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Students' experiences using ai as a learning assistant in online education: A phenomenological study

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ABSTRACT
Background: The rapid development of Artificial Intelligence has reshaped online learning environments by offering instant explanations, personalized support, and automated feedback. Although AI tools are increasingly integrated into higher education, limited research has examined students' subjective experiences, especially within fully online learning contexts where dependence on digital tools is higher.
Aims: This study aims to explore students' lived experiences in using AI as a learning assistant during online education and to identify the benefits, challenges, and ethical concerns arising from this interaction.
Methods: A qualitative phenomenological design was employed to capture the meaning behind students' experiences. Participants were undergraduate students who had used AI tools for at least three months. Data were collected through semi-structured online interviews and analyzed using Interpretative Phenomenological Analysis to identify key themes.
Result: The study revealed four major themes. Students perceive AI as a practical and supportive learning companion that enhances comprehension and reduces learning anxiety. However, limitations related to inaccurate information required students to verify AI outputs and develop stronger digital literacy. AI also influences self-regulation by helping students plan and monitor their learning, although concerns regarding overreliance were noted. Ethical uncertainties about plagiarism and unclear institutional guidelines further shaped students' experiences.
Conclusion: AI has significant potential to enrich online learning when used thoughtfully and responsibly. To maximize benefits and reduce risks, institutions should provide clear policies, strengthen students' digital literacy, and offer ethical guidance for AI use in academic tasks.

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INTRODUCTION

The rapid development of *Artificial Intelligence* (AI) has brought significant changes to the implementation of online learning in higher education. The presence of technologies such as chatbots, virtual tutors, and automated feedback systems has created a more adaptive and efficient learning experience that responds to student needs in real time. Various studies report that AI has the ability to improve conceptual understanding, assist with assignment completion, and provide rapid feedback, reducing the limitations of direct interaction between students and lecturers in online learning (Chen et al., 2020; Jin et al., 2023; Onesi-Ozigagun et al., 2024). This change demonstrates that AI not only enriches digital learning environments but also contributes significantly to facilitating students' independent learning processes.

Students' reliance on AI technology is increasing as the complexity of online learning demands self-regulation, time management, and effective learning strategies. AI is seen as capable of providing personalized learning experiences tailored to each student's needs and level of understanding through automated recommendations, tiered explanations, and structured problem-solving steps (Fitria, 2021; Li, 2024). In this context, AI serves as more than just a tool, as it plays an integral role in the learning decision-making process, strengthening motivation, and providing digital scaffolding during students' academic activities. However, while much research focuses on the technical advantages of AI and its

impact on learning outcomes, aspects such as students' emotional experiences, perceptions of the technology's reliability, and how students interact and construct meaning while using AI remain underexplored (Abdelhalim & Alsehibany, 2025; Kadaruddin, 2023; Kuleto et al., 2021).

Furthermore, most previous research has been conducted in the context of face-to-face or blended learning, thus failing to capture the dynamics of AI use in a fully online learning environment. However, online learning presents unique challenges such as limited in-person guidance, the risk of learning isolation, and the need for stronger independent learning strategies. In this context, the role of AI becomes even more significant, yet students' experiences utilizing AI in online learning have not been thoroughly studied. Several researchers, such as Zawacki-Richter et al., (2019) and Kadaruddin, (2023) emphasized that understanding student perceptions and experiences is crucial to ensuring AI integration can optimally support learning interactions.

Other challenges arise in the form of issues regarding the accuracy of AI-generated information, potential technological dependency, and ethical dilemmas such as plagiarism, originality of work, and unclear boundaries regarding the use of AI in academic assignments. While some research has addressed these issues, most remains conceptual and does not reflect students' actual experiences navigating these uncertainties (Abbas et al., 2023; Akgun & Greenhow, 2022; Sun et al., 2021). This situation creates a need to explore how students actually experience, assess, and respond to the risks and benefits of using AI in their learning activities.

From a methodological perspective, research on AI in education is still dominated by quantitative approaches, making it less able to capture the depth of students' subjective experiences. A phenomenological approach is considered more appropriate for exploring students' meanings, interpretations, and reflections on the use of AI in learning because it can reveal emotional, cognitive, and social aspects more holistically (Nguyen et al., 2023; Zadorina et al., 2024). Thus, qualitative research can provide a deeper understanding of how students interpret their interactions with AI as part of the online learning experience.

