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# Impact of Generative AI on Undergraduate Students: A Case Study of Kyungdong University Global

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**Abstract**

This study identifies how generative AI tools influence undergraduate students' learning behavior and problem-solving skills in the Smart Computing department at Kyungdong University Global, South Korea. To identify the frequency, purposes, and impact, a quantitative cross-sectional survey of 160 students was conducted. The findings illustrate that such tools enhance the quality of assignments, efficiency, and understanding of the programming concepts. Nonetheless, overreliance on the AI tools may shrink problem-solving skills and critical thinking, with occasional errors in AI outputs. The research highlights the importance of ethical and responsible integration of GenAI tools in education, while safeguarding self-learning capacity.

Keywords: Generative AI; Undergraduate Students; Learning Behavior; AI Tools


DOI:

## 1.0 Introduction

The growing development of artificial intelligence (AI), Internet of Things (IoT), and Cloud Computing has created significant demand across various sectors (Bhandari et.al., 2020). In recent years, generative AI tools such as ChatGPT and similar platforms have become widely accessible, allowing students to support their academic activities in new and innovative ways (Wu et al., 2025). These tools are commonly used for tasks such as understanding complex topics, completing assignments, and assisting with programming and writing. The increasing use of generative AI among students has raised crucial questions regarding its influence on learning behavior. While these tools offer benefits such as improved efficiency and accessibility of information, there are growing concerns about overdependence, reduced critical thinking, and issues related to academic integrity (Wiredu et al., 2024; Abbas et al., 2024). As a result, understanding how students interact with AI tools in their learning process has become an important area of research.

Although earlier studies have analyzed the role of generative AI in education, limited attention has been given to its impact within specific academic disciplines and student groups. There is a need to explore how students in computing-related fields use these tools and how such usage influences their learning behavior. Therefore, this study aims to investigate the impact of generative AI on the learning behavior of undergraduate students in the Smart Computing department at Kyungdong University Global.

## 2.0 Literature Review

Recent advancements in generative artificial intelligence (GenAI) have significantly changed teaching methods and learning practices in higher education. The increasing integration of AI tools such as ChatGPT and other generative systems has influenced students' learning experiences, engagement, and academic behavior. A systematic review by Fan Wu et al. (2025) highlights that GenAI adoption


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in higher education has grown rapidly, with strong implications for students' responses, attitudes, and behavioral patterns in learning environments. Their findings emphasize the psychological and behavioral dimensions of AI use in academic contexts.

Several studies have explored the growing usage behavior of generative AI among university students. Research by Qianli Wu et al. (2025) indicates that factors such as performance expectations, social influence, and effort expectancy significantly affect students' intention to use AI tools. Similarly, Chengliang Wang et al. (2024) found that students' attitudes and AI literacy strongly influence their behavioral intention to adopt generative AI technologies. These findings suggest that both individual and environmental factors play a crucial role in shaping AI usage patterns among students.

In terms of positive impacts, previous research demonstrates that generative AI can enhance learning efficiency, understanding, and motivation. Maila Rahiem (2024) reported that students use AI tools for tasks such as summarizing information, improving writing quality, and organizing study activities, leading to enhanced learning effectiveness. Furthermore, Mohammad Hmoud et al. (2024) found that AI tools positively influence students' motivation by enhancing engagement, interaction, and perceived relevance of learning tasks. These studies indicate that AI can function as a supportive learning assistant when used appropriately. However, despite these benefits, several studies highlight critical challenges related to the use of GenAI in education. Research by Japheth Kodua Wiredu et al. (2024) revealed that while AI tools improve comprehension, they also raise serious concerns regarding academic integrity and overreliance. Similarly, Muhammad Abbas et al. (2024) found that increased use of AI tools is associated with negative outcomes, including procrastination, memory loss, and reduced academic performance. These findings suggest that excessive dependence on AI may negatively affect students' critical thinking and independent learning abilities.

