

Demonstrating AI as Collaborator for Undergrad Thesis Advising: Working with Generative AI to Enhance the Research Process

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学部卒業研究指導における AI の協働者としての実証

—研究プロセスを向上させるための AI との協働—

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Abstract

Although ChatGPT was released to the public less than a year ago, such generative AI is already disrupting education. Educators are tasked with helping students use it responsibly. This paper explores using ChatGPT to advise undergraduates writing a thesis in English or Japanese. Although AI has limitations, it can also effectively engage students when applied deliberately. I share experiences incorporating ChatGPT for thesis advising at a Japanese university. I show my students how to use AI to summarize texts, analyze quotes, improve drafts, and ask questions without judgment. The conversational nature of ChatGPT prompted more time on task, comprehension, and agency in learning. Included are some failures of generative AI. And the paper provides tips for helping students to overcome these failures. While not a panacea, AI as a collaborative tool strengthened the thesis writing process. This demonstrates one potential for AI to enhance human teaching and learning, not replace it. More research is needed, but preliminary findings suggest promising futures for AI as a collaborator in higher education.

Introduction

The complex perspectives on AI in higher education exceed the scope of this short paper. Some say that it will improve education, others claim it will degrade it. Another group thinks AI will give teachers more ways to support students while their rivals think it threatens to take away the teacher's job. I think we need to take a breath, realize it is neither panacea nor poison. It is a tool, similar to calculators, which students were once prohibited from using. Ellis, Head of School of Digital Education at Arden University, emphasizes that calculators "allowed students to solve more complicated questions." She continues the thought that "AI may create the spaces for our students to demonstrate their approach to more complicated, nuanced and 'more human' matters" (2023, p. 25). The impact on our students is already evident and will continue in the future. In a debate on the Open to Debate website, Peter Zeihan, a geopolitical strategist, who authored several books, including "The End of the World is Just the Beginning," states that AI will change the way we work, having "the most disruptive and most reinventing impact. There are going to be two kinds of companies at the end of this decade, those fully utilizing AI and those out of business. It's going to be that black and white" (Open to Debate, 2023, 22:56). Banning the use of AI as a tool would be irresponsible for educators, taking this into account. Educators must prepare students for a future world heavily influenced by AI, according to experts. Despite being a new technology, it is being embraced by educators. LaPierre, a Virginiana Specialist Librarian, who writes for the Information Today website, cites a survey of K-12 teachers conducted by Impact Research wherein 72% "agreed with the statement 'ChatGPT is just another example of why we can't keep doing things the old way for schools in the modern world.' Seventy-three percent of the teachers said ChatGPT can help their students learn more at a faster rate" (2023, p. 32). Thus, AI is affecting all sides of education. Accordingly, we are tasked with teaching students how to use AI responsibly. If we do not teach them how to use it, they will find ways to abuse it.

Shortly before classes started in April 2023, I found that the free version of ChatGPT, 3.5 at the time, with a bit of creative prompting, could produce a perfect answer to my Business Communication email homework. The changes I instituted are unrelated to this paper. However, I was advising ten students on their undergraduate thesis—eight writing in English, and two in their original L1 language of Japanese. I decided to teach and learn how to use ChatGPT with them.

When undergraduates can choose their own topics, they will be much more engaged. A graduate or PhD thesis advisor would be an expert in the field and be able to offer advice and properly devised criticisms to help students learn. In the Global Communication Department, we are a hodge-podge of teachers from various fields. This is a strength in offering diversity but a weakness in that we cannot direct all students in their fields of interest. Thus, in the past, it was often difficult for me to give ample guidance to every student. I find generative AI has made it easier for me to advise students on random fields.

A complete overview of my advising method is not possible because it is ever changing, based on the last thing I read, the abilities of individual students and the current machinations of my manic mind. I can state, however, some constants, and readers will find other details below if this introduction inclines them to read on. The bedrock of my method is “process.” Students should not focus on submitting a finished product. This means that they must meet with me regularly and prior to the meeting have chosen at least two quotes with attempts at analyzing those quotes. When students understand my method, they seriously engage in finding quotes, which leads to better research and better writing. Worse than coming with nothing prepared, is coming with two quotes picked out at random seconds before the meeting. This happened with less frequency when I added ChatGPT to the process. Additionally, students drafted better analyses. So, I feel ChatGPT amplified my students’ engagement in research and writing.

Following is a short recounting of the AI-enhanced process. The first section examines some faults in generative AI in this capacity. The next section illustrates how AI can overcome some students’ barriers to learning.

