Exploring College Students' Positions in Interaction with ChatGPT

Nuodi Zhang
nz21a@fsu.edu

Jiabei Xu
jxu4@fsu.edu

Zhongyu Wang
zw23@fsu.edu

Vanessa Dennen
vdennen@fsu.edu

Florida State University, USA

Abstract: This study explored how college students relate to and interact with ChatGPT during in-class learning tasks by using positioning theory as the analytical framework. Fifteen college students voluntarily participated in the study and completed the learning task through interaction with ChatGPT. The results demonstrated that college students interacted with ChatGPT in distinct ways. Additionally, they position ChatGPT as distinct and changing roles as interaction develops, including Information Provider (Search Engine, Individualized Consultant), Human Conversational Partner, and a Computer-based Tool (Digital Servant, Intelligent Engine). The findings illuminate the potential of leveraging ChatGPT as a learning tool in higher education and the need to improve students' AI literacy.

Introduction

Artificial intelligence (AI) has emerged as a promising tool in the rapidly evolving landscape of educational technology. As a prominent example of AI-driven tools, ChatGPT, with its ability to generate human-like interactions, has brought new opportunities to support learning and teaching in higher education (Dempere et al., 2023; Rudolph et al., 2023). ChatGPT has the potential to offer personalized learning experiences to students by generating content tailored to their needs, as well as providing on-demand and real-time support to students who are navigating challenging learning situations independently (Fuchs, 2023). In other words, ChatGPT can help college students with their homework (e.g., writing essays and generating novel ideas) and other learning activities in their independent knowledge pursuits as they engage in learning dialogues with ChatGPT.

Functioning as an interactive entity, ChatGPT communicates, responds, and adapts to students' diverse inputs, thus playing important roles in the learning process. These roles, however, are not static or predefined; rather, they are dynamic, evolving as the interaction develops between student and tool (Go & Sundar, 2019). As ChatGPT is expanding rapidly in higher education and college-level students have become primary ChatGPT users (Crompton & Burke, 2023; Sullivan et al., 2023), understanding the roles and dynamics ChatGPT creates within the learning environment becomes increasingly important.

This study aims to explore how college students' relate to ChatGPT during an in-class learning task. It draws upon positioning theory to examine the dynamic nature of a student's discursive interactions with ChatGPT (Davies & Harré, 1990; Dennen, 2011). Positioning theory recognizes the fluidity of roles, which are constantly negotiated and redefined through social interactions, and helps explore the expectations of each agent within an interaction. This theory allows us to explore how students employ different queries and prompts as they reposition themselves and ChatGPT during a learning interaction. By examining the discursive positions students ascribe to ChatGPT, we can gain valuable insights into the nature of ChatGPT-student interactions and their implications for learning outcomes in higher education.

This study is guided by two research questions:

1) What types of interaction do students use to complete in-class learning activities with ChatGPT?
2) How do these interactions differ based how the student positions themselves and ChatGPT?

Methods

This research employed a descriptive, multi-cases study approach (Yin, 2017) to investigate college students' interactions and positions when using ChatGPT to solve an in-class learning task.

Participants

Fifteen college students from a research-intensive public university in the Southeastern U.S. voluntarily participated in the study. The students were preservice teachers enrolled in an undergraduate educational technology course. Among the fifteen participants, ten were identified as female, four were male, and one was non-binary. Five students had experience using ChatGPT while ten did not.

Procedure, Data Collection, and Data analysis

Students attended the 1-hour session in person as a class. At the beginning of the session, the students were introduced to the task where they needed to develop a lesson plan using ChatGPT. The students set up an OpenAI account and were given a lesson planning task.

They were given time to engage in this task using ChatGPT. At the conclusion of the task, students completed a brief survey and shared the link to their ChatGPT transcripts. These transcripts are the focus of this analysis.

To gain a fine-grained insights into the dynamics of interaction and positioning, we adopted a hybrid data analysis approach which included both deductive and inductive analysis processes. We first developed several codes adapted from Han and their colleagues' coding framework (2022). Then we developed other codes from the data. Three researchers coded the same 50% of the data and discussed the similarities and differences. We resolved all the discrepancies and finalized the coding framework for the interaction transcripts (Table 1).

Table 1. Codebook for Interaction Acts

Categories	#	Codes	Descriptions
Initial	A	Complete_imperative	Initiate an imperative in a complete sentence form. E.g., "Give me 3 ideas about ..."
	B	Complete_interactive statement	Initiate an interactive statement in a complete sentence form. E.g., "I would like to ..."
	C	Question	Inquiry as a question in a complete sentence form.
	D	Incomplete*	Inquiry in an incomplete sentence form. E.g., "lesson plan."
	E	Provide context	Provide expectations, requirements, or examples that guide ChatGPT.
Following prompts	F	Add details	Revise initial prompts to add details. E.g., from "English lesson plan" to "2nd grade English lesson plan"
	G	Decompose	Break down initial prompt into specific ones. E.g., from "new year resolutions" to "improve time management skill"
	H	Evaluate/Feedback	Evaluate ChatGPT input in various ways, such as commenting on its errors. E.g. "all of these sound great!"
	I	Follow up	Ask questions or comment on specific aspects of ChatGPT response. E.g., "tell me more about ..."
	J	Appreciation*	Express appreciation to ChatGPT's input.

