PROS AND CONS OF GENERATIVE ARTIFICIAL INTELLIGENCE IN TEACHING-LEARNING PROCESS: A SEQUENTIAL EXPLANATORY DESIGN
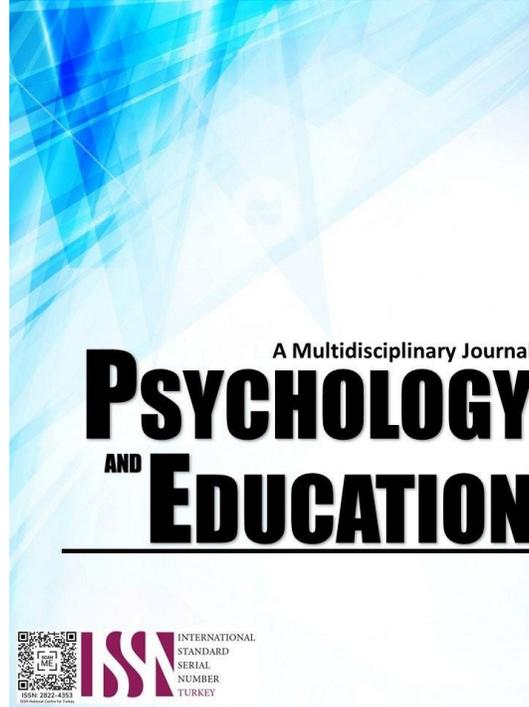
Pros and Cons of Generative Artificial Intelligence in Teaching-Learning Process: A Sequential Explanatory Design

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Abstract

Generative Artificial Intelligence (GAI) is a type of AI that can create new content, e.g., text, based on patterns and structures learned from existing data, and its application is pervasive in several areas, including education. This study, therefore, sought to assess the Junior High School (JHS) teachers' perception of the pros and cons of GAI in teaching and learning. It also aimed to determine the challenges teachers faced with GAI. This study utilized the sequential explanatory design, utilizing 50 teachers in a Junior High- School Integrated School in Sagay District, Schools Division of Camiguin, for the school year 2023-2024. Results revealed that the teacher-respondents perceived Generative AI to have a "Moderate Extent" of advantages as they believed in its potential application in essential improvements in teaching. However, they further reported a "High Extent" of disadvantages, notably its significant influence on conventional teaching-learning practices. The qualitative results also demonstrated several challenges, including factors limited teacher oversight of student AI Use, limited access to information, decreased learner retention, the overshadowing of traditional teaching methods, and the encouragement of academic dishonesty. In light of the results, the article suggests that policies be instituted around the responsible and effective use of generative AI in schools.

Keywords: *advantages, challenges, disadvantages, generative AI, junior high school, teachers, teaching-learning process*

Introduction

Students see themselves as a key area of interest in education because of the power of this self-concept to drive learning and academic success. In recent years, a lot has changed on the education horizon thanks to the fast pace of technological progress. One of these, AI, has risen as one of the most revolutionary breakthroughs that has forever changed the way content is taught and how students learn from it. The rising significance of student self-concept in determining learning outcomes is now well established in educational research. Now, tech, especially AI-based, is omnipresent in the classroom, redefining how we teach and learn. The latest and possibly most potent of these developments is the emergence of generative artificial intelligence (GAI), which promotes learning in unprecedented ways (Bozkurt et al., 2023). GAI relies on unsupervised or semi-supervised machine learning algorithms to produce outputs based on statistical patterns and probabilities (Mondal et al., 2023; Zhang et al., 2023).

Artificial Intelligence contributes to progress towards the Sustainable Development Goal (SDG) 4, quality education. AI can support learning in various ways - it can adapt lessons to meet the needs of individual students; it can give those not in the classroom access to educational resources; it can reduce the burden of lesson planning and preparation for teachers (Chen et al., 2020). These aspects contribute towards inclusivity, equality, and accessibility of education to all, including those in underserved areas (Pedro et al., 2019).

Generative Artificial Intelligence (GAI), such as ChatGPT and Midjourney, have received wide attention. ChatGPT can generate elaborate responses in various domains, and Midjourney can generate images conditioned on user input. Despite the quality-promoting potential, the abuse of these tools has implications for education and social security (Yang et al., 2021).

AI is now ubiquitous, and specific digital tools and resources are transforming how academics work. Today, teachers and students depend on e-learning platforms, tools for collaboration, and apps for lesson planning (Tsai, 2024). These might be flashcard makers, educational quiz apps such as Quizlet, citation creators, plagiarism checkers, copywriting software and virtual assistants. These tools offer extensive information that revolutionizes the conventional way of teaching and learning.

