
AI-Assisted Learning Tools in Enhancing Student Engagement in Binalatongan Community College

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Abstract —This study examined the effectiveness of AI-assisted learning tools in enhancing student engagement among 50 Bachelor of Elementary Education (BEED) learners at Binalatongan Community College. Specifically, it focused on behavioral, emotional, and cognitive engagement, as well as students' perceived effectiveness of AI tools and the challenges encountered in their use. A quantitative descriptive-correlational research design was employed, with data collected through a structured questionnaire and analyzed using descriptive statistics and Pearson correlation. The results revealed that AI-assisted learning tools were effective in supporting student learning, particularly in improving cognitive engagement and motivation. Furthermore, a significant relationship was found between AI tool usage and overall student engagement. However, challenges such as poor internet connectivity, limited access to devices, and low technical skills were also identified. The findings suggest that while AI tools can enhance engagement, addressing technological and skill-related barriers is essential. The study recommends strengthening the integration of AI in instruction, improving digital literacy, and enhancing technological infrastructure to foster more engaging learning environments

Keywords: BEED learners, AI-assisted learning tools used, student engagement scale, cognitive engagement, perceived effectiveness, challenges encountered in using AI-Assisted learning tools

I. INTRODUCTION

The rapid advancement of artificial intelligence (AI) has significantly transformed various sectors, particularly education, where it is increasingly utilized to enhance teaching and learning processes. AI-assisted learning tools offer interactive, adaptive, and personalized learning experiences that can improve student engagement. Student engagement—encompassing behavioral, emotional, and cognitive dimensions—is widely recognized as a key determinant of academic success. As educational institutions continue to integrate digital technologies into instruction, examining the role of AI in shaping student engagement has become an important area of research.

Recent studies highlight the growing impact of AI on educational practices. According to Holmes et al. (2022), AI applications such as intelligent tutoring systems, adaptive learning platforms, and automated assessment tools provide real-time feedback and data-driven personalization that promote active learning and participation. Similarly, Chen et al. (2022) emphasized that AI technologies influence how students engage with content, collaborate with peers, and regulate their learning. Furthermore, Bond et al. (2023) found that AI-supported learning environments enhance behavioral, cognitive, and emotional engagement by making learning more interactive and collaborative. In addition, Zhang et al. (2025) reported that AI-powered learning assistants are perceived as accessible and effective in improving comprehension and participation, indicating that AI plays a transformative role in modern education.

In the Philippine context, the adoption of AI-assisted learning tools has increased, particularly with the implementation of flexible and blended learning modalities. Castañeda and Roldan (2022) observed that Filipino students actively use AI applications for writing, research, and academic tasks. Likewise, David et al. (2024) found that AI tools help improve student motivation and engagement by simplifying complex concepts. Reyes and Santiago (2023) further highlighted that AI-supported learning promotes self-regulated learning, increased motivation, and improved academic performance. However, despite these benefits, challenges remain, especially in community and rural educational settings. Garcia et al. (2022) noted that limited technological infrastructure, poor internet connectivity, and restricted access to devices hinder effective AI

integration, while Torres et al. (2023) emphasized the importance of institutional readiness and support systems in maximizing the benefits of AI in education.

Binalatongan Community College (BCC), as a developing community-based institution, provides a relevant context for examining the effectiveness of AI-assisted learning tools. Bachelor of Elementary Education (BEED) students at BCC are increasingly exposed to AI technologies; however, there is limited empirical evidence on how these tools influence their engagement. Additionally, institutional constraints and student readiness may affect the extent to which AI enhances the learning experience.

Given these considerations, this study aims to examine the effectiveness of AI-assisted learning tools in enhancing student engagement among BEED learners at Binalatongan Community College. Specifically, it investigates the levels of behavioral, emotional, and cognitive engagement, as well as students' perceived effectiveness of AI tools and the challenges they encounter. Furthermore, it seeks to determine whether a significant relationship exists between the use of AI-assisted learning tools and student engagement. By addressing this gap, the study aims to provide evidence-based insights that can inform instructional practices, strengthen AI integration, and support the development of more engaging and technology-enhanced learning environments.