Further research has specifically examined the impact of generative AI on students' learning behavior. Sehar Islam and Shahbaz Ahmad (2024) reported that AI tools can support learning when used for explanation, feedback, and self-assessment. However, when students rely on AI as a primary source of answers, the quality of learning decreases due to reduced effort and verification practices. Additionally, Sajeda Ben Otman et al. (2025) found that while AI usage shows positive correlations with motivation and problem-solving, the impact varies across different student groups depending on their digital literacy and usage patterns. Moreover, research also highlights the importance of ethical considerations and responsible AI usage. Dwayne Wood and Scott H Moss (2024) emphasize that while students become more comfortable using AI tools, awareness of ethical issues and limitations is still developing. Similarly, studies from educators' perspectives indicate uncertainty regarding best practices for integrating AI into teaching and assessment, along with concerns about academic integrity and institutional readiness. Despite the growing body of research, there remains a gap in understanding how generative AI specifically influences students' learning behavior within a particular academic discipline and context. Many studies focus on general higher education settings, with limited attention to department-specific environments such as Smart Computing programs.

Therefore, this study aims to investigate the impact of generative AI on the learning behavior of undergraduate students in the Smart Computing department at Kyungdong University Global, providing context-specific insights into AI usage patterns, behavioral changes, and student perceptions.

The increasing use of generative AI among students has raised crucial questions regarding its influence on learning behavior. While these tools offer benefits such as improved efficiency and accessibility of information, there are growing concerns about overdependence, reduced critical thinking, and issues related to academic integrity (Wiredu et al., 2024; Abbas et al., 2024). As a result, understanding how students interact with AI tools in their learning process has become an important area of research.

Although earlier studies have analyzed the role of generative AI in education, limited attention has been given to its impact within specific academic disciplines and student groups. In particular, there is a need to explore how students in computing-related fields use these tools and how such usage influences their learning behavior.Therefore, this study aims to investigate the impact of generative AI on the learning behavior of undergraduate students in the Smart Computing department at Kyungdong University Global.

## 3.0 Methodology

This study uses a quantitative research approach to evaluate the impact of generative AI on the learning behavior of undergraduate students in the Smart Computing Department at Kyungdong University Global. A quantitative cross-sectional survey method was used to collect data, enabling the identification of students' usage patterns, perceptions, and behavioral tendencies at a single point in time.

The study is guided by the following research questions:

RQ1. To what extent do undergraduate students use generative AI tools for academic purposes?

RQ2. How does the use of generative AI influence students' learning behavior and study practices?

RQ3. What are students' perceptions of the benefits and challenges of generative AI in learning?

RQ4. How does the use of generative AI affect students' independent thinking and problem-solving abilities?

RQ5. What are the perceptions and potential impact of generative AI among students who do not currently use these tools?

### *3.1 Participants*

The target population of this study consists of undergraduate students from the Smart Computing Department at Kyungdong University-Global. A total of 160 students (n = 160) participated in the survey using a convenience sampling method, as they were easily accessible. The study aimed to capture diverse perspectives by including both users and non-users of generative AI tools. This allowed for a more comprehensive understanding of AI usage patterns and their impact on student learning behavior.

### *3.2 Data Collection Method*

A structured questionnaire was designed in Google Forms to collect data. The survey questionnaire was split into four main sections:

- Participant Information: including year of study

- Usage of GenAI Tools: screening questions determined whether participants were familiar with AI tools and used them for academic purposes (Yes/No)
- GenAI Usage and Learning Behavior: participants who responded "Yes" were directed to questions related to the frequency of AI usage, the purpose of using AI tools, and their impact on study habits and learning behavior
- Non-Users' Awareness and Perceptions of GenAI Tools: participants who responded "No" were directed to questions focusing on reasons for not using AI tools and their perceptions of such technologies

The purpose of the study was clearly explained to all participants through email prior to data collection. All responses were collected anonymously to ensure privacy and encourage honest responses.

