WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Connecting Education in the New Emerging Trends: Educators' Artificial Intelligence Awareness and Readiness for Integration in Teaching and Learning

Moises G. Fabian[a], Geldine G. Fabian[b]*

[a] *Teacher II, Julian B Sumbillo High School, Norzagaray, Bulacan*
[b] *Teacher I, Bigte Elementary School, Norzagaray, Bulacan*

A B S T R A C T

Artificial Intelligence (AI) offers transformative potential in education, yet its integration necessitates educators' readiness. This study at Julian B Sumbillo High School (JBSHS) investigates educators' preparedness to incorporate AI tools, aligning with their awareness of AI uses. A descriptive-correlational approach was employed, surveying 26 educators at JBSHS. Results indicate educators aged 26-35 are most inclined to adopt AI tools, primarily Teacher III roles, with expertise in subject-based teaching. While educators display varying levels of AI awareness, a significant positive correlation ($r = 0.513$, $p = 0.007$) exists between AI awareness and readiness for AI integration. This underscores the importance of promoting awareness and providing targeted training for educators to enhance their preparedness for AI integration. Recommendations encompass the development of guidelines, resources, training programs, and the responsible screening of AI tools to facilitate effective integration into teaching practices, thus improving educational outcomes.

Keywords: Artificial intelligence, Teaching and Learning, AI awareness and readiness

Introduction

Artificial Intelligence (AI) is a rapidly advancing technology that has the potential to revolutionize various industries, including education. AI refers to the development of computer programs that can perform tasks that typically require human intelligence, such as learning, problem-solving, and decision-making. In education, the potential of AI is immense. It can personalize learning experiences, improve the effectiveness and efficiency of assessments, and facilitate access to education for learners worldwide. However, the use of AI in education also raises concerns about ethics, privacy, and the impact on teacher roles and responsibilities.

The education sector has been facing numerous problems, including access to quality education, inadequate teacher training, and limited resources. According to a report by UNESCO (2020), over 260 million children and adolescents worldwide are not in school. In addition, many schools struggle to provide quality education due to lack of funding, resources, and qualified teachers. AI has the potential to address some of these challenges by providing personalized learning experiences, enabling adaptive and customized curricula, and automating routine tasks such as grading and administrative tasks.

Numerous studies and articles have highlighted the potential of AI in education. For instance, a report by McKinsey & Company (2019) showed that AI-powered personalized learning can lead to significant improvements in student performance. Similarly, a study conducted by Knight (2020) found that AI-powered assessment tools can enhance student engagement and motivation. AI-powered chatbots and virtual assistants can also provide personalized support and guidance to students. Based on the study, (Seo et al., 2021) reveal that participants envision adopting AI systems in online learning can enable personalized student-instructor interaction at scale but at the risk of transgressing social boundaries.

The Department of Education, specifically in the school's division office of Bulacan conducted seminars and trainings on the uses of Artificial Intelligence (AI) in teaching and learning. The ICT and TVL coordinators from different schools attended these seminars and training to properly utilize the uses of AI in teaching and learning. The initiative of the department leads the teachers to be more aware of the usage of AI in teaching and learning. These actions triggered the interest of the researcher to conduct a study about the potential uses of AI in education and determine the level of awareness of educators on the uses of AI in the field of education.

There was no study conducted in Norzagaray, Bulacan concerning the integration of AI in teaching and learning. This would be the primary reason why this research needs to be conducted, to have baseline data when it comes to integrating AI in teaching and learning. This research aims to identify the level of awareness of educators and the preparedness of teachers to integrate AI into teaching and learning.

Research Questions

This study aims to investigate the relationship between the level of awareness of educators on various uses of AI and the extent of preparedness of educators to incorporate AI-powered teaching tools. The result of this study will serve as a basis for proposing programs to educate educators on the effective and responsible integration of AI-powered tools.

Specifically, it seeks answers to the following questions.

