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Impact of ChatGPT on Computer Science Education

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Abstract : *ChatGPT is an Artificial Intelligence (AI) technique that is widely used in the educational system. This study is trying to explore the impact of ChatGPT on students' learning and their educational growth. This study about how Computer Science students use Generative AI for clear concepts, solving problems, completing assignments, and upgrade their skills. This research highlights some advantages of ChatGPT, such as quick responses as well as easily access any type of information, Individualization learning support, and improved the student's learning efficiency. However, it also explores some difficulties, including overuse of AI tools, academic misconduct, disinformation, and reduced students' thinking capacity or level. This result suggests that using ChatGPT is helpful for educational learning when used responsibly. It should support and improve the learning process rather than replace traditional teaching techniques, human leadership, and independent thinking.*

The findings imply that when utilized sensibly and morally, ChatGPT may be a useful teaching tool. Instead of taking the role of conventional teaching techniques, human direction, and independent thought, it should complement and improve the learning process. In order to optimize the benefits of AI tools in education while minimizing any potential drawbacks, the study also highlights the importance of awareness, appropriate guidelines, and balanced use..

Key Words: ChatGPT, Artificial Intelligence (AI), Generative AI, Computer Science Education, Student Learning, Academic Performance, Personalized Learning, Educational Technology, Critical Thinking, AI-Assisted Learning

I. INTRODUCTION

ChatGPT is totally Artificial Intelligence (AI) tool capable of generating any kind of human-like responses to different kinds of questions and prompts. Now it is one of the most widely use AI applications in education system. It provides instant answers, explain concepts, generate content, solve problems and provides various learning activities. In Computer Science education, ChatGPT can support students in understanding programming concepts, writing and debugging code, technical topics. It provides quick responses as well as individual learning support, making the learning process easier and more accessible. As a result, today ChatGPT is widely used in educational purpose. However, students who use ChatGPT too much may become dependent on it, which can reduce their thinking and problem-solving skills. It may also cause issues such as cheating in exams and receiving inaccurate information. Therefore, this study explores both the positive and negative impacts of ChatGPT.

The objectives of this research are to find out how ChatGPT affects students learning in computer science Subject, to identify both the benefits and drawbacks of ChatGPT for educational Purpose and to figure out how ChatGPT impact students' educational growth, critical thinking, and capability to solve problems.

II. LITERATURE REVIEW

Most of the researchers focus on the use of ChatGPT and other Artificial Intelligence (AI) tools in education system. Depending on this research, ChatGPT is widely used for learning concepts and educational related task. Researchers learned that ChatGPT is useful for instant replies, self-learning platform, easy and free access to any kind of

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information.Deng et al. demonstrated that ChatGPT can help to improve students' performance in College (2025).As well as they focused on ChatGPT can help to reducing the effort spent to finish learning activities. Another study discovered ChatGPT Positive approach in higher educational system. Learners use ChatGPT for understanding complicated subjects, collect input, and enhanced the quality of learning. Researchers have found that ChatGPT expands student enrolment in academic activities. With this positive impact of ChatGPT tool in education, many students are rapidly use these methods for learning. However, several researchers have also raised concerns regarding its misuse, overreliance, and impact on critical thinking skills.

Given its positive aspects, several researchers have voiced reservations regarding ChatGPT's application in the classroom. Academic dishonesty, an excessive reliance on AI, false knowledge, and diminished critical thinking abilities are typical problems. Therefore, rather than taking the role of autonomous thought, ChatGPT should be utilized sensibly as a learning assistance tool. All things considered, ChatGPT has both beneficial and detrimental effects on education, thus its appropriate and moral use is crucial.

III. RESEARCH METHODOLOGY

For our research, we have chosen a survey-based methodology. A Google Form survey was used to gather information from undergraduate computer science students. Students' use of ChatGPT, its educational advantages, and its drawbacks were the main topics of the questionnaire. To assess the benefits and drawbacks of ChatGPT on students' educational experiences, statistical techniques based on percentages were applied to the collected responses.

Selection of Respondents

There are total of 70 to 107 students participated in this activity; we collected their responses using Google Forms. We selected students from our college and other college institutes.

Data Collection:

Several Questions are included for this survey such as how ChatGPT impact on Students academic behaviour.