*3.3 Data Analysis*

The descriptive statistics were used to analyze the collected data. Responses from Likert scale questions were grouped into three categories:

- Agree (Strongly Agree + Agree)
- Neutral
- Disagree (Strongly Disagree + Disagree)

The results were presented using frequency distributions and percentages to identify patterns in AI usage, learning behavior, and student perceptions.

## 4.0 Findings

*4.1 Overview of the Data*

A total of 160 undergraduate students from the Smart Computing program at Kyungdong University participated in this study. The data were collected through a structured questionnaire and were analyzed using descriptive statistics, which include frequency distributions and percentages. The findings are presented to highlight patterns in the impact of generative AI tools such as ChatGPT on students' learning behaviors.

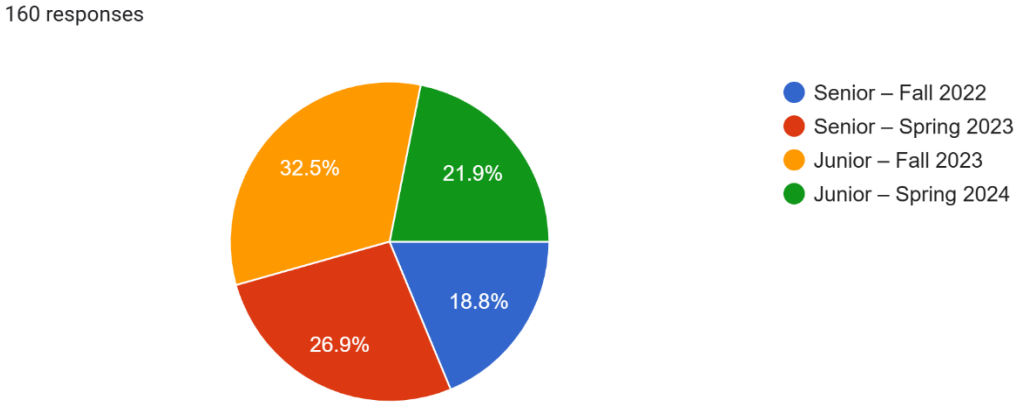


Fig. 1: Participants' Academic Level

*Source:) Prepared by the authors*

*4.2 Usage of Generative AI Tools*

The findings indicate that generative AI tools are widely recognized and used among undergraduate students. A majority of respondents (95%) reported using generative AI tools, while 5% indicated that they do not use them.

Among users, varying levels of usage frequency were observed: 65.8% reported daily use, 19.1% weekly use, 11.8% occasional use, and 3.3% rare use.

Regarding tool preference, most students identified ChatGPT as the most frequently used tool, followed by platforms such as Claude AI, Google Gemini, and Microsoft Copilot.

These results suggest that generative AI tools have become an integral part of students' academic activities.