Given the Philippine setting, while there may be challenges, AI in education can still be tapped, specifically in adapting curriculums and offering personalized learning. However, the Philippines must better prepare for digital skills, according to a report by the World Economic Forum in 2020. The advent of AI as a substitute for conventional learning necessitates curricular changes that map to technological advancements.

AI can also help relieve school administrations' workloads by automating the administrative aspects of managing a school, such as grading assignments and keeping tabs on student performance. The proposed system supports the education objectives based on the DepEd's BEDP 2030. Schools can also use predictive models based on AI to support data-driven decision-making to allocate resources, develop curricula, and support students.

While the positive future possibilities of AI in the Philippine educational sector are immense, privacy issues, data security, and the risk of increasing the digital gap must also be addressed. For instance, Italy recently blocked ChatGPT's use over privacy concerns. Establishing ethical guidelines for AI use in schools and defining how to maintain the human aspect of teaching and learning, preserving

critical and creative thinking (Pedro et al., 2019).

Even though AI is now widely used in education worldwide, a significant research gap is evident in this context locally (especially in its benefits, challenges, and barriers) related to Generative AI, i.e., GAI, when applied to the teaching-learning process at school. The lack of well-structured studies that focus on this area of the Philippine educational scene, thus, demands locally generated perspectives and empirically backed issues that contribute relevant information necessary in shaping better options and reforms in the Philippine educational setting.

Research Questions

This study aimed to evaluate the perceptions of the pros (advantages) and cons (disadvantages) of Generative Artificial Intelligence in the teaching-learning process among Junior High School teachers. Specifically, it sought to answer the following questions:

1. To what extent are there advantages of Generative Artificial Intelligence (GAI) in the teaching-learning process among teachers?
2. To what extent are there disadvantages to Generative Artificial Intelligence (GAI) in the teaching-learning process among teachers?
3. What are the challenges encountered with the existence of generative artificial intelligence in the teaching-learning process among teachers?

Literature Review

Artificial Intelligence

As an emerging technology, Artificial Intelligence (AI) is a boon and a bane for education, with various roles to play in enhancing learning and pedagogical experiences. Some have suggested that AI is indispensable, including in essay grading (Babitha et al., 2022; AlAfnan et al., 2023). Nevertheless, the real potential and efficiency of AI-based grading tools in the scientific literature remain uncertain. Of particular interest is the AI model ChatGPT, which has been studied and reported to facilitate and improve the grading system, offering semi-automated assessment for various homework tasks such as research papers and academic essays (Kasneci et al., 2023). Using reports from ChatGPT, instructors can offer more nuanced feedback to students in both formative and summative assessments, identifying more precisely where learning is challenging and why. It helps educators to guide strategically towards intervention when learners are at risk (Kasneci et al., 2023).

Previous research has documented successful implementations of AI for grading short-answer responses in online learning environments (Schlippe et al., 2021, 2022). It has been proposed that an AI-based auto-grader, when implemented for exam practice, could serve as an instructional tool to help students achieve better exam results. In addition, AI graders could lead to a more unbiased grading process (Schlippe et al., 2021, 2022). However, a critical stance towards the use of grading explanations and transparency in grading, e.g., in view of ethical considerations and acceptance of such technology by students.

Artificial Intelligence in Current Education

Artificial intelligence has long been a specialized subject in computer science. Most people's first thought when they hear "artificial intelligence" is often that of a high-powered supercomputer with tremendous processing power, adaptive behaviour, and human-like cognitive capabilities, including functioning with sensors and other input/output systems that facilitate interaction between machines and humans (Chen et al., 2023). This is a notion which transcends easy understanding and has been heavily influenced by depictions in film, wherein "AI systems" run buildings and centrally control such things as air quality, temperature and mood-based settings. Aied 2023-24 (Challenge) In education, AI is not limited to supercomputers, but may include embedded systems, robots, computers, applications, and other technology that are aimed at assisting children's development and learning (Chen et al., 2023).

For example, AI-enabled robots or computers that interact and collaborate with teachers or colleague robots (cobots) are transforming education by assisting with repetitive tasks, teaching spelling and pronunciation, and adapting to each student's capabilities (Fang et al., 2019). Likewise, the internet and web-based learning have advanced from mere downloading resources and regurgitating tasks to intelligent, adaptive systems. Such systems are sensitive to both teachers' and students' actions, which would contribute to more interactive and adaptive learning experiences (Chassignol et al., 2018). As pointed out by Chassignol et al. (2018), AI in education has begun to infiltrate the administrative tasks, instructional approaches and the learning experience.