The following questions were included in the survey:

Category	Survey Questions
Demographic Information	Age
	Gender
	Year of Study
	Have you used ChatGPT before?
Usage of ChatGPT	How frequently do you use ChatGPT for educational purposes?
	For what purpose do you use ChatGPT? (Programming/Coding, Assignments, Exam Preparation, Understanding Concepts)
Learning Impact	ChatGPT helps me understand Computer Science concepts more effectively.
	ChatGPT improves my learning efficiency.
Challenges and Concerns	Excessive use of ChatGPT may reduce critical thinking skills.
	ChatGPT may provide inaccurate information.
	ChatGPT may encourage academic dishonesty or plagiarism.
Students' Overall Perception	Would you recommend ChatGPT as a learning support tool?

IV. RESULTS AND DISCUSSION

Data Analysis

1) Demographic Information

a) Age Distribution

The age distribution of the respondents who participated in the survey is presented in Figure 1.

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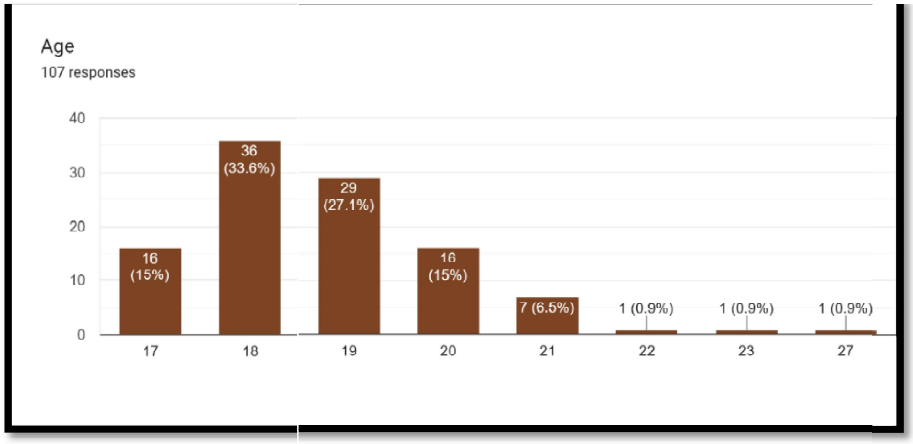


Figure 1: Age Distribution of Respondents

According to the above distribution, most respondents belong to the 17–20 years age group, while a smaller proportion belong to the other age groups.

b) Gender

The gender distribution of the respondents who participated in the survey is presented in Figure 2.

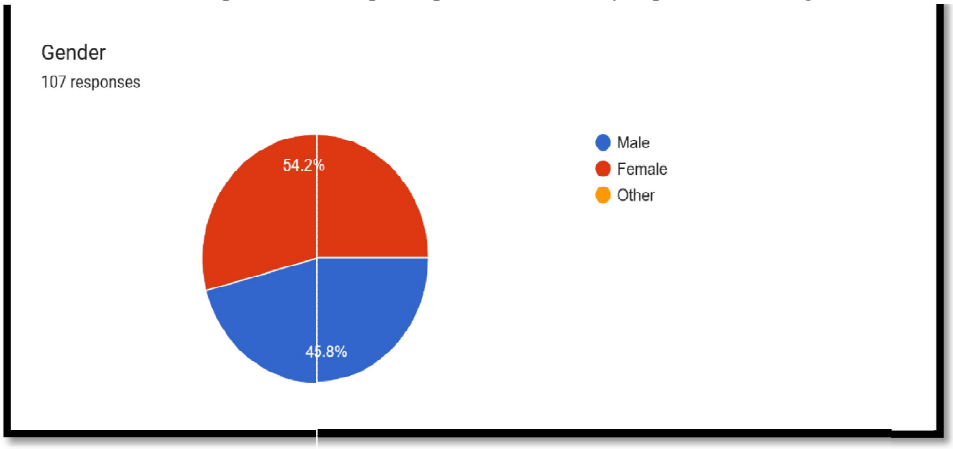


Figure No. 2: Gender Distribution of Respondents

The results indicate that female respondents constitute the largest proportion, followed by male respondents and other responses, if applicable.

c) Year of Study

The Year of Study of the respondents who participated in the survey is presented in Figure 3.