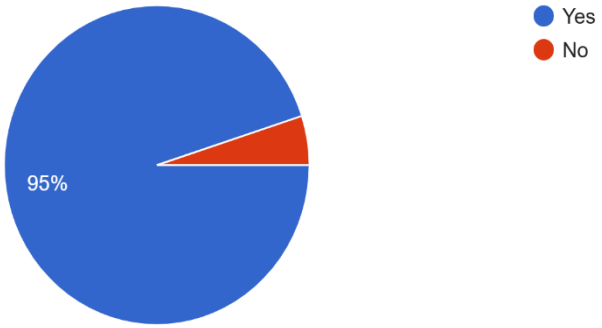


Fig. 2: Usage of Generative AI Tools

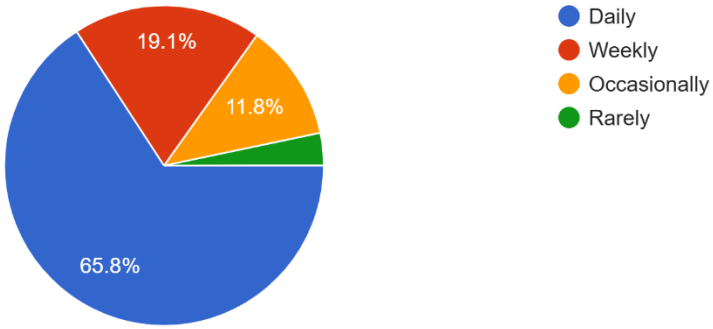


Fig. 3: Frequency of AI Usage

*(Source:) Prepared by the authors*

*4.3 Influence on Learning Behavior and Study Practices*

The results demonstrate that generative AI tools have a significant influence on students' learning behaviors and study practices. A substantial proportion of respondents (92.76%) agreed that generative AI tools help them understand academic concepts more easily. Additionally, 82.23% of students indicated that they use AI tools to assist with assignments or homework, while 87.5% agreed that AI tools improve their overall study efficiency. A considerable number of respondents (80.92%) also reported relying on AI tools when encountering difficult academic problems. Furthermore, 80.26% of students agreed that AI tools support self-directed learning, and 86.18% indicated that generative AI has a positive impact on their overall learning experience. These findings highlight the role of generative AI in enhancing academic efficiency and supporting modern learning practices.

