Exploring BSIT Students' Experiences and Perceptions on ChatGPT as a Tool for Software Development

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Abstract

This study investigates the attitudes and experiences of Bachelor of Science in Information Technology (BSIT) students about the use of ChatGPT as an aid tool in software development. With the rapid advancement of artificial intelligence (AI) in learning, particularly programming and software subjects, the study aims to determine how students use ChatGPT in their learning processes. With a descriptive qualitative research design guided by the Input-Process-Output (IPO) model, researchers gathered the data from 30 purposively sampled BSIT students using structured questionnaires. Results indicate that students primarily utilize ChatGPT to learn about programming concepts, debugging, and generating or optimizing code. While most acknowledged its usefulness and constructive contribution to learning, issues such as providing incorrect answers, failing to offer sufficient detail in explanations, and the risk of overreliance were also cited. Most participants favored integrating ChatGPT into the curriculum with proper instructor guidance and ethical instruction. This study offers practical contributions for teachers, developers, and institutions to integrate AI responsibly into IT education to enhance students' learning without sacrificing their critical and independent problem-solving skills.

Keywords: Software Development, Educational Technology, ChatGPT

Introduction

The research ″Examining BSIT Students' Experiences and Perceptions on ChatGPT as a Tool for Software Development″ examines the interactions and perceptions of BSIT students when using ChatGPT as an AI-aided tool in software development. The research is motivated by the growing application of artificial intelligence in coding education, where tools like ChatGPT assist learners in coding, debugging, and solving problems. With the development of AI technology, it is crucial to understand its influence on students' learning experiences, skill acquisition, and potential overreliance, as this understanding can contribute to maximizing AI's benefits within educational contexts. Through exploring students' experiences, this study seeks to elucidate the efficacy, challenges, and educational significance of AI-supported assistance in software development.

Background and Context of the Study

Artificial Intelligence (AI) is swiftly changing the educational landscape, offering students resources that enhance personalized learning, provide immediate feedback, and deliver real-time support. A key application of AI in this field is ChatGPT, a sophisticated language model created to produce human-like text replies. In higher education, especially within information technology (IT) and computer science disciplines, ChatGPT has gained traction for aiding in coding, debugging, grasping programming concepts, and resolving technical issues.

As AI becomes further integrated into education, it is increasingly vital to examine the actual experiences of students who engage with these tools. Although AI presents opportunities for enhancing educational results, there are concerns about its limitations, ethical considerations, and potential for dependency, particularly in situations that demand critical thinking and autonomous problem-solving.

Students pursuing a Bachelor of Science in Information Technology (BSIT) often encounter difficulties when trying to grasp intricate programming languages and software development principles. AI tools like ChatGPT provide an immediate support system, assisting learners with challenging subjects and potentially shortening their learning process. Nevertheless, the utility of these tools largely hinges on how students choose to engage with them—either as a means to enhance their learning or as a quick fix that could undermine their deeper comprehension.

Studies have highlighted both the benefits and drawbacks of incorporating AI into education. AI-driven assistants, such as GitHub Copilot and ChatGPT, have been recognized for enhancing productivity by automating repetitive coding tasks and offering useful recommendations (Ahmad et al., 2023). However, researchers like Kim & Park (2022) warn that excessive use may hinder the development of vital problem-solving abilities, while Johnson & Lee (2023) contend that an over-dependence on AI may impede students' capacity for creative and critical thinking. In spite of these findings, there remains a limited understanding of how BSIT students specifically view and interact with ChatGPT throughout their academic experience.

The Gap in Literature: Lack of Student-Centered Research

Most existing studies concentrate on how AI tools affect professional software developers, neglecting the distinct circumstances of student learners in educational settings. There is a lack of research that specifically examines how undergraduate IT students interact with AI tools such as ChatGPT, particularly regarding their learning experience, skill enhancement, and perspectives on AI's role in the curriculum.

