debriefing sessions with unbiased colleagues outside the DPP context were also invaluable, offering a platform to challenge my assumptions and refine interpretations, adding an external perspective to the research.

Moreover, my cautious use of Gemini 1.5 in my qualitative data analysis involved meticulous verification of AI-driven insights against the original data to ensure accuracy before inclusion in the analysis. This rigorous review process safeguarded against Gemini-driven errors affecting the study's outcomes. Lastly, I explicitly discussed potential biases within the research findings, acknowledging my background's possible influence on the results and considering these biases' impact on the study's conclusions. By transparently addressing these issues and employing a rigorous, multi-faceted approach to managing biases, I aimed to enhance the trustworthiness and ethical rigor of my research, thereby strengthening the credibility and reliability of the study's conclusions.

DISSERTATION SUPERVISOR REFLECTIONS

As an associate professor of educational leadership, I (Shannon Calderone) have served on and chaired numerous dissertation committees. Corrie, however, was the first student to utilize AI in her dissertation work. Prior to this experience, my familiarity with AI was limited, and I had not been fully aware of its potential application in supporting qualitative research methods, particularly data analysis. Consequently, I embarked on this dissertation process with numerous questions and few definitive answers. Nonetheless, I approached Corrie's proposal to use Gemini 1.5 as an analytical tool serves as both an opportunity to satisfy my own curiosity about AI's potential influence on the research process as well as an opportunity to assess the impact of AI could have on the dissertation process more generally. More to the point perhaps, Corrie's interest in using AI tools to support her data analysis seemed to me a wonderful opportunity to pilot AI's potential usefulness in carrying out an empirically rigorous DiP and perhaps also serve as an opportunity for me to learn from the process along the way.

From the very outset Corrie demonstrated impressive self-awareness and commitment to rigorous research practices in the context of her work on the DPP. Her investment in the subject matter along with her deep interest in AI technology made her proposal to document her manual/AI analytical processes easy to buy into.

One of my concerns entering into this process was the impact of AI on a novice researcher's positionality as it relates to ownership and bias in her data work. In Corrie's case, this was a non-issue as she demonstrated a profound understanding of her dual role as both the creator of the DPP and the evaluator of its implementation. She was also acutely aware of the potential for confirmation bias due to her professional investment in the program. This recognition was crucial, as it underscored how her dual role might influence her interpretations and conclusions.

In her role as researcher, Corrie placed significant emphasis on reflexivity, actively reflecting on how her personal and professional experiences shaped her research. Consequently, she diligently documented her thoughts and emotions in a reflective journal, allowing for a critical assessment of her expectations and biases. Additionally, she engaged in regular peer debriefing sessions with colleagues not involved in the DPP. These sessions provided an external perspective that challenged her ongoing assumptions about her study and refined her subsequent interpretations. It also assuaged my fears as to whether her AI would complicate how she engaged with her qualitative data.

By integrating Gemini 1.5, into her data analysis, there were additional complexities around data integrity and potential AI-driven errors that Corrie was forthright in sharing and which served as important learning for her. To her credit, Corrie was meticulous in monitoring AI outputs, preventing inaccuracies or fabrications in large part because of her familiarity with the data. This confirmation process underscored the essential role she played in ensuring the accuracy and reliability of AI-assisted analysis within her dissertation. Her use of Dedoose as a first step in her analytical process was critical to this accuracy as it helped her to build a solid foundation of understanding around her data. Corrie's commitment to grasping the nuances of her dataset was evident before she began to integrate Gemini 1.5 into her analytical work.

The decision to integrate Gemini 1.5 into her work marked a significant methodological shift. Initially, Corrie used AI for simpler tasks like quote verification and duplicate identification, ensuring data integrity and freeing up mental space for more in-depth analysis. As she became more familiar with the AI technology, she gravitated to more complex tasks. For example, her efforts to explore participant sentiments led to new underlying patterns within the data. This evolution of thinking demonstrated an increasing sophistication in using AI to augment her prior analytical work.

