Role and Effectiveness of Artificial Intelligence in Enhancing Learning for Early Childhood Education in Eastern Visayas' Higher Education Institutions

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ABSTRACT: *This study evaluated the understanding, usage, and attitudes of early childhood education students concerning Artificial Narrow Intelligence (ANI) tools in learning within selected Higher Education Institutions (HEIs) in Eastern Visayas during the School Year 2024–2025. Using a descriptive-correlational research method, this research integrated data from 369 student respondents. The poll examined students' profiles, the ANI tools they use, and their awareness, usage, and opinions concerning these technologies. With students citing a high degree of knowledge and regular usage of ANI in their academic activities, results revealed Quillbot, ChatGPT, and Grammarly to be the most frequently used tools. Their sentiments remained broadly neutral in spite of this, suggesting a mix of awareness and cautious hope regarding the wider effects of artificial intelligence. Greater awareness leads to larger use and more favorable opinions of ANI in learning, according to a statistical study revealing significant moderate positive connections between awareness and usage, awareness and attitude, and usage and attitude. To encourage appropriate and efficient use of ANI, the study suggests that HEIs implement awareness campaigns, training, and curricular integration to promote students' academic growth.*

Key words: Artificial intelligence, Eastern Visayas, higher education, Learning for early, role.

1. Introduction

In higher education, as in other fields, the focus is on how students use AI to their advantage in the classroom. A recent study by Chu et al. (2022) found that AI usage in HEIs has been on the rise over the past five years, which calls for an evaluation of the impact of this rapidly developing technology on students, the main audience for these institutions. Previous research by Gorriz et al. (2020) confirmed that AI is a valuable tool for students, helping them to improve and advance their learning. Moreover, Scott (2024) defines artificial intelligence (AI) as a technology that combines computers and human intelligence to take actions to achieve specific goals. Similarly, Kanade (2022) states AI is a machine capable of imitating human abilities. Additionally, Digicrome (2023) emphasized that there are three types of artificial intelligence based on their abilities: artificial narrow intelligence (ANI), artificial general intelligence (AGI), and artificial superintelligence (ASI). This study focuses on artificial narrow intelligence (ANI).

Artificial Narrow Intelligence (ANI) is a computer-based tool designed to perform particular tasks (Guinness, 2023). Similarly, Larkin (2022) characterizes ANI as created to solve specific problems, such as

internet searches, speech detection, and face recognition, simulating human behavior within defined constraints. Thus, ANI can influence students in their learning processes. Common examples of ANI applications that students use to enhance their academic success include Grammarly, ChatGPT, Quizlet, Quillbot, Turnitin, and other tools designed to improve performance across various academic domains. The application of artificial narrow intelligence (ANI) allows Higher Education Institutions (HEIs) to enhance and develop teaching approaches and methodologies, particularly in student learning (Hwang & Tu, 2021). According to Pisica et al. (2023), HEIs serve as an avenue for developing and creating effective and efficient community leaders among enrolled students. Moreover, these policies and regulations for using ANI in students' learning experiences can lead to academic success and provide insights for formulating responsible ANI usage guidelines internationally (Zinchenko et al., 2022).

Internationally, several countries, including the United States, Finland, China, and the United Kingdom, have embraced using ANI (Artificial Narrow Intelligence) in education. These nations have implemented systematic strategies that enable Higher Education Institutions (HEIs) to conduct seminars and training programs, raising awareness among educators and students about the appropriate integration of ANI in the teaching-learning process (Bhutoria, 2022). In the Philippines, Republic Act No. 11927, known as the "Digital Workforce Competitiveness Act," recognizes the rapid changes in the workforce due to digitalization and advances in artificial intelligence, particularly in the educational system (Republic of the Philippines, 2022). Considering Artificial Narrow Intelligence's (ANI) advantages in students' learning experiences is essential. Ng et al. (2021) underscored that ANI offers students learning opportunities to strengthen and enhance their acquisition of knowledge and skills, preparing them for future endeavors. On the contrary, artificial narrow intelligence (ANI) presents certain disadvantages within the educational system. However, the implications of ANI on education and learning need more clarity regarding how it meaningfully influences teaching and learning (Zawacki-Richter et al., 2019).

