

Evaluating ChatGPT's Role In Academic Development: Evidence From College-Level Learning Contexts

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Abstract

This study investigates the role of ChatGPT as a supplementary educational tool in enhancing academic development among Bachelor of Elementary Education (BEED) students at Southern Luzon State University–Judge Guillermo Eleazar Campus. Specifically, it examines its effectiveness in improving learning outcomes in terms of engagement, critical thinking, and problem-solving abilities. A descriptive-inferential design was employed, with 60 BEED students across year levels as respondents. Data were collected through validated questionnaires and analyzed using descriptive statistics and one-way ANOVA. Findings reveal that ChatGPT positively influences student engagement, and cognitive skills. Significant differences were observed across year levels, suggesting developmental variations in AI adoption. Recommendations are provided for optimizing ChatGPT integration in higher education.

Keywords: *ChatGPT, academic development, higher education, student engagement, critical thinking, problem-solving.*



INTRODUCTION

The rapid advancement of artificial intelligence (AI) has transformed the educational landscape, reshaping how students and teachers interact with knowledge. Among the most widely adopted innovations is ChatGPT, a generative AI developed by OpenAI, which produces human-like responses, assists in content creation, and simplifies complex concepts. Its accessibility and versatility have made it a popular tool in higher education, where students are expected to demonstrate independence, critical thinking, and problem-solving abilities.

In teacher education programs, particularly the Bachelor of Elementary Education (BEED), students balance demanding academic workloads with teaching demonstrations, field studies, and lesson planning. Within this context, ChatGPT has emerged as a supplementary resource, supporting tasks such as essay writing, synthesizing information, and clarifying difficult topics. Its ability to provide immediate feedback and generate structured content aligns closely with the pedagogical demands of pre-service teachers. However, while ChatGPT offers opportunities for enhanced learning, it also raises concerns about academic integrity, tool dependency, and the authenticity of student outputs. Several studies have begun to explore ChatGPT's role in education. Bongolto et al. (2024) reported that pre-service teachers in Mindanao used ChatGPT to improve productivity and confidence in academic writing and lesson planning, though issues of tone mismatch and over-reliance were noted. David and Maroma (2025) examined its integration in Bulacan State University, highlighting instructional benefits alongside the need for ethical guidelines and AI literacy training. Herda et al. (2024), in a cross-country study of Filipino and Indonesian students, found that ChatGPT improved writing quality and reduced academic stress, but also posed challenges in citation accuracy and authenticity. These findings affirm the tool's potential but also underscore the importance of responsible use.

Despite these contributions, most existing research has focused broadly on general perceptions of ChatGPT or on urban institutions. Limited attention has been given to localized contexts such as provincial state universities, where resources, digital literacy, and pedagogical practices may differ significantly. In particular, there is a research gap in understanding how ChatGPT influences the academic development of BEED students in Southern Luzon State University–Judge Guillermo Eleazar Campus. Addressing this gap is crucial, as pre-service teachers in provincial settings represent a significant portion of the future teaching workforce, and their experiences with AI integration can inform curriculum development, faculty training, and institutional policy.

This study therefore, seeks to evaluate ChatGPT's role as a supplementary educational tool in enhancing academic development among BEED students. Specifically, it examines its effectiveness in improving student engagement, critical thinking, and problem-solving abilities, while also testing for significant differences across year levels. By situating the investigation within established educational theories such as distributed cognition, connectivism, and heutagogy, the study aims to provide both empirical evidence and theoretical grounding for the responsible integration of AI in teacher education.



Objectives

This study is to evaluate the role of ChatGPT as a supplementary educational tool in enhancing academic development among Bachelor of Elementary Education (BEED) students at Southern Luzon State University–Judge Guillermo Eleazar Campus. Specifically, the study seeks to determine its effectiveness in improving student engagement, critical thinking, and problem-solving abilities, while also examining differences in its impact across year levels.

Statement of the problem

Artificial intelligence tools such as ChatGPT are increasingly integrated into higher education, offering new opportunities for supporting student learning. While prior studies have highlighted its potential benefits, limited research has been conducted in localized contexts such as provincial state universities. In particular, the role of ChatGPT in enhancing academic development among BEED students at Southern Luzon State University–Judge Guillermo Eleazar Campus remains underexplored.

This study seeks to address the following specific problems:

1. To determine the impact of ChatGPT on student engagement in college-level learning contexts
2. To evaluate the effectiveness of ChatGPT in fostering critical thinking and problem-solving abilities among college students
3. To test the significant difference in the effectiveness of ChatGPT across different year levels

METHODOLOGY

This study employed a descriptive–inferential research design to evaluate the role of ChatGPT as a supplementary educational tool in academic development among BEED students. The design was chosen because it allowed the researchers to describe perceptions and experiences while also testing for statistical differences across year levels.

Respondents

The respondents consisted of 60 BEED students purposively selected from first-year to fourth-year levels. Inclusion criteria required that students had prior experience using ChatGPT for academic tasks such as lesson planning, or synthesizing information. The distribution across year levels allowed comparison of developmental differences in how students engaged with ChatGPT.