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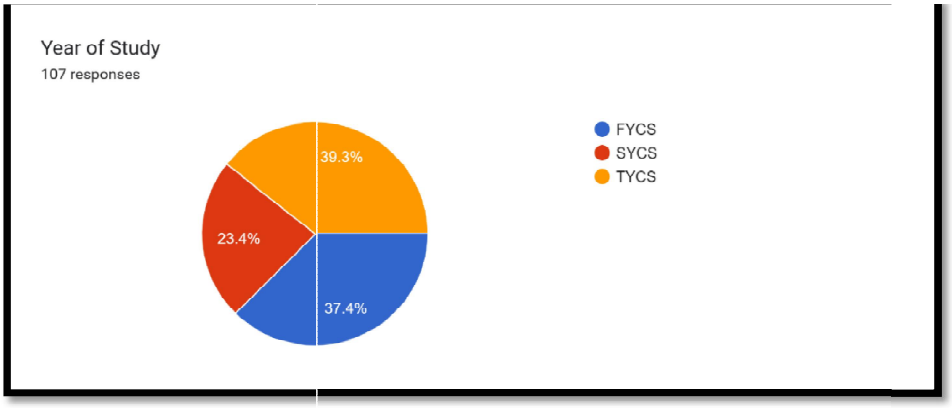


Figure No. 3: Distribution of Respondents by Year of Study

The results indicate that FYCS students constitute the largest group, followed by SYCS and TYCS students.

d) Have you used ChatGPT before?

The respondents' previous use of ChatGPT is presented in Figure 4.

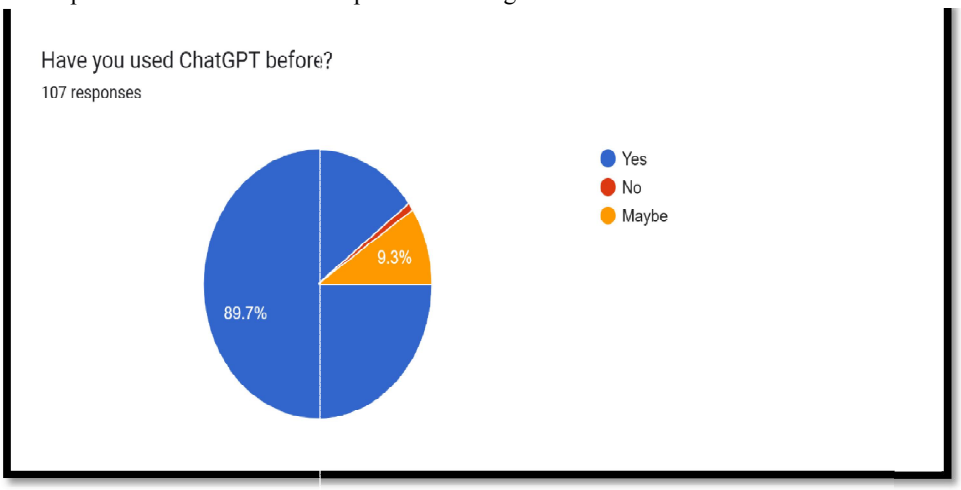


Figure 4: Previous Use of ChatGPT among Respondents

The results indicate that most respondents have previously used ChatGPT, while a smaller proportion have not used it.

2) Usage of ChatGPT

a)Frequency of ChatGPT Usage

The frequency of ChatGPT use for educational purposes by the respondents is presented in Figure 5.

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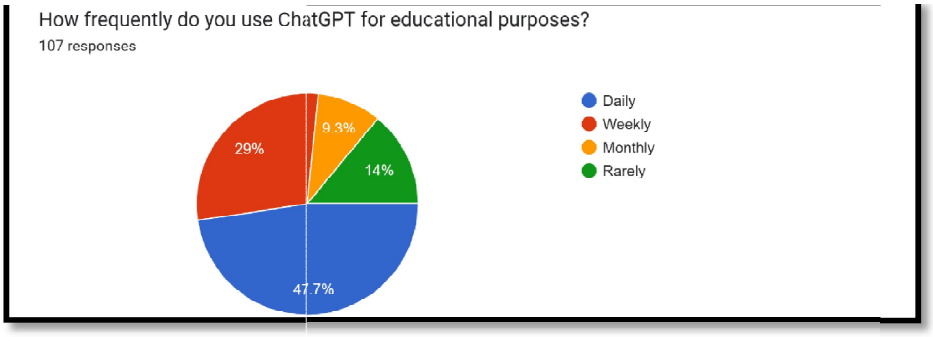


Figure 5: Frequency of ChatGPT Usage for Educational Purposes

The results show the proportion of students who use ChatGPT daily, weekly, monthly, and rarely.

b) Purpose of Using ChatGPT

The major purposes for which students use ChatGPT are presented in Figure 6.

