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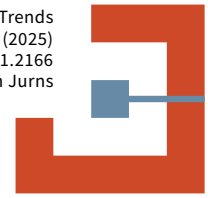

Castledown

Generating discussion: Using ChatGPT to foster critical thinking skills

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Cultivating critical thinking (CT) skills has become standard practice in education in Japan at the behest of many institutes and Japan's Ministry of Education, Culture, Sports, Science, and Technology. However, developments in generative artificial intelligence (AI) have left many educators to freshly consider how to encourage creativity and critical thinking in a world with such powerful and readily available AI like ChatGPT. Nevertheless, by exposing students to the realities of ChatGPT and educating them on how it can be used, AI can foster CT skills. This article outlines the procedure, impressions, and considerations of a classroom practice in which English-language students analyzed discussion questions created by ChatGPT. Students were required to use higher-order thinking skills by considering the significance, role, and qualities of thought-provoking discussion questions and evaluating generated questions against these criteria. Beyond encouraging CT, the activity highlighted its necessity when adopting new, exciting technology.

Keywords: critical thinking, discussion, artificial intelligence, ChatGPT

Introduction

Developments in generative AI and large language models (LLM) have put it squarely in the public eye, and many in the academic community are left to wonder what this means for education and students. When ChatGPT and other similar programs can so easily complete the types of tasks and assignments that have been the backbone of many curricula, what can teachers do, and how can they encourage creativity, integrity, and critical thinking (CT)? When using LLMs, many educators may find that while it is both capable and useful, the content it creates still needs a critical eye. However, students may not immediately have the same critique, as they are still in the process of developing CT skills, a goal of Japan's Ministry of Education, Culture, Sports, Science, and Technology (2023)(Suzuki, 2018). With this goal in mind, this classroom practice utilizes ChatGPT as a tool to allow students to look at the AI in a more critical light as well as help foster CT (Chang et al., 2021).

The American Philosophical Association's Delphi report (Facione, 1990) described CT as "…purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (p. 3). In simpler terms, CT could also be described as using higher-order thinking (Anderson & Krathwohl, 2001) to analyze and evaluate information, create opinions, and inform decisions (Jance van Rensburg & Rauscher, 2021). Bloom's revised taxonomy also describes the CT tier using language describing higher-order thinking (Anderson & Krathwohl, 2001). CT is ultimately based on the action of using higher-order thinking and can be defined as using one's and others' knowledge and experience to form opinions, analyze materials, and develop understanding.

One common way to encourage CT in a second-language class is regularly incorporating small-group discussions in the classroom. Discussions among peers are engaging and can provide a space for students to speak more openly and honestly, leading them to understand their own thoughts better and improve communication (Halvorsen, 2005; Loveland, 2019; Wessel, 2015). However, participating in or leading a discussion may not come naturally to students, and may require training (Muller, 2000; Tsuei, 2014). Discussion does not inherently provide opportunities for CT, and students are likely to need instruction and scaffolding to foster CT skills (Davies, 2019; Trosset, 2010). Whether students are explicitly taught or have a natural disposition for CT (Jance van Rensburg & Rauscher, 2022), it is particularly important in class discussions, as well as when navigating media or utilizing technology, all of which are integral parts of this practice.

Procedure

To address difficulties in generating questions that were thought-provoking and sustained meaningful discussion, a multi-step activity was developed to better prepare students in crafting effective discussions. The aim of the practice was to enhance students' CT by analyzing AI-generated questions (in this case, ChatGPT) and creating their own. This activity was designed for sophomores at a Japanese university in an English media literacy course that focused on giving students the tools to navigate and analyze media. To fulfill the course requirements, students regularly lead small-group extended interactions using discussion questions they have created.

After the initial extended interaction of the semester, the instructor observed students struggling to fulfill the time requirement of 10 minutes. Furthermore, in conversations with students, they shared that they had difficulty creating discussion questions, particularly ones that led to extensive and meaningful conversation. Although there was some scaffolding on what to consider while writing a discussion question, it was clear that the students desired and would benefit from further training in creating discussion questions.

The lesson began with a small-group discussion in which students shared their ideas on the role and purpose of discussions themselves, and why question creation is a part of the assignment. Although familiar with the practice, students were encouraged to reflect on discussion questions' use and what makes them effective.