Things Generative AI Fails at and Tips to Circumvent Them

The most nefarious aspect of AI is its lies. Recently, people have been calling the false fabrications of generative AI “hallucinations.” I reject this humorous glossing and call the lies what they are, lies. The nature of these lies was revealed to the lawyer Steven A. Schwartz when the judge overseeing his case found he had presented false legal citations which “Schwartz thought were real, but were actually invented by the artificial intelligence-powered chatbot” (Neumeister, 2023, para. 1). A new precedent has been set for the adage ‘rely but verify’. The incidents extend beyond the courtroom. Weinberger indicates that “internet connectivity makes it far easier to spread lies than to remove them, and the internet’s scale makes it infeasible for humans to

moderate it effectively" (2023, p. 2). Like toothpaste out of a tube, AI-generated lies cannot be put back in, so students must learn to verify for themselves. I illustrated this tendency to lie by having students ask ChatGPT to summarize the book they wrote about their hobby. Students enjoyed reading about books, both fiction and non-fiction, they have may have penned in an alternate universe about basketball or guitars. ChatGPT told one student the book did not exist, but she quickly got around that by typing, "Try to look harder, it is an actual book." ChatGPT apologized and then gave her the summary of the book she never wrote. The students had a great time and naturally saw through the lie. However, to help my students avoid a Schwartz-style mistake, I had my students request academic quotations on a subject of their choice. ChatGPT often presented a quote with reference. Students followed this by searching for the article and quote. In some cases, the article was a complete fabrication. While the article existed in other cases, often with a different author, the quotes were not included. Thus, my students learned they needed to find the articles for themselves. Perhaps my students will not fail "to do adequate background research, relying on dubious or non-existent AI-generated sources" (Graham, 2023, p. 162). So, my first tip would be to use these or similar activities to make sure that your students do not blindly trust ChatGPT.

The very concept of Large Language Model makes this next point a tautology; ChatGPT is a wordsmith. Unfortunately, much like a native speaker who never studied grammar, it cannot explain grammar. It has told me that certain grammatical constructions require a simple past verb when it should be a past participle or confused simple present verbs, infinitives, and gerunds. Thus, students cannot get grammatical instruction when they have trouble understanding something. Which often happens when they use ChatGPT to translate. I have found it far superior to Google translate. So, for my students who want to write their thesis in English, but lack the confidence to do so, I show them how to use it to get L1 quotes into English. First, I tell them to limit the translation to several sentences or, at most, a paragraph. The first translation request produces a well-formed set of sentences. But often the language and grammar are too difficult for the students to understand. The more ambitious students bring the sentence to our advising session, and I help them understand it. I have those students, and the less ambitious, get ChatGPT to produce something they can understand. I want them to read over the thesis later and understand it, giving them the ability to revise and they become more involved with the information. We all fail to remember the sentences we wrote several weeks back. So, if they cannot read them

relatively easily, then they cannot hope to revise them. One way around this was to have ChatGPT rewrite the translated passage in CEFR A1 level English. (Note the capitalization is necessary for the results.) Some students request the rewrite so as a junior high school student could understand. Often, the new attempts are easier to understand but contain words or grammar that is beyond the requested level. However, it was enough to be clear to the student most times. The student conversed with ChatGPT to clarify any unclear points, which will be elaborated on in the next section.

Things Generative AI Usually Get Right and How to Teach Them

I find students are not against learning. Limited time and fear of looking foolish are the two factors contributing to this misconception. The issue of time often stems from a lack of executive skills and proper prioritization, but these are beyond the scope of this paper. They think asking “stupid” questions makes them look stupid. ChatGPT will answer questions, ad infimum, without judgement. I found my students did not feel judged and enjoyed the speed of the exchanges and believed they had saved time. Instead, they spent more time engaged with the materials and gained a deeper understanding. LaPierre was on point when she wrote that ChatGPT “can provide a quick foundation of knowledge on a topic to spur engagement and further inquiry. As such, use of the tool might encourage student agency” (2023, p. 32). Here are some ways my students successfully engaged with ChatGPT and gained more agency in their own education.

I instruct my students to read the conclusion of a book or paper first. That way, they can gauge if it is relevant to their research. Introducing generative AI improved the effectiveness and efficiency of student performance. Whether the research paper they were reading was in the L1 or L2 language, ChatGPT could provide a summary of the conclusion in L1. Then, they could acquire a clear understanding of the conclusion by asking questions. I require direct quotes with analysis rather than summarizing, so students cannot drop these summaries into their papers. Once they found a paper that applied to their thesis, they could read from the start.