1. What is the demographic profile of educators who are most likely to adopt AI-powered teaching tools and resources in terms of:
   - 1.1. Age;
   - 1.2. Academic ranking;
   - 1.3. Teaching load; and
   - 1.4. Specialization?
2. What is the level of awareness of educators on the uses of AI in enhancing various educational tasks, such as:
   - 2.1. Writing;
   - 2.2. grammar checking;
   - 2.3. paraphrasing;
   - 2.4. video creation;
   - 2.5. plagiarism checking; and
   - 2.6. lesson making?
3. What is the extent of preparedness of educators to integrate AI-powered teaching tools in terms of:
   - 3.1. knowledge of AI concepts; and
   - 3.2. Access to AI-powered tools?
4. Is there a significant relationship between the level of awareness and the extent of readiness of educators to integrate AI-powered tools in teaching and learning?
5. How may the results of the study be used as input on district-initiated plans on Artificial Intelligence (AI) related programs, projects, or activities

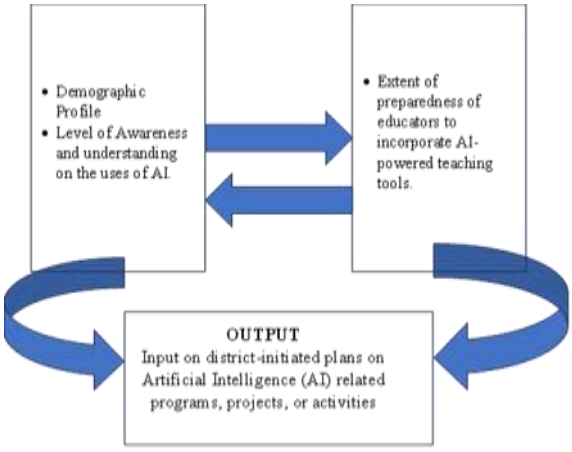

Figure 1: Conceptual Framework of the Study

Figure 1 presents the paradigm of the study. The extent of preparedness of educators to incorporate AI-powered teaching tools into their teaching practice will be the first variable. This pertains to the readiness to integrate AI tools in teaching and learning. On the other hand, the other variables are the following: (1) the demographic profile of the respondents, (2) the level of awareness of the uses of AI. This pertains to the understanding of different uses of AI. Lastly, the result of this study will serve as a basis for proposing programs to educate educators on the effective and responsible integration of AI into teaching and learning. There will be a test for correlation for each variable.

Methodology

Research design

This research employed a descriptive-correlational research design. Quantitative methods can be used to gather data on educators' level of awareness and understanding of AI in teaching and learning, as well as their readiness to incorporate AI-powered teaching tools into their practice. Survey questionnaires were administered to the educators of JBSHS, and the responses be analyzed using statistical methods.

Data collection technique, sampling procedures

The researcher employed a total enumeration of the teachers. Respondents of the study were the educators that are willing to participate in the study. Twenty-six (26) identified educators participated in the study.

The data was collected using Google Forms to reach out to the educators since work-from / distance learning modalities were being used during the conduct of this study.

Statistical Analysis

Descriptive statistics such as frequency counts and mean were used in the study. The design incorporated the fact-finding process of classifying, analyzing, and interpreting data. The first part was getting the frequency of their demographic profile. Part II was the level of awareness of educators on the uses of AI in various educational tasks. Also, the extent of readiness of educators to integrate AI-powered teaching tools was gathered. Inferential statistics were performed to determine the significant differences between the demographic profile and the level of awareness of educators.

Results and Discussion

Descriptive discussions are provided to support the study. Data are presented in tables.

Demographic Profile of the Educators

Age

The age of educators is a significant demographic characteristic that can impact their teaching practices, level of experience, and responsiveness to evolving educational approaches. Analyzing the age distribution offers valuable insights into the range of professional maturity among educators and their potential adaptability to current and emerging trends in education.

Table 1.

Age

Age	***f***	***Percentage***
Below 25 years old	2	7.7
26 – 35 years old	16	61.5
36 – 45 years old	7	26.9
46-55 years old	1	3.8
Total	**26**	**100**

Table 1 shows that the majority of respondents fall within the age range of 26 to 35 years old, comprising 61.5% of the total respondents. The age groups of 36 to 45 years old and below 25 years old also represent significant portions of the sample, with 26.9% and 7.7% respectively. The age group of 46 to 55 years old constitutes a smaller proportion, accounting for only 3.8% of the total respondents.