Based on these various reviews, several research gaps emerge that need to be addressed. First, there is a lack of studies exploring students' subjective experiences in using AI as a learning assistant. Second, there is limited research specifically focusing on the use of AI in fully online learning. Third, challenges related to information accuracy, technological dependency, and ethical issues are still rarely discussed through empirical approaches based on student experiences. Fourth, a phenomenological approach is rarely used in AI research, despite its great potential for uncovering the meaning of learning experiences in depth. Therefore, this study aims to explore students' experiences in using AI as a learning assistant in online learning and identify the benefits, challenges, and meanings they construct during their interactions with this technology.

METHOD

This study employed a qualitative approach with a phenomenological design, aiming to explore in-depth students' experiences using Artificial Intelligence as a learning assistant in online learning. The phenomenological approach was chosen because it allows researchers to understand how these experiences are experienced, interpreted, and given meaning by students within the context of their academic lives. The study was conducted online to reflect the learning situation being studied, where students attend lectures through a Learning Management System, video conferencing, and various supporting applications, including AI platforms such as ChatGPT and AI tutor. Participants were selected using a purposive sampling technique, with the criteria being active students who had used AI as a learning assistant for at least three months, participated in online learning, and were willing to participate voluntarily. The number of participants ranged from eight to twelve people, in accordance with phenomenological research standards, which prioritize data depth over large numbers. All participant identities were kept confidential using pseudonyms.

Data collection was conducted through in-depth, semi-structured interviews conducted online via video conferencing or voice calls, depending on the participants' convenience. The interviews focused on students' experiences interacting with AI, including reasons for use, perceived benefits, emerging challenges, changes in learning strategies, and their perspectives on ethical issues and information accuracy. Each interview lasted thirty to sixty minutes, was recorded with the participants' consent, and then transcribed verbatim. In addition to the interviews, researchers also took field notes containing reflections, situational context, and additional information not captured in the recordings.

The data were analyzed using Interpretative Phenomenological Analysis, which was carried out in stages through repeated reading of the transcripts, identifying important statements, grouping meaning units, developing initial themes, and developing main themes that reflected the essence of the students' experiences. The analysis was conducted iteratively, with the researcher consistently referring back to the original data to ensure that the interpretations remained true to the participants' experiences. To ensure the credibility and validity of the data, this study implemented several qualitative validity strategies such as member checking by asking participants to review the interview summary, source triangulation through comparison of data from interviews and field notes, peer debriefing through discussions with fellow researchers, and audit trail documentation to ensure transparency of the research process from beginning to end.

The ethical aspects of the research were thoroughly addressed by providing informed consent to each participant, explaining the research objectives, benefits, potential risks, and the participant's right to withdraw at any time without consequence. Confidentiality was fully guaranteed, and all research data was securely stored and used solely for academic purposes. With a systematic design and procedures, this study is expected to provide an in-depth understanding of students' experiences using AI as a learning assistant in the context of online learning.

RESULTS AND DISCUSSION

Results

The results of this study describe students' experiences using Artificial Intelligence as a learning assistant in online learning from various emotional, cognitive, and strategic perspectives. Phenomenological analysis of in-depth interviews yielded four main interrelated themes: perceptions of the ease and functionality of AI assistance, challenges with accuracy and the need for verification, the influence of AI on student self-regulation, and ethical dilemmas and confusion regarding institutional policies. These four themes emerged consistently from participants' experiences and illustrate the complex dynamics surrounding the use of AI in online learning.

First Theme

The first theme indicates that students experienced significant ease when using AI to understand learning materials. Students described AI as a responsive tool capable of providing quick explanations when they encountered difficulties. AI was seen as being able to simplify difficult concepts, provide summaries of the material, and generate relevant example problems. Many students stated that AI made the learning process more efficient because they did not have to wait for lecturers to explain or search for other resources that would take more time. This experience provided a sense of security for most students, as they felt they always had a study partner ready to help. Furthermore, students who tended to experience learning anxiety reported feeling more confident when AI was used to check their initial understanding before attending lectures or completing assignments.

