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Accelerating Students' Critical Thinking through AI and Supportive Digital Platforms

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Abstract: The aim of this research is to elaborate on the role of AI and supportive digital platforms to enhance students' critical thinking. We conducted this qualitative research from May to June 2024 at a private university in West Java. Interviews and observation became our instruments to collect the data. Moreover, a descriptive qualitative approach was utilized during the data analysis phase. The findings showed that teacher's instruction on how to use AI and digital platforms during students' independent learning could help students to level up their critical thinking in completing the task. It also helped the students to be able to obey academic ethical concerns during their task completion. The use of AI and digital platforms in students' learning process gave beneficial values for the students. However, the teachers' role in explaining how to use these tools to elaborate students' ideas is significantly important to prevent students from breaking academic ethical concerns, like plagiarism and failure in developing their original ideas.

Keywords: AI, Independent learning, Ethical concerns, Learning media.

Introduction

The use of artificial intelligence (AI) in the world of education is something that can no longer be avoided. The integration of the use of AI in education is part of the transformation of the traditional learning environment that can open up various opportunities for both teachers and students (read also: An et al., 2024; Xiao et al., 2024; Yim, 2024). The presence of AI can also help the society to build inclusive education where various AI products can be used to facilitate the learning process of students and improve their skills (Anders, 2024; Yilmaz & Yilmaz, 2023). Kaur et al. (2024) argued that the use of AI in education can help students personalize their learning pathways to fulfill their needs. This adaptive learning system may tailor learning materials and students' needs accordingly which further can help them to learn effectively (Alkan, 2024). We can say that AI offers a promising opportunity to help students maximize their potential inclusively.

Even though AI offers some benefits for students, teachers should be aware of its negative effects, such as bias, misinformation, plagiarism, and other ethical violations. Before allowing their students to use AI as their learning assistant, teachers should elaborate clearly on how to use AI correctly without humiliating ethical concerns in academic work. Furthermore, teachers need to anticipate students' dependence on AI which may lead to being irresponsible towards the academic ethical concerns they need to obey. However, teachers can still utilize AI and digital platforms to provoke students' critical thinking and organize their ideas. Mayasari et al. (2024) stated that AI helped students to foster their higher-order thinking skills especially when it was combined with customized curricula. It means that educators need to set limitations and boundaries to what extent students may use Generative AI as one of

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the supporting learning media in the classroom settings.

Most AI, like ChatGPT, was developed by training LLM (Large Language Model) to make them able to respond to the given prompt. In general, Searle (1980) categorized AI into weak AI and strong AI. Weak AI is defined as powerful tools to ease humans in formulating or testing a hypothesis. On the other hand, strong AI is a programmed tool that can think and act like a human being. Most AI that we have today is weak AI since it can only function when humans give some prompt and train them. ChatGPT as one of the most frequently used tools can be categorized as weak AI. It has powerful functions to foster the human's way of thinking, but it has no power yet to act like a human. In educational settings, ChatGPT offers many benefits to help its users map their thoughts since this tool contains much information and can be personally trained to support users' needs.

Previous studies showed that the integration of generative AI in writing enhanced the creativity and productivity of the users. Wang (2024) proved that AI tools significantly help develop learners' cognitive and sociocultural dynamics. AI tools are best to facilitate scaffolding teaching techniques since learners can independently initiate and control how these tools may help them enhance their learning paths. On the other hand, Guo et al. (2024) and Wiboolyasarin et al. (2024) examined how AI assisted students in improving their writing quality by providing feedback for students' writing products. These arguments showed that AI has much potential to support students' personalized learning, especially in writing classes. Because AI and digital platforms were learning tools that were commonly used in higher education, we were interested in investigating how far these learning tools could help lecturers boost students' critical thinking in writing tasks.

This research studied how AI and digital platforms were utilized in students' learning processes to foster their critical thinking. We focused on researching how these tools helped students to work on their persuasive essays. The main aim of this research is to investigate how AI and supportive digital platforms can be managed to develop students' critical thinking.

Materials and Methods

Study area

The use of AI and digital platforms in educational settings is undeniable amidst the trend of hybrid and blended learning in higher education. This educational research has been conducted under the qualitative research method aimed to investigate how AI and digital platforms were used to boost students' critical thinking in completing their writing projects. Creswell (2002:17) elaborated that qualitative research is a method that is suitable for exploring problems in a particular phenomenon and to discover the understanding of the happening phenomenon. In this argument, we investigated how the teachers used AI and digital tools in their classroom design. We want to dig deeper and explore how far this design affects students' critical thinking. This research has been conducted in a private university located in West Java. We administered a non-probability sampling technique in this research. Cohen et al. (2007:102) pointed out that non-probability samples allowed researchers to select the research samples by targeting a particular group to represent the samples needed. Specifically, we use a purposive sampling technique in this research. Cohen et al. (2007:103) added that purposive sampling is a kind of sampling technique where the researchers choose the research samples based on some criteria that they set to fulfill specific research needs. In the case of this research, we chose 3 English lecturers as the research participants. We decided to choose these 3 lecturers because they were actively using generative AI and digital platforms to support their teaching classes.