This study aims to fill that gap by investigating the particular ways in which BSIT students utilize ChatGPT for software development activities. It seeks to comprehend their motivations, usage trends, perceived advantages, and the obstacles they face. Additionally, the research looks into the students' opinions on whether ChatGPT enhances or hinders their learning, as well as what type of assistance or guidance they require to use the tool proficiently and ethically.

The increasing adoption of AI tools in education has created opportunities to modernize and enhance teaching and learning processes. In the field of IT, where programming skills are crucial, tools like ChatGPT can serve as supplementary resources to improve students' engagement and efficiency. However, the integration of AI into the

curriculum must be approached with care. It is vital to ensure that these tools complement rather than replace traditional learning, promote critical thinking, and are used within an ethical framework.

By assessing the real-world application of ChatGPT among BSIT students, this study contributes valuable insights to educators, curriculum designers, and policy makers. It emphasizes the need for structured AI implementation, ethical guidelines, and instructor support to maximize the educational benefits of AI without compromising the development of independent learning skills.

Research Objectives and Questions

The main aim of this research is to explore BSIT students' experiences and views on using ChatGPT as a software development resource. More specifically, the study intends to:

1.Examine how BSIT students apply ChatGPT to understand programming concepts and carry out software development tasks.

2.Identify the advantages and difficulties students face while using ChatGPT in their educational activities.

3.Investigate the extent to which ChatGPT impacts students' problem-solving abilities, coding skills, and self-directed learning.

4.Offer suggestions for incorporating AI tools like ChatGPT into the IT curriculum in a way that promotes ethical, responsible, and efficient learning.

Research Questions:

1.How do BSIT students use ChatGPT to support their learning in software development and programming courses?

2.What are the perceived advantages and disadvantages of using ChatGPT in academic programming tasks among BSIT students?

3.How does the use of ChatGPT affect students' ability to solve problems independently and understand programming concepts?

4.What best practices can be implemented to guide the ethical and pedagogically sound use of ChatGPT in IT education?

Conceptual Framework

Artificial Intelligence (AI) has revolutionized how students learn, and ChatGPT is one of the most utilized AI learning tools. Software development is a challenging experience for Bachelor of Science in Information Technology (BSIT) students, and it includes coding, debugging, and understanding complex programming concepts. These issues typically force students to seek assistance from AI-based platforms like ChatGPT, which can help them improve their efficiency and problem-solving abilities. With the increasing application of AI in education, this study, "Exploring BSIT Students' Experiences and Perceptions of ChatGPT as a Tool for Software Development," aims to investigate how students utilize ChatGPT, the factors that influence their adoption of the tool, and its overall impact on their software development skills.

This study employs the Input-Process-Output (IPO) model as its theoretical framework to analyze these components. The IPO model provides a systematic approach to studying how ChatGPT improves students' learning process by separating the research into three principal components: input, process, and output. The input stage considers students' prior experience, such as their familiarity with AI tools, programming expertise, and

motivations for adopting ChatGPT. It is essential to understand why students choose to apply AI to their learning and how their current expertise influences their usage of the tool. The process stage deals with how students interact with ChatGPT regarding software development.

This entails considering how often they use ChatGPT, how they utilize ChatGPT in coding, and the ethical considerations of AI-assisted programming. By observing how students engage with the tool, the study can ascertain whether they are utilizing ChatGPT as a learning enhancement tool that augments learning or if it creates over-reliance on AIgenerated solutions. Additionally, this phase explores the students' critical thinking and problem-solving approaches to leveraging AI assistance.

The final component of the IPO model, the output phase, measures ChatGPT's overall impact on the student learning experience and software development skills. This entails examining whether the use of AI improves students' understanding of programming concepts, their ability to program and debug, or their perception of AI in software development. The outcome at this phase will help determine whether ChatGPT works as a good learning tool or has disadvantages, such as decreased independent problem-solving skills. Applying the IPO model, the study investigates ChatGPT's effect on the BSIT learning process. Through this research, an attempt has been made to elucidate the experience and emotion surrounding AI-facilitated learning in software development processes. As a whole, the understanding gained through this research will be helpful for instructors and students in understanding the position of AI tools in IT education.