Additionally, ANI still needs to match the cognitive human skills, highlighting limitations in its output (Tegmark, 2018). Concerns have been raised regarding the potential for students to cheat using ANI applications like ChatGPT, leading to ethical questions (Shen et al., 2021). These disadvantages of ANI in learning highlight the need to address its impact, particularly on Early Childhood Education students in higher education institutions (Kazanidis & Pellas, 2024). It is essential to assess their attitudes, usage, and awareness of artificial intelligence in learning to ensure its effective and responsible integration into their educational experiences. According to Yang (2022), artificial intelligence is familiar in the educational sector. However, many students and educators need more exposure and awareness regarding using artificial narrow intelligence (ANI) in teaching and learning. Based on the studies, assessing artificial narrow intelligence roles in learning within Higher Education Institutions (HEIs) in Eastern Visayas is necessary. This assessment should encompass students' learning experiences, including their perceptions, challenges, and coping mechanisms. Understanding both the drawbacks and benefits of this artificial intelligence is essential, as it can serve as a basis for strengthening and enhancing the formulation of policies and regulations governing the effective use of artificial intelligence in learning.

Exploring students' learning experiences with Artificial Narrow Intelligence and its influence on learning outcomes in HEIs can serve as a foundation for educational stakeholders, including students, teachers, and school administrators. Beyond general recommendations, the studies can inform AI policies and implementation strategies in Philippine HEIs, particularly in Eastern Visayas, by guiding the development of structured plans to raise awareness among students and promote the responsible, effective, and efficient use of artificial intelligence in their studies. Additionally, this research underscores the need for a comprehensive action plan that regulates the ethical and pedagogical integration of ANI, ensuring that its use aligns with institutional goals while upholding the core values of education.

2. Literature Review

The use of Artificial Narrow Intelligence (ANI) to improve teaching and learning strategies has been on the rise in recent years, especially in the field of early childhood education. Studies have shown that ANI can personalize lessons and increase participation from elementary school students. For example, research has shown that AI-powered systems can adjust to each student's unique learning style and speed, which is especially useful in preschool and kindergarten where kids are still building their skill sets (Smith & Jones,

2019). According to Brown et al. (2020), adaptive learning platforms and other AI tools can help teachers better target their lessons by revealing which areas students are having difficulty.

In addition, by incorporating ANI into HEIs' early childhood education programs, teachers may access powerful analytics tools that aid in tracking students' development and forecasting how well they will do in school. Early intervention for students with learning disabilities is made possible by this technology, which enables a data-driven approach to education. Positive feedback on learner engagement and information retention has been observed in the application of AI to build cognitive and social abilities through interactive games and personalized learning scenarios (Lee & Nguyen, 2019). Supporting a more equitable and effective learning environment for early childhood students, ANI plays an increasingly important role in defining educational techniques as HEIs continue to implement these technologies (Martin & Davis, 2020).

3. Methodology

This study employed a descriptive-correlational research design to gain a comprehensive understanding of the role of Artificial Narrow Intelligence (ANI) in early childhood education learning. As described by Dankyi et al. (2024), this design begins with quantitative data collection and analysis. The research was conducted during the School Year 2024–2025 across three Higher Education Institutions (HEIs) in Eastern Visayas—Leyte Normal University (HEI-A), Visayas State University (HEI-B), and Samar State University (HEI-C)—which offer early childhood education programs. A total of 369 officially enrolled students from first-year to fourth-year levels participated. The quantitative phase used a structured and modified survey questionnaire based on Goldberg et al. (2024), covering student profiles, ANI tools used, and academic performance indicators such as General Weighted Average (GWA). The instrument assessed three core areas using a five-point Likert scale: awareness of ANI, usage of ANI tools in learning, and attitudes toward ANI. Each section consisted of five items, rated from Strongly Agree (5) to Strongly Disagree (1). Pearson's r correlation coefficient was applied to examine relationships between awareness, usage, and attitudes, identifying the strength and direction of associations.

4. Results and Discussion

Table 1. Artificial Narrow Intelligence Tools Used by the Respondents in Learning.

Artificial Narrow Intelligence Tools Used	f	Rank
ChatGpt	178	2
Grammarly	155	2
Quilbot	182	1
Quizlet	36	4
Others	34	5

Table 1 highlights the most commonly used artificial intelligence tools among teacher education students. Quillbot emerged as the most utilized tool, with 182 users. ChatGPT followed closely with 178 users, while Grammarly ranked third with 155 users. Quizlet was used by 36 students, and other applications accounted for 34 users. The findings of the study highlight the essential role of artificial narrow intelligence (ANI) tools in enhancing the learning experiences of teacher education students. These ANI tools effectively support students in their writing and research activities (Meroua & Noudjoud, 2024). This suggests that the integration of artificial intelligence into the learning process is being leveraged by teacher education students to their advantage, helping them achieve and complete academic requirements efficiently. However, the growing number of students using artificial narrow intelligence (ANI) tools highlights the need for guidance to prevent plagiarism and promote responsible use of these technologies (Khan, 2024). It is recommended to conduct awareness campaigns and training sessions to educate students on how these tools can support their academic endeavors while fostering essential skills for effectively utilizing them (Abulibdeh et al., 2024). Encouraging responsible use of ANI tools can help uphold academic integrity and ensure students take ownership of their work, contributing to their overall success and development.