Procedures

After deciding the place of the research and research sample, we designed procedural steps to collect the data. We managed to use several instruments to collect the data. Creswell (2002:16) gave an assertive notion that qualitative research should be started by identifying the research

problem for further we decided types of data collection procedures to explore the phenomenon. We conducted 2 data collection procedures to gather the qualitative data. These procedures can be seen in the following roadmap:

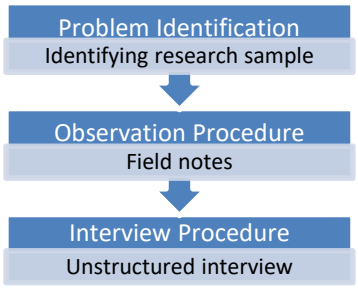

Figure 1. The data collection procedures

We joined three classes where these three English lecturers taught English at a higher education level. We came to the classes three times for each class they taught while preparing the notes to investigate the teaching process. After completing the observation procedures, we administered interview procedures to get more comprehensive data in order to reach the aim of this study. We invited the teachers to have an unstructured interview where the questions were given based on our data in the observation phase.

Data analysis

In this stage, we analyzed the data with a descriptive qualitative approach. Creswell (2002:19) explained that data analysis in qualitative research was commonly processed by doing text analysis or interpretation. We got the data from field notes and interview transcription. In analyzing the data, we interpreted the data and analyzed them descriptively.

Results and Discussion

Results

The first stage in data collection was carried out by conducting the observation procedure. The observation was carried out for 3 consecutive weeks. We took turns following the lectures carried out by three lecturers in three different classes. We sat in each classroom to observe how our research participants used AIs and digital platforms in their writing classes. They conducted 3 meetings in a row to assess students' critical thinking in delivering their ideas through persuasive essays. The following is a list of AI and digital platforms that are permitted to be used in writing classes by the third lecturer in the research sample:

Table 1. Generative AIs and supportive digital platforms used in writing class.

Types of Tools	Function
ChatGPT	Outlining the persuasive essay, developing ideas, and structuring the essay
Quillbot/Grammarly	Editing and grammar-checking
Mendeley/ Zotero	Managing references
Statista	Finding statistical data to develop arguments
ScienceDirect/Google Scolar/Etc.	Finding reading sources

At the first meeting, each lecturer delivered the materials in the classroom discussing persuasive essays, outlines for persuasive essays, and AIs or supportive digital platforms for writing. Each lecturer explained the generic structure of a persuasive essay. They also handed an outline prepared to write a persuasive essay. More importantly, they also explained how the students can manage using AI and other digital platforms to support their writing. They elaborated on how far the students could go with the tools without breaking the ethical concerns of using these tools in academic writing. Here are the classroom activities conducted by the teachers using AI and digital platforms as learning media:

Table 2. Classroom activities and supporting tools used during the lectures.

Meeting	Activities	Supporting tools/platforms
First meeting	Pre-writing activities: - Article reading and formulating the topic - Outlining essay - Searching supporting data in Statista	- ScienceDirect/ Google Scholar - ChatGPT - Statista
Second meeting	Essay writing - Transforming outline into paragraphs - Inserting references - Editing and grammar-checking	- Mendeley/Zotero - Quillbot/Grammarly
Third meeting	Evaluation and feedback by lecturers	- ZeroGPT and Plagiarism Checker

The above table shows activities in each classroom during our observation phase. At the first meeting, the lecturers guided the students on how to use generative AI and digital platforms to prepare their writing. The lecturers encouraged the students to find interesting topics from ScienceDirect, Google Scholar, or similar platforms. After reading some articles, the students were asked to develop their outline to write a persuasive essay. While crafting their outlines, students were also asked to find facts or data from Statista that later should be used to develop their opinions in their essays. At the second meeting, students started to write their essays based on the outlines and data they already prepared at the preceding meeting. Students were allowed to manage their references in writing the essays by using Mendeley or Zotero. On the other hand, the lecturers also allowed the students to edit their writing by using Quillbot or Grammarly as well as to check the plagiarism. At the last meeting of the observation phase, the lecturers, who are also the research participants, gave the evaluation and feedback of students' work. The lecturers used ZeroGPT and plagiarism checker to evaluate whether the students did not obey the ethical concerns in writing academic essays. Based on the observation at the third meeting, approximately 85% of students could complete the tasks with quite satisfactory results.

After observing the teaching and learning process, we interviewed three lecturers to investigate how they managed the generative AI and digital platforms to support their teaching activities in the classroom. Here are some points that we figured out while doing the interview.

The Use of AI and Students' Critical Thinking

We interviewed three English lecturers who taught English as a requisite course. We asked each lecturer about why they allowed students to use generative AI in writing classes and how it might help students develop their critical thinking. They responded to the questions voluntarily and explained that they set particular regulations on the use of AI for students' personalized learning process. Students are only allowed to use AI to develop their thinking framework, not to produce sentences that later would be written in their essays. As identified in the observation phase, during the interview the lecturer explained that generative AI, like ChatGPT, could only be used during the outlining phase to design the writing framework. Before using this AI, students have previously read some articles to find the writing topic, therefore, they might use AI only to develop the details or to organize their ideas. During the writing process, they were no longer allowed to use generative AI, like ChatGPT. The lecturers encouraged them to create their sentences to develop the essays. Furthermore, they emphasized that students needed to build their arguments or opinions in structuring each line of their persuasive essays.