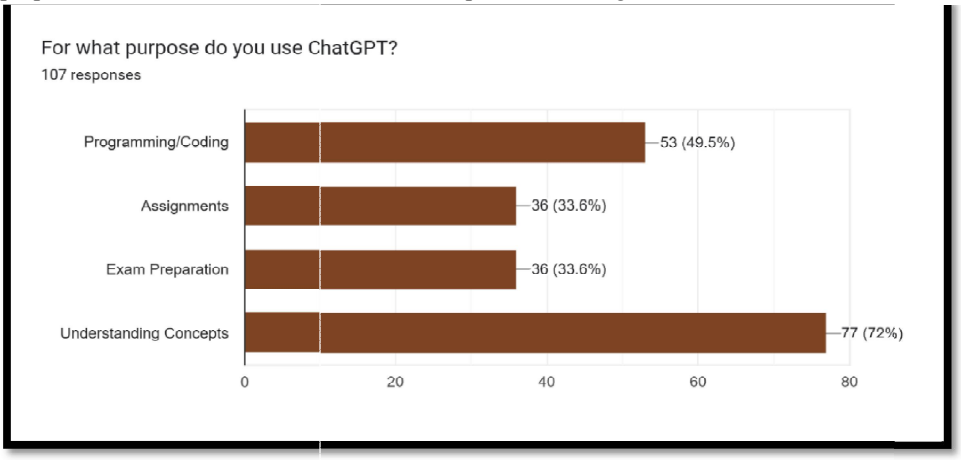


Figure 6: Purpose of Using ChatGPT

The responses include programming/coding, assignments, exam preparation, and understanding concepts. This helps identify the main educational uses of ChatGPT among students.

3) Learning Impact

a) Understanding Computer Science Concepts

The students' opinions on whether ChatGPT helps them understand Computer Science concepts more effectively are presented in Figure 7.

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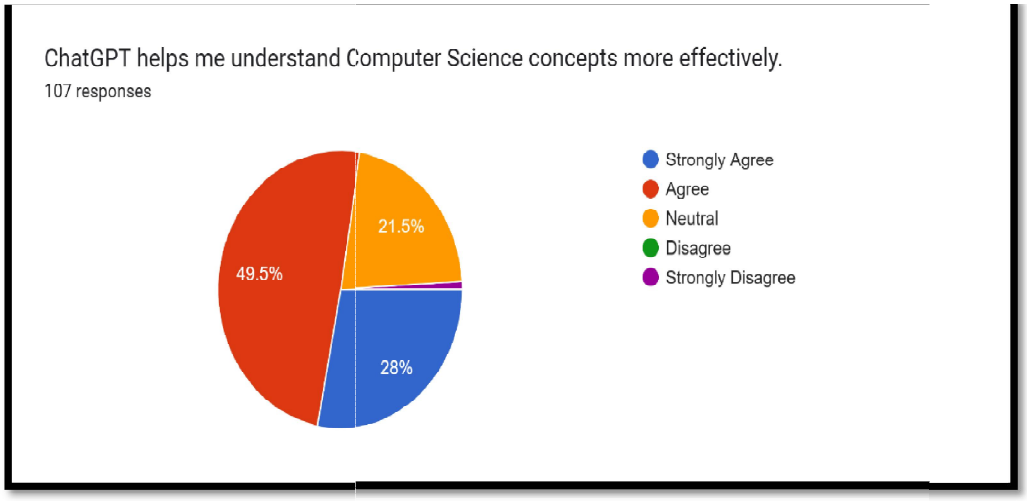


Figure 7: Effect of ChatGPT on Understanding Computer Science Concepts

A higher level of agreement indicates that students perceive ChatGPT as a useful learning support tool.

b) Learning Efficiency

The students' responses regarding whether ChatGPT improves their learning efficiency are presented in Figure 8.

