Unveiling the Convenience and Drawbacks of Artificial Intelligence (AI) in Education

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Abstract— This study aims to examine the level of convenience of Artificial Intelligence (AI) for students in education in terms of personalized learning, enhanced engagement, accessibility, and inclusivity. It also explores the extent of the drawbacks of AI in education for students, considering neutrality, privacy concerns, the digital gap, and dehumanizing effects. The study looked into the significant differences between the convenience and drawbacks of Artificial Intelligence and the relationships between these factors. The study employed a descriptive-correlational research design. Results revealed that the correlation analysis between the level of convenience of Artificial Intelligence and the extent of its drawbacks shows a significant relationship. This entails that active use of AI in education contributes to students' learning while knowing its downfall. This is viewed as AI's role in education to have a balanced use. Regarding these results, it is essential to properly create policies and procedures to use AI in education. It will help enhance the student support system and encourage responsible AI development practices to manage the unforeseen drawbacks and ensure AI's ethical and efficient application in educational settings.

Keywords: Pre-service teachers, AI in Education, Practices, Challenges, Potential Drawbacks

I. INTRODUCTION

Integrating Artificial Intelligence (AI) has enormously become a research interest in higher education. AI significantly impacts education, including student learning experience, support, enrollment management, and teaching and learning enhancement [1–2]. The potential of AI to extend and enhance teaching and learning in higher education is strong, with AI technologies being considered a catalyst for online learning [3]. Furthermore, there is a growing demand to understand how AI supports students in performing learning tasks and strengthens their learning experience [4]. Also, AI sees the potential contribution to personalized learning platforms, automated assessment systems, and insights into learners' behaviors [5].

AI tools like ChatGPT can enhance student learning, prompting educators to adapt their teaching and assessment practices to embrace this new reality [6]. Furthermore, ChatGPT can help and motivate students, revolutionize communication, and affect research and public discourse across multiple academic disciplines [7-8]. However, the application of AI in higher education poses issues. Ethical considerations have been highlighted, with some educators expressing concerns about the impact of AI tools like ChatGPT on creativity, learning culture, originality, and the potential fostering of dependency on technology among students [9].

The lack of critical reflection on the pedagogical and ethical implications and the risks of implementing AI applications in higher education has also been challenging [10]. Furthermore, the application of AI in tertiary education has been found to need more key features for promoting equity and inclusion in higher learning, posing a challenge to its widespread adoption [11]. Caraga State University students have embraced integrating AI technology to augment and refine their academic output. These tools use AI algorithms to offer learners individualized learning experiences, shorten learning sessions, and expose them to various cultures [12]. However, while utilizing AI language learning systems, issues like the requirement for human contact and the reliance on vast volumes of data for training must be considered [13]. As students' dependence on using AI for assistance increases, a careful procedure for the ethical use of AI must implemented, which will manage the possible drawbacks and encourage a broad comprehension of the technology's regulation. Balancing the benefits is essential for the responsible usage of AI to sustain academic integrity and protect the opposing anticipated outcome in the educational landscape at Caraga State University.

The researchers emphasize the significance of investigating the fundamental causes of the observed facts and occurrences. As a result, examining the benefits and drawbacks of incorporating AI technology into higher education is required. The study's results were intended to help teachers and students make well-informed decisions on integrating AI technology into their teaching and assessment methods. Policy recommendations will be provided for this study to help improve the quality of education for students and educators.

II. METHODS

This study used a descriptive-correlational research design. This design was chosen for its ability to provide a comprehensive depiction of the current state of AI integration in education and its correlations with student learning outcomes. It was descriptive as gathering data is involved that

describes a sample [14]. In this study, the researchers collected information such as the profiles of the participants and captured the nuances of educational technology use in the AI era.

Additionally, the study was correlational as it determined the strength of the relationship among and between the different variables of the study [15]. Specifically, the articulated design aimed to determine if there is a significant relationship between the convenience and drawbacks of Artificial Intelligence to the Bachelor of Elementary Education (BEEd) students within the College of Education.