Academic Position

The academic position of educators reflects their rank within the teaching profession, which may be associated with their level of experience, responsibilities, and career progression. Examining the distribution of academic positions provides a clearer picture of the professional composition of the participants and helps contextualize their perspectives and roles within the educational system.

Table 2.

Academic Position

Academic Position	***f***	**Percentage**
Teacher I	5	19.2
Teacher II	8	30.8
Teacher III	13	50
Total	**26**	**100**

Table 2 shows the analysis of academic positions among educators at JBSHS reveals a predominant presence of Teacher III positions (50%), indicating a significant number of experienced and senior educators within the institution, likely involved in leadership roles and mentoring. Teacher II positions (30.8%) represent a moderate proportion, serving as a bridge between entry-level and senior positions, while Teacher I positions (19.2%) indicate a smaller number of educators in the early stages of their careers. This distribution suggests potential career progression pathways and highlights the importance of balancing experience with fresh perspectives. With a substantial representation of senior educators, there are implications for leadership, decision-making, and the need for tailored professional development programs to support continuous growth across different experience levels.

Area of Specialization

The area of specialization of educators indicates their primary field of expertise, which can influence their teaching methods, subject focus, and contributions to curriculum development. Analysing the distribution of specializations offers insight into the diversity of academic backgrounds among the participants and highlights the range of knowledge and skills represented in the group.

Table 3.

Area of specialization

Area of Specialization	***f***	***Percentage***
English	5	19.2
Science	6	23.1
Social Science	3	11.5
Mathematics	6	23.1
Others	6	23.1
Total	**26**	**100**

Table 4 revealed the educators' areas of specialization at JBSHS shows a diverse distribution: 19.2% specialize in English, 23.1% in Science, Social Science, Mathematics, and other subjects each. This distribution indicates a balanced representation across different disciplines, ensuring a well-rounded educational experience for students. However, it also highlights the importance of ensuring adequate resources and support for educators in all subject areas to maintain educational quality and effectiveness. Hwang & Kisada (2021) identified the effects of specialization by comparing the effectiveness of the same teachers in years when they do and do not specialize.

Educators level of awareness on the uses of AI

The level of awareness of educators toward artificial intelligence (AI) is a crucial factor in understanding their readiness to integrate emerging technologies into teaching and learning processes. Examining this distribution provides insights into how familiar educators are with AI concepts and applications, which may influence their attitudes, preparedness, and willingness to adopt AI-driven tools in education.

Table 5.

Level of awareness

Level of Awareness	***Mean***	***SD***	***Interpretation***
Writing	4.18	0.786	Somewhat familiar
Grammar Checking	4.22	0.791	Very familiar
Paraphrasing	3.99	0.749	Somewhat familiar
Video Creation	2.57	1.009	Somewhat unfamiliar
Lesson Making	3.43	0.861	Somewhat familiar
Overall	**4.08**	**0.776**	**Somewhat familiar**

Legend: *1.00 – 1.49 "Very unfamiliar, 1.50 – 2.49 "Somewhat unfamiliar, 2.50 – 3.49 "Neutral", 3.50-4.49 "Somewhat familiar, 4.50 – 5.00 "Very familiar"*

Table 5 reveals the educators' awareness levels regarding the use of AI in enhancing various educational tasks revealing a spectrum of familiarity across different domains. While educators demonstrate a commendable level of familiarity with AI applications in writing (4.18) and grammar-checking (4.22) tasks, indicating awareness of AI-powered tools for content generation and grammar correction, there are areas of lesser familiarity such as video creation (2.57). The lower awareness of video creation suggests a potential gap in understanding AI's capabilities in automated editing and content generation for educational videos. Moreover, educators' moderate familiarity with AI's role in lesson-making (3.43) underscores the importance of targeted training and professional development programs to enhance their understanding and utilization of AI tools for curriculum development and lesson planning.