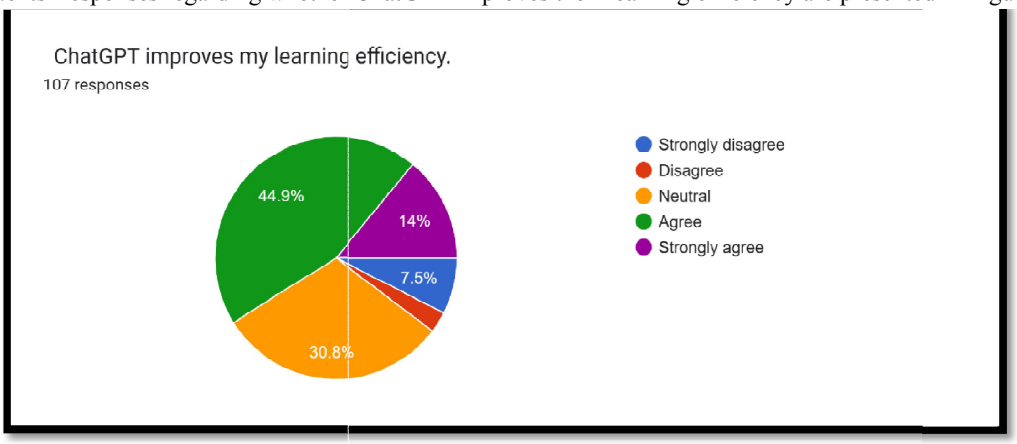


Figure 8: Effect of ChatGPT on Learning Efficiency

The results indicate that most students believe ChatGPT improves their learning efficiency. A considerable number of students agreed or strongly agreed, while some students remained neutral. Only a small number of students disagreed with the statement.

4) Challenges and Concerns

a) Critical Thinking

The students' opinions regarding whether excessive use of ChatGPT may reduce their critical thinking skills are presented in Figure 9.

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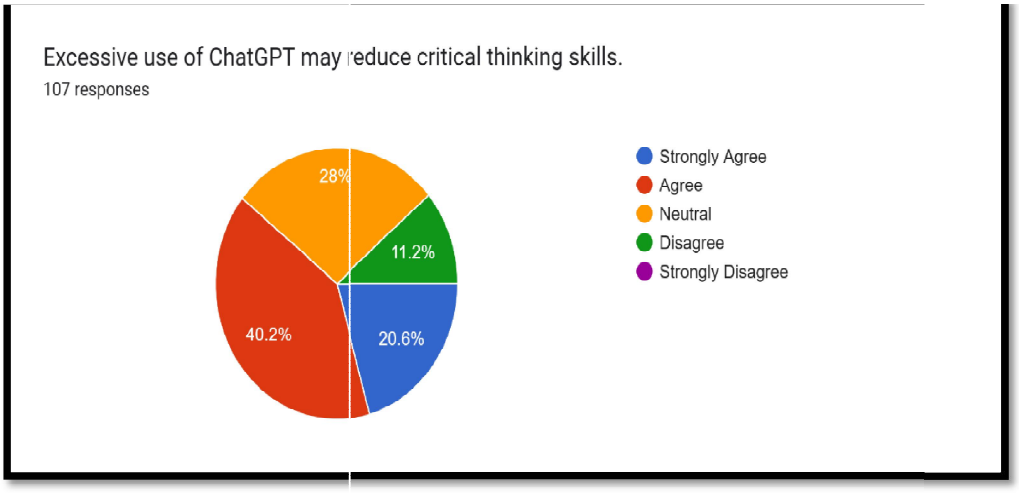


Figure 9: Effect of ChatGPT on Learning Efficiency

The responses indicate students' level of agreement with this potential challenge, with most students agreeing or strongly agreeing, while some remained neutral and only a few disagreed.

b) Inaccurate Information

The students' opinions regarding the possibility of ChatGPT providing inaccurate information are presented in Figure 10.

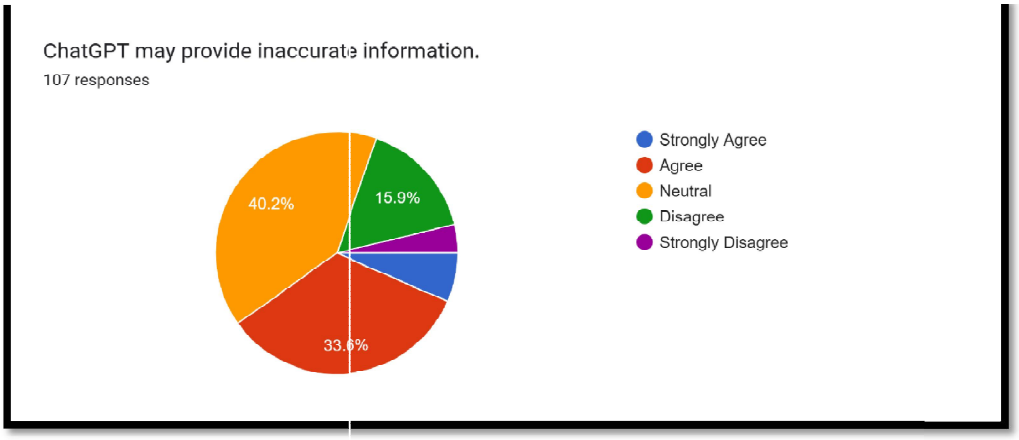


Figure 10: Concern Regarding Inaccurate Information from ChatGPT

It indicates the level of concern students have regarding the accuracy and reliability of ChatGPT-generated responses.