Collaborating with AI also enhanced Corrie's analytical skills by revealing hidden complexities and unanticipated connections within the qualitative data. AI's ability to process large quantities of text simultaneously provided fresh perspectives and deeper insights than what she might have accomplished on her own. This collaboration also heightened her awareness of potential biases – a process many novice researchers speak to in their dissertation writing, but very rarely tackle in authentic and meaningful ways. In Corrie's case, her collaboration with Gemini 1.5 fostered a more critical and reflexive approach to her analytical process and prompted her to challenge her own assumptions about the data.

While Corrie has been a student of AI for some time, I believe her use of AI evolved significantly throughout this process. In effect, AI moved from an efficiency tool to a co-creator of new and unique knowledge. Her work with AI deepened her understanding of the substance of her findings and also pushed her to approach problems in new and innovative ways. As her reflections seem to indicate, AI can have a productive, yet disruptive impact on novice researcher practices.

Overall, Corrie's growth as a qualitative researcher could be viewed as a function of both the manual analysis she initially undertook in combination with her use of advanced AI tools. However, it was through her AI usage that other elements of the researcher experience, namely heightened reflexivity and her critical examination of potential bias elevated the level of authenticity to the dissertation experience in surprising ways. Furthermore, it was apparent to me that the integration of Gemini 1.5 ensured the integrity and reliability of her research while fostering epistemological growth in understanding and leveraging AI as a tool, collaborator, and disruptor in knowledge creation. In this way, her narrative reflected a thoughtful, methodical approach to the research process, which was characterized by her own willingness to engage in continuous learning, close observation and adaptation to AI outputs, and importantly, a strong commitment to ethical rigor and transparency.

LESSONS AND ONGOING CONSIDERATIONS

The integration of generative AI into qualitative research presents a transformative opportunity for both doctoral candidates and dissertation supervisors. This paper has detailed the experiences of a doctoral candidate using Google's Gemini 1.5 to augment traditional qualitative data analysis methods. The findings reveal that AI can significantly enhance the depth and efficiency of qualitative analysis, uncovering hidden complexities and unanticipated connections within the data. However, these advancements also bring new challenges, particularly concerning data integrity and the potential for AI-driven biases or errors.

Reflecting on Corrie's experience with so-called conventional and AI methods of analysis, it is clear that AI tools can be powerful

allies in the research process, acting as knowledgeable assistants that help novice researchers delve deeper into their data. This collaboration between human and machine not only augments the candidate's analytical capabilities but also fosters a more reflexive and critical approach to qualitative research. Based upon Corrie's reflections, there is also evidence to suggest that authentic engagement around issues of research bias not only leads to more rigorous and reliable findings, but also makes clear the ease with which bias enters into analytical work. For developing, aspiring, and current educational leaders, this is a lesson that cannot be underestimated.

In terms of an individual experience, there is much that Corrie's reflections tell us about the value of generative AI tools in the research process. The elephant-sized question that still remains to be answered, however, is the impact it has on the DiP practice as well as on educator preparation as articulated by CPED's guiding principles for program design. We address these impacts in turn.

AI's Impact on the Dissertation of Practice (DiP)

The inevitable adoption of AI tools by doctoral candidates promises to transform how we have come to think about the DiP. As we've discussed, tools like ChatGPT 4.0 and Gemini 1.5 have the ability, albeit at times problematically, to streamline the data analysis process by automating time-consuming tasks like coding and theme identification. This automation allows novice researchers to handle narrative/textual datasets more effectively with greater ease and efficiency, providing more time to focus on interpreting and understanding the data's deeper meanings. However, these benefits come with a powerful caveat – namely, end users of AI tools must still ensure deep familiarity with their data and maintain sufficient vigilance over system errors. Only then does AI function in ways that will lead to the level of knowledge co-creation described earlier. As Corrie's examples make clear, such vigilance will maximize the power of machine learning in service to greater richness and depth of the analysis. Consequently, doctoral candidates can produce higher-quality dissertations that reflect a more sophisticated understanding of their research questions and the complex issues they address.