Advantages, Disadvantages, and Challenges in Artificial Intelligence in Current Education

Artificial Intelligence (AI) in the classroom has the potential to revolutionize both students' learning experiences and teachers' instructional approaches. AI provides customized feedback and suggestions, creating a more engaging and effective learning environment (Manghsudi et al., 2021). Despite these potential benefits, there are also notable drawbacks to using AI in education (Vincent-Lancrin & Van der Vlies, 2020; Akgun & Greenhow, 2021). AI opens new opportunities for developing practical learning tasks and enhancing technology-based learning environments (Lee & Hwang, 2022).

Nevertheless, the development of such systems is still a challenging process for researchers or developers in the fields of computer

science and education (Hwang & Chien, 2022). The challenge is beyond programming; it is about re-creating the decision-making of the human curators in intelligent tutoring and adaptive learning systems (Minn, 2022). Nevertheless, the development of such systems is still a challenging process for researchers or developers in the fields of computer science and education (Hwang & Chien, 2022). The challenge is beyond programming; it is about re-creating the decision-making of the human curators in intelligent tutoring and adaptive learning systems (Minn, 2022). The goal of these systems is to incorporate the knowledge and experience of human tutors and provide personalized problem-solving and enhanced learning. It is hard to build Educational AI (AIED), since it is very computationally driven and rather multi-disciplinary. A lack of knowledge of the roles and functions of AI in education may prevent researchers from being able to use AIED appropriately to tackle crucial problems in learning (Hwang et al., 2023).

For example, AI applications can act as virtual tutors, observing learning, performance, and providing instant support for students (Zhai et al., 2021). Systems designed under the SAIL (Student-AI-Interaction and Learning) paradigm can emerge through a joint effort of computer scientists and educators. This is a model which allows for learning, practice and interaction with peers or teachers with personalized feedback and support. Because of numerous promises of AI for the disclosure of the education, the instruction is advised to consider incorporating appropriate AI TELS so as to guide and help to promote the students' academic comperance and overcome the seduce that rise the originality and the stimulate, to duty action to improve the text of man academic experts' studies by proposing to utilize AI-based teaching and learning systems. Similarly, education researchers should pursue the implications of the incorporation of AI in school instruction (Huang et al., 2023).

Therefore, the literature mentioned earlier is relevant to the ongoing study on the Pros and Cons of Generative Artificial Intelligence (AI)in the Teaching-Learning Process: A Sequential Explanatory Design." These studies would represent useful references to the researcher, providing him with support and insight into the problem under investigation in the present study. The researcher can support and supplement the results of the current study based on the results and views offered in the related literature.

Methodology

Research Design

The researcher engaged in a mixed methodology of quantitative and qualitative approaches in the data collection and analysis process, specifically, the sequential explanatory approach. The sequential explanatory research methodology is a two-phase approach that gathers and analyzes quantitative data first, then acquires and analyzes qualitative data in light of the quantitative findings. Qualitative data is used to explain quantitative data. A mixed-method research approach incorporates quantitative and qualitative information (Timans et al., 2019).

Respondents

The study targeted high school teachers with at least one year of experience among Integrated Schools in Sagay District during the school year 2023-2024. The research employed a total enumeration sampling technique, a type of purposive sampling where the entire population with specific characteristics was studied. This method ensures that every respondent in the population is included, enhancing the findings' reliability.

Instrument

An adapted and modified survey questionnaire was used as the main instrument for gathering data. The initial draft of the survey questionnaire and semi-structured interview questions were subjected to face and content validation. The researcher sought assistance from experts on the subject matter. After incorporating the inputs and comments from the identified experts, pilot testing was conducted at the Catarman District by administering the survey questionnaire to other teachers. Cronbach's alpha was used to test the reliability and validity of the research instrument. The research instrument yielded an acceptable value of .80; the researcher administered the questionnaire to the respondents (Sharma, 2022).

In the qualitative phase, an interview protocol guide was created based on the data gathered from the quantitative results, including an interpretation of the participants' extreme or outlier groups. The researchers allowed the participants to elaborate on the questions and deliver responses that most accurately reflected their ideas and perspectives in light of the data obtained from the quantitative stage. These responses offered the researchers valuable information that enhanced the quality of the study.