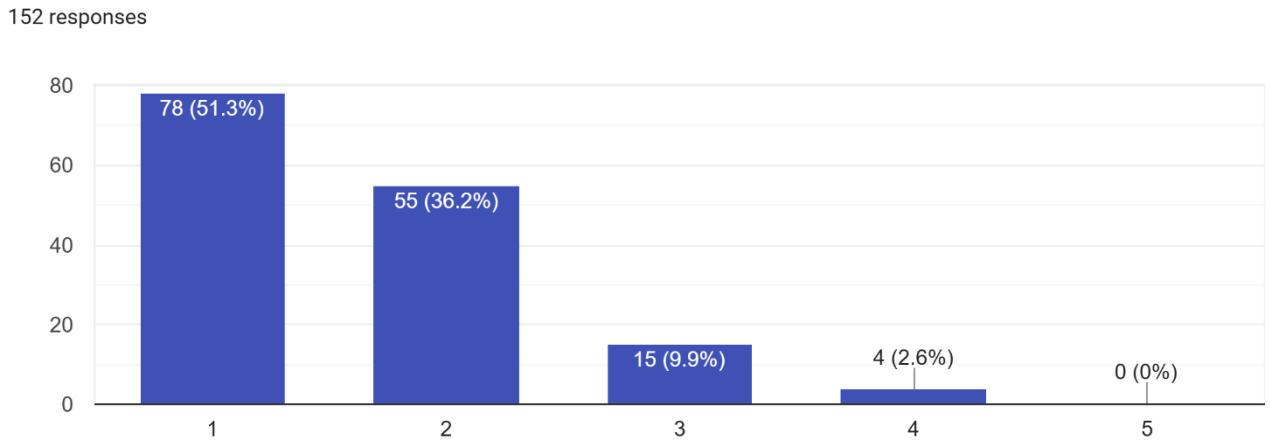


Fig. 4. Impact of AI on Study Efficiency

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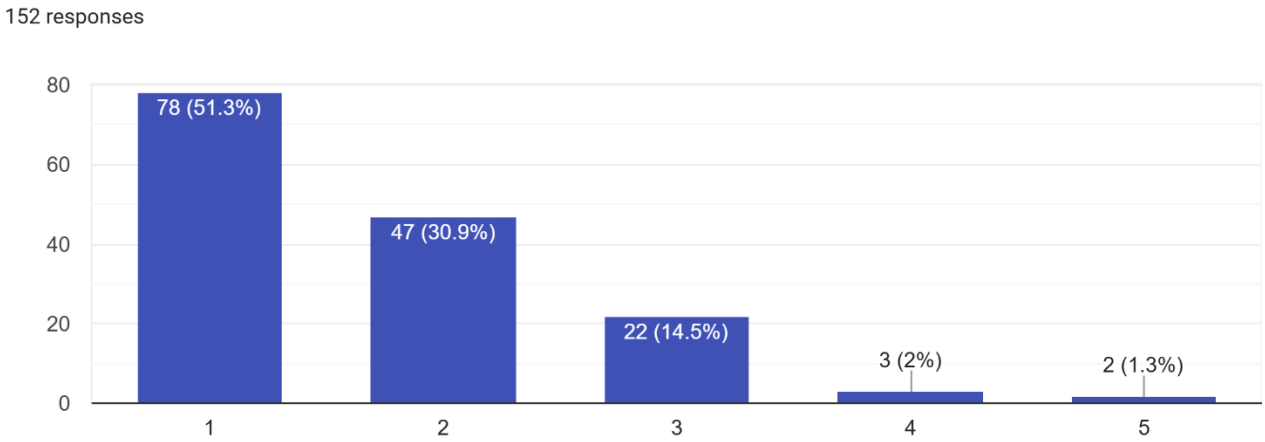


Fig. 5: AI Support in Assignments or Homework

*Source:) Prepared by the authors*

*4.4 Perceived Benefits and Challenges of Generative AI*

Students reported both advantages and challenges associated with the use of generative AI tools.

The most identified benefits include:

- Assistance in coding, debugging, and problem-solving tasks (46.1%)
- Enhanced understanding of programming and technical concepts (23.7%)
- Improved quality of assignments, reports, or project work (17.1%)
- Increased efficiency in completing academic tasks (13.2%)

However, several challenges were also reported:

- Overreliance on AI tools (36.8%)
- Reduced development of independent problem-solving skills (27.6%)
- Inaccuracy or inconsistency in AI-generated responses (23%)
- Difficulty in evaluating and verifying AI outputs (12.5%)

In terms of integration, 66.5% of respondents supported the inclusion of generative AI tools in university learning environments, while 2.6% opposed it and 30.9% remained uncertain. These findings indicate that while the use of generative AI tools provides several benefits, it also presents challenges that need to be addressed.