III. RESULTS AND DISCUSSION

TABLE 1. Level of convenience of AI to education students

Level of Convenience of AI		Mean	Description	Interpretation
1	Personalized Learning	3.93	Agree	The convenience of AI is high
2	Enhanced Engagement	3.92	Agree	The convenience of AI is high
3	Accessibility	4.09	Agree	The convenience of AI is high
4	Inclusivity	4.06	Agree	The convenience of AI is high
	Overall Weighted Mean	4.00	**Agree**	**The convenience of AI is high**

Table 1 underlines the perceived convenience of AI for education students. AI has significantly contributed to different education elements, including individualized learning, increased engagement, accessibility, and inclusivity. The overall weighted mean of 4.00 demonstrates that AI convenience is highly valued in education. These findings indicate that AI has a significant potential to transform education.

AI highlights a number of critical educational advantages, including enhanced accessibility, heightened engagement, and personalized learning. AI can improve learning outcomes by customizing educational materials to each student's needs by analyzing vast amounts of data [16–17]. In addition, AI-enabled tools make the learning environments interactive, which increases the student's motivation and engagement [18]. The high level of convenience perceived by AI among students demonstrates the ability of AI to revolutionize education.

Table 2 shows students' perceptions of Artificial Intelligence in education. The findings indicate that students are concerned about AI's neutrality, privacy, impact on the digital divide, and the potential of dehumanization. Preserving privacy, addressing prejudices, closing the digital divide, and making sure AI in education complements human interaction rather than replaces it are all crucial.

Incorporating Artificial Intelligence (AI) into the educational system presents opportunities and challenges. The possibility of algorithmic bias is a serious worry since it can widen already-existing gaps, especially for underprivileged student populations [19–20]. Furthermore, the collection and analysis of extensive personal data by AI technologies raises significant privacy concerns, potentially jeopardizing data security and eroding public trust in educational institutions [21-22].

TABLE 2. The extent of drawbacks of AI to education students

Extent of Drawbacks of AI		Mean	Description	Interpretation
1	Neutrality	3.92	Agree	The drawback of AI is high
2	Privacy Concerns	4.07	Agree	The drawback of AI is high
3	Digital Gap	4.07	Agree	The drawback of AI is high
4	Dehumanizing Effect	4.08	Agree	The drawback of AI is high
	Overall Weighted Mean	4.04	**Agree**	**The drawback of AI is high**

The digital divide further complicates matters, as unequal access to technology disproportionately impacts students from lower socioeconomic backgrounds, exacerbating existing inequities [23]. Finally, over-reliance on AI systems may dehumanize students and reduce the value of human educators, which could have a detrimental effect on student-teacher relationships and have unfavorable outcomes [24]. It is significant to proactively address these issues to fully achieve AI's transformative potential in education, working to establish a fair and welcoming learning environment for every student.

Table 3 shows an analysis of the perceived level of convenience of Artificial Intelligence (AI) in education for students, grouped by specific student profiles. The analyzed variables included sex, year level, and internet connectivity. The analysis yielded a non-significant result for the influence of sex on the convenience of AI. The F-value was .779, with a corresponding p-value of .403. This suggests no statistically significant difference in the perception of convenience between male and female students.

However, the results show a statistically significant difference when considering the students' year level. With a p-value of .000 and an F-value of 24.652, students' perceptions of the convenience of AI are highly influenced by their year level.

Similarly, the type of internet connectivity also plays a statistically significant role. The F-value of 4.505 with a p-value of .015 suggested that there was a statistically significant difference in the level of convenience of AI between students who used cellular data and those who used Wi-Fi.

Furthermore, internet speed was also a statistically significant factor. With an F-value of 8.349 and a p-value of .000, it indicated that there was a statistically significant difference in the level of convenience of AI among students with different internet speeds.

In summary, the analysis indicated a statistically significant difference in the level of convenience of AI among students of different year levels and with different internet connectivity types and speeds. However, there was no statistically significant difference between male and female students.

TABLE 3. Significant difference in the level of convenience of Artificial Intelligence (AI) to education students when grouped according to profile

Variables		F-Value	P-Value	Decision
Sex	Male	.779	.403	Not Significant
	Female			
Year Level	1st Year 2nd Year 3rd Year 4th year	24.652	.000	Significant
Internet Connectivity (type)	Cellular Data Wifi Wifi, Cellular Data	4.505	.015	Significant
Internet Connectivity (speed)	Less than 10 Mbps 10 - 50 Mbps 51 - 100 Mbps More than 100 Mbps	8.349	.000	Significant

Significant @ 0.05 level

This suggests a need for advanced strategies in AI integration, accounting for differences based on students' year levels, internet connectivity methods, and internet speeds. Educators, legislators, and developers can create a more inclusive and productive learning environment by considering these variables and customizing AI implementations to better meet the varied requirements and preferences of students from various profiles.