An interview is a technique for gathering detailed information on people's ideas, feelings, experiences, and opinions. Interviews are useful when research questions implicate problems for which complex questioning and deep probing are necessary. Face-to-face interviews are suitable when the target population can communicate more effectively through face-to-face conversations than through writing or phone conversations (Easwaramoorthy et al., 2006).

Procedure

Letters of request were given to the District-in-Charge to obtain consent for teachers' participation as respondents. The researchers personally handed in the letters and sought the assistance of schools in conducting the study. The research utilized online platforms to gather the necessary data to adhere to health protocols.

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To investigate teachers' perceptions of the pros and cons of generative AI, the researchers conducted Focus Group Discussions (FGD) and interviews to gain an in-depth understanding of the topic. The qualitative portion aimed to explore outliers' perspectives on the benefits, drawbacks, and challenges of generative AI. Participants were chosen according to their teaching background in public secondary schools (at least a year of teaching experience) and at various-sized, located, and student-demographic-centred schools.

Selected participants were interviewed face to face (at an average interval of 30 minutes for each person), and ethical considerations were observed as regards participants' rights. The study employed homogeneous sampling to develop in-depth research into generative AI by specifically selecting participants in public secondary schools with identical backgrounds. The aim of phase two was to gain insight into the detailed views of respondents on the benefits and drawbacks, as well as the challenges, of generative AI. All of their conversations were taped; no recording ever interrupted their conversation. The information collected was recorded, analyzed and interpreted.

Data Analysis

Quantitative data in this study were analyzed using both SPSS (Statistical Package for the Social Sciences) and Jamovi, a user-friendly statistical software designed for easy and accurate data analysis. Qualitative data were manually coded and examined using thematic analysis following Braun and Clarke's (2006) six-step framework: familiarizing with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. For Problem 1, the Mean and Standard Deviation were used to assess the extent to which high school teachers perceive the advantages of Generative Artificial Intelligence (GAI) in the teaching-learning process. For Problem 2, the same statistical measures were used to evaluate the extent of teachers' engagement in AI-related practices in classroom settings. For Problem 3, interview data were analyzed thematically regarding teachers' challenges of AI integration in education.

Ethical Considerations

Ethical considerations in facilitating the study were also addressed. Approval and permits to conduct the study were secured. In compliance with the Research Ethics Protocol, the researcher obtained informed consent from the teacher-respondents, specifying their awareness of the study's purpose, their agreement to participate as survey respondents, their freedom to disclose or not disclose information, their right to withdraw from the study at any time if they felt uncomfortable, their right to be informed of the study's results, any benefits they might receive as a result of the study, and their right to confidentiality and anonymity. The researcher incorporated the agreement with the Data Privacy Act into the survey questionnaire and prepared a disclosure and confidentiality agreement for the interview participants.

Results and Discussion

In this part, the findings are presented to show the information necessary to answer the research questions of this research undertaking.

To what extent are there advantages of Generative Artificial Intelligence (GAI) in the teaching-learning process among teachers?

Table 1 shows the survey results on the extent of the advantages of Artificial Intelligence (AI) in teaching and learning.

Table 1. *Extent of Advantages of Artificial Intelligence (AI) in Teaching and Learning*

Indicators	Mean	Qualitative Description
Provides students with access to learning materials anytime through AI-powered tools.	3.30	High Extent
It enables teachers to create more effective lesson plans based on data.	3.27	High Extent
Offers virtual tutoring, giving students extra help outside the classroom.	3.20	Moderate Extent
Automates grading, saving teachers time for other tasks.	3.10	Moderate Extent
Delivers personalized learning experiences for students.	3.05	Moderate Extent
Engages students with interactive AI tools, making learning more enjoyable.	3.05	Moderate Extent
It gives instant feedback to students, helping them learn faster.	2.90	Moderate Extent
Allows students to learn at their own pace with AI-driven programs.	2.90	Moderate Extent
Enhances learning by providing timely support and resources through AI tools.	2.85	Moderate Extent
It helps teachers quickly identify students' strengths and weaknesses.	2.48	Less Extent
Total Average Weighted Mean (TAWM)	3.01	Moderate Extent
Standard Deviation (SD)	0.77	

The table presents teacher-respondents' responses regarding their perceptions of the advantages of Artificial Intelligence (AI). The data reveals an overall average weighted mean of 3.01, indicating that the teachers generally have a "Moderate Extent" of the various advantages of AI. The standard deviation of 0.77 suggests that the responses were relatively consistent among the respondents, showing a clustered distribution of perceptions. This agreement implies a positive recognition of AI's potential to enhance educational processes, suggesting that teachers are open to integrating AI technologies into their teaching practices.

