

ChatGPT-Assisted Learning: A New Paradigm for Information Technology Education

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Abstract: *This study explored the effectiveness of ChatGPT as a learning aid for Bachelor of Science in Information and Communications Technology (BSICT) students at Surigao del Norte State University (SNSU). With the increasing integration of artificial intelligence in education, the research focuses on two key features of ChatGPT: its search function and personalized learning capabilities. The primary aim is to assess how these features impact students' knowledge acquisition, skill development, and learning behaviour. A quantitative research design was employed using a structured questionnaire based on the Technology Acceptance Model (TAM) to evaluate perceived usefulness, ease of use, and satisfaction. Results revealed that ChatGPT helped students better understand complex topics, improve technical and cognitive skills, and foster positive behaviours such as consistency, curiosity, and independent study. Additionally, the tool was found to reduce manual effort and promote deeper engagement with learning materials. The study concludes that ChatGPT, when thoughtfully integrated into academic routines, can serve as an effective and accessible aid in enhancing student learning outcomes.*

Keywords: ChatGPT, Personalized Learning, Knowledge, Skills

I. INTRODUCTION

In recent years, artificial intelligence (AI) has profoundly influenced the educational landscape, with tools like OpenAI's ChatGPT emerging as transformative technologies in higher education. ChatGPT, a large language model trained to produce human-like responses, is increasingly utilized by students and educators to support learning and knowledge construction. As academic institutions integrate digital tools into their pedagogy, understanding the implications of AI-assisted technologies on student outcomes becomes increasingly important—particularly within technology-focused programs like the Bachelor of Science in Information and Communications Technology (BSICT) at Surigao del Norte State University (SNSU).

Research has suggested that ChatGPT enhances educational experiences by supporting self-directed learning and improving access to academic resources. It functions as a dynamic knowledge repository, aiding students in critical thinking, independent inquiry, and problem-solving [1]. Moreover, ChatGPT assists in writing tasks, offering feedback, and suggesting revisions, which can help students improve their communication and technical skills [2], [25], [12]. AI-powered writing support fosters the development of cognitive, affective, and behavioural learning components, especially when used intentionally and reflectively [3].

Beyond improving academic performance, ChatGPT can personalize instruction by offering tailored explanations and content reinforcement, leading to enhanced comprehension and interdisciplinary learning [4], [10], [11]. Motivation also plays a critical role; research reveals that students are more inclined to use ChatGPT when they perceive it as useful and easy to use, with intrinsic motivation significantly influencing their adoption behavior [5], [7], [24].

Nevertheless, scholars caution against potential downsides. Over-reliance on ChatGPT may lead students to bypass the development of critical thinking and creative problem-solving skills—abilities essential in both academic and real-world ICT contexts [6], [14], [22]. Moreover, concerns have emerged around academic integrity, the quality of student engagement, and the erosion of independent thought [27], [26]. Current literature focuses heavily on generalized AI use in education or explores ChatGPT's application in limited contexts, such as law [30], programming education [28], and



foreign language instruction [11]. However, there remains a gap in evaluating how ChatGPT specifically affects knowledge acquisition, skill development, and behavioral changes among ICT students. Addressing this gap, this study investigates the perceived effectiveness of ChatGPT as a learning aid among BSICT students at SNSU, with emphasis on its impact across the cognitive, psychomotor, and affective learning domains.

This quantitative study, employing structured surveys, captured student perceptions, usage behaviours, and self-reported outcomes related to ChatGPT. Leveraging recent empirical evidence and grounded in a user-acceptance and motivation framework [29, 8], the research provided nuanced insights into the effective integration of ChatGPT into ICT education. The study explored its potential for fostering complex thinking [19], improving career readiness [9], enhancing collaborative and knowledge-sharing behaviors [21], and transforming the overall student learning experience [23]. Ultimately, this research contributed to the growing body of knowledge on AI in education by offering evidence-based recommendations for educators, institutions, and policymakers regarding the optimal deployment of ChatGPT and similar tools in academic settings.

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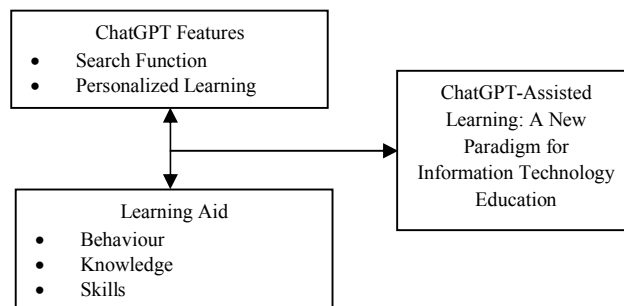