Note. * indicates the codes adapted from Han et al., (2023)

Results

Ways of interaction

The number of queries students had with ChatGPT varied. Overall, they had 48 queries with ChatGPT (M = 3.43), with six students having only one interaction and eight having multiple queries (from 2 to 11). Regarding the linguistic forms of the queries, the two most frequently adopted were Question (n = 23) and Interactive statement (n = 17). Fewer participants crafted queries as Imperative (n = 7) and Incomplete (n=8). As for the following prompts, Follow up was most adopted to respond to or further pursue ChatGPT's input (n = 22). Only one student expressed appreciation to ChatGPT's response. Around half of all queries provided context for more targeted output (n = 23). Students' approaches to completing the lesson-plan task vary. Some students, especially those with no experience with ChatGPT, explored its functionality and usability first before embarking on the task. For example, S1's interaction covered three different topics ranging from outdoor activities for her dog to the training plan for a marathon. Moreover, some students tended to provide rich context in their initial prompts and ask follow-up questions. In contrast, some students asked queries with increasing details. For example, S13 first typed in "water cycle", then "water cycle activities for kindergarten."

Role Attributions

In most cases, students viewed ChatGPT as an Information Provider, which can generate new ideas or details on specific topics. Some students viewed ChatGPT as a Search Engine (n=7), searching for easy-to-find information using incomplete sentences (i.e., a phrase), and most of them had only one interaction with ChatGPT (n = 4). For example, S12's query was as simple as "first grade English lesson." Students also positioned ChatGPT as an Individualized Consultant, who tailors the content to meet their specific needs. An example comes from S7, "Lesson plan targeted to a 2nd audience who has some general background about the various forms of water, on the water cycle with different activities and hands-on demonstrations. About 45 min long". The student provided rich context for the lesson plan she wanted to formulate such as target students' prior knowledge. Ten participants (71.43%) provided personalized queries to assign this role.

Moreover, some students tended to position ChatGPT as a Human Conversational Partner (n = 8) and showed empathy and politeness in their language use. For example, one student directly addressed ChatGPT as a male human when expressed appreciation for ChatGPT's output, "Thanks, bro." Some queries positioned ChatGPT as a tool, a machine, or a computer, frequently using declarative sentences in an imperative way with action verbs like "give," and "construct." They would say, "Give me 3 ideas about ..." Here students positioned ChatGPT as a Digital Servant and they are the commanders to give orders. Another type of tool identified was Intelligent Engine, where they used both phrases and detailed queries for feedback. As shown in S7's first query, "lesson plan targeted to a 2nd audience ..." Almost all the students positioned ChatGPT as either a Digital Servant or an Intelligent Engine (n = 12, 85.71%).

Students' positioning of ChatGPT was fluid, shifting across and between queries. On average, they assigned ChatGPT around two distinct roles throughout the interaction (M= 1.86). Participants exhibited different patterns of positioning. Some adopted one role as they only had one exchange with ChatGPT. When students had more than one query, their position ascriptions tended to vary. For example, S1 had seven queries with ChatGPT, she first explored two different topics by positioning ChatGPT as an Information Provider (e.g., What are five fun and creative activities to do indoors with my dog who has a lot of energy?). This position changed to a Servant with multiple direct requests for action, "Make me a training plan to run a 5K." Interestingly, she then treated ChatGPT as both a Servant and a Search Engine by testing its functionality, "show me the Italian alphabet." She ended the query from a more collaborative and human-like stance, "Can you create a training plan for me to run a 10K?" Another example was S2, who had a total of 11 queries, and 10 of them were human-like interactions (91%). She frequently evaluated and praised ChatGPT's output like conversing with a friend or colleague.

Discussion and Conclusion

This study explored how college students relate to ChatGPT in solving in-class learning tasks. The findings revealed a general trend of limited exchanges between students with ChatGPT, with around half of the participants having only one interaction with the tool. Additionally, students demonstrated different ways of interactions. Some students explored different topics before embarking on the learning task whereas others engaged directly with the task. Some students provided rich detail in the first prompt while others asked a series of queries with increasing details. These differences can be attributed to individual differences among the participants, such as their prior experience and comfort levels with AI technology (Brandtzaeg & Følstad, 2017). This highlights the importance of considering individual differences when integrating AI tools into higher education settings. The findings also suggest that college students need to develop adequate AI literacy. Mastery of AI tools like ChatGPT enables them to effectively exploit the potential of the technology and maximize their learning outcomes (Fui-Hoon Nah et al., 2023).

Leveraging positioning theory as the analytical framework, it was revealed that ChatGPT is positioned differently by students, with most of them positioning it as an Information Provider (Search Engine, Individualized Consultant). It aligns with the primary function of AI language models as information-generating tools (Brown et al., 2020). Interestingly, some students position ChatGPT as a Human Conversational Partner, showing empathy and politeness in their language use and a tendency to anthropomorphize AI technologies. In addition, students' positioning towards ChatGPT may shift during the interaction. This could be due to the adaptive and personalized nature of ChatGPT, which can cater to diverse user needs (Fui-Hoon Nah et al., 2023). Collectively, the findings contribute to our understanding of how college students relate to and position ChatGPT in solving learning problems. The findings highlight the potential of utilizing ChatGPT as a learning tool in higher education and the need to improve college students' AI literacy.

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