This is consistent with Villarino's (2024) findings on AI integration in Philippine education. In the context of education, Villarino's findings have a few positive implications for AI. Prominent among these was the widespread opinion that AI tools are easy to use and intuitive. Even with little technical knowledge, AI tools were easy for teachers and learners to use. The findings uphold Ayala-

Pazmiño's (2023) view that educators have paid considerable attention to the implications of AI in education, and some support it as a revolutionary instrument in improving instruction. AI can revolutionize education by enabling new ways to enhance assessments, increase personalized learning, and help reduce some load on teacher prep time.

On the other hand, among the 10 indicators, the teacher-respondents rated the statement "Provides students with access to learning materials anytime through AI-powered tools" as the top indicator with a mean value of 3.30, which corresponds to "High Extent." This finding indicates that teachers firmly believe one of the significant advantages of AI is its ability to provide students with continuous access to learning materials. The strong agreement suggests that teachers recognize the potential of AI to enhance flexibility in learning, allowing students to study at their own pace and convenience.

The findings are also consistent with the responses gathered from the FGD, where respondents 4, 6, and 21 expressed that, "Today's learners have instant access to various AI-powered learning tools. We cannot deny their existence, and students who use them wisely can access a wide range of learning resources", "Students today are very tech-savvy; they can easily navigate different AI-powered learning apps and quickly find what they need" and "Given the ascent of AI, we now have student-friendly tools that assist students to search for materials and work at their phase."

Many AI-based tools can aid in their learning by giving them access to personalized learning resources. For instance, intelligent tutoring systems (ITSs) provide personalized step-by-step instruction to students. Examples of intelligent tutors include Spark by Domoscio and Gooru Navigator, referred to by some as the "Google Maps of learning" (Holmes & Tuomi, 2022). With artificial intelligence, students can access a vast array of learning resources.

On the other hand, teachers rated the following as one of the highest indicators, "AI helps teachers create more effective lesson plans based on data," with a mean score of 3.27, denoted as "High Extent." That shows educators' willingness to apply AI tools to lesson planning, potentially resulting in more data-informed, personalized teaching. Additionally, with an endorsement of AI in virtual tutoring, teachers believe in the potential of AI to provide learning opportunities that can open up education and allow for a more personalized experience for students — particularly those who need extra assistance after class hours.

The findings align with the recorded responses from the FGD, as respondent 12 mentioned that "TAI tools can assist with lesson planning, such as App Gen, but they should be used as a guide by teachers. Teachers are still the real architects of their lesson plans. I felt it important to note that though AI can present useful and helpful ideas and suggestions, the final plan needs to be in the hands of the teacher, who has the skill and expertise to understand their students' needs. This method makes the lessons varied and effective rather than solely AI-based."

The process outcomes regarding the quality and quantity of the produced plans can measure the benefits of AI methods to lesson planning. AI removes the computational burden from the teacher and facilitates the process more efficiently by producing plenty of different concepts and resources faster, allowing the teacher to compare more options in less time (Shah, 2023). Furthermore, AI can also analyze data to recommend better teaching approaches that align with individual students, improving the lesson plans overall. This efficiency, coupled with personalization, results in better-prepared lessons for various learning styles (Chen et al., 2020).

Lastly, it is important to note that there was only one indicator where teacher-respondents rated it as "Less Extent": "AI helps teachers quickly identify students' strengths and weaknesses," with a mean value of 2.48. This finding implies that teachers might not be entirely convinced about the capability of AI to quickly and precisely evaluate the needs of each student. It raises an area where AI tools may be complex, or teachers might need extra help using AI as part of the assessment.

This finding supports the FGD responses, where respondent 9 pointed out that "AI has limits, especially when identifying students' strengths and weaknesses. For example, AI might struggle to assess individual student needs accurately because teachers can more accurately assess through direct interaction and observation".

AI assistance could also prove beneficial, although it can struggle to comprehend or evaluate some of a student's performance, such as their behaviour and personal struggles (Pedro et al., 2019). The reason is that AI may not be capable of completely imitating the nuances of how students interact and act. Observations and insights from teachers are key to interpreting these factors, the nuances that AI alone may overlook. Therefore, using AI alongside teachers' assessments can provide a more complete picture of students' needs.