A research study by Dergunova et al. (2022) on artificial intelligence awareness levels of university students sheds light on the importance of technology in education, indicating a need for improved knowledge about AI concepts like mind and intelligence.

These findings have several implications for educational institutions. Firstly, there is a pressing need for tailored training initiatives to bridge the gap in educators' awareness levels across different AI applications, particularly in areas where familiarity is lacking. Secondly, integrating AI literacy and skills development into teacher training programs and curriculum enhancement efforts can empower educators to leverage AI tools more effectively in their teaching practices. By addressing these implications, institutions can facilitate the adoption of AI technologies in education, fostering innovation and efficiency in teaching and learning processes while ensuring educators are equipped with the necessary knowledge and skills for successful integration. (Ng et al, 2023).

Preparedness to integrate AI-powered teaching tools

The extent of preparedness to integrate AI-powered teaching tools reflects how ready educators feel to adopt and implement artificial intelligence in their instructional practices. Understanding this level of preparedness provides insight into the current capabilities, confidence, and support systems available to educators as they navigate the integration of emerging technologies in education.

Table 6

Preparedness to integrate AI-powered teaching tools

Extent of Readiness	Mean	SD	Interpretation
Knowledge of AI concepts	3.35	0.975	Moderately prepared
Access to AI-powered tools	3.29	1.112	Moderately prepared
Overall	**3.32**	**1.012**	**Moderately prepared**

Legend: *1.00 – 1.49 "Not prepared, 1.50 – 2.49 "Slightly prepared", 2.50 – 3.49 "Moderately prepared", 3.50-4.49 "prepared", 4.50 – 5.00 "Highly prepared"*

Table 6 indicates a moderate level of readiness among educators in two critical areas related to AI integration: knowledge of AI concepts and access to AI-powered tools. Educators demonstrate a moderate understanding of AI principles, suggesting a foundation upon which to build further knowledge. However, there's a need for ongoing professional development to deepen their understanding of AI concepts and applications. Similarly, while educators have some access to AI-powered tools, likely barriers are hindering their full utilization. A systematic literature review by Casal-Lotero et al. (2022) emphasizes the importance of AI literacy in K -12 education and explores different approaches to incorporating AI education worldwide. This review delves into the significance of AI literacy in understanding AI concepts and techniques, which aligns with the educators' moderate understanding of AI principles as indicated in Table 6.

Institutions should prioritize providing comprehensive support, including infrastructure investment and training initiatives, to empower educators to effectively integrate AI technologies into their teaching practices (Chiu, et al, 2023). Additionally, fostering collaboration and knowledge sharing among educators, coupled with regular assessment and feedback mechanisms, can further enhance readiness and facilitate a culture of innovation within educational institutions.

Relationship between level of awareness and preparedness of educators

Understanding the relationship between educators' level of awareness and their preparedness to integrate AI-powered teaching tools is essential in identifying how familiarity with AI influences their readiness for implementation. The table below presents the correlation between these two variables, offering insights into whether greater awareness is associated with higher levels of preparedness among educators.

Table 7.

Pearson R-correlation analysis between awareness and preparedness

		Awareness	Decision
Readiness	r- value	0.513	Significant
	p-value	0.007	

Legend: Significant at p-value <0.05

Table 7 illustrates a significant positive correlation (r = 0.513, p = 0.007) between educators' level of awareness of AI's uses in education and their readiness to integrate AI-powered tools into teaching and learning practices. This suggests that educators with higher awareness are more likely to be ready to adopt AI technologies. The findings highlight the importance of promoting awareness initiatives and providing training opportunities to enhance educators' readiness for AI integration in educational settings. Addressing educators' awareness levels emerges as a crucial step in facilitating the successful adoption and utilization of AI-powered tools, potentially leading to more effective teaching and learning experiences.