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c) Academic Dishonesty

The students' views on whether ChatGPT may encourage academic dishonesty or plagiarism are presented in Figure 11.

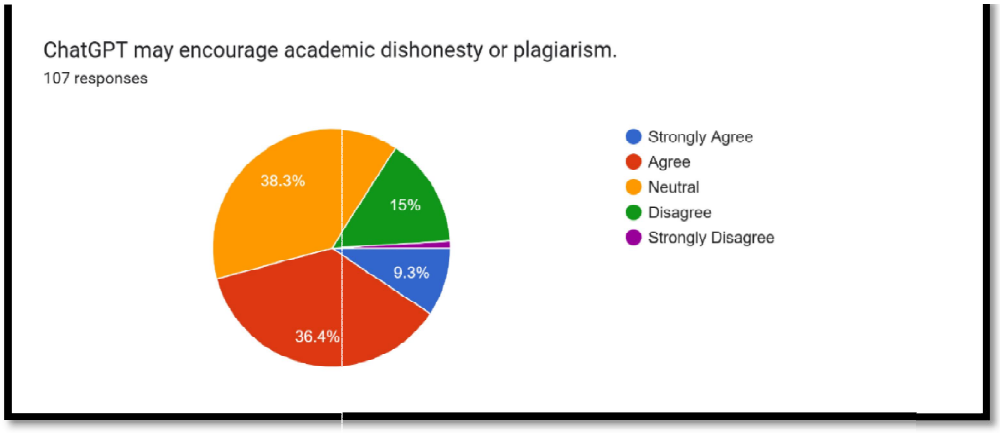


Figure 11: Perceived Risk of Academic Dishonesty

The results indicate students' perception of the potential negative impact of ChatGPT on academic integrity.

5) Overall Opinion

The students' views on whether they would recommend ChatGPT as a learning support tool are presented in Figure 12.

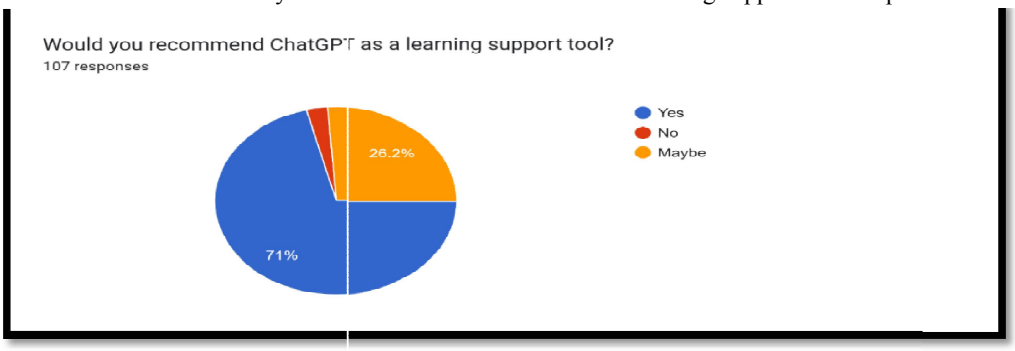


Figure 12: Perceived Risk of Academic Dishonesty

The results indicate that most students would recommend ChatGPT as a learning support tool. A considerable number of students selected "Yes," while some selected "Maybe." Only a small number selected "No." The results provide an overall indication of students' perception and acceptance of ChatGPT for educational purposes.

V. RESULT

The survey shows that most students are familiar with and regularly use ChatGPT for educational purposes such as programming, assignments, exam preparation, and understanding concepts. Students generally believe that ChatGPT improves learning efficiency and helps them understand Computer Science topics better. However, some concerns were raised regarding critical thinking, inaccurate information, and academic dishonesty.

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VI . CONCLUSION

The study concludes that ChatGPT is a useful learning support tool for Computer Science students. It helps improve understanding and learning efficiency, but it should be used responsibly to avoid overdependence and ensure academic integrity. Overall, students have a positive perception of ChatGPT and recommend its use in education.

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