To what extent are there disadvantages to Generative Artificial Intelligence (GAI) in the teaching-learning process among teachers?

Table 2 shows the survey results on the extent to which Artificial Intelligence (AI) has disadvantages in teaching and learning.

Table 2. *Extent of the Disadvantages of Artificial Intelligence (AI) in Teaching and Learning*

Indicators	Mean	Qualitative Description
It relies too much on AI for homework, leading to a lack of understanding.	3.80	High Extent
Reduces critical thinking skills by depending on AI for quick answers.	3.75	High Extent
Limits creativity by using AI to solve problems instead of thinking independently.	3.75	High Extent
Decreases collaboration and communication skills due to excessive AI use.	3.70	High Extent
Prevents the development of original ideas by relying on AI-generated content.	3.70	High Extent
Engages in academic dishonesty by using AI for assignments.	3.65	High Extent

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Struggles to learn concepts because of over-dependence on AI.	3.60	High Extent
Loses motivation to study as AI handles most tasks.	3.60	High Extent
Faces difficulty in learning effective writing due to AI reliance.	3.55	High Extent
It challenges teachers to identify whether work is student-generated or AI-generated.	3.45	High Extent
Total Average Weighted Mean (TAWM)	3.66	High Extent
Standard Deviation (SD)	0.57	

The table presents teacher-respondents' responses regarding their perceptions of the disadvantages of Artificial Intelligence (AI). The data reveals an overall average weighted mean of 3.66 (High Extent), indicating that the teachers strongly agree on the various disadvantages of AI. The standard deviation of 0.57 suggests that the responses were relatively consistent among the respondents, showing a clustered distribution of perceptions. These results indicate that most teachers at least harbor similar concerns about the adverse effects of AI. The same responses, however, also suggest a consensus among teachers, reflecting perhaps well-formed and established views.

This aligns with Adlawan's (2024) study, which highlighted that AI in education can make learning feel less personal. When AI generates content and controls the pace of lessons, students might miss the personalized touch that a human teacher provides. It can also be inferred that the teacher-respondents gave the highest rating to the indicator "Relies too much on AI for homework, leading to a lack of understanding," with a mean value of 3.80, indicating "High Extent." This shows that teachers are apprehensive that students might depend too heavily on AI to complete homework, which could result in them not fully understanding the materials. This further implies that teachers are highly concerned about students missing out on genuine learning when they rely too much on AI.

The results are supported by the responses to the Focus Group Discussion (FGD). Respondent 19 mentioned that "the students can immediately come up with their responses through AI tools such as ChatGPT, Bard, and other AI-based websites and applications. This can confuse us when we are grading their assignments and outputs." Similarly, Respondent 24 noted that "with AI, students can easily complete tasks such as essays, reflection papers, and research assignments by relying on instant answers provided by these tools with AI, students can easily complete tasks such as essays, reflection papers, and research assignments by relying on instant answers provided by these tools."

According to Sibanda et al. (2023), AI as a tool for education can improve education through efficiency, speed, and student productivity. However, Seo et al. may become too dependent on it, resulting in undue control over its use (2021). This reliance might have favorable and unfavorable impacts on their academic success.

On the other hand, among the 10 indicators, the teacher-respondents rated the statement "Challenges teachers in identifying whether work is student-generated or AI-generated" as the lowest indicator with a mean value of 3.30, which corresponds to "High Extent." The findings may imply that many teachers feel uncertain about their ability to tell whether students are submitting their work or relying on AI, potentially leading to a lack of trust in students' academic honesty.

The findings are also consistent with the responses gathered from the FGD, where respondents 11 and 15 expressed that, 'It is difficult to tell if the work truly reflects the student's understanding' and 'The AI-generated content often lacks the personal touch and depth that we expect from students.'"

Cotton et al. (2023) discussed the challenges of using ChatGPT in education. These include cheating and deception, causing issues for assessment and learning. Students who use tools like ChatGPT in written assignments have an unfair advantage regarding assessment and grading. At the same time, they might miss out on learning opportunities. Cotton et al. (2023) stated that it can be difficult for teachers to distinguish between a student's writing and the responses generated by LLMs.

What are the challenges encountered with the existence of generative artificial intelligence in the teaching-learning process among teachers?