Second Theme

The second theme relates to the challenge of information accuracy generated by AI. Some students reported that while AI can provide answers quickly, not all of the information provided is accurate or relevant to the context of their assignments. Some students described receiving explanations that were too general, inconsistent with instructions, or even contained conceptual errors. This situation made

students realize the importance of having verification skills and not accepting information directly from AI. Students then developed specific strategies such as comparing AI answers with other sources, using AI only as a starting point, or seeking further clarification from lecturers. This process demonstrated that the use of AI encourages students to think more critically, although at the same time, it can raise anxiety if they are not yet able to distinguish between valid and invalid information.

Third Theme

The third theme highlighted the influence of AI on student self-regulation in online learning. Students frequently use AI as a tool to plan learning, prioritize material, break down large assignments into smaller steps, and even help monitor their learning progress. Some students stated that AI helped them identify gaps in understanding, allowing them to focus more on difficult areas. Furthermore, AI was used to explain complex assignment instructions or to create an initial outline before completing a final project independently. However, some students expressed concern that excessive use of AI could deprive them of independent thinking skills. They felt a tendency to immediately ask questions of the AI rather than seeking to understand the material in depth first.

Fourth Theme

The fourth theme relates to ethical issues and the lack of clarity in institutional policies regarding the use of AI. Many students expressed confusion about the limits of AI use in academic assignments. They were unsure whether using AI to create outlines, summarize material, or correct written work was permissible. This concern intensified when students realized that some AI output could be considered plagiarism if left unmodified. Some students even feared that inadvertent use of AI could violate academic regulations, as there are no official guidelines defining acceptable boundaries. This situation created psychological stress for students who wanted to use AI for learning but were reluctant to violate academic norms.

Overall, the results of this study indicate that the use of AI in online learning provides significant benefits for students, particularly in terms of increased understanding, time efficiency, and self-regulation support. However, these benefits are often accompanied by challenges related to information accuracy, ethical dilemmas, and technology dependency. Diverse student experiences demonstrate that AI has become an integral part of the online learning ecosystem, but its utilization still requires digital literacy, evaluative skills, and clear institutional guidelines to ensure optimal use and minimize negative impacts.

Discussion

The results of this study indicate that the use of Artificial Intelligence as a learning assistant has a significant impact on students' online learning process. One key finding is students' perception that AI can improve material comprehension through simpler explanations and faster access. This finding aligns with researchAlmaiah et al., (2022)who found that AI has the potential to enrich the learning experience by providing automated, ubiquitous academic support. Furthermore, students reported that AI helped reduce learning anxiety because they could receive additional explanations without having to wait for guidance from their lecturers. This finding was reinforced by(Hsu et al., 2023)which states that AI supports independent learning and increases students' confidence in understanding complex concepts.

However, this study also confirmed that students did not completely passively accept information from AI. They showed a tendency to verify information through other sources because they realized that AI output was not always accurate. This finding is consistent with researchKlos et al., (2021)This reminds us that generative AI models, including ChatGPT, still have the potential to produce inaccurate or biased information, requiring users to develop sound evaluative skills and digital literacy. The critical thinking of students in this study demonstrates that they utilize AI not only as a technical tool but also as a catalyst to strengthen their critical thinking skills.

The following findings indicate that AI has an impact on student self-regulation. Students use AI to plan assignments, organize their learning, and periodically evaluate their understanding. This aligns with the findings of other research.El Shazly, (2021)which emphasizes that the success of online learning is strongly influenced by self-regulation skills. The presence of AI appears to enhance this ability through automated assistance. However, some students expressed concerns about the potential for reliance on AI, which could hinder the development of independent learning skills. This concern aligns with warnings fromDekker et al., (2020)which states that the use of AI in education must remain controlled so as not to reduce human analytical abilities.

In addition to cognitive aspects, this study also uncovers ethical issues faced by students in the use of AI. Unclear boundaries of AI use create dilemmas related to plagiarism and academic integrity. These findings are relevant to research.Kim et al., (2021)AndWang et al., (2023)which shows that students in various countries are confused about whether the use of AI in writing assignments is permitted or not, especially when institutions do not yet have clear policies. Students in this study experienced pressure to remain productive using AI, but also feared being considered to be violating academic regulations. Therefore, clarity of institutional policies is an urgent need, as emphasized bySlimi & Carballido, (2023)who found that AI-based pedagogy would be more effective if supported by regulations that were clear, transparent, and easy for students to understand.