In their reading, they highlight sentences they could quote in their thesis. I have them ask ChatGPT to analyze the text by providing the sentence and its surrounding context. Students often discover a nuance they have not noticed. A conversation with ChatGPT about the information often follows this—taking a shape akin to the functional dialogism proposed by Ward. She states that dialogic interactions can enable students to “understand an issue or group of issues from various points of view and

gain insight into one's relationship to those ideas" (1994, p. 171). ChatGPT has access to information from world-wide sources up to 2021—other generative AI have access to more up-to-date sources—so students can get an overview of what others have said related to their specific quote. Numerous times, students have conversations that span over eight pages of text. Next, the student takes the specific quote only and writes their own analysis, focusing on the points mentioned in the quote. Usually, it is an amalgamation of their own thoughts and AI-generated input. However, the points were well thought out most of the time. To reach the point of being able to create a valid analysis takes varied amounts of time based on student abilities. Nevertheless, these are engaged students. In the past, it was difficult to have the time or ability to engage with ten students over disparate topics outside of my field on a weekly basis. Now, I can easily review their saved AI discussions and add my human input, discussing the advantages and disadvantages of the analysis with the student. The most common student error is failing to address all the points in the quote. One student's analysis of the quote was surprising because it focused on the ChatGPT discussion rather than the actual quote.

Once a student completes a section, we have a three-way conversation: student, human advisor (me), and AI advisor, about improving the section. The student and I ask our respective AI advisors, "How would you recommend improving this section of a thesis on TOPIC?" followed by copying and pasting the entire section. We then compare notes and agree or disagree on points to change. Through this process, both of us can think about the topic and thesis while improving that section. The students' previous conversation with AI has made them more knowledgeable about the topic, enabling them to teach me and grasp the concept of analysis writing more quickly than previous students.

I would argue that the most timesaving aspect of ChatGPT is in its ability to create references. It is just a matter of copy the relevant information from the details page of the database hosting the article, such as EBSCOHost for English articles or CiNii for those in Japanese and paste it below the prompt "Please create an APA reference for this:" The response comes in approximately 10 seconds and is usually flawless. The same applies to both books and websites, although gathering the information may involve more effort. I wish I had such a thing when I was writing my theses, but I do not bemoan my students for having it to help them.

Last Word for Now

Overall, I have always seen writing a thesis as a process instead of a desire for a final product. So, when Janey, from eSchool News, states, “ChatGPT may catalyze the return to a ‘process-over-product’ approach” (J. 2023, para. 5), I find it a welcome addition to my method. In fact, I hope that through generative AI, I can improve the process. After all, I must admit that this being the first year I used ChatGPT with my students and since it only became available six months into the year-long process, not every student used it and those who did had varied degrees of success. Some students were still attached to the outdated education model, believing that submitting a stack of pages was sufficient. The blame does not lie with them, as they have been conditioned by 16 years under an education system that prioritized the outcome. This is a direct reflection of Toyama’s pronouncement that technology does not determine results. He states outcomes are “different because of what you each started with. The differences are all about people—who you are, whom you know, and what you’re capable of” (2017, p. 49). My students’ educational expectations are set before they come to me. Nevertheless, both I and the students who used ChatGPT learned much from the experience and I am bringing those lessons forward to my next year of thesis advisees. I can still improve on how to make sure that all my students understand my process-driven goals and become more engaged in research and writing. Thus, I will make better use of generative AI to prove Toyama right on another point in his book—namely that “technology’s primary effect is to amplify human forces. Like a lever, technology amplifies people’s capacities in the direction of their intentions” (Toyama, 2017, p. 29). So, if my students understand my intentions and have improved capabilities from functional dialogism with ChatGPT, I can steer them in a better direction.

References

- Janey, J. (2023, April 11). Adapting to the ChatGPT era in education. *eSchool News*. <https://www.eschoolnews.com/digital-learning/2023/04/11/adapting-to-the-chatgpt-era-education/>
- LaPierre, S. S. (2023). Educators Find Value in ChatGPT. *Computers in Libraries*, 43(7), 31–34.
- Neumeister, L. (2023, June 9). Lawyers blame ChatGPT for tricking them into citing bogus case law. *AP News*. Retrieved from <https://apnews.com/article/artificial->

intelligence-chatgpt-courts-e15023d7e6fdf4f099aa122437dbb59b

Open to Debate. (2023, December 22). Will the Future Be Abundant? - *Open to Debate*.

<https://opentodebate.org/debate/will-the-future-be-abundant-livestream-event/>

Toyama, K. (2017). *Geek Heresy: Rescuing Social Change from the Cult of Technology*.

Public Affairs, New York.

Ward, I. (1994). *Literacy, Ideology, and Dialogue: Towards a Dialogic Pedagogy* (Suny Series, Teacher Empowerment and School Reform). State University of New York Press.