The findings highlight the extent of both the advantages and disadvantages of Artificial Intelligence (AI) in the teaching-learning process. The mean scores reflect the teachers' perceptions, with an overall average weighted mean of 3.02 indicating that they generally "agree" on the advantages of AI. On the other hand, the data also shows an overall average weighted mean of 3.66, suggesting that the teachers "strongly agree" on the disadvantages of AI. The consistent responses suggest a consensus among teachers, indicating that their views are well-formed and widely shared. Despite recognizing the advantages of AI, teachers highly perceive that AI also brings significant disadvantages to the teaching-learning process. This perspective is corroborated by the qualitative nature of the focus group discussions (FGDs), the richness of which provided the study with a deeper understanding of their perceptions. Therefore, the qualitative results align with the quantitative views about AI in education, teachers' perceptions.

Meanwhile, teachers expressed their challenges encountered with the existence of generative artificial intelligence in the teaching-learning process. The qualitative findings are categorized into five themes based on teachers' narratives and feedback on their manifestations of the challenges of Artificial Intelligence in the teaching-learning process. These themes are Beyond Their Control, Limited Access to Information, Reduces Learner Retention, Overpowers Traditional Teaching, and Promotes Academic Dishonesty.

Theme 1: Beyond Their Control

The presence of AI in the teaching-learning process is now evident, and learners may freely navigate it outside of school premises, making it beyond the teacher's control. In this context, "beyond their control" refers to the fact that once students are outside the classroom, teachers have little influence over how students use AI. This lack of control can lead to students using AI in ways that may not align with the educational goals set by teachers.

"Sometimes we cannot prevent our learners from using AI outside the classroom, as we have no control over their learning activities beyond school." P2

"AI is prevalent nowadays. In the context of education, learners are tech-savvy and curious, using their abilities to explore AI. We cannot deny that this is part of their natural curiosity, which I believe is beyond our control." P5

Adam et al. (2023) note that the feeling of not being in control of what a learner does with these tools makes it difficult to maintain learning as authentic and valid. Jabar et al. (2024) argue that it can hinder the learning process as it is challenging to manage and lead students' interaction with AI effectively.

Theme 2: Limited Access to Reliable Information

AI technology has many uses, but teachers may feel these tools only provide shallow or incorrect data. AI-generated answers can also occasionally rely on incomplete or out-of-date information, which means that the responses a natural language processing system provides do not turn out to be entirely reliable. One can imagine that this limitation may be a significant obstacle in learning, as students will receive less information based on credible sources. Teachers, therefore, remain cautious about relying solely on AI, recognizing the need to verify the accuracy of the content it provides to ensure that students receive trustworthy and well-founded knowledge.

"AI systems have access to a wide range of information, but they can sometimes produce responses that lack depth, especially regarding local contexts. When users ask questions in an AI chatbox, the answers provided may be general or incomplete, particularly if the topic involves specific regional or cultural details." P5

"Just like everything else, technology has its limitations - the responses from AI do not always match with real facts or the truth. For example, if you question something in an AI chatbot and check it against the data from books or trustworthy websites, you may find some inconsistencies. The AI response is not always the same as in compared sources, and we must be cautious when verifying against reliable references." P12

Amaro et al. (2023) note that answers generated from Chatbots like ChatGPT are sometimes unreliable. Research shows that people can be easily misled into believing an answer is true, even if the answer is entirely unfounded or a version of the truth presented with a bias or in a way that leads one to believe it is unreliable. AI does not ensure the delivery of accurate responses and can spread fakers, given the training data, or produce fake information. However, the output tone persuades the user (Duboust, 2023).

Theme 3: Reduces Learner's Retention

Teachers also mentioned that using AI might lead to a decrease in learners' retention. They firmly believe that relying too heavily on AI tools could make students less engaged in actively processing and retaining information. Students who rely on AI for quick answers or solutions might miss deeper learning from critical thinking and problem-solving.

"With AI, learners may absorb less information because they might no longer take the time to read and understand the material; instead, they may simply copy and paste information generated by chatbots", P8.

"AI provides instant answers, which may prevent students from generating their own ideas. As a result, when given tasks like assignments, students might struggle to explain their work if questioned by the teacher. This is a clear sign of reduced retention, as they have not completed the assignments independently or fully engaged with the material." P1

Excessive use of ChatGPT may result in memory loss among students. Continuous use of ChatGPT for academic tasks may develop laziness among students and weaken their cognitive skills (Yilmaz & Yilmaz, 2023a), leading to memory loss. Using generative AI tools extensively at the expense of critical thinking and mental effort can harm memory retention, cognitive function, and critical thinking skills (Bahrini et al., 2023; Dwivedi et al., 2023).