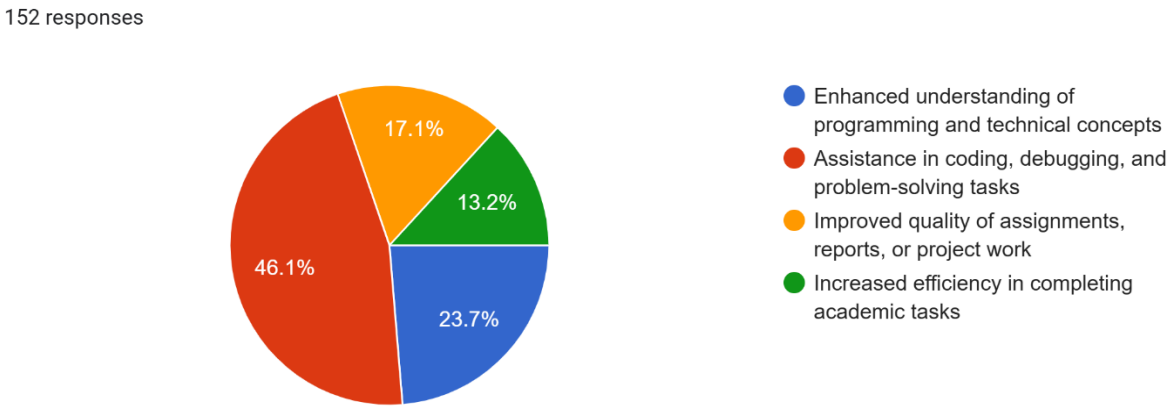


Fig. 6: Perceived Benefits of Generative AI

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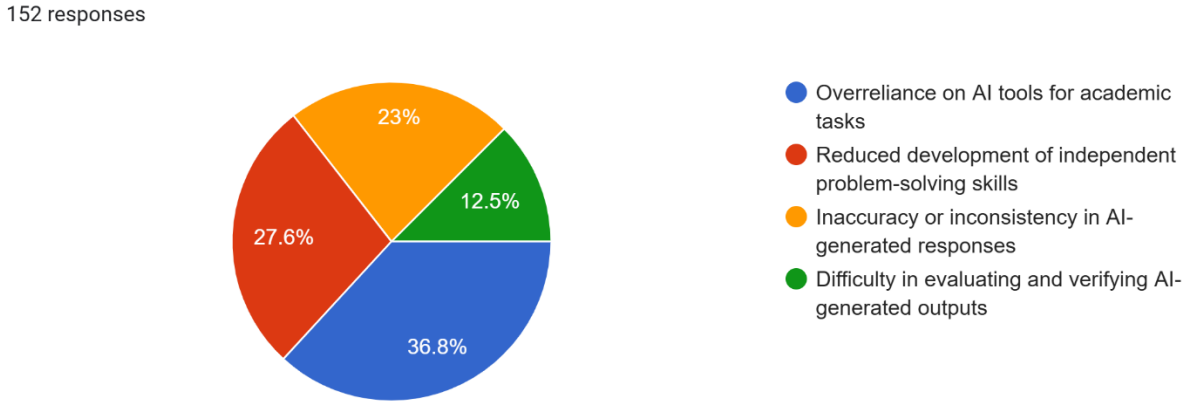


Fig. 7: Challenges of Generative AI Usage

*(Source:) Prepared by the authors*

*4.5 Impact on Independent Thinking and Problem-Solving*

The findings reveal mixed perspectives regarding the impact of generative AI on students' independent thinking and problem-solving abilities. A portion of respondents (58.55%) agreed that the use of AI tools may reduce their independent thinking ability, while 41.45% disagreed. At the same time, 80.92% of students reported that AI tools assist them in solving complex academic problems, indicating both supportive and potentially limiting effects. These results suggest that while generative AI can enhance problem-solving capabilities, excessive reliance may negatively impact independent cognitive processes.

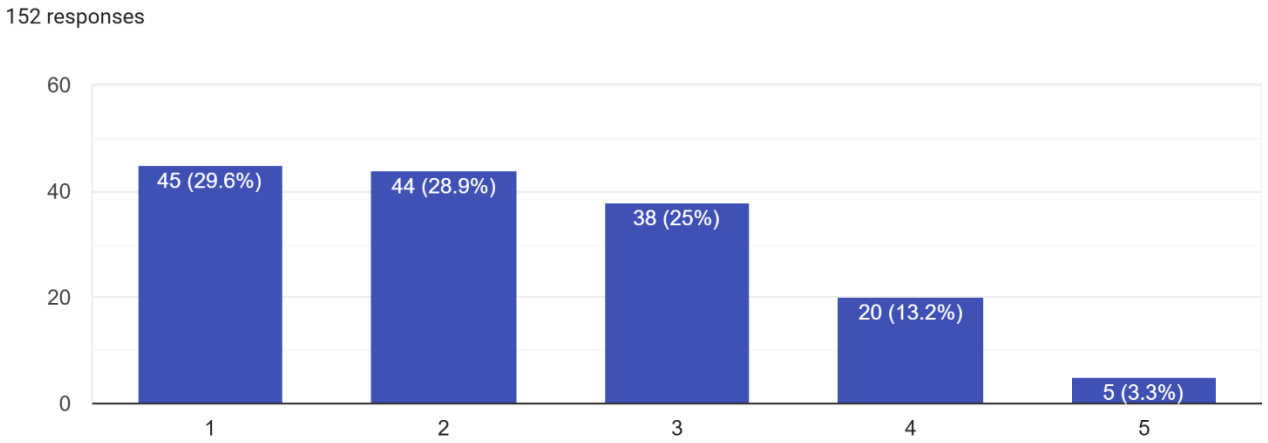


Fig. 8: Impact of AI on Independent Thinking

*(Source:) Prepared by the authors*

*4.6 Perceptions of Non-Users*

A tiny fraction of respondents reported that they do not use generative AI tools for academic purposes. The main reasons include:

- Not perceiving AI tools as useful for coursework (37.5%)
- Concerns about the accuracy and reliability of AI-generated content (37.5%)
- Limited familiarity with AI tools (12.5%)
- Preference for traditional learning methods (12.5%)

Despite not using these tools, many non-users still recognized their potential value. Approximately 37.5% considered generative AI moderately useful, 37.5% slightly useful, and 25% not useful. None of the respondents rated them as highly useful.