These findings align with existing research on AI acceptance and adoption. The study by Asan et al. emphasizes that various human factors and properties of the AI system, such as transparency and complexity, can influence trust in AI [25]. The results also resonate with studies on technology acceptance theories. Chai et al. discuss the significant effects of social influence on participants' intention to use AI products, which could apply to students' perceptions of AI convenience [26].

Table 4 analyses the perceived extent of drawbacks attributed to Artificial Intelligence (AI) in education among students. Year level, internet connectivity, and sex were among the characteristics that were examined. Examining the influence of sex on the perceived drawbacks of AI yielded a non-significant result. The effect of sex on perceived AI downsides was found to be non-significant. The F-value was .075, and the p-value was .466, showing no significant difference between male and female students. However, sudents' perceptions of the drawbacks of Artificial Intelligence were strongly influenced by their year level. The analysis yielded a statistically significant result (F-value of 6.751, p-value of .000).

Regarding internet connectivity, while cellular data versus Wi-Fi showed no statistically significant difference in perceived drawbacks (F-value of 1.665, p-value of .198), internet speed did have a significant impact. Those with less than 10 Mbps experienced with more AI drawbacks than those who had faster internet speed. The p-value for this comparison was .017, and the F-value was 3.599. This entails that as students progress in their education, their perceptions and awareness of AI's drawbacks may evolve [27]. Moreover, the study emphasized how students' impressions of AI's shortcomings are influenced by their online access. While the type of internet connection (cellular data vs. Wi-

Fi) did not significantly differ in perceived drawbacks, internet speed played a crucial role. Students with slower internet speeds (less than 10 Mbps) perceived AI to have more drawbacks than those with faster internet speeds. This emphasizes the importance of reliable and fast internet access in influencing students' views on AI in education [28].

TABLE 4. Significant differences in the extent of drawbacks contributed to Artificial Intelligence (AI) to the education students when grouped according to profile

Variables		F-Value	P-Value	Decision
Sex	Male	.075	.466	Not Significant
	Female			
Year Level	1st Year 2nd Year 3rd Year 4th year	6.751	.000	Significant
Internet Connectivity (type)	Cellular Data Wifi Wifi, Cellular Data	1.665	.198	Not Significant
Internet Connectivity (speed)	Less than 10 Mbps 10 - 50 Mbps 51 - 100 Mbps More than 100 Mbps	3.599	.017	Significant

Significant @ 0.05 level

The Technology Acceptance Model (TAM) could also be applied to interpret these findings. TAM suggests that perceived ease of use and usefulness are key determinants of individuals' attitudes toward technology. In this context, students' perceptions of AI drawbacks may be influenced by how easy they find it to use AI in their educational settings and how useful they perceive AI to be in enhancing their learning experience. Additionally, Social Cognitive Theory could be relevant in understanding how students' perceptions of AI drawbacks are shaped by their observations of others' experiences with AI and the outcomes they witness [29].

Table 5 shows the correlation analysis between perceived convenience and perceived drawbacks of Artificial Intelligence (AI) in education for students. The study indicated a statistically significant relationship between the level of convenience (p-value: .000) and the extent of drawbacks (p-value: .000) associated with AI in education for students. A moderately positive correlation was indicated by the positive r-value of .554. This suggests that students' perceptions of the extent of AI's disadvantages grew along with its perceived convenience. This result suggests that although students were aware of the potential advantages of Artificial Intelligence (AI) in the classroom (convenience), they were also aware of the possible disadvantages. Developing strategies to minimize the negative effects and maximize the positive effects of AI in educational settings may benefit from an understanding of this relationship.