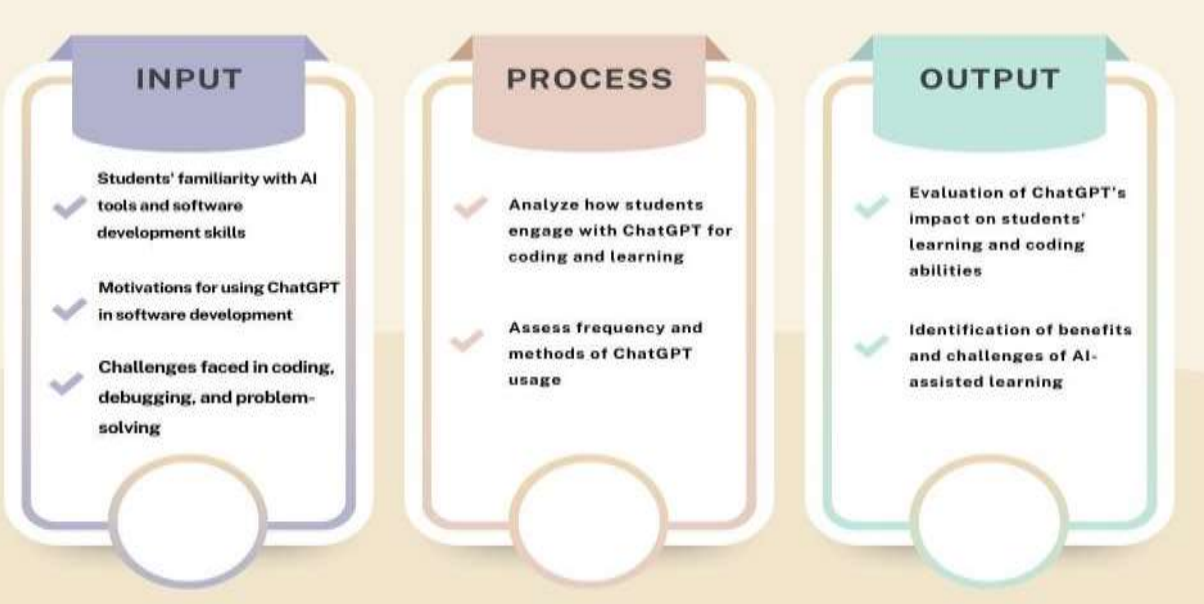

Figure 1. Conceptual Framework of the Study

Methodology

Research Design: This study will adopt a descriptive qualitative research design, supported by selected quantitative data, to thoroughly examine the experiences and perceptions of BSIT students in using ChatGPT as a tool for software development. This approach allows for in-depth exploration of student experiences while also incorporating measurable patterns in usage and perception. The study aims to:

1.Qualitatively explore how BSIT students utilize ChatGPT in software-related academic tasks, including coding, debugging, and concept learning.

2.Quantitatively identify patterns in usage frequency, perceived effectiveness, and the challenges associated with ChatGPT in academic contexts.

3.Assess how the tool impacts students' problem-solving abilities, learning behavior, and independence.

This combined approach ensures a holistic understanding of ChatGPT's role in IT education by capturing both experiential insights and observable trends.

Population and Sample: The target population consists of Bachelor of Science in Information Technology (BSIT) students who have used ChatGPT as a learning tool in programming or software development subjects.

This study employs a mixed-methods approach, integrating both quantitative and qualitative methods. The participants in this research are students currently enrolled in the Bachelor of Science in Information Technology (BSIT) program. A key criterion for participation is that students must have prior experience using ChatGPT within the context of coursework related to software development. This ensures that the data collected reflect authentic experiences that are directly relevant to the focus of the study.

Eligible participants must have used ChatGPT at least occasionally for academic tasks related to software, such as coding, completing projects, or studying theoretical concepts in computer science. The study is open to students from all year levels (1st to 4th year) in order to capture a diverse range of experiences. This inclusion aims to allow comparisons of perspectives among students with varying levels of academic and technical experience.