These findings indicate that even among non-users, there is awareness of the potential role of generative AI in education.

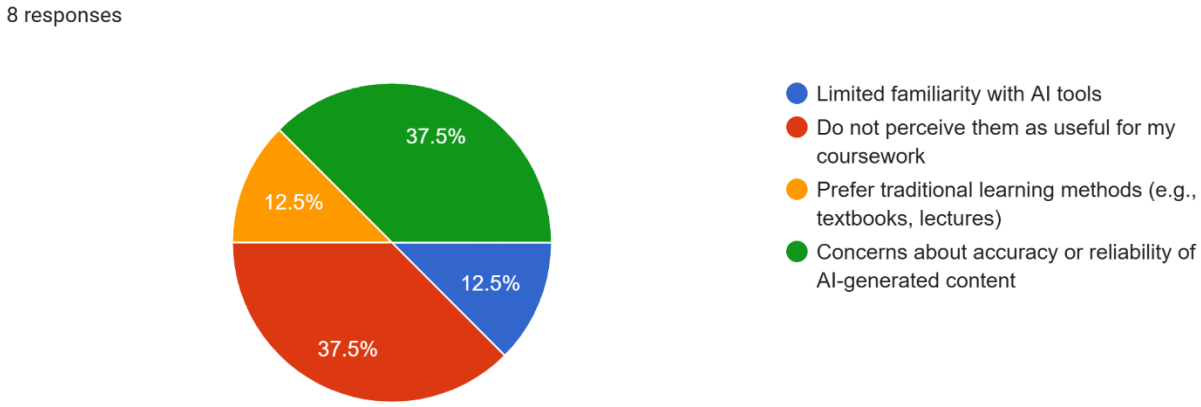


Fig. 9: Reasons for Not Using Generative AI Tools

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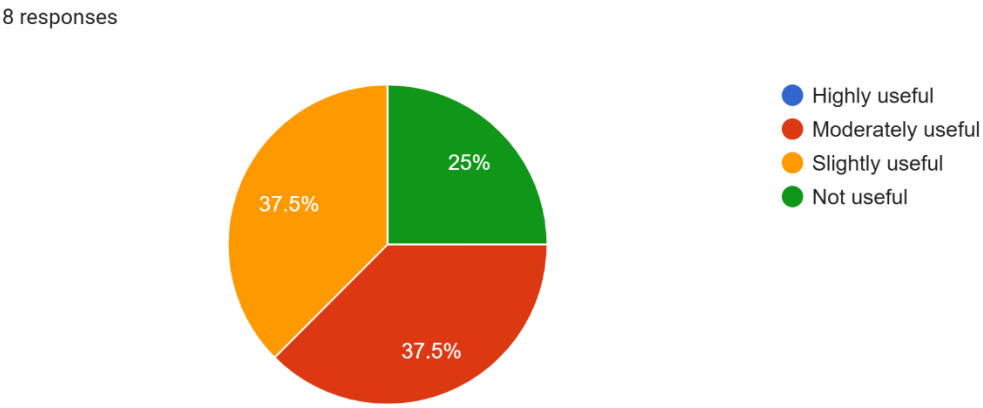


Fig. 10: Perception of Usefulness in Computing-Related Courses

*(Source:) Prepared by the authors*

*4.7 Summary of Findings*

Overall, the results indicate that generative AI tools are widely used among undergraduate students and have a significant impact on their learning behaviors. While these tools enhance efficiency, understanding, and academic performance, concerns regarding dependency, accuracy, and independent thinking were also identified.