The findings demonstrated that Artificial Intelligence (AI) is a two-edged sword, and that it is necessary to maximize its benefits while reducing its drawbacks [30]. This results aligns with the correlation analysis between perceived convenience and drawbacks of AI in education for students. As the perceived convenience of AI increased, the perceived extent of drawbacks among students, indicating a moderate positive

correlation. This suggests that while students recognize the benefits of AI in education, they also acknowledge the potential drawbacks associated with its use. By identifying the dual nature of AI in education, educators and policymakers can strive to maximize the advantages of AI while minimizing its limitations [31].

TABLE 5. Significant relationship between the level of convenience and extent of drawbacks of Artificial Intelligence (AI) to education students

Variables		r-value	p-value	Decision	Significant
Level of Convenience	Extent of Drawbacks	.554**	.000	Reject Ho	Significant

Significant @ 0.05 level

Understanding this relationship is crucial in developing strategies to mitigate the drawbacks while maximizing the benefits of AI in educational settings. The study by Akgün and Greenhow on addressing ethical challenges in AI in education emphasizes the importance of considering ethical implications when implementing AI technologies in educational settings [32]. This aligns with the need to develop strategies that not only enhance the convenience of AI but also address the drawbacks to ensure ethical and effective use in education.

Furthermore, the findings stress the importance of implementing strategies to effectively manage AI's drawbacks in education. This aligns with the concept that integrating AI in education necessitates a thoughtful approach towards potential challenges and the formulation of suitable solutions [33]. By tackling the drawbacks identified by students, educational stakeholders can establish a more favorable environment for incorporating AI in education.

IV. CONCLUSION

On the convenience of using AI in education, students find that AI-powered resources are extremely valuable for improving engagement and individualized learning. They view AI as a helpful tool for improving education by delivering individualized learning opportunities and increasing participation. However, there is room for improvement in AI-powered personalized feedback to meet the needs of students more effectively. AI-powered accessibility features have received excellent feedback from students, which points to exciting opportunities for the future of education. These features could make learning more inclusive, accessible, and engaging for all students. These results show that using AI for inclusive teaching methods is becoming more popular, encouraging more research and development of AI-powered learning environments to promote inclusion and diversity in classrooms.

The study also found possible negatives of AI neutrality, including privacy problems, the digital divide, and the dehumanizing effect. The results highlight the necessity of continuous efforts to improve the neutrality of AI systems in education, address privacy concerns by putting policies and procedures in place, guarantee that AI technologies are accessible to all students, and carefully incorporate AI to enhance rather than replace the human element in instruction. The significance of a careful strategy that builds on AI's advantages while maintaining the role of human educators in

promoting social-emotional learning and establishing a supportive learning environment is underscored by these findings, which have significant ramifications for educators, legislators, and developers.

The ANOVA analysis revealed no significant differences in student sex regarding the convenience of Artificial Intelligence in education. However, year level and internet connectivity showed substantial differences. This suggests that students with Wi-Fi internet connection find AI more convenient than those with cellular data or no internet connection. Students with an internet connection speed of 10-50 Mbps and 51-100 Mbps find AI more convenient than those with less than 10 Mbps or more than 100 Mbps.

In terms of the extent of drawbacks of AI, the study found no significant differences in the students' perceived drawbacks of AI in education in terms of sex and internet connection type. This suggests both male and female students may have similar concerns or reservations about Artificial Intelligence, and whether they used cellular data, Wi-Fi, or a combination of both didn't seem to impact their perception of drawbacks. However, there was a significant difference in perceived drawbacks regarding year level and internet speed. Firstly, student year level showed a significant difference, suggesting concerns might be tied to their curriculum stage. For instance, students encountering foundational concepts might have different worries than those with advanced topics. Secondly, internet speed emerged as a crucial factor. Students with slower internet speeds (less than 10 Mbps) perceived significantly more drawbacks. This highlights the digital divide as a barrier, as slow internet can lead to performance issues, limitations in accessing features, and overall frustration, potentially fueling a more negative perception of AI's role in education.

The correlation analysis between the level of convenience of Artificial Intelligence and the extent of its drawbacks showed a significant relationship. This suggests that as the perceived convenience of AI tends to increase, so does the perceived extent of drawbacks among students. This finding implies that while students recognize the potential benefits of Artificial Intelligence in education (convenience), they also acknowledge the potential drawbacks associated with its use. Understanding this relationship could be valuable in developing strategies to mitigate the drawbacks while maximizing the benefits of AI in educational settings.

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