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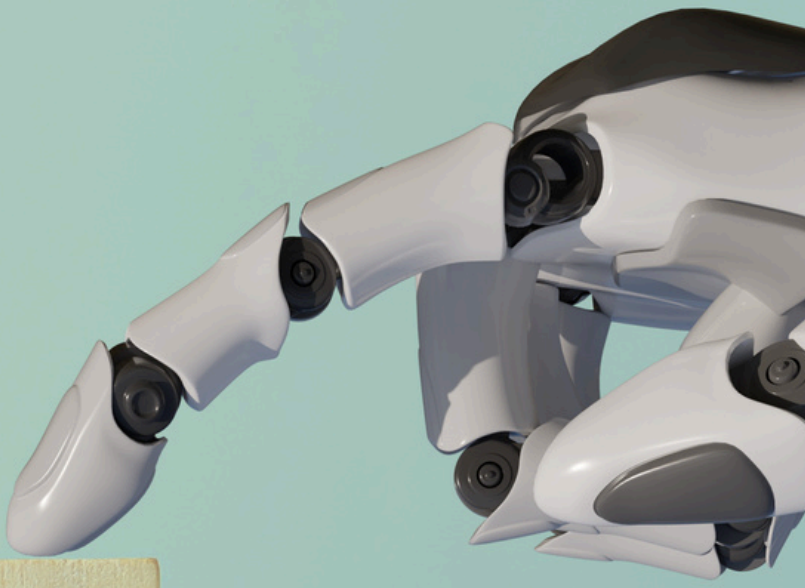

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CHATGPT IN PROGRAMMING EDUCATION: A SUPPORT TOOL OR A SHORTCUT?

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INTRODUCTION

Artificial intelligence (AI) tools such as ChatGPT are changing the way students learn and interact with knowledge. ChatGPT has become popular in education because of its ability to generate explanations, suggest solutions, and provide feedback in real time (Kasneci et al., 2023). For programming students, this is particularly beneficial as coding often involves trial and error, debugging, and understanding abstract logic. While ChatGPT helps students learn faster and gain confidence, it also raises important concerns. Some students may copy answers without fully understanding them, while others risk becoming overly reliant on the tool. Instructors also worry about academic honesty, and whether students are truly learning to solve problems independently (Lund et al., 2023). Programming courses provide a unique context to study these issues because coding requires both conceptual understanding and hands-on problem-solving.

This study was conducted with CSC415, Programming 1 students for semester March-August 2025, aimed to understand how often students use ChatGPT, what they use it for, and how they believe it affects their learning, assignments, and exam preparation. The findings offer insights for both educators and institutions on how to manage and guide the use of AI tools in programming education (Selvanathan & Narayanan, 2024).

METHODOLOGY

The study involved 25 students, most of them female (78%), with an average age of 20, all enrolled in the CSC415 course during the March-August 2025 semester. Data collection was done using an online survey that included both Likert-scale questions and open-ended responses. The Likert-scale items measured students' frequency of ChatGPT use, perceived benefits, and concerns, while open-ended questions allowed students to share their personal views. This mixed approach provided both quantitative data for statistical patterns and qualitative insights into student experiences. Descriptive statistics were used to summarize the quantitative results, and thematic analysis helped interpret the qualitative feedback. This combination was chosen to ensure a balanced understanding of how students use ChatGPT and how it influences their skills.

RESULTS AND DISCUSSION

The findings reveal that ChatGPT is becoming a regular part of students' study routines. About half of the participants (12 out of 25) reported using ChatGPT a few times each week (see Figure 1).

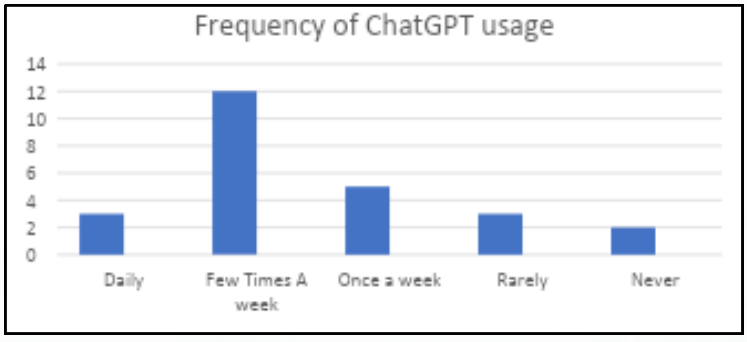

Figure 1: Frequency of ChatGPT Use

Students mainly relied on it to debug code, clarify programming concepts, and generate ideas for assignments. This shows that students view ChatGPT as a support tool rather than a replacement for learning. In terms of programming skills, most students (60%) felt that ChatGPT had a neutral impact, while 36% reported a positive effect. A small group of respondents (4%) report a negative impact. (see Figure 2).