Table 2. Awareness Level of the Respondents Towards Artificial Narrow Intelligence in Learning.

S/N	Indicators	WM	SD	Verbal Description
1	I am aware of AI technology, but I am still learning about how it works	4.18	0.72	High
2	I know that AI can help people improve and achieve their goals	3.87	0.81	High
3	I keep up with news about AI.	3.32	0.95	Moderate
4	I talk about AI with friends and family.	3.15	1.08	Moderate
5	I notice chances to learn more about AI on campus.	3.64	0.81	High
	Aggregate Mean	3.63		High
	Aggregate Standard Deviation		0.88	

The results indicate that respondents have a high level of awareness of AI technology, as shown by their recognition of its potential to enhance productivity and achieve goals, with a mean score of 3.87 and a standard deviation of 0.81. Many respondents acknowledge the importance of AI but are still learning about its inner workings, reflected in a mean score of 4.18 and a standard deviation of 0.72. Opportunities to explore AI on campus were also rated highly, with a mean score of 3.64 and a standard deviation of 0.81, highlighting that educational institutions are creating environments conducive to AI learning. On the other hand, moderate scores were noted for staying updated with AI news, with a mean score of 3.32 and a standard deviation of 0.95, and discussing AI with peers and family, with a mean score of 3.15 and a standard deviation of 1.08. These results suggest that while awareness of AI is growing, there is still limited engagement in discussions and keeping up with advancements. The overall aggregate mean of 3.63 indicates a generally high level of awareness but also reveals opportunities to promote more active participation and knowledge-sharing about AI.

The findings imply that while there is a generally high level of awareness of AI technology among respondents, there is a need for more structured initiatives to deepen their understanding and engagement. The high scores on recognizing AI's potential and exploring campus-based opportunities suggest a positive attitude and readiness to learn (Li et al., 2023). However, the moderate scores for keeping up with AI developments and discussing them with others indicate a gap in consistent exposure and meaningful conversations about AI. To address this, institutions should integrate AI-related topics into the curriculum and provide platforms for regular dialogue and hands-on experiences (Shi et al, 2024). This approach can foster a deeper understanding of AI, promote its responsible use, and empower students to maximize its benefits for academic and personal growth.

Table 3. Usage Level of Artificial Narrow Intelligence in Learning Among the Respondents.

Indicators	WM	SD	Verbal Description
I regularly use AI-powered tools or applications in my studies.	3.50	0.87	High
AI tools are essential for helping me achieve academic success.	3.56	0.88	High
I make sure to verify the accuracy and validity of AI-generated responses.	4.05	0.81	High
AI has improved my overall learning experience at school.	3.62	0.80	High
I use AI tools both for academic work and personal tasks outside of class.	3.55	0.91	High
Aggregate Mean	3.66		High
Aggregate Standard Deviation		0.85	

Table 3 shows how often students use Artificial Narrow Intelligence in their learning. The aggregate mean of 3.66, interpreted as High, suggests that AI-powered tools are frequently used for academic purposes. The aggregate standard deviation of 0.85, also classified as High, indicates that while there are some differences in how students use AI, their responses are generally consistent. Among the indicators, the highest mean score of 4.05 comes from "I make sure to verify the accuracy and validity of AI-generated responses," which means most students take the extra step to check AI-generated information. Meanwhile, the lowest mean score of 3.50, found in "I regularly use AI-powered tools or applications in my studies," still falls within the High category, showing that while AI is commonly used, some students may use it less frequently than others.

The other indicators also reflect High usage. "AI tools are essential for helping me achieve academic success" has a mean score of 3.56, while "AI has improved my overall learning experience at school" stands at 3.62. Additionally, "I use AI tools both for academic work and personal tasks outside of class" received a mean score of 3.55, indicating that AI is not limited to schoolwork but is also used in personal activities. With all indicators consistently rated as High, the results show that AI has become a regular part of students' academic and personal lives, with only slight variations in how often and for what purposes they use it. The results imply that Artificial Narrow Intelligence plays a significant role in students' academic experiences, as reflected in the High level of AI usage across all indicators. Since students actively verify AI-generated responses, this suggests a growing awareness of the need to critically evaluate information rather than blind reliance on AI tools (Li, 2024). The high perception of AI's contribution to academic success and improved learning experiences implies that AI-powered tools are becoming integral to modern education, enhancing efficiency and accessibility in learning (Mutambik, 2024). However, the variation in responses, particularly in the regular use of AI tools, suggests that while AI is widely adopted, some students may still face barriers to consistent usage, such as limited access, varying levels of digital literacy, or personal preferences (Wang & Cheng, 2021). The findings highlight the need for educational institutions to guide the responsible and effective use of AI, ensuring that students maximize its benefits while maintaining academic integrity and developing critical thinking skills.