Data Analysis:

1**.** Quantitative Data Analysis Descriptive Statistics**:** Survey responses will be analyzed using means, percentages, and frequency distributions to identify usage trends and perceptions. Cross-Tabulations**:** Comparing variables such as year level vs. ChatGPT usage frequency or perceived usefulness.

2**.** Qualitative Data Analysis

Thematic Analysis**:** Interview and case study transcripts will be analyzed using Braun & Clarke's thematic analysis method. Themes may include**:**

- ChatGPT as a tutor vs. a shortcut
- Dependence vs. empowerment
- Trust issues with AI accuracy
- Recommendations for responsible use

3. Mixed-Methods Integration

Triangulation: Quantitative data from surveys will be contrasted and supported by qualitative findings from interviews and case studies.

For example, if many students report using ChatGPT for debugging, interview narratives will be used to understand how that support is perceived and its limitations.

This integration ensures that statistical patterns are contextualized within student experiences.

Ethical Considerations:

This study will adhere to ethical research conduct strictly, including: Informed Consent: The participants will informed of the research objectives, their voluntary nature, and their right to withdraw at any moment. This methodology ensures a rigorous, ethical, and insightful investigation into the role of IT in early literacy development in low-income communities.

Results

This section presents the results of the survey of BSIT students regarding their experiences and observations of ChatGPT as a software development tool. The results are both quantitative and qualitative, derived from the feedback using surveys.

Section 1: Demographic Information

1. Year Level of Respondents The survey gathered responses from BSIT students across different year levels. Table 1 presents the distribution of respondents.

Table 1: Year Level Distribution of Respondents

Year Level	Frequency	Percentage (%)
1st Year	7	23.3%
2nd Year	10	33.3%
3rd Year	13	43.3%
4th Year	0	0.0%
Total	30	100%

The majority of respondents were third-year students (43.3%), followed by secondyear students (33.3%) and first-year students (23.3%), while no responses were recorded from fourth-year students.

2. Frequency of ChatGPT Usage Respondents asked how often they use ChatGPT for software development. The responses are summarized in Table 2.

Table 2: Frequency of ChatGPT Usage

Usage Frequency	Frequency	Percentage (%)
Never	2	6.7%
Rarely	4	13.3%
Occasionally	10	33.3%
Frequently	8	26.7%
Daily	6	20.0%
Total	30	100%

Most students (33.3%) use ChatGPT occasionally, while 26.7% use it frequently and 20.0% rely on it daily. A smaller percentage (6.7%) has never used it.

Reasons for Using ChatGPT: Students were asked to specify their reasons for using ChatGPT. Table 3 summarizes their responses.

Table 3: Reasons for Using ChatGPT

Purpose	Percentage (%)
Learning programming concepts	70%
Debugging and fixing errors	65%
Generating or optimizing code	60%
Completing assignments/projects	55%

Section 2: Experiences Using ChatGPT for Software Development

Respondents rated various statements on a Likert scale (1 - Strongly Disagree, 5 - Strongly Agree) regarding ChatGPT's impact on their learning. The results are summarized in Table 4.

Table 4: Perceived Impact of ChatGPT on Learning

Statement	Mean Score	Interpretation
ChatGPT helps me understand programming concepts.	4.2	Strongly Agree
ChatGPT assists in debugging and troubleshooting.	4.0	Agree
ChatGPT makes coding more engaging.	3.9	Agree
ChatGPT improves my problem-solving skills.	3.8	Agree
I feel too dependent on ChatGPT.	3.1	Neutral

Perceived Impact of ChatGPT on Learning Most students agreed that ChatGPT helps in learning programming concepts (4.2 mean score) and debugging tasks (4.0 mean score), while concerns about over-reliance received a neutral response (3.1 mean score).

Section 3: Challenges in Using ChatGPT

Students identified various challenges they encountered while using ChatGPT. The most common challenges are summarized in Table 5.