Research Instrument

Data were collected using a survey questionnaire developed by the researchers and validated by subject matter experts. The instrument contained 40 items measuring the effectiveness of ChatGPT in terms of student engagement, critical thinking, and problem-solving abilities. The questionnaire was pilot-tested to ensure clarity, reliability, and internal consistency before full administration.

Data Gathering Procedure

Approval for the questionnaire was secured from academic authorities and validation experts. After revisions, permission was sought from the BEED program chair to administer the survey. Participants completed the questionnaire electronically via Google Forms. Data collection was conducted over a two-week period.

Data Analysis

Collected data were processed using both descriptive and inferential statistical techniques. Descriptive statistics, including means and standard deviations, summarized student perceptions of ChatGPT's effectiveness. Inferential analysis was conducted using a one-way Analysis of Variance (ANOVA) to test for significant differences in effectiveness ratings among year levels. A significance level of $p < 0.05$ was adopted.

RESULTS AND DISCUSSION

The significant differences across year levels suggest that academic maturity shapes AI adoption. Senior students, with more advanced coursework and teaching demonstrations, may use ChatGPT more strategically, while freshmen may rely on it for basic tasks. This finding underscores the importance of differentiated AI integration strategies tailored to developmental stages.

Survey responses revealed that BEED students perceived ChatGPT as highly effective in supporting their academic tasks. Students rated ChatGPT highest in Engagement ($M = 4.25$), reflecting increased motivation and active participation. Critical thinking and problem-solving were rated as effective but slightly lower, suggesting that while ChatGPT supports analytical tasks, students still rely on personal judgment and instructor guidance for complex reasoning.



Table 1 presents the mean scores across three dimensions.

Table 1. Mean Scores of ChatGPT Effectiveness by Dimension

<i>Dimension</i>	<i>Mean</i>	<i>SD</i>	<i>Interpretation</i>
<i>Engagement</i>	4.25	0.52	Highly Effective
<i>Critical Thinking</i>	4.10	0.60	Effective
<i>Problem-Solving</i>	4.05	0.58	Effective

The findings affirm ChatGPT's potential as a supplementary educational tool in higher education. Its strong impact on engagement aligns with the Distributed Cognition Theory (Hutchins, 1995), as students extend their cognitive capacity through AI assistance. Similarly, Connectivism (Siemens, 2005) is reflected in students' ability to access and connect with information beyond the classroom.

However, the slightly lower ratings in critical thinking and problem-solving highlight the limitations of AI in fostering higher-order skills. This supports Cognitive Apprenticeship Theory (Collins et al., 1989), which emphasizes the need for guided human mentorship alongside technological tools.

Differences Across Year Levels

To determine whether perceptions varied by academic standing, a one-way ANOVA was conducted. Results are summarized in Table 2.

Table 2. ANOVA Results on Effectiveness Across Year Levels

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p-value</i>	<i>Interpretation</i>
<i>Between Groups</i>	2.85	3	0.95	4.12	0.009	Significant
<i>Within Groups</i>	12.45	56	0.22			
<i>Total</i>	15.30	59				

The ANOVA revealed a **statistically significant difference** ($p < 0.05$) in ChatGPT's effectiveness across year levels. Senior students reported greater utility in academic writing and problem-solving compared to freshmen, suggesting that maturity and academic experience influence how effectively students leverage AI tools.

CONCLUSION AND RECOMMENDATIONS

This study demonstrated that ChatGPT serves as a valuable supplementary educational tool in higher education, particularly within the BEED program at Southern Luzon State University–Judge Guillermo Eleazar Campus. Its integration into academic routines was found to enhance student engagement, strengthen critical thinking, and support problem-solving abilities.



Moreover, the significant differences observed across year levels highlight the developmental nature of AI adoption, with senior students leveraging ChatGPT more strategically than freshmen. These findings affirm the potential of ChatGPT to contribute meaningfully to academic development and underscore its relevance in teacher education programs.

To optimize the use of ChatGPT in enhancing educational achievement, institutions should embed the tool into instructional design in a structured and intentional manner, ensuring alignment with course objectives and assessment rubrics. Faculty members are encouraged to guide students in crafting effective prompts and critically evaluating AI-generated outputs, thereby fostering deeper engagement and reflective learning.

Differentiated strategies should be adopted across year levels. Freshmen may benefit from scaffolded activities that introduce ChatGPT as a tool for comprehension and drafting, while senior students can be challenged to use it for advanced tasks such as lesson planning, synthesis writing, and reflective analysis. This developmental approach ensures that students progressively build autonomy and higher-order thinking skills as they advance through their program.

Institutions should also invest in AI literacy training, equipping both students and faculty with the knowledge to use ChatGPT responsibly and effectively. Such training can emphasize the importance of balancing AI support with independent thinking, thereby preventing over-reliance and reinforcing academic integrity. Finally, integrating ChatGPT into collaborative learning contexts—such as group projects, peer review sessions, and classroom discussions—can maximize its potential as a catalyst for engagement and collective problem-solving.

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