II. METHODOLOGY

This study utilized a quantitative descriptive-correlational research design to examine the effectiveness of AI-assisted learning tools in enhancing student engagement. The descriptive component identified the types of AI tools used by students and measured their levels of engagement across behavioral, emotional, and cognitive dimensions. The correlational component determined the relationship between the use of AI-assisted learning tools and student engagement. The respondents of the study consisted of 50 Bachelor of Elementary Education (BEED) students from Binalatongan Community College. A stratified random sampling technique was employed to ensure proportional representation across year levels, with 10 first-year, 10 second-year, 15 third-year, and 15 fourth-year students. The sample size was determined using statistical methods such

as Slovin's formula. Data were collected through a structured survey questionnaire adapted from validated engagement scales and technology adoption measures to ensure reliability and validity. The instrument gathered information on students' use of AI-assisted learning tools, their levels of behavioral, emotional, and cognitive engagement, as well as their perceived effectiveness and challenges encountered. For data analysis, descriptive statistics such as frequency, percentage, and mean were used to summarize the data, while Pearson product-moment correlation was applied to examine the relationship between AI tool usage and student engagement. Ethical considerations were strictly observed throughout the study. Participation was voluntary, informed consent was obtained from all respondents, and confidentiality and anonymity of the data were ensured.

III. RESULTS

This section presents the findings of the study on the use of AI-assisted learning tools and their impact on student engagement among Bachelor of Elementary Education (BEED) students at Binalatongan Community College (BCC). The data gathered from 50 respondents are organized into key areas: types of AI tools used, levels of student engagement (behavioral, cognitive, and affective), perceived effectiveness, challenges encountered, and the relationship between AI use and engagement. The results are interpreted and discussed in relation to existing literature.

TABLE 1
TYPES OF AI-ASSISTED LEARNING TOOLS USED BY STUDENTS
N=50

AI Tool	Frequency	Percentage
ChatGPT / Generative AI tools	18	35%
Grammarly / AI grammar checkers	8	15%
Quillbot / Paraphrasing tools	9	18%

Google Scholar AI / AI research assistants	3	6%
AI-based tutoring apps (e.g., Khan Academy AI)	2	4%
AI quiz generators	2	4%
AI transcription tools	2	4%
AI presentation or content-generation tools	2	4%
Adaptive learning platforms (Coursera, EdX, AI)	1	2%
Others	3	8%
Total	50	100%

For table 1, The data indicate that 18 out of 50 students (35%) use ChatGPT or generative AI tools, making it the most commonly used AI tool. Quillbot (9 students, 18%) and Grammarly (8 students, 15%) are also popular, reflecting students' focus on writing and paraphrasing tasks. Tools like AI-based tutoring apps, quizzes, transcription, and presentation tools each have 4% usage, highlighting limited exposure or awareness. Only 1 student (2%) uses adaptive learning platforms, suggesting a gap in the adoption of more advanced or structured AI-based learning resources. Students prefer AI tools that provide immediate support for assignments and writing rather than exploratory or adaptive learning tools, indicating that engagement strategies should focus on practical and high-use AI applications.

The finding that ChatGPT was the most frequently used AI tool among the respondents is supported by previous studies. According to Johnston et al. (2024), ChatGPT emerged as the generative AI application most recognized and utilized by higher education students because of its accessibility and ability to assist with academic tasks such as writing, research, and problem-solving. Similarly, Abbas et al. (2024) found that university students extensively adopted ChatGPT for learning support, information retrieval, and assignment completion, making it one of the most commonly used AI tools in academic settings. Furthermore, a study by Bong et al. (2025) reported

that ChatGPT was the most frequently used generative AI tool among higher education students, surpassing other AI applications due to its ease of use and broad functionality.

These studies support the present finding that 18 out of 50 students (35%) identified ChatGPT or generative AI tools as their preferred AI application. The widespread use of ChatGPT may be attributed to its capacity to provide immediate and practical assistance for academic requirements, particularly in writing, brainstorming, summarizing, and generating ideas. As a result, students appear to favor AI tools that directly support their coursework over more specialized AI applications such as adaptive learning platforms or AI-based tutoring systems.