Table 5: Challenges Encountered While Using ChatGPT

Challenge	Frequency	Percentage (%)
ChatGPT provides incorrect code	12	40.0%
Lacks detailed explanations	10	33.3%
Struggles with complex problems	9	30.0%
Encourages over-reliance	8	26.7%

These findings highlight that incorrect outputs (40%) and lack of detailed explanations (33.3%) are common concerns among BSIT students, reinforcing the need for critical thinking when using AI-assisted tools.

Section 4: Views on ChatGPT's Role in Education

Students shared their views on how ChatGPT should integrate into IT education. Table 6 presents their responses.

Table 6: Views on ChatGPT Usage in IT Education

Suggested Role	Percentage (%)
As a learning tool with instructor guidance	76%
As an optional resource for independent study	65%
Integrated into the curriculum	82%
Limited in coursework to prevent over-reliance	41%

These findings suggest that students generally favor structured integration of ChatGPT into their curriculum, with responsible usage training.

Section 5: Recommendations for AI-Assisted Learning

Students asked about additional support that could enhance their use of ChatGPT. Table 7 presents the most preferred recommendations.

Table 7: Recommended Support for AI-Assisted Learning

Suggested Support	Percentage (%)
Tutorials on responsible AI usage	68%
Workshops on ChatGPT's limitations	74%
Integration into programming courses	80%
Guidelines from instructors on ethical use	77%

These results suggest that students overwhelmingly prefer guided direction when using ChatGPT for coding. The highly rated recommendation is incorporating AI tools in the programming curriculum (80%), indicating that students benefit from using ChatGPT as an approved course of study. In addition, 77% of the students support ethical rules, wherein AI is utilized in responsible ways within learning settings. ChatGPT limitation workshops (74%) and training on how to use AI properly (68%) highlight the need for awareness and training to use AI without reliance effectively.

Discussion

The findings show that ChatGPT has become part of BSIT students' learning process. Most students utilize ChatGPT daily or frequently, underscoring its perceived usefulness in programming tasks. Learning programming concepts, debugging, and optimizing code are the most common reasons for using ChatGPT, showing that it is an aid tool in software development. They pointed towards positive experiences but highlighted drawbacks such as ChatGPT's wrong code and a lack of detailed information. Overdependence issues also surfaced. Most respondents preferred incorporating ChatGPT into the curriculum with training on responsible use, reflecting that students appreciate AI-aided learning but recognize the importance of organized guidance.

In short, although ChatGPT significantly enhances students' programming skills, its controlled and judicious use is essential to prevent overreliance and ensure that it complements learning conventionally rather than replacing it.

Conclusion

This research has established that ChatGPT has a significant and vibrant role in BSIT students' learning process, especially in teaching software development. The findings substantiate the objective of the research—to examine the experiences and perceptions of students with AI-assisted programming tools—by highlighting the fact that despite ChatGPT being mostly well-accepted to learn programming fundamentals, debugging, and code production, it has accuracy and dependence problems as well.

The study identifies key findings that emphasize how most students value ChatGPT as an enhancement of learning rather than as a cheat. They value the possibility of solidifying understanding and encouraging active participation in programming activities. However, concerns were mentioned repeatedly regarding incorrect answers, restricted explanations, and excessive use of AI as a temptation. These findings support the necessity for guided implementation of ChatGPT in the curriculum, with training for teachers and ethics in use.

Significantly, this research contributes to the broader field of IT education by offering a comprehensive understanding of how AI technologies influence learning behavior, critical thinking, and learner skill acquisition. It adds value in its argument that the future of AI in teaching and learning must balance technological innovation with cognitive human capabilities and pedagogical responsibility. This benefits educators and policymakers by allowing them to create AI-enhanced models that prioritize technological support alongside cognitive autonomy.

While this research is informative, it also has its limitations. The sample was merely 30 purposively selected BSIT students from a single university, which may affect the findings' generalizability. Self-reported information may also be prone to subjectivity. Future research must have a larger and more diverse sample and longitudinal tracking to assess the evolving effect of AI tools like ChatGPT over time. Expanding the research to performance indicators could also extend the study of the impact of AI on education.

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