As this was a lesson encouraging engagement with CT, it was particularly important that the students thought about the "why" of discussion questions to establish a foundation before tackling the "how" of question creation. This step prompted the students to view questions not as routine tasks but as tools for deeper engagement and communication.

Small groups then worked together through brainstorming and researching to determine the key features of a well-done discussion question. The groups shared and compared ideas with a prepared list (i.e. clear, open-ended, engaging, and thought-provoking; promoting various ideas; and using higher-order thinking skills), setting the criteria of good discussion questions. The final point, "using higher-order thinking skills", was a foundation for introducing Bloom's revised taxonomy (Anderson & Krathwohl, 2001). This proved a useful tool for the students, as charts that lay out the taxonomy's categories typically use familiar actions to describe higher- and lower-order thinking. These action verbs gave the students concrete language for identifying the levels of cognitive demand in the discussion questions and for use later in the activity.

Following the class discussion, the students were arranged so there was at least one student with a ChatGPT account in each group. The groups were given one of five short articles written in simple English on a variety of current topics. The students read their assigned articles individually and worked in their small groups to create a short summary, with the instructor circulating to clarify vocabulary and the texts when necessary. After a brief demonstration, the groups asked ChatGPT to create five discussion questions from the article. The student groups scrutinized the discussion questions generated and evaluated their viability against the criteria discussed earlier in class. The groups selected the strongest and weakest questions generated and explained their reasoning.

After articles were read and the questions were created and evaluated, students were tasked with designing their own original discussion question for their respective articles. Drawing on both the analysis exercise and the criteria discussed in class, they aimed to produce questions that demonstrated higher-order thinking and could help them complete an extended interaction. This once again guided the students to engage in CT and higher-order thinking as they moved from critique to creation.

Impressions

Positive impressions

One positive impact of the activity was a pique in student interest. With many institutions restricting the use of LLMs, students seemed excited about being able to explore AI in a sanctioned activity. Although ChatGPT was not strictly necessary for question analysis, its use made what could have been a mundane activity exciting and new. It also fostered CT by having students consider the possible benefits and shortcomings of such seemingly helpful technology.

This practice was designed to achieve the practical goal of building students' skills in creating discussion questions. When students were allowed to create one discussion question using ChatGPT, the generated questions they included were strong,

anecdotally demonstrating independent CT, at least in this context. After the activity, students had mixed views about creating discussion questions. Many felt that they had a better understanding of how to generate good questions, though there were also some who felt daunted by the additional criteria to consider. Students' discouragement is not necessarily a failure. Although writing discussion questions continued to prove challenging for some, it gave them a tool for autonomous CT.

Considerations

Though the instructor and participants had an overall positive impression of the practice, it was not without its challenges. One aspect to consider is that students may not be comfortable interacting with AI or LLMs. In this case, a teacher could have pre-prepared the five generated discussion questions for students to analyze.

While expected, students struggled to identify strong and weak discussion questions, but they struggled less to identify the issues when shown what statements were weak. More scaffolding, such as familiarizing students with the vocabulary commonly used in discussion questions or reviewing helpful grammar like modals, could help the groups better navigate the nuanced or subtle language in the generated questions. Additionally, analyzing a few "strong" and "weak' samples could have given them a better foundation for analyzing ChatGPT's questions.

In the original activity, lack of time meant students did not have the opportunity to use their questions in live discussions during this lesson. However, in future iterations, the activity could be extended across two class periods. In the second session, the students would be arranged so that each group included members familiar with different articles, where they would conduct discussions using their original questions. Students would then meet with their original group to reflect on their questions, comparing them with the AI-generated questions as well as those created by their classmates. This additional step would further emphasize the value of thoughtful question design and offer a practical context for evaluating success.

Conclusion

As institutes and teachers try to enforce academic integrity and encourage creativity, it is easy to give blanket restrictions on the use of predictive text generators of any kind. While these constraints may aid plagiarism prevention, they may not help students navigate new and future technologies. As with those before them, the younger generations seem ready and willing to adopt new technology. And, like the generations before them, they are more than capable of thinking critically, not just about AI but also about the world around them. While some may have a natural propensity towards CT, it is also a learned skill and one that is especially important when understanding the value and implications of technology in everyday life. This is now a ChatGPT world. It is vital, therefore, that instructors understand what it is and how it can be used as a tool and to pass that on to the next generation of critical thinkers.

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