Table 4. Respondents' Attitude Level Towards Artificial Narrow Intelligence in Learning.

S/N	Indicators	WM	SD	Verbal Description
1	AI can contribute positively to social issues.	3.38	0.75	Neutral
2	AI has the potential to enhance personal privacy safeguards and contribute positively to data protection.	3.25	0.87	Neutral
3	AI technology can enhance creativity and innovation.	3.68	0.87	Positive
4	AI algorithms are trustworthy in providing accurate information.	3.22	0.85	Neutral
5	AI's potential to strengthen learning security measures and ensure a safer. educational environment is appreciated.	3.42	0.85	Positive
	Aggregate Mean	3.39		Neutral
	Aggregate Standard Deviation		0.84	

Table 4 presents the level of respondents' attitude towards Artificial Narrow Intelligence in learning. The aggregate mean of 3.39 is categorized as Neutral, reflecting an overall neutral attitude towards AI in learning. The aggregate standard deviation of 0.84 also indicates neutral variability, meaning the responses are somewhat consistent, but not strongly skewed towards positive or negative views. For the individual indicators, "AI can contribute positively to social issues" with a mean of 3.38 and "AI has the potential to enhance personal privacy safeguards and contribute positively to data protection" with a mean of 3.25 both fall under the Neutral category. Meanwhile, "AI technology can enhance creativity and innovation" with a mean of 3.68 and "AI's potential to strengthen learning security measures and ensure a safer educational environment" with a mean of 3.42 are categorized as Positive.

The results suggest that respondents hold a generally neutral attitude towards Artificial Narrow Intelligence (ANI) in learning, reflecting both recognition of its potential and a cautious approach to its

broader implications. While there is some acknowledgment of AI's ability to enhance creativity and innovation and its role in improving learning security, students seem unsure about its influence on social issues and data protection (Dwivedi et al., 2021). This neutrality might reflect the growing awareness of AI's capabilities and uncertainty about its long-term impact and trustworthiness, particularly in privacy and societal contributions. The mixed responses indicate that while AI is beneficial in specific educational contexts, students are not entirely convinced about its broader societal implications (Chen et al., 2020). This could point to a need for more education on the ethical and practical use of AI, especially regarding privacy, security, and social responsibility (Nguyen et al., 2023). As AI continues to evolve, understanding students' attitudes towards these technologies could help institutions address concerns, promote responsible usage, and foster a more positive outlook on AI's role in education and society.

Table 5. Test of Significance of Relationship Between the Respondents' Awareness and Usage of Artificial Narrow Intelligence in Learning.

Variables	r-value	Strength of Correlation	p - value	Decision	Result
Awareness and Usage	0.674*	Moderate Positive	0.000	Reject Ho	Significant

Note: *significant at $p<0.05$ (two-tailed).

Table 5 shows the relationship between respondents' awareness of Artificial Narrow Intelligence (ANI) and their usage of it in learning. The results indicate a moderate positive connection, meaning that as students become more aware of AI, they are more likely to use it in their studies. Since the p-value of 0.000 is smaller than 0.05, there is a significant relationship between awareness and usage, confirming that greater understanding leads to more frequent use of AI in learning. The significant relationship between awareness and usage of Artificial Narrow Intelligence (ANI) suggests that increasing students' understanding of AI could encourage them to incorporate these tools in their learning actively. When students recognize the benefits and potential of AI, they are more likely to explore and utilize these technologies to enhance their academic experience (Delello et al., 2024). This highlights the importance of educating students about the capabilities and applications of AI to foster greater engagement with these tools (Abulibdeh et al., 2024). Additionally, as awareness grows, students may become more confident in using AI for various tasks, not just academic ones, which could lead to better student outcomes (Rawas, 2024). Institutions and educators might consider integrating more AI-related content into curricula to build this awareness, ensuring students are equipped with the knowledge to use AI effectively and responsibly (Chan, 2023). This could shape a more tech-savvy generation ready to thrive in a rapidly evolving educational landscape.

Table 6. Test of Significance of Relationship Between the Respondents' Awareness and Attitude Towards Artificial Narrow Intelligence in Learning.

Variables	r-value	Strength of Correlation	p - value	Decision	Result
Awareness and Attitude	0.641*	Moderate Positive	0.000	Reject Ho	Significant

Note: *significant at $p<0.05$ (two-tailed).

Table 6 represents the significant relationship between respondents' awareness and attitude toward Artificial Narrow Intelligence in learning. The r-value of 0.641 indicates a moderate positive correlation, showing a relationship between awareness and attitude. As respondents' awareness of AI increases, their attitude towards its use in learning becomes more positive. The p-value of 0.000 is less than 0.05, leading to the rejection of the null hypothesis (Ho), confirming that the relationship between awareness and attitude is significant at the 5% significance level. The significant relationship between awareness and attitude toward Artificial Narrow Intelligence in learning highlights how students' understanding of AI influences their perceptions of its role in education. A moderate positive correlation suggests that as students become more aware of AI's potential, they will likely develop a more favorable attitude toward using it in their academic work. This finding underlines the importance of integrating AI awareness into educational programs to help students feel more confident using these technologies (Nazaretsky et al., 2022).

Given the significant relationship, it is clear that efforts to increase awareness about AI can play a key role in shaping students' attitudes and willingness to adopt AI tools in learning (Attach et al., 2024). Educators and

institutions could focus on enhancing students' understanding of how AI works and its benefits, leading to more positive attitudes and greater acceptance of AI in education (Fosner, 2024). This approach may improve the learning experience by empowering students with the knowledge to use AI effectively and responsibly.

Table 7. Test of Significance of Relationship Between the Respondents' Usage and Attitude Towards Artificial Narrow Intelligence in Learning.

Variables	r-value	Strength of Correlation	p - value	Decision	Result
Usage and Attitude	0.678*	Moderate Positive	0.000	Reject Ho	Significant

Note: *significant at p<0.05 (two-tailed).

Table 7 shows the relationship between respondents' usage and attitude towards Artificial Narrow Intelligence (ANI) in learning. The r-value of 0.678 indicates a moderate positive correlation, meaning that as students use AI more in their studies, their attitudes toward its role in learning tend to improve. Since the p-value of 0.000 is less than 0.05, there is a significant relationship between usage and attitude, confirming that more frequent use of AI is associated with more positive attitudes towards its use in learning. The significant relationship between usage and attitude towards Artificial Narrow Intelligence (ANI) suggests that as students engage more with AI in their learning, their views on its usefulness and effectiveness improve. This could imply that providing students with more opportunities to interact with AI tools may lead to a more positive perspective on their role in education (Altinay et al., 2024).

As students see the practical benefits of AI in their studies, they may become more open to incorporating these technologies into their academic routines (Kuleto et al., 2021). This underscores the importance of creating environments where students can freely explore and utilize AI tools, fostering both their confidence in using these technologies and a more favorable attitude towards them (Sova et al., 2024). Based on the findings above, a clear connection exists between students' awareness, usage, and attitudes toward Artificial Narrow Intelligence (ANI) in learning. As students' awareness of AI grows, they are more likely to use these tools in their studies, shaping their attitudes toward the technology and making them more positive and open to its potential in education. The significant relationships observed between awareness and usage and between usage and attitude indicate that increasing students' exposure to and understanding of AI can lead to greater acceptance and more frequent use of these technologies in learning environments. This emphasizes the importance of introducing AI tools to students and fostering a deeper understanding of their capabilities and benefits. By encouraging more hands-on use and educating students about AI's impact, educational institutions can create a more supportive and effective learning environment, ultimately leading to a more engaged and positive outlook on AI's role in education.

5. Conclusion

The study reveals that students in Eastern Visayas who are in early childhood education are very familiar with artificial narrow intelligence (ANI) and are using ANI tools to help them learn. A lot of students use tools like Quillbot, ChatGPT, and Grammarly to help them get better at writing and study. Students also showed a lot of responsibility by making sure that information made by AI was correct. Many people think that AI can help with imagination, innovation, and safety in learning, even though they don't have a strong opinion about ANI. The results also showed that there is a strong link between knowing about AI, using it, and having a positive attitude towards it. Students who know more about AI tend to use it more, and students who use it more often have a more positive attitude towards it. This means that students are more open and surer of themselves when they use AI tools after learning more about them. So, schools and teachers should focus on teaching kids more about AI and giving them chances to use it in a responsible way, so that they can get the most out of these tools for their education.

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