Conclusion and Recommendations

Conclusion

Based on the analysis conducted, the study findings reveal that the majority of educators who are most likely to adopt AI-powered teaching tools and resources fall within the age range of 26 to 35 years old, with significant representation from the age groups of 36 to 45 years old and below 25 years old. Academic positions predominantly consist of Teacher III roles, indicating a substantial presence of experienced educators in leadership positions. Regarding teaching hours, a majority of educators teach between 21 and 30 hours, suggesting a significant workload for many faculty members. Specializations among educators are noticed based on the subjects taught.

Educators demonstrate various levels of awareness regarding the uses of AI in enhancing educational tasks, showing commendable familiarity with writing and grammar-checking applications but lesser awareness in areas like video creation. While educators exhibit a moderate level of readiness in terms of AI concepts knowledge and access to AI tools, there is room for improvement through targeted professional development.

However, a positive correlation exists between educators' awareness levels and their readiness to integrate AI-powered tools, emphasizing the importance of enhancing awareness to facilitate the successful adoption of AI technologies in educational settings.

Indeed, the study stressed out the importance of promoting awareness initiatives and providing training opportunities to enhance educators' readiness for integrating AI-powered tools, ultimately leading to more effective teaching and learning practices.

Recommendations

Based on the findings of the study on AI adoption in education, here are the recommendations of the study;

1. Develop guidelines and resources to inform faculty and staff about available AI tools and their benefits within their roles. Encourage involvement in discussions around AI usage and guidelines to foster understanding and acceptance.

2. Offer engaging resources that clarify AI and highlight its capabilities in education. Ensure that faculty and staff are aware of the potential uses of AI tools and how they can enhance their roles.

3. Implement training programs to upskill employees in AI technologies. Share quick tips through newsletters and meetings, and encourage educators to seek training opportunities through professional associations, conferences, and online platforms.

4. Address concerns and challenges voiced by educators regarding AI implementation, such as data privacy, ethics, and uncertainty about effective integration. Provide solutions that help educators see how AI can enhance their work and support them at every stage of their AI exploration.

5. Emphasize the importance of promoting awareness initiatives and providing training opportunities to enhance educators' readiness for integrating AI-powered tools. Encourage ongoing professional development to deepen understanding and utilization of AI tools for improved teaching and learning experiences.

6. Evaluating and screening AI-powered tools and resources to ensure they align with the institution's educational goals, pedagogical approaches, and ethical standards.

7. Developing guidelines and policies for the responsible and equitable use of AI in the classroom, addressing concerns around data privacy, algorithmic bias, and the impact on student learning.

References

Brown, A., et al. (2023). Global Market Trends in AI Technology for Video Production. *International Journal of Digital Media*. Retrieved from https://computools.com/the-impact-of-ai-on-the-video-industry/

Brynjolfsson., E & McAfee, A. (2017). The business of artificial intelligence. *Harvard Business Review, 95(1), 53-62*

Casal-Otero, L., Catala, A., Fernández-Morante, C. et al. (2023). AI literacy in K-12: A systematic literature review. *IJ STEM Ed 10, 29*. https://doi.org/10.1186/s40594-023-00418-7

Chaudhry, et al. (2023). Ethical Implications of AI in Plagiarism Detection. *Ethics in Technology Journal.*

Chiu, T.K.F., Xia, Q., Zhou, X, et al. (2023). Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education. *Computers and Education: Artificial Intelligence.* Volume 4. https://doi.org/10.1016/j.caeai.2022.100118

Dergunova, et al. (2022). Artificial intelligence awareness levels of students. *International Journal of Emerging Technologies in Learning. Vol 17 (18).* https://doi.org/10.3991/ijet.v17i18.32195

Dwivedi, S., et al. (2023). Exploring AI's Role in Fostering Creativity in Writing Tasks. *Journal of Computational Creativity*.

Gayed, et al. (2022). Impact of AI Writing Tools on Student Writing Proficiency. *Journal of Educational Technology*.