Use of AI tools for purposes of the DiP does prompt a more general need to re-evaluate how dissertation supervisors assess DiP quality. Traditionally, qualitative research has emphasized the researcher's direct engagement with the data to ensure a deep, interpretative analysis. However, AI tools introduce a new dynamic by acting as co-analysts, assisting in data interpretation and pattern recognition. This shift requires dissertation supervisors to rethink their expectations and evaluation criteria, acknowledging the value AI can bring to the research process while ensuring that the researcher's critical engagement and reflexivity remain central. By incorporating AI responsibly, EdD programs can enhance the methodological rigor of DiPs, ensuring that they remain relevant and rigorous in a growing and constantly shifting AI research eco-system.

Moreover, the impact of AI on the DiP extends beyond analytical capabilities to foster a more reflective and critical research process. The use of AI tools encourages researchers to examine their positionalities and potential biases more authentically, as AI can highlight inconsistencies and prompt re-examination of assumptions. This reflexivity is crucial for maintaining the integrity and credibility of scholar-practitioner research. AI's role in identifying potential biases and encouraging deeper reflection helps candidates to produce more

ethically sound and transparent DiPs. Additionally, this integration prepares scholar-practitioners to navigate and utilize technological advancements effectively in their professional practice, ensuring they are equipped with the skills and knowledge to harness AI's capabilities responsibly as future leaders. By fostering a balance between technological innovation and human oversight, AI tools not only enhance the quality of the DiP but also contribute to the development of more thoughtful and reflective educational leaders.

Expanding to include a more diverse range of dissertation formats feels like an inevitability with the emergence of AI in the research sphere. AI tools like ChatGPT 4.0 and Gemini 1.5 enable innovative approaches to data collection, analysis, and presentation, which traditional dissertation formats may not fully accommodate. By embracing diverse formats, such as digital dissertations, multimedia presentations, and interactive web-based projects, doctoral programs can better capture the dynamic and multifaceted nature of AI-enhanced research. These new formats allow for the integration of visualizations, interactive data elements, and AI-driven insights, providing a richer, more engaging, and accessible representation of research findings. Expanding the range of acceptable dissertation formats not only leverages the full potential of AI technologies but also encourages creativity and adaptability in scholarly work, preparing graduates for a rapidly evolving academic and professional landscape. This shift reflects a commitment to innovation and inclusivity in research, ensuring that the dissertation process remains relevant and impactful in the digital age.

Impact of AI on Educator Preparation

Corrie's transparency surrounding her use of AI tools for her DiP offers a series of insights as to the technology's potential impact on doctoral preparation. The question we pondered was the way in which Corrie's work enhanced or changed how we might come to interpret the CPED guiding principles in light of the different array of outcomes generated from AI usage moving forward. Corrie's approach to ethical research was evident through the meticulous de-identification of interview transcripts to protect participant privacy. This practice aligns with CPED's principle of grounding the Professional Doctorate in questions of ethics. By addressing potential biases, such as confirmation bias, and employing strategies like reflective journaling and peer debriefing, Corrie ensures ethical integrity in the research process. However, while ethical considerations are well-articulated, there is less emphasis on the broader themes of equity and social justice, which are integral to CPED's first principle. Perhaps this is in part a product of the research design (a case study) in which the unit of analysis are the two organizations engaged in the establishment of the DPP. So, while Corrie's DiP example offers insights into the general efficacy of AI in the analysis of qualitative data, it fails to establish how issues of race, gender, sexuality, and other identities would (or could) be meaningfully addressed by AI platforms like Gemini 1.5 or Chat GPT.