Fig. 1 A conceptual framework of the study

The conceptual framework in Fig.1 presented a simple model illustrating how ChatGPT's features contributed to its effectiveness as a learning aid in information technology education. The framework identified two key features: a search function, which highlighted ChatGPT's ability to quickly access and process vast amounts of information, providing students with readily available learning resources—a crucial aspect in the rapidly evolving field of IT; and personalized learning, which showcased ChatGPT's potential to adapt to individual student needs and learning styles by providing customized explanations, examples, and exercises. This personalized approach offered the potential for improved learning outcomes. The framework then connected these features to their impact as a learning aid, focusing on three key areas: behavior (suggesting that ChatGPT could influence student learning behaviours, potentially encouraging more active engagement, independent learning, and timely task completion); knowledge (referring to the direct impact on knowledge acquisition through ChatGPT's provision of definitions, explanations, and examples to aid understanding of complex IT concepts); and skills (highlighting ChatGPT's potential to assist in skill development by enabling students to practice coding, troubleshoot problems, and explore various IT solutions). The framework culminated in the concept of "ChatGPT-Assisted Learning: A New Paradigm for Information Technology Education," suggesting that ChatGPT's integration represented a significant shift in IT education delivery and student experience. The implication was that effectively utilized ChatGPT features could lead to improved learning outcomes across behavioral, knowledge, and skill dimensions. While the framework provided a high-level overview of how ChatGPT's features could enhance IT education, a more comprehensive model would have benefited from incorporating potential



challenges and strategies for their mitigation. Further research was needed to fully explore ChatGPT's potential and limitations as a learning aid.

II. RESEARCH METHOD

A. Research Design

This study employed a quantitative descriptive-correlational research design to analyze the relationship between BSICT students' use of ChatGPT's search and personalized learning features and their behavioral, knowledge-based, and skill-related learning outcomes at Surigao del Norte State University. This approach facilitated a statistical examination of how ChatGPT's features influenced student engagement, understanding, and competency development.

B. Participants and Sampling Method

This study utilized a quantitative descriptive-correlational research design to investigate the correlation between BSICT students' use of ChatGPT's search and personalized learning capabilities and their behavioral, knowledge, and skill-based learning outcomes at Surigao del Norte State University. This design was chosen for its suitability in statistically examining the influence of ChatGPT's features on student engagement, comprehension, and competency development within an academic setting.

As shown in Table 1, the proportional sampling ensured a comprehensive assessment of perceptions regarding ChatGPT's effectiveness across all year levels.

TABLE I: Distribution of Respondents by Year Level

Year Level	Total Population	Sample Size (50%)
1st Year	137	69
2nd Year	92	44
3rd Year	74	37
4th Year	51	25
Total	354	177

C. Data Collection Methods

Data Collection Methods Data for this study were primarily collected through a structured survey questionnaire. This instrument, which was reviewed and validated by the course instructor, was specifically designed to evaluate ChatGPT's effectiveness in enhancing learning, with a focus on its impact on students' knowledge, skills, and behaviour, particularly through its search functionality and personalized learning features. Data collection was executed using two distinct methods: an online survey disseminated via Google Forms to university email addresses, and a printed QR code linking to the form, personally distributed on campus.

D. Data Analysis Techniques

Quantitative data derived from the survey responses were analysed using descriptive statistics to summarize participants' demographic profiles and their patterns of ChatGPT usage. Measures of central tendency, including the mean, and standard deviation were employed to characterize the collected data. To further investigate the relationship between ChatGPT usage and its perceived effectiveness, correlation analysis was conducted. This analysis successfully identified significant associations between the frequency of ChatGPT use and students' reported improvements in knowledge, skills, and behaviour. All data analysis was performed using Microsoft Excel, via jamovi software, which generated statistical insights providing a clear understanding of ChatGPT's role as a learning aid in a technology-driven academic setting.



TABLE 2: Parameter Limits

Rating Scale	Mean Scale	Verbal Description	Verbal Interpretation
1	1.00-1.74	Strongly Agree	Very High degree
2	1.75-2.49	Agree	High degree
3	2.5-3.24	Disagree	Low degree
4	3.25-4.00	Strongly Disagree	Very Low degree

III. RESULTS AND DISCUSSION

A. Effectiveness of ChatGPT as Learning Aid on BSICT students

Table 3 displayed the results of a survey assessing students' perceptions of ChatGPT's search function. The data showed an overwhelmingly positive response, indicating that the search function was widely perceived as a valuable learning tool. The average mean score of 3.24 (interpreted as "agree" and quantitatively described as a "High Degree" of agreement) demonstrated a strong overall positive perception among the student respondents, suggesting they found the tool helpful and effective for their studies. Analysis of individual survey items revealed consistently positive feedback across various aspects of the search function's impact on learning. Specifically, students reported increased confidence when encountering unfamiliar words (Q1, mean 3.19), suggesting that ChatGPT effectively bridged knowledge gaps. High mean scores for questions related to motivation (Q2, 3.17), engagement (Q3, 3.17), and improved understanding of programming language (Q4, 3.27) indicated that ChatGPT fostered a more positive and productive learning environment. Moreover, students demonstrated improved abilities to recall information (Q5, 3.19) and expand their knowledge beyond classroom instruction (Q6, 3.33). Positive responses regarding troubleshooting (Q7, 3.25), enhancing programming skills (Q8, 3.31), and acquiring practical, real-world skills (Q9, 3.32) highlighted the tool's effectiveness in fostering practical skill development. These findings strongly suggested that ChatGPT's search function served as a valuable asset in supporting student learning in programming and related IT subjects, contributing to enhanced confidence, motivation, and skill development through readily accessible information, personalized assistance, and opportunities for practical application. Although Table 3 provided compelling evidence of ChatGPT's positive impact, further research was deemed necessary to confirm these findings and explore potential limitations more thoroughly.