Continuously, students were allowed to use Mendeley or Zotero as a reference manager and Quillbot or Grammarly as a writing editor. In this stage, students were required to develop their arguments based on information, data, and facts

they found in Statista and ScienceDirect or Google Scholar. The lecturers emphasized that the grading criteria were set up based on how clear their arguments were and how sharply they elaborated on the topic. Shortly, the scoring rubric was prepared to measure students' critical thinking. AIs and digital platforms here were only used as supportive learning tools. Students with excellent critical thinking could produce satisfactory persuasive text by using the given learning platforms.

AI and Writing Ethics

Ethical concerns in academic writing are the most prominent matters that should be noticed and obeyed by scholars. Regarding this case, we investigated how the lecturers managed their classes to divine that the students could understand the ethical concerns of using AI to complete their tasks. To avoid cheating in writing, lecturers emphasize to students that ethical violations such as the use of AI to produce sentences or paragraphs, data bias, and plagiarism will not be tolerated. In other words, students are given one chance to improve their writing if there is a violation of academic ethics. To check for possible ethical violations, lecturers use platforms such as ZeroGPT and plagiarism checkers. The similarity rate of student writing must not exceed 10%.

Discussion

Despite having some shortcomings, AI also has several advantages that scholars can take us of. Combined with digital learning platforms, AI can help its user organize their thoughts, especially in writing classes. The findings elaborated above showed similar patterns to the previous research (Liu et al., 2024; Tran, 2024; C. Wang, 2024). Generative AI may make a positive contribution to the writers. Students with good critical thinking have a good digital literacy so they can use AI and digital platforms critically. They are aware that they cannot completely rely on generative AI since information provided in AI is not always reliable; bias of information may happen, therefore, they still need to seek more reliable information from other digital platforms that provide more reliable data and facts. The observation phases of this research showed that AI was quite helpful for students to organize their ideas, however, students could not 100% rely on AI to finish their writing project.

In some cases, generative AI can considerably provide writing feedback that may assist students in self-evaluating their writing before submitting the writing products to their lecturers (Rad et al., 2023; Wiboolyasarin et al., 2024; Wu, 2024). However, our research participants primarily gave constructive feedback to the students of the three observed classes mostly in a traditional way. They commented on how students constructed the persuasive cues and elaborated their arguments critically after reading the essays one at a time. Partially, they managed using ZeroGPT and plagiarism checkers to ensure that students produced their sentences without using generative language produced by AI. By making these efforts, the lecturers want to assess students' critical thinking and integrity after the lecturers facilitated the students with digital literacy to support their autonomous learning.

Under the guidance of the lecturers, the use of generative AI like ChatGPT may offer some beneficial help to assist students during task completion. Educators and students should be aware of some caution and ethical concerns in the use of AI or other digital platforms. Al-Zahrani (2024) revealed some drawbacks of the excessive use of AI that need to be addressed. The users should notice that generative AIs were built from LLM that contained texts from various sources. Thus, each response from the given prompt should be double-checked to ensure the logic and reliability od each response given. Moreover, teacher professional development and creativity in delivering instructions played an important role in minimizing the negative effects of AI (Al-Zahrani, 2024). In line with this topic, Bouteraa et al. (2024) stated that students' integrity in using AI could moderate complex reciprocity between consideration of ethical concerns and technological adoption in education settings.

The users of generative AI, like ChatGPT, should understand that bias, misinformation, unreliable statements, and so on are possibly

produced by generated responses given by this AI. Therefore, using generative AI that collaborated with other academic digital platforms such as Google Scholar, Statista, etc., would maximize the reliability of information to further develop opinions in persuasive essays. In the case of this research, the lecturers had made good decision by combining AI and some other digital platforms as learning media to support the learning activities. The lecturers also gave clear instruction so the students had good cautions and awareness in using the tools and following the academic ethical concerns.

Conclusions

The use of Artificial Intelligence (AI) in educational settings may offer benefits and drawbacks, both for the teachers and students. The findings of this study showed how lecturers could collaborate with generative AIs, like ChatGPT, and other digital platforms as learning media to assist students in accelerating their critical thinking. With a good understanding of digital literacy, academic integrity, and ethical concerns, both parties can minimize the drawbacks caused by the excessive use of AI. The classroom teachers need to give clear instructions to the students when they allow their students to use AI as the learning assistant. They need to explain the limitations and cautions of the negative sides of AIs to the students to prevent academic violations. One notion that we should keep in mind is that the AI that we have today is not a type of strong AI. Having a good awareness of its drawbacks is crucial, especially for scholars.

Conflict of Interest

The authors declare that there are no conflicts of interest concerning the publication of this article.

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