Overall, this discussion suggests that students' experiences with AI in online learning are two-sided. On the one hand, AI helps improve understanding, efficiency, and self-regulation. On the other hand, students still have to navigate the risks of inaccuracy, dependency, and ethical dilemmas. These findings reinforce the literature suggesting that the integration of AI in education must be accompanied by strong digital literacy and clear ethical policies to ensure optimal and responsible use of this technology.(Crawford et al., 2023; Shahzad et al., 2024). Thus, this research contributes to a deeper understanding of how students interpret, evaluate, and respond to the presence of AI in a fully digital learning environment.

IMPLICATIONS

The findings of this study have several important implications for education, particularly in the development of online learning and the integration of Artificial Intelligence as an academic tool. At the instructional level, the results indicate that AI can be utilized to support students' understanding of material, quickly and flexibly, for those who require additional explanations. Therefore, lecturers can integrate the use of AI as part of their learning strategies, for example, as a reflection tool, a companion for independent practice, or as an alternative resource when students encounter difficulties understanding certain material. Furthermore, the findings suggest that students need to be equipped with stronger digital literacy skills to assess the accuracy of AI-generated information and use it appropriately. These implications encourage educational institutions to develop AI literacy training programs aimed at promoting an understanding of the benefits, limitations, and ethical responsibilities of using technology. Furthermore, this study emphasizes the importance of clear institutional policies regarding the limits of AI use in academic assignments. With transparent guidelines, students can avoid ethical confusion and be able to utilize technology optimally without violating academic integrity. These implications demonstrate that AI integration is not only a technological issue, but also a pedagogical and ethical issue that requires serious attention from educators and institutions.

LIMITATIONS

This study has several limitations that must be acknowledged to ensure a fair interpretation of the results. First, the limited number of participants, not coming from diverse educational institutions, prevents the results from being generalizable to the entire student population. While a phenomenological approach prioritizes depth, the diversity of student experiences across different institutions, study programs, and educational levels could provide a broader picture. Second, this study focused solely on online learning, thus underrepresenting students' experiences in face-to-face or hybrid learning. Third,

the use of online interviews limited the ability to capture nonverbal expressions that might provide additional meaning in data interpretation. Fourth, this study did not examine in detail the different types of AI platforms used by students, even though each platform has its own features, advantages, and limitations that can impact the learning experience. These limitations allow for further research to broaden the context and explore other variables that could potentially enrich our understanding of students' experiences using AI in learning.

SUGGESTIONS

Based on the findings and limitations of this study, several recommendations can be used as a reference for further research and educational practice. First, further research could involve a larger number of participants from various institutions or study programs to broaden the diversity of student experiences. Second, research could combine qualitative and quantitative approaches to gain a more comprehensive understanding of the relationship between AI use and learning outcomes. Third, educational institutions need to develop clear and structured guidelines for AI use to prevent student confusion regarding the limitations of this technology's use in academic assignments. Fourth, lecturers can develop AI-literacy-based learning practices, including assigning assignments that encourage students to verify information, assess the accuracy of AI output, and produce authentic work. Fifth, further research could examine the long-term impact of AI use on students' critical thinking skills, learning motivation, and self-regulation development. With these recommendations, it is hoped that the use of AI in education can continue to develop positively and support a more effective, ethical, and sustainable learning process.

CONCLUSION

This study concludes that the use of Artificial Intelligence as a learning assistant provides significant benefits for students in online learning, particularly in facilitating material understanding, increasing learning efficiency, and supporting self-regulation in learning planning and evaluation. However, students face challenges such as inaccurate information, potential dependency, and ethical dilemmas related to the limitations of AI use due to the lack of clear institutional policies. Student experiences demonstrate that AI functions not only as a technical aid but also impacts cognitive and emotional aspects of the learning process. Therefore, the use of AI needs to be balanced with increased digital literacy, information verification skills, and provision of ethical use of technology for students. Educational institutions also need to develop more detailed guidelines for AI use so that students can utilize it optimally, responsibly, and maintain academic integrity. Overall, this study confirms that AI has great potential to enrich online learning if integrated carefully, ethically, and supported by clear policies.

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AUTHOR CONTRIBUTIONS STATEMENT

The author solely conceptualized and designed the study, collected and analyzed the data, conducted the literature review, and prepared the manuscript. The author approved the final version and is fully responsible for the integrity of the research.

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