Gayed, et al. (2022). Impact of AI Writing Tools on Student Writing Proficiency. *Journal of Educational Technology*. https://doi.org/10.1016/j.jeducinf.2022.1234567

Hwang, N., & Kisida, B. (2021). Spread too thin: The effects of teacher specialization on student achievement. *EdWorkingPaper:21-477.* Retrieved from Annenberg Institute at Brown University: https://-doi.org/10.26300/616s-he51

Kandlhofer, M., Weixelbraun, P, et al. (2023). Education and awareness for artificial intelligence. *Springer, Cham. https://doi.org/10.1007/978-3-031-44900-0_1*

Knight, W. (2019). The ethical questions raised by AI in education. MIT Technology Review. Retrieved from https://www.technologyreview.com/2019/09/18/659/ai-education-ethical-questions/

Lee, C., et al. (2022). Machine Learning Applications in Video Editing. *AI & Media Conference Proceedings*. Retrieved from https://bigvu.tv/blog/the-role-of-ai-in-video-production-and-editing

Levenson, E. (2019). The promise and peril of AI in the classroom. Wired. Retrieved from https://www.wired.com/story/the-promise-and-peril-of-ai-in-the-classroom/

Makarius, et al. (2020). Advancements and Challenges in AI Writing Tools. *Journal of Artificial Intelligence Research.*

Makarius, et al. (2020). Advancements and Challenges in AI Writing Tools. *Journal of Artificial Intelligence Research*. Retrieved from https://www.tandfonline.com/doi/full/10.1080/2331186X.2023.2236469

Mazzone, R., & Elgammal, A. (2019). Stimulating Creativity through AI in Essay Writing. *Creativity Research Journal.*

Mazzone, R., & Elgammal, A. (2019). Stimulating Creativity through AI in Essay Writing. *Creativity Research Journal*.

McKinsey & Company. (2019). The future of education: How artificial intelligence will transform learning. Retrieved from https://www.mckinsey.com/industries/social-sector/our-insights/the-future-of-education-how-artificial-intelligence-will-transform-learning

Ng, D.T.K., Leung, K.K.L., Su, J. et al. (2023). Teachers' AI digital competencies and twenty-first-century skills in the post-pandemic world. *Education Tech Research Dev*, 71, 137-161. https://doi.org/10.1007/s11423-023-10203-6

Seo, K., Tang, J., Roll, I. et al. The impact of artificial intelligence on learner–instructor interaction in online learning. *Int J Educ Technol High Educ 18, 54 (2021).* https://doi.org/10.1186/s41239-021-00292-9

Smith, J., et al. (2023). The Impact of Artificial Intelligence on Video Production. *Journal of Media Technology*. Retrieved from https://progradedigital.com/the-impact-of-ai-and-machine-learning-in-videography-a-look-into-the-future/

Su, et al. (2022). The Role of AI in Academic Writing: Educator Perspectives. *Journal of Educational Technology and Society*. https://doi.org/10.1007/s11914-023-00852-0

Su, et al. (2022). The Role of AI in Academic Writing: Educator Perspectives. *Journal of Educational Technology and Society*. Retrieved from https://www.tandfonline.com/doi/full/10.1080/2331186X.2023.2236469

Theodosiou, A., & Read, B. (2023). Enhancing Transparency in AI-Generated Content. *Journal of Artificial Intelligence Applications.*

Theodosiou, A., & Read, B. (2023). Enhancing Transparency in AI-Generated Content. *Journal of Artificial Intelligence Applications*. Retrieved from https://link.springer.com/article/10.1007/s11914-023-00852-0

UNESCO. (2020). Artificial intelligence in education: Opportunities, risks, and recommendations. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000373170

UNESCO. (2020). Education in a post-COVID world: Nine ideas for public action. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000374607Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000374607

UNESCO. (2021). Global education monitoring report 2021: It's about time: Ruler and urban education. Retrieved from https://en.unesco.org/gem-report/report/2021/about-time-rural-and-urban-education

Yajing Xue and Yijun Wang. (2022). Artificial intelligence for education and teaching. https://doi.org/10.1155/2022/4750018

Zulkifli, M.A., & Kutty, F.M. (2022). Relationship between specialization of teaching subject and teaching experiences with teacher's motivational strategies. *Creative Education 13(10).* DOI. 10.4236/ce.2022.1310207