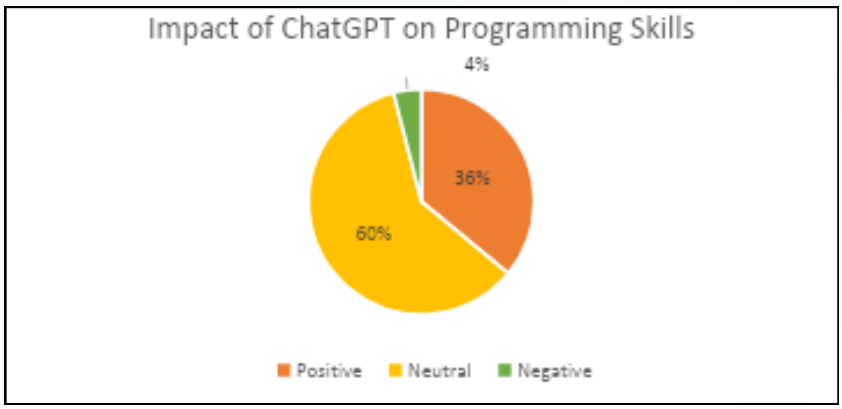

Figure 2: Impact of ChatGPT on Programming Skills

Students who benefited said that ChatGPT helped them complete assignments faster, understand lessons more easily, and feel confident about trying new approaches. However, a few students raised concerns that incorrect or incomplete answers sometimes confused them, especially for beginners. Others worried that a heavy reliance on ChatGPT could limit their ability to solve problems independently.

Exam performance was another area of mixed opinion. Most students (72%) said ChatGPT affected their exam preparation (see Figure 3).

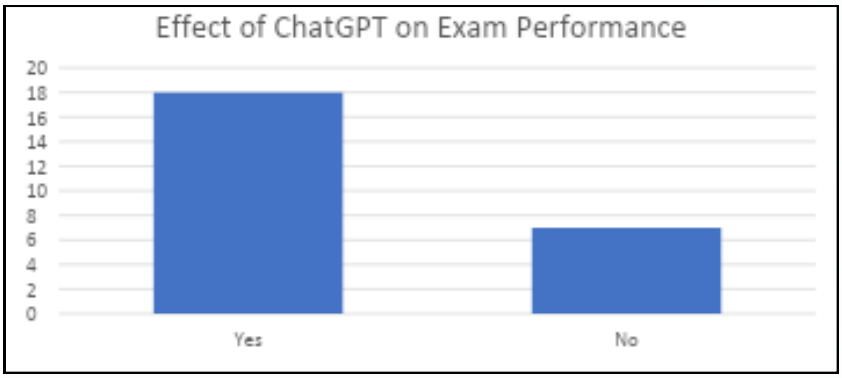

Figure 3: Effect of ChatGPT on Exam Performance

Some students felt that practising with ChatGPT gave them confidence, but others admitted that it left them less prepared for exams where AI was not allowed. This shows that while ChatGPT can help learning by making ideas clearer and faster to understand, it may also create gaps when students must depend on their own skills. Other studies have also warned about the risks of relying too much on AI, even though it can make learning more efficient (Qadir, 2023; Lund et al., 2023). From the perspective of the cognitive domain, using ChatGPT too often may limit students' practice in recalling knowledge, understanding concepts, applying ideas, analysing problems, and making judgements. Since final exams are conducted face-to-face without applications or computers, this lack of practice can weaken students' ability to think critically and solve problems independently. Therefore, AI should be used in a balanced way to support learning while still developing essential thinking skills.

PRACTICAL IMPLICATIONS FOR THE PROGRAMMING COURSE

To make the best use of ChatGPT in programming education, students and lecturers need both clear rules and smart teaching strategies. Rules keep things fair, like setting guidelines, asking for drafts or code history, and running in-class coding tests. Teaching strategies help students use ChatGPT wisely by checking answers, reflecting on how they use it, and working in groups to avoid over-reliance. Most of all, students should see ChatGPT as a support tool, not a shortcut. With the right balance, AI can boost learning while still building real problem-solving skills.

CONCLUSION

This study shows that ChatGPT is playing an increasing role in programming education. ChatGPT is changing how students learn programming by helping them understand concepts, build confidence, and manage complex tasks. It also comes with risks like logic errors and runtime issues. That's why lecturers must set clear rules, promote critical thinking, and keep problem-solving as a core skill. Used this way, ChatGPT becomes real learning support rather than just a shortcut for assignments.

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