Theme 4: Overpowering Traditional Learning

Another trend that emerged was the rise of generative AI over traditional learning. Now that generative AI is readily available, educators should expect students to use it instead of more traditional forms, for example, reading books. This shift could mean traditional pedagogy moves to the back as students turn to AI for their information requirements, rather than working through traditional methods.

"They rely on AI for learning to the extent that they do not read books or other learning resources but use AI instead." P12

"The value of traditional learning is increasingly overshadowed and dominated by generative AI. People do not read books and other

proven learning tools in favor of AI." P9

According to Yilmaz and Yilmaz (2023b), this transformation will decrease the value and use of printed and academic resources. It can have adverse consequences on critical and analytical thinking. Duboust (2023) also argues that the convenience of generative AI might cause learners to underestimate the depth and accuracy of traditional learning sources. Overdependence on AI can replace the need to go through reliable sources for a holistic understanding of a topic.

Theme 5: Promotes Academic Dishonesty

Teachers also pointed out that generative AI can promote cheating. Students will not be able to use AI to do their homework and hand in work that is not their own. Which is to say, it is the AI that does the thinking work, not the students, thus negating the educational value and benefits of the learning process to the students' future critical thinking abilities. Teachers are concerned that this dependence on AI could lead to declining academic integrity, as students might bypass the effort needed for their assignments and other school-related tasks.

"AI may encourage dishonest behaviour, as learners might claim that their work is their own when, in reality, it was generated by AI." P5

"AI could undermine the values students should uphold, as their assignments are created by generative AI with minimal effort, meaning they do not work hard to produce their work." P30

Plagiarism and reputational challenges for ChatGPT. The use of ChatGPT might impact academic honesty and reputation. Otherwise, students may be committing academic dishonesty by not acknowledging the use of ChatGPT or the sources in their deliverables (Kleebayoon & Wiwanitkit, 2023; Thurzo et al., 2023). Recent research discovered that advanced AI tools like Turnitin can game conventional plagiarism detection. This could lead students to claim the output of ChatGPT as created by themselves (Khalil & Er, 2023). Indeed, students who have relied on ChatGPT for their homework are more likely to commit acts of plagiarism than those who have not been using the system (Herbold et al., 2021). al 2023).

The study revealed that regarding the teacher respondents' perceptions of the advantages of Artificial Intelligence (AI), an overall average weighted mean of 3.01 was obtained, indicating that teachers perceived a "Moderate Extent" of the various advantages of AI. This agreement implies a positive recognition of AI's potential to enhance educational processes, suggesting that teachers are open to integrating AI technologies into their teaching practices. Among the 10 indicators, the teacher-respondents rated the statement "Provides students with access to learning materials anytime through AI-powered tools" as the top indicator, with a mean value of 3.30, corresponding to "High Extent." This finding indicates that teachers firmly believe one of the significant advantages of AI is its ability to provide students with continuous access to learning materials.

The study further reveals that when it comes to their perceptions of the disadvantages of Artificial Intelligence (AI), it yielded an overall average weighted mean of 3.66, indicating that the teachers have a "High Extent" of the various disadvantages of AI. It can also be inferred that the teacher-respondents gave the highest rating to the indicator "Relies too much on AI for homework, leading to a lack of understanding," with a mean value of 3.80, indicating "High Extent." This shows that teachers are apprehensive that students might depend too heavily on AI to complete homework, which could result in them not fully understanding the materials.

Finally, the qualitative findings on the challenges encountered in GAI are categorized into five themes based on teachers' narratives and feedback on their manifestations of Artificial Intelligence in the teaching-learning process. These themes are Limited Teacher Oversight of Student AI Use, Limited Access to Information, Reduces Learner Retention, Overpowers Traditional Teaching, and Promotes Academic Dishonesty. These findings imply that AI offers significant advantages but also presents challenges that could undermine traditional teaching methods and student learning.

Conclusions

Teacher respondents generally perceived a "Moderate Extent" of the advantages of generative AI in the teaching-learning process, acknowledging its potential to enhance educational practices. Teacher respondents perceived "a High Extent" of the disadvantages of generative AI, emphasising its significant negative impact on traditional teaching and learning methods. The challenges encountered by generative AI in the teaching-learning process, as identified by teacher-respondents, include issues such as being beyond their control, limited access to information, reduced learner retention, overpowering traditional teaching, and promoting academic dishonesty.

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