TABLE 3: Effectiveness in terms of Search Function

Statements	Mean	Verbal Interpretation	Quantitative Description
Search Function			
Whenever I use ChatGPT to assist with my studies, I...			
Q1. am more confident in unfamiliar words.	3.19	agree	High Degree
Q2. am motivated to practice coding in programming.	3.17	agree	High Degree
Q3. am more engaged in other learning activities.	3.17	agree	High Degree
Q4. gain a better understanding of programming language	3.27	agree	High Degree
Q5. can recall substantial information.	3.19	agree	High Degree
Q6. can expand my general knowledge beyond what is taught in class.	3.33	agree	High Degree
Q7. find it easier to troubleshoot programming errors.	3.25	agree	High Degree
Q8. can enhance my programming skills by providing step by step examples.	3.31	agree	High Degree
Q9. learn practical skills that I can apply in real-world situations.	3.32	agree	High Degree
Average:	3.24	agree	High Degree



TABLE 4: The results on Effectiveness in terms of Personalized Learning

Statements	Mean	Verbal Interpretation	Quantitative Description
Personalized Learning			
Whenever I use ChatGPT, I...			
Q10. feel more motivated to learn lessons that match my learning style.	3.18	agree	High Degree
Q11. develop a sense of ownership over my academic progress.	3.05	agree	High Degree
Q12. become more persistent in overcoming learning difficulties.	3.19	agree	High Degree
Q13. gain a deeper understanding of academic concepts.	3.25	agree	High Degree
Q14. can strengthen my ability to connect new topics with prior knowledge.	3.29	agree	High Degree
Q15. absorb information more effectively that aligns with my preferred learning style.	3.23	agree	High Degree
Q16. can improve in writing programs with accurate results.	3.20	agree	High Degree
Q17. can develop my critical thinking skills by exploring new information.	3.21	agree	High Degree
Q18. gain more hands-on experience by applying coding concepts.	3.21	agree	High Degree
Average:	3.22	agree	High Degree

Table 4 presented survey results assessing students' perceptions of ChatGPT's personalized learning capabilities. The data revealed an overwhelmingly positive response, strongly suggesting that students found ChatGPT's personalized features beneficial to their learning experience. An average mean score of 3.22 (interpreted as "agree" and signifying a "High Degree" of agreement) demonstrated a predominantly positive perception of these features, indicating that the tool's adaptability to individual learning styles and needs was well-received. Analysis of individual survey items showed consistently positive feedback across multiple aspects of personalized learning. Students reported increased motivation (Q10, mean 3.18) when learning materials aligned with their learning styles, highlighting the effectiveness of personalization in enhancing engagement. High mean scores also indicated a developed sense of ownership over academic progress (Q11, 3.05) and increased persistence in overcoming learning challenges (Q12, 3.19), suggesting that personalized learning fostered a sense of agency and resilience among the students. Furthermore, students reported gaining a deeper understanding of concepts (Q13, 3.25) and an improved ability to connect new topics with prior knowledge (Q14, 3.29), indicating more effective knowledge acquisition and integration. Finally, positive responses regarding information absorption (Q15, 3.23), improved program writing (Q16, 3.20), enhanced critical thinking skills (Q17, 3.21), and increased hands-on experience (Q18, 3.21) demonstrated that personalized learning contributed to improved information processing, skill enhancement, and the development of higher-order thinking abilities.

IV. CONCLUSION

This study investigated the effectiveness of ChatGPT as a learning tool among 177 students, focusing on its search function and personalized learning capabilities. The findings consistently revealed a positive student perception of ChatGPT in both areas. Regarding its search capabilities, students largely agreed that ChatGPT facilitated the expansion of general knowledge, application of practical skills, and improved understanding of programming concepts, demonstrating its utility for information retrieval and comprehension. In terms of personalized learning, students agreed that ChatGPT effectively supported their individual learning styles, enhanced their conceptual understanding, and fostered critical thinking and skill application. Although the impact on fostering a sense of ownership over academic progress was somewhat less pronounced, the overall consensus strongly supports ChatGPT's beneficial role in tailoring learning experiences and improving student comprehension.

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