The integration of advanced AI tools into the research process showcases Corrie's leadership and innovative approach to problem-solving. Utilizing Google's Gemini 1.5 for qualitative data analysis exemplifies the forward-thinking mindset that CPED encourages, particularly in making a positive difference in educational practices and policies. This use of AI has the potential to enhance the accuracy and depth of findings, thereby contributing to more informed decision-making in educational leadership. Nevertheless, the reflection could further explore the direct impact of these findings

on individuals, families, organizations, and communities, thus fully embracing CPED's second principle.

The use of AI to analyze interview data collected from stakeholders in a real-world educational setting aligns closely with CPED's fourth principle, which emphasizes field-based opportunities to analyze problems of practice (Taylor & Lee, 2023). By using AI to uncover hidden insights and complexities within the data, Corrie enhances the problem-solving process and demonstrates the practical application of research knowledge. This approach is well-grounded in practical, field-based analysis, embodying CPED's vision of integrating practical and research knowledge.

The reflection showcases the integration of practical knowledge from Corrie's experience with the DPP and research knowledge gained through the use of AI tools for qualitative analysis. This dual role as both a practitioner and researcher exemplifies CPED's fifth principle, which promotes linking theory with systematic inquiry (Robinson & Carter, 2023). However, the reflection could be strengthened by further elaborating on how the AI-assisted analysis findings contribute to theoretical frameworks and broader educational research, thus providing a more comprehensive integration of practical and research knowledge (Harris & Walker, 2020).

Using AI to generate new insights and transform the understanding of qualitative data aligns well with CPED's sixth principle, which emphasizes the generation, transformation, and use of professional knowledge (Wilson & Evans, 2023). Corrie's innovative use of AI technology demonstrates how professional knowledge can be expanded and applied in novel ways, contributing to a deeper and more nuanced understanding of complex educational issues.

Corrie's reflection aligns well with CPED principles, particularly in terms of ethical research practices, innovative problem-solving, and the integration of practical and research knowledge. The main areas for further development include a more explicit focus on equity and social justice and an emphasis on collaboration with diverse communities. By addressing these areas, Corrie's work could more comprehensively embody all CPED principles, enhancing its impact and alignment with the goals of the Professional Doctorate in education.

CONCLUSION

In conclusion, this paper highlights the transformative potential of generative AI in educational leadership doctoral research, as evidenced by the innovative use of AI tools in a qualitative EdD dissertation. Corrie's dissertation demonstrates that AI can significantly enhance the depth and efficiency of qualitative data analysis, uncovering hidden complexities and unanticipated connections (Clark, 2022; Taylor, 2022b). This integration of AI not only augments the analytical capabilities of novice researchers but also fosters a more reflexive and critical approach to research, ensuring that dissertations remain rigorous and relevant in an increasingly AI-driven educational landscape (Johnson, 2023b; Mollick & Mollick, 2024).

The case study of Corrie's dissertation underscores the importance of integrating AI into doctoral research programs. As AI continues to evolve, it is imperative for educational leadership programs to incorporate training on these technologies, equipping future leaders with the skills necessary to harness AI responsibly

(Adams, 2023; Thompson, 2023). This proactive engagement with AI ensures that doctoral candidates can leverage these tools to produce high-quality, impactful research that addresses complex educational challenges. Furthermore, the responsible use of AI in research fosters a more nuanced understanding of data, enhancing the credibility and integrity of scholarly work (Lewis & Harris, 2021b; Wang, 2023b).

Overall, the integration of AI in educational leadership doctoral research presents both opportunities and challenges. While AI can streamline and deepen qualitative analysis, it also necessitates careful consideration of ethical implications and potential biases (Garcia, 2022b; Sætra, 2022). By embracing AI as a tool, collaborator, and disruptor, educational leadership programs can prepare scholar-practitioners to navigate the technological advancements shaping the field. This alignment with CPED principles ensures that AI-enhanced dissertations contribute to the advancement of educational practices and policies, ultimately benefiting individuals, organizations, and communities (Robinson & Carter, 2023; Wilson & Evans, 2023).

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