TABLE 2.1
LEVEL OF STUDENT ENGAGEMENT IN TERMS OF BEHAVIORAL
ENGAGEMENT
N=5

Statement	WM	Descriptive Equivalent
1. I participate more actively in class activities when I use AI tools.	3.50	Often
2. I complete academic tasks on time with the help of AI tools.	3.30	Sometimes
3. I use AI tools to review lessons regularly.	2.80	Sometimes
4. I engage more frequently in academic discussions because of AI support.	2.04	Rarely
Average Weighted Mean	2.91	Sometimes

Legend : 4.21 – 5.00- Always ,3.41 – 4.20-Often, 2.61 – 3.40-Sometimes , 1.81 – 2.60-Rarely , 1.81 – 2.60-Never

The results of Table 2.1 show that students' behavioral engagement when using AI-assisted learning tools is generally moderate, with an overall weighted mean of 2.91 ("Sometimes"). In terms of active participation, students reported a higher level of engagement (WM = 3.50, "Often"), indicating that AI tools moderately support class involvement. However, timely completion of tasks (WM = 3.30), lesson review (WM = 2.80), and participation in academic discussions (WM = 2.04) show lower levels of engagement, with discussions being the least affected.

These findings suggest that AI tools are more effective in supporting individual academic tasks such as participation and deadlines but are less effective in promoting consistent engagement in collaborative activities and discussions. This indicates that while AI enhances task-oriented behavior, it does not strongly encourage interactive classroom participation.

The results imply that teachers should integrate more interactive AI-based strategies, such as collaborative learning platforms and guided discussion activities, to strengthen behavioral engagement. Additionally, structured activities and proper guidance on AI use may help improve consistency in student participation.

These findings are consistent with Zhang et al. (2023) and Holmes et al. (2022), who reported that AI improves academic task completion but has limited impact on classroom interaction and collaboration. Similarly, Chen et al. (2024) noted that AI tools often support individual learning but are less effective in promoting peer interaction, which aligns with the results of this study.

TABLE 2.2
LEVEL OF STUDENT ENGAGEMENT IN TERMS OF COGNITIVE ENGAGEMENT
N=50

Statement	WM	Descriptive Equivalent
5. AI tools help me understand difficult concepts.	4.22	Always
6. I use AI tools to explore topics beyond what is taught in class.	3.46	Often
7. AI feedback helps me improve my academic work.	3.34	Sometimes
8. Using AI encourages me to think critically and analyze information.	3.24	Rarely
Average Weighted Mean	3.56	Often

Legend : 4.21 – 5.00- Always ,3.41 – 4.20-Often, 2.61 – 3.40-Sometimes , 1.81 – 2.60-Rarely , 1.81 – 2.60-Never

The results in Table 2.2 show that students' cognitive engagement with AI-assisted learning tools is generally high, with an average weighted mean of 3.56 ("Often"). AI tools are most effective in helping students understand difficult concepts (WM = 4.22, "Always"), indicating strong support for comprehension and learning of complex topics. Students also frequently use AI to explore topics beyond classroom lessons (WM = 3.46, "Often"), showing that AI encourages independent learning.

However, AI tools show moderate effectiveness in improving academic work through feedback (WM = 3.34, "Sometimes") and a lower effect in developing critical thinking and analysis skills (WM = 3.24, "Rarely"). This indicates that while AI supports understanding and exploration, it is less effective in promoting deeper cognitive processes such as critical thinking.

These findings suggest that AI tools are effective for knowledge acquisition but need improvement in fostering higher-order thinking skills. Teachers may need to supplement AI use with guided activities that promote analysis, reflection, and problem-solving.

The results align with Zhang et al. (2023), Holmes et al. (2022), and Chen et al. (2024), which found that AI improves understanding and learning efficiency but has limited impact on critical thinking unless supported by structured and interactive learning strategies.

TABLE 2.3
LEVEL OF STUDENT ENGAGEMENT IN TERMS OF AFFECTIVE ENGAGEMENT
N=50

Statement	WM	Descriptive Equivalent
9. I feel more motivated to study when using AI tools.	3.04	Sometimes
10. AI tools make learning more enjoyable for me.	3.12	Sometimes
11. I feel more confident about my academic performance when using AI.	2.8	Rarely
12. AI tools reduce the stress I feel when doing schoolwork.	3.38	Sometimes
Average Weighted Mean	3.08	Sometimes

Legend : 4.21 – 5.00- Always ,3.41 – 4.20-Often, 2.61 – 3.40-Sometimes , 1.81 – 2.60-Rarely , 1.81 – 2.60-Never

Table 2.3 shows that AI-assisted learning tools have a **moderate effect on students' affective** engagement. Students reported that AI tools sometimes increase motivation (WM = 3.04) and make learning more enjoyable (WM = 3.12). They also moderately reduce stress (WM = 3.38),

indicating some emotional support in academic tasks. However, confidence remained low (WM = 2.80, “Rarely”), suggesting limited impact on students’ self-belief in academic performance. The overall mean of 3.08 (“Sometimes”) indicates a generally moderate emotional influence of AI tools.

These results imply that AI tools are helpful in improving motivation, enjoyment, and stress management, but are less effective in building student confidence. Enhancing AI with more personalized feedback, gamification, and supportive learning features may strengthen affective engagement.

The findings align with studies of Holmes, Wayne et al. (2022) and Zhang, L. et al. (2023), which reported that AI improves motivation and reduces stress but has limited impact on emotional confidence. Similarly, Chen, L. et al. (2024) noted that AI tools often fail to create deeper emotional connection in learning.

TABLE 3
PERCEIVED EFFECTIVENESS OF AI-ASSISTED LEARNING TOOLS
N=50

Statement	WM	Descriptive Equivalent
13. AI tools improve my overall learning experience.	3.46	Agree
14. AI tools help me complete academic tasks more effectively.	3.44	Agree
15. AI tools improve the quality of my outputs.	3.58	Agree
16. AI tools significantly contribute to my engagement in learning activities.	3.28	Neutral
Average Weighted Mean	3.44	Agree

Legend : 4.21 – 5.00- Strongly Agree ,3.41 – 4.20-Agree, 2.61 – 3.40-Neutral , 1.81 – 2.60-Disagree , 1.81 – 2.60-Strongly Disagree

Table 3 shows that students generally agree that AI-assisted learning tools are effective in improving their learning experience (WM = 3.46), task completion (WM = 3.44), and quality of outputs (WM = 3.58). This indicates that AI tools are most useful for enhancing academic productivity and improving student outputs.

However, students were only neutral on the role of AI tools in improving engagement (WM = 3.28), suggesting that while AI supports academic performance, it does not strongly promote active participation in learning activities. The overall mean of 3.44 (“Agree”) reflects a positive perception of AI tools, particularly in academic efficiency rather than engagement.

These findings imply that AI tools should be further enhanced with interactive and collaborative features to improve student engagement. Similar results were reported by Zhang, S. et al. (2023) and Holmes, Wayne et al. (2022), who found that AI improves academic tasks but has limited impact on active learning and engagement. Chen, L. et al. (2024) also noted that AI is more effective for productivity than for collaborative engagement.

TABLE 4
CHALLENGES ENCOUNTERED IN USING AI-ASSISTED LEARNING TOOLS
N= 50

Statement	WM	Descriptive Equivalent
Poor internet connection	3.46	Serious
Limited access to devices	3.28	Serious
Difficulty using AI tools (low digital literacy)	3.39	Serious
AI responses are sometimes inaccurate	3.25	Serious
AI tools are restricted or blocked by school	1.78	Not Serious
Overdependence on AI	1.80	Not Serious
Ethical concerns (plagiarism, dishonesty)	2.15	Slightly Serious
Lack of teacher support or clear guidelines	1.89	Not Serious
Average Weighted Mean	2.63	Moderately Serious

Legend : 4.21 – 5.00- Very Serious ,3.41 – 4.20-Serious, 2.61 – 3.40-Moderately Serious , 1.81 – 2.60-Slightly Serious , 1.81 – 2.60-Not Serious

Table 4 shows that students experience moderately serious challenges in using AI-assisted learning tools (WM = 2.63). The most significant issues are poor internet connection (WM = 3.46), low digital literacy (WM = 3.39), limited device access (WM = 3.28), and inaccurate AI responses (WM = 3.25). These indicate that technological and skill-related barriers remain the main obstacles to effective AI use.

In contrast, issues such as school restrictions, overdependence on AI, and lack of teacher support were rated as not serious, while ethical concerns were only slightly serious. This suggests that institutional and ethical issues are less problematic compared to infrastructure and user capability.

The findings imply that improving internet access, providing devices, and strengthening digital literacy training are essential to maximize AI effectiveness in learning. Similar issues were identified by Zhang, S. et al. (2023) and Holmes, Wayne et al. (2022), who highlighted connectivity and skill gaps as major barriers in AI integration in education.

TABLE 5
RELATIONSHIP BETWEEN AI-ASSISTED LEARNING TOOLS AND STUDENT
ENGAGEMENT
N=50

Variable	Mean	Standard Deviation (SD)	Correlation Coefficient (r)	Significance (p-value)	Interpretation
Behavioral Engagement (e.g., participation, task completion)	2.91 (Moderate)	0.85	0.60	$p < 0.05$	Moderate positive relationship between AI tool use and behavioral engagement. Indicates that AI tools support task completion and participation but with moderate consistency.

Cognitive Engagement (e.g., understanding concepts, critical thinking)	3.56 (Often)	0.76	0.75	$p < 0.01$	Strong positive relationship between AI tool use and cognitive engagement. AI tools are highly effective in helping students understand difficult concepts.
Affective Engagement (e.g., motivation, confidence, stress reduction)	3.08 (Moderate)	0.80	0.50	$p < 0.05$	Moderate positive relationship between AI tool use and affective engagement. AI tools moderately enhance motivation and reduce stress but have limited impact on building confidence.
Overall Engagement (Composite of all types)	3.18 (Moderate)	0.82	0.65	$p < 0.05$	Moderate to strong positive relationship between AI tool use and overall student engagement, with AI tools supporting multiple aspects of engagement.

Table 5 shows a moderate to strong positive relationship between AI-assisted learning tools and student engagement. Behavioral engagement shows a moderate correlation ($r = 0.60$),

indicating that AI tools help improve participation and task completion, but not consistently across all students.

Cognitive engagement shows a strong correlation ($r = 0.75$), meaning AI tools are highly effective in improving understanding of complex concepts. This suggests that AI significantly supports students' learning comprehension.

Affective engagement shows a moderate correlation ($r = 0.50$), indicating that AI tools help increase motivation and reduce stress but have limited effect on student confidence. Overall engagement shows a moderate to strong relationship ($r = 0.65$), confirming that AI tools positively influence student engagement across all domains.

These results imply that AI tools are most effective in cognitive learning but need improvement in enhancing emotional and behavioral consistency. Similar findings were reported by Zhang, S. et al. (2023) and Holmes, Wayne et al. (2022), which emphasized AI's strong role in comprehension but weaker impact on emotional and social engagement.

IV. DISCUSSIONS

The findings show that AI-assisted learning tools are mainly used by BEED students for writing, research, and comprehension tasks, indicating their role in supporting practical academic needs. Among the three engagement domains, cognitive engagement was the most enhanced, as AI tools helped students understand difficult concepts and explore additional topics. However, their impact on critical thinking and deeper analysis remained limited. Behavioral engagement was moderate, with AI tools supporting task completion but not consistently improving participation in discussions or collaborative activities. Likewise, affective engagement was also moderate, as AI tools increased motivation and reduced stress but had little effect on student confidence. Overall, results show a moderate to strong positive relationship between AI tools and student engagement, especially in cognitive aspects. However, challenges such as poor internet connection, limited device access, low digital literacy, and inaccurate AI outputs hinder effective use. These findings imply that AI tools are beneficial for learning but require proper integration,

infrastructure support, and teaching strategies to fully enhance engagement, particularly in interaction, critical thinking, and emotional development.

V. CONCLUSION

The study concludes that AI-assisted learning tools are effective in enhancing student engagement among BEED students at Binalatongan Community College, particularly in improving cognitive engagement such as understanding complex concepts, task completion, and output quality. However, their overall impact remains moderate, as they are less effective in developing critical thinking, active participation, and confidence. A significant relationship was found between AI tool use and student engagement, indicating that increased use contributes positively to learning, though effects vary across engagement domains. Despite these benefits, challenges such as poor internet connectivity, limited access to devices, low digital literacy, and occasional AI inaccuracies limit their effectiveness. Thus, AI tools are valuable but require proper integration, improved infrastructure, and strong institutional support to maximize their educational potential.

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