Generative Artificial Intelligence and the Dissertation in Practice

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Public access to content generators (also known as generative AI) such as ChatGPT, Microsoft Bing, and Google Bard has created a challenge for educational institutions (Heaven, 2023). They must navigate decisions such as when and how students should be allowed to use the tools in their work, when use of the AI represents cheating, and how to recognize any cheating when it occurs. It appears that, whether permitted or not, student use of AI tools is common. One study found that 33% of students ages 12-17 have used ChatGPT for schoolwork (Impact Research, 2023), and its use in higher education is assumed to be high as well (Chaudhry et al., 2023; Cotton et al, 2023).

Doctoral students, their committees and advisors, and other university administrators may be puzzled as to how AI tools might be ethically and advantageously used as part of dissertation research and writing. The dissertation in practice (DiP) includes specific elements such as a context-embedded problem of practice and cycles of intervention or change that are not always present in a traditional dissertation. These unique elements suggest unique challenges in creation of policies surrounding and using AI in the dissertation process.

Some administrators or advisors may wish to adopt a "no AI" policy. However, nearly all students are already using AI in the form of spelling and grammar checkers when writing their DiPs. Their instructors and advisors generally encourage, and often require, this use of AI (McKnight, 2021; Morrison, 2023). Some argue that allowing the use of content generators such as ChatGPT is simply an extension of the philosophy that technological tools should be used that improve the final product. For example, McKnight (2021) suggested that it may not make sense for humans to continue to do what machines can do so much better, and that it might be

best to think of writing as Man + Machine rather than Man *or* Machine. Others describe how content generators might increase efficiency, enhance creativity, and improve overall quality of the writing (Cotton et al., 2023). A study of secondary students and teachers found that the majority of users in both groups felt the use of ChatGPT had a positive impact on learning (Impact Research, 2023). Another study found that ChatGPT use leads to more personalized learning and quicker feedback for college students, thereby improving their academic performance (Chaudhry et al., 2023). While the literature does suggest a variety of positive outcomes when generative AI is used, there are clearly challenges that must be addressed such as avoiding plagiarism, inaccuracies of AI results, and various ethical issues (Cotton et al., 2023; Lo, 2023; Rahman & Watanobe, 2023).

While there are many arguments that can be reasonably made for and against allowing EdD students to use generative AI as part of their dissertation experiences, the focus of this chapter is on exploring the various ways that AI might be ethically used by students. In addition, it provides suggestions for maintaining academic integrity and ethical standards for when these tools are used.

Using AI in DiP Projects

Brainstorming

Generative AI tools are great brainstorming assistants (Holt, 2023), though possibly not as good as working with a human brainstorming partner (Maier et al., 2022). Using AI to help with idea generation can be useful during many parts of the DiP project. For example, the tools might be used to come up with ideas for:

- Topics and problems of practice (PoPs).
- Potential enabling conditions or root causes related to the PoP.

- Theoretical frameworks or theories of action that might help frame the project.

- Interventions or changes that might be implemented.

- Project plans and timelines.

- Metrics and instruments that might be used to measure improvement.

For example, I wrote a prompt in Bing asking it for some potential reasons why teachers at a high school in the Midwest might be experiencing burnout. Bing suggested the pandemic, low salaries and recognition, political pressures and public scrutiny of teachers, the shortage of teachers and resources, and a lack of professional development and autonomy. Each of these suggestions was accompanied by several sentences of explanation, and some included a link to a reference. While this information is not an adequate study of the enabling conditions of a PoP, and may not be accurate or relevant in a particular school, it may get a student started with some ideas they can use in doing a literature review or conducting interviews or a survey within their contexts.

As part of this brainstorming process, AI tools can not only come up with lists of ideas but also evaluate those ideas, flesh them out in detail, and organize and connect various elements together. By using AI, the student may be presented with more ideas than they may generate on their own, and much more quickly. Often these generated ideas will help a student get their own creative juices flowing and lead to original ideas coming from the student as well. The student will need to critically examine the ideas for feasibility (Hung & Chen, 2023) and potential impact.

One advantage of this approach is it reduces the likelihood of the student settling for only the most obvious idea at any stage of their DiP process. AI may   connect the student's PoP to a theoretical framework they had never considered, for example, or suggest design elements that

might have been overlooked. One common issue found with DiPs is sometimes called *solutionitis* (Kivel, 2015), a student deciding on an intervention they want to try before they have studied their PoP or its enabling conditions thoroughly. By using AI to brainstorm intervention ideas, a student can be directed to consider ideas that are potentially much more creative, feasible, and impactful than their original solution.

Reviewing Academic Literature

Content generators such as ChatGPT can be used to locate academic literature on a topic. However, this search must be done cautiously as the results will only be as good as the program's training database, the data it was fed by its programmers. At this point, results are often not reliable, particularly for less-common topics. ChatGPT, for example, and similar content generators, will simply make up the names of articles on topics when they do not have a relevant article in their data. This result is called *hallucination*, and it is a common occurrence (Jolly, 2023; Lo, 2023; Masters, 2023). Students will need to check to see that any suggested articles really exist and that the citation is correct.

A better use of AI with its current abilities, with respect to literature reviews, is to use it to summarize and synthesize articles. If it does have an article in its data, it can provide a good summary of the article, emphasizing whatever is requested. The student can also feed their notes related to what they have read, and the AI will synthesize and organize the findings, or outline the review. This ability can make writing the literature review much more efficient and may help the students deepen their thinking or make connections they had not thought of.

Design

AI content generators can be very effective in designing any part of the DiP. For example, the student can ask it to design a mini study to look at the enabling conditions of a particular PoP

within a context. It can also make suggestions about what data collection or data analysis processes to use. AI content generation tools can be used to design surveys, interviews, and experiments. Again, the student becomes the critical curator of the information given. Because the AI tools can make errors or misunderstand, the student needs to evaluate and refine the AI's suggestions. Alternatively, AI can be used to evaluate a design created by the student and make recommendations for improvement. The AI, of course, will only understand as much of the context of the PoP, any theoretical or conceptual frameworks used, and the unique ideas of the student as it is fed. Therefore, the student must work with the AI in an iterative process, continually revising the AI's suggestions, or asking it to revise to include more criteria. From the perspective of *man + machine* (McKnight, 2021), the student using AI well can create a higher quality product than either could do alone.

Data Collection and Analysis

There are advanced AI tools available that can distribute surveys. If used, the researcher will need to be careful of confidentiality and other ethical issues. However, the focus of this chapter is on generative AI tools, and they do not currently have that capability. Basic content generation tools such as ChatGPT can analyze both quantitative and qualitative data. This process can save time and effort but can also lead to discovering new patterns or insights. As with all uses of AI, the results will need to be checked for accuracy. Rather than using the AI to analyze data, my preference is to use it to help write the code for the software I choose. This feature can be very helpful when I do not   remember how to do something and is generally more efficient than searching with Google or through user guides or notes.

Another way that AI can be helpful is in creating simulated data for practice analysis. It can create fictional survey data, and it can act as an interviewee in order to either practice and refine the use of an interview protocol or to obtain fictional interview data for practice analysis.

AI and Writing the DiP

Planning

ChatGPT and similar content generators are great tools for outlining sections of or entire dissertations (Morrison, 2023). This outlining can be done at any level of detail if the software is correctly prompted. For example, a student might ask it to outline a 10,000-word chapter 5 that addresses specifically stated ideas and issues. It is often helpful, after an outline is generated, to either request another version, or several, of the outline or to ask for a section of the outline in more detail. The student then can revise, adapt, and feed their final outline into the software for critique. This activity can save the student a lot of time and result in a much more organized and thorough chapter than the student would have created on their own. It is a great tool for a student experiencing writer's block or who has weak organizational skills. The risk of the student not having to think at all is quite minimal as the AI will not fully understand the student's context and project, and the student will have to work iteratively *man + machine* to refine and create an optimal outline.

Drafting

Using AI to directly write sections of the dissertation, or all of it, is probably one of the greatest fears of advisors and administrators. However, current content generators are limited in the size of response they will provide from one prompt, generally not more than a few paragraphs. While it is possible that a student could feed the AI prompt after prompt until the entire dissertation is written, it is unlikely that it would be a quality product that readers would

not catch. For example, the entire document would lack consistency as AI can currently hold only so much conversation in its memory. It would also lack the ability to really describe the context of the DiP.

It would be possible, however, for a student to use AI to write various sections of their dissertation without the knowledge of their committee. If the student is an experienced and sophisticated prompt writer, this would be difficult to catch. The student can even feed in a paragraph they wrote independently and ask the AI to match their writing style. Existing tools meant to identify the use of AI written text are known to be unreliable; original text is often mis-identified as written by AI and vice versa (Ibrahim et al., 2023; Naidoo, 2023). There is potential for the generative AI tools to incorporate a feature called *watermarking* into their responses, a process where sophisticated statistics are used to create patterns in the responses that could not be detected by human eyes, and therefore not removable by the writer unless they do considerable editing to the response. It is not currently known whether watermarking is or will ever be incorporated into generative AI, or whether it will even be effective (Lawton, 2023).

Regardless, any writing created by the AI will require some thinking and evaluation by the student. I have heard many AI thought leaders and educators suggest that students are going to do it anyway, we are not going to be able to tell unless they do it poorly, and the best option is to embrace and teach use of the tools.

Some benefits of student use of these tools include overcoming writer's block, increased creativity and quality, and greater efficiency. However, use of the tools with insufficient student input or editing can result in the student's voice from being absent from the writing (Morrison, 2023).

Daniel et al. (2023) discussed the possibilities of using AI as part of the academic writing process from the perspective of *writing virtuously*. The authors described virtuous writing as including human growth as part of the writing process, developing relationships between the writer and readers, community building, identity development, leading in the field of study, curiosity, and having compassion for the reader. They suggested that the important result is not the written product itself but the growth of the writer and the reader. The authors explained that, while these traits can accompany the use of AI tools, the AI tools cannot produce these traits on their own. AI tools reflect common human biases from the data they were trained on rather than the development of new meaning and wisdom. They cannotadequately reflect the particular culture, context, identity, and experiences of the writer. They may not adequately walk the line between confidence and humility in the description of new ideas and conclusions the way a human might. However, AI tools can support lower-level writing skills so that the writer can focus on higher level thinking.

Revising

As mentioned earlier, students are already using AI tools such as Grammarly or Word's grammar and spell checker. Newer AI tools such as ChatGPT allow students to go beyond this by feeding it a section of text and having the software make suggestions not only related to spelling, grammar, and writing style, but also related to the coherence, organization, and logic of their ideas (Morrison, 2023). A study conducted with predecessors to current content generators found that students who used AI to help revise their essays ended up with much more complex and sophisticated ideas in their final papers (Kim et al., 2022).

The use of these AI tools for these purposes can save time and effort for both the student and the committee. It can improve the quality of the document. However, the final results depend

on the quality of the AI tool, and unsophisticated use of the tool can prevent a student from learning to revise their own work. If a student is taught to use AI as part of an iterative process of human-machine rounds of revision, the writing quality can be optimized without the student being left out of the process.

AI and Social Justice in the DiP

One goal of the Carnegie Project for the Educational Doctorate (CPED) is to emphasize social justice and equity as part of DiP projects. There are some specific challenges in making sure this issue is addressed when AI is used in conducting or writing about the DiP project.

One challenge is that AI databases themselves are often biased and generally reflect the ideas and opinions of the majority (Slimi & Carballido, 2023). This means that, when AI is used for brainstorming, designing, or making conclusions, there could be bias. One way to help overcome this weakness is by specifying the underrepresented groups or voices that the researcher wants reflected in the AI response. For example, when using AI to generate a list of ideas for interventions to improve math anxiety in middle school classrooms, the researcher might tell the AI to particularly consider interventions that would be helpful to a specific minority group.

Another solution would be to make sure to engage with stakeholders and communities throughout the research and writing process to make sure their needs, values, and interests are respected and represented.

Maintaining Academic Integrity and Ethical Standards

In order to maintain integrity, administrators and educators need to create an AI policy for the DiP that is reasonable, clear, and enforceable. These tools are going to become more sophisticated and do more with time, and both faculty and students will need to know how to use

them. In considering AI use policies, it is important to remember that student use of AI cannot be easily detected, and AI detectors tend to over-identify student-written work as AI-generated (Ibrahim et al., 2023; Naidoo, 2023). A reasonable policy is one that acknowledges the benefits of AI, as well as its limitations.

One possibility is to teach students how to appropriately use AI generated content with integrity. Learning objectives might include:

- Describing why completing specified parts of the project without AI assistance is important.

- Citing AI generated text correctly, whether copied or paraphrased (Hung & Chen, 2023).

- Documenting the use of AI tools in the text of the DiP (Cotton et al., 2023).

- Checking AI content for accuracy (Cotton et al., 2023).

- Identifying the differences between appropriately simulated data and fake data generated by AI.

For the written DiP, programs might require the students to include a statement regarding their use, if any, of AI tools, similar to what some academic journals are starting to require. For example, the academic journal *Biological Psychology*, requires authors who have used AI to add the following statement:

> During the preparation of this work the author(s) used [NAME TOOL / SERVICE] in order to [REASON]. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication. (Dien & Ritz, 2023, p.).

An advantage of this approach is it both requires the student to be open about their AI use and reminds the student of the need to review and revise the generated content. It also suggests a

particular element that should be part of any AI use policy—the author is to blame for any inaccuracies or ethical problems with the content, not the AI.

Conclusion

In what ways generative AI should be used as part of the DiP research or writing process, if at all, poses a challenge for an EdD program's policymakers, dissertation committee members, and students. This challenge is largely rooted in fears that students will not learn as much from the process as they did before AI was readily available. This fear may result in university, departmental, or program policies that restrict the use of AI by students. Organizations that take this approach will need to carefully consider whether their policies are enforceable and in the best interest of the students. On the other hand, those that are more permissive need to make sure the students know how to use AI appropriately, are engaging in enough critical thinking, and know how to let their own thoughts and voice dominate their written products.

One option for educators worried about the overuse of AI is to require DiP elements that are currently not able to be faked by AI. For example, at the current time, ChatGPT and similar content generators cannot adequately describe personal experiences or practical contexts. The DiPs emphasis on context, then, may be an advantage over traditional dissertations when AI is used. Another possibility is for dissertation committee members to shift to a more active role, participating in the research and/or intervention, rather than primarily editing DiP textual content. In this way, they can evaluate the EdD candidate directly rather than through their writing. The product becomes the person, not the paper.

Over time, the DiP project may need to evolve as AI and modern technology shift what it means to be educated. Billingsley et al. (2023) stated, "Artificial intelligence is affecting what knowledge is, how knowledge is created and what it means to be a biologist, philosopher,

journalist, lawyer, theologian, artist or [feel in your profession here]" (p. 453). It may be that our real question may become what it means to have completed a DiP. Does it mean to create a 100+ well-written pages or does it mean to create impact, to communicate a message, or to become something new?

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