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Chapter 4 - A Survey on Students' Perceptions of GenAI in Higher Education

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Chapter Highlights

- The While Generative Artificial Intelligence (GenAI) tools are increasingly being used by students in higher education, we still lack insight into their views on its use and potential applications.
- This study explores students' perceptions of GenAI tools across five key dimensions: learning performance, motivation, effort expectancy, trustworthiness, and intention to use.
- Data were collected through the spread of an online survey among 940 higher education students enrolled in life sciences courses at a Dutch university during the 2023-2024 academic year.
- The results indicated that students generally found GenAI tools useful, easy to use, and moderately trustworthy.
- They reported that GenAI tools help with task completion and improve learning performance.
- Effort expectancy was high, with students finding the tools intuitive and easy to learn. However, motivation levels were moderate, and there was variability in intention to use. Some students expressed a strong desire to continue using GenAI tools, while others were uncertain or less inclined to engage with them in the future.
- These findings suggest that while GenAI tools show promise in supporting students' performance, there are challenges related to student motivation and long-term intention to use.
- The study provides insights for educators and institutions aiming to integrate GenAI tools effectively into higher education.

Introduction

Generative Artificial Intelligence (GenAI) is rapidly transforming the landscape of higher education, offering unprecedented opportunities to enhance teaching, learning, and assessment. Understanding students' perceptions of this technology is critical to harnessing its potential effectively (Farrokhnia et al., 2024). As primary stakeholders in the educational process, students' attitudes and beliefs about GenAI significantly influence how these tools are adopted, used, and ultimately impact their academic performance and experience.

The emergence of GenAI tools like ChatGPT showcased the potential for AI to streamline educational processes and provide personalized learning experiences. These tools can help students access immediate feedback, generate ideas, and explore new forms of creativity (Banihashem et al., 2024). However, they also raise important questions about ethics, academic integrity, and equitable access. Exploring students' perceptions allows educators and policymakers to address these concerns and create strategies that align with students' needs, ensuring that GenAI complements rather than complicates their learning journey.

GenAI tools are increasingly and significantly influencing higher education. These tools offer capabilities like content generation and personalized support, which have the potential to reshape students' learning experiences (Farrokhnia, et al., 2024; Noroozi et al., 2024). However, the impact of GenAI tools depends heavily on students' perceptions, which encompass various psychological and behavioral dimensions (Daher and Hussein, 2024). Students' perceptions and attitudes, whether positive or negative, play a crucial role in determining their willingness to adopt and effectively use GenAI tools in educational contexts (Zawacki-Richter et al., 2020). Students' negative and positive perceptions of and attitudes towards GenAI tools can determine whether students are willing to use and apply GenAI tools are not. Investigating how students perceive these tools can reveal the opportunities and challenges associated with their integration into academic settings (Dwivedi et al., 2023). Understanding students' learning performance, motivation, effort expectancy, trustworthiness, and intention to use can guide educators and institutions in designing effective strategies for GenAI tools adoption that align with educational goals and ethical considerations (Zawacki-Richter et al., 2019).

Student perceptions involve several key dimensions, including perceived learning performance (students' beliefs about the extent to which GenAI tools contribute to their learning outcomes and academic success), perceived motivation (the extent to which students believe that using GenAI tools enhances their enthusiasm, motivation, and drive to learn or complete academic tasks), perceived effort expectancy (the degree to which students believe that GenAI tools are easy to use and require minimal effort to adopt), perceived trustworthiness (to the extent to which students believe that GenAI tools are reliable, accurate, and capable of providing trustworthy outputs or recommendations in educational contexts), and intention to use (the likelihood or willingness of students to adopt and utilize GenAI tools for educational purposes). These dimensions play a crucial role in determining how students interact with GenAI tools and the extent to which these tools are embraced in academic environments (Venkatesh et al., 2012).

One of the key reasons to focus on students' perceptions is to shape effective integration strategies for GenAI in higher education. When students view these tools positively, recognizing their ability to support learning, institutions can design interventions that maximize these benefits (Akhteh et al., 2022a, 2022b). For example, embedding GenAI into collaborative learning environments or adaptive learning platforms can make education more personalized and engaging. At the same time, addressing negative perceptions, such as concerns about over-reliance on AI or the loss of critical thinking skills, ensures that the integrati on of technology does not undermine educational objectives (Banihashem et al., 2024).

Understanding students' perceptions also sheds light on the need to foster digital literacy and critical thinking. While GenAI offers convenience and efficiency, students must develop the skills to evaluate AI-generated outputs critically. Without these skills, there is a risk of overdependence on AI, potentially undermining students' ability to think independently and solve complex problems. By understanding how students perceive and interact with these tools, educators can design targeted interventions that promote responsible and informed use of technology (Noroozi et al., 2024).

Another important dimension of students' perceptions relates to the ethical implications of using GenAI. Questions about plagiarism, bias in AI-generated content, and data privacy

have become central to discussions about AI in education. By engaging with students' views, educators can facilitate meaningful conversations about the responsible use of AI and co-create policies that reflect shared values. This approach not only encourages ethical behavior but also fosters a sense of accountability and trust between students and institutions (Noroozi et al., 2024).

This study seeks to explore these factors, addressing the research question: How do students perceive the use of GenAI tools in higher education in terms of learning performance, motivation, effort expectancy, trustworthiness, and intention to use? By addressing this research question, we aim to provide a comprehensive understanding of how students perceive the use of GenAI tools in higher education, focusing on their impact on learning performance, motivation, effort expectancy, trustworthiness, and intention to use. This insight will help educators, policymakers, and developers design more effective strategies for integrating GenAI tools into educational practices, ensuring they meet students' needs and foster positive learning outcomes.

Method

Context and Participants

This exploratory and survey-based study was conducted at a Dutch university and involved 940 higher education students enrolled in five life sciences courses during the 2023-2024 academic year. Of these, 722 participants were included in the final analysis, as 218 students (23%) did not complete the survey. The demographic information of the participants is listed in Table 1.

Table 1: Demographic Information of the Study Sample

Variable	Category	N	%
Education Level	Bachelor's students	285	37.3

	Master's students	479	62.7
Academic Year	First year	246	32.2
	Second year	265	34.7
	Third year	153	20.0
	Fourth year	63	8.2
	Other years	35	4.6
Native Language	Dutch	545	71.3
	Non Dutch	216	28.3
Gender	Female	398	52.1
	Male	322	42.1

Measurements and Analysis

To assess students' perceptions of using GenAI tools, a questionnaire was developed based on frameworks by Venkatesh et al. (2012), Gulati et al. (2019), Chatterjee et al. (2020), and the UNESCO report. The questionnaire included 16 items evaluating five components: learning performance (e.g., I find GenAI useful for my learning), motivation (e.g., using GenAI is fun), effort expectancy (e.g., learning how to use GenAI is easy for me), trustworthiness (e.g., I can trust the information presented to me by GenAI), and intention to use (e.g., I intend to continue using GenAI in the future). Responses were measured on a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). A score of 5 indicates a highly positive perception while a score of 1 reflects a negative perception, indicating strong disagreement. The scale demonstrated high reliability, with a Cronbach's alpha of 0.95, and descriptive analyses provided mean and standard deviation for each item and component.

Results

The findings revealed nuanced insights into students' perceptions of GenAI tools across five dimensions. Learning performance, with an overall mean of 3.51, indicated that students generally find GenAI useful for their learning performance and productivity. Among the

items, the highest-rated statement was that using GenAI helps students accomplish tasks more quickly (M = 3.63, SD = 1.43), while the lowest-rated was its impact on productivity (M = 3.41, SD = 1.44). For motivation, the results showed a moderate level of enjoyment, with an overall mean of 3.11. Students found GenAI moderately fun (M = 3.21, SD = 1.26), though entertainment was rated slightly lower (M = 3.00, SD = 1.27). The effort expectancy was rated relatively high (M = 3.53), suggesting that students perceive GenAI as easy to learn and use. Among the items, the statement "I find GenAI easy to use" received the highest score (M = 3.71, SD = 1.30). However, trustworthiness in GenAI scored mixed results. While students expressed skepticism about its accuracy, as indicated by high agreement with the statement "Educational content created by GenAI is NOT always correct" (M = 4.37, SD = 1.12), their overall trustworthiness level in the tool was moderate (M = 3.60, SD = 0.73). Finally, intention to use showed variability, with an overall mean of 3.11. While some students indicated an intent to continue using GenAI (M = 3.77, SD = 1.37), others were less certain about consistent future usage (M = 2.42, SD = 1.25) (see Figure 1).