## 5.0 Discussion

*5.1 Adoption and Usage of Generative AI Tools*

The results show the huge adoption of generative AI tools by undergraduate students, where 95% reported active use. Among them, 65.8% are daily users, which confirms how deeply such tools are integrated into students' daily routine. This dominance clarifies that generative AI tools are useful and accessible for academic tasks, making them an integral part of students' learning instead of just an additional tool (Wu et all., 2025).

*5.2 Influence on Learning Behavior and Study Practices*

The findings depict a huge positive influence of GenAI tools on students' learning behavior. Many students reported that their understanding of concepts has increased, along with enhanced study efficiency and better learning experience.

The regular use of AI tools for assignments and problem-solving suggests that they are actively shaping study practices. Additionally, their role in supporting self-directed learning indicates a shift toward more flexible and independent learning approaches (Sajeda Ben Otman et al., 2025).

*5.3 Benefits and Challenges of Generative AI Usage*

Students identified several benefits, particularly in coding, debugging, and problem-solving, which are essential for Smart Computing studies. Improvements in concept understanding and assignment quality further highlight the academic value of AI tools.

However, they also reported concerns about excessive use, reduced independent skills, and accuracy issues with AI-generated responses (Wood & Moss, 2024). Overall, mixed opinions are observed.

*5.4 Impact on Independent Thinking and Problem-Solving*

The findings show a mixed impact on students' cognitive abilities. While a large proportion of students use AI to solve complex problems, more than half believe it may reduce independent thinking.

This indicates that although generative AI enhances efficiency, excessive reliance may limit critical thinking. Therefore, AI tools should be used as supportive resources rather than replacements for independent reasoning (Wiredu et al., 2024; Abbas et al., 2024).

*5.5 Perspectives of Non-Users*

Non-users identified a lack of perceived usefulness and concerns about accuracy as the main reasons for not adopting AI tools. At the same time, many still view these tools as moderately or slightly useful, indicating awareness of their potential benefits.

The absence of a strong positive perception suggests a cautious attitude, likely due to limited exposure. This highlights the need for better awareness and guidance to encourage informed use of generative AI tools.

*5.6 Overall Implications*

The generative AI tools have a significant impact on students' learning behaviors, improving efficiency, understanding, and learning experience. However, concerns related to dependency and critical thinking highlight the need for balanced and responsible use.

These outcomes suggested that while generative AI is a valuable educational tool, its effectiveness depends on how it is integrated into the learning process (Abbas et al., 2024).

## 6.0 Conclusion& Recommendations

This study reviewed the impact of generative AI tools on undergraduate students' learning behaviors at Kyungdong University. The findings show that generative AI tools have become an important part of students' academic activities. A higher number of students stated that these tools enhance their study efficiency, their understanding of concepts, and their ability to complete the assignments. The study also identified students' concerns about the accuracy and reliability of AI-generated content.

In this study, generative AI tools showed a positive impact on students' learning; however, their effectiveness depends on proper guidance and practice. Based on the findings, universities should integrate AI tools into their learning practices. However, students should be provided with proper guidance, training, and clear policies for ethical use, as suggested in a previous study by Wood & Moss (2024). Additionally, to preserve problem-solving skills and independent thinking, generative AI tools should be used as a supportive resource rather than relied on completely (Wiredu et al., 2024; Abbas et al., 2024).

## Acknowledgements

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## Paper Contribution to the Related Field of Study

This research aims to analyze the impact of generative AI in education, focusing on Smart Computing undergraduate students. It clarifies how GenAI tools affect study, academic experience, and learning behavior. This research identifies both benefits and challenges of using GenAI tools, highlighting users' and non-users' experiences. The findings can help educators improve teaching strategies and integrate AI tools responsibly. It can serve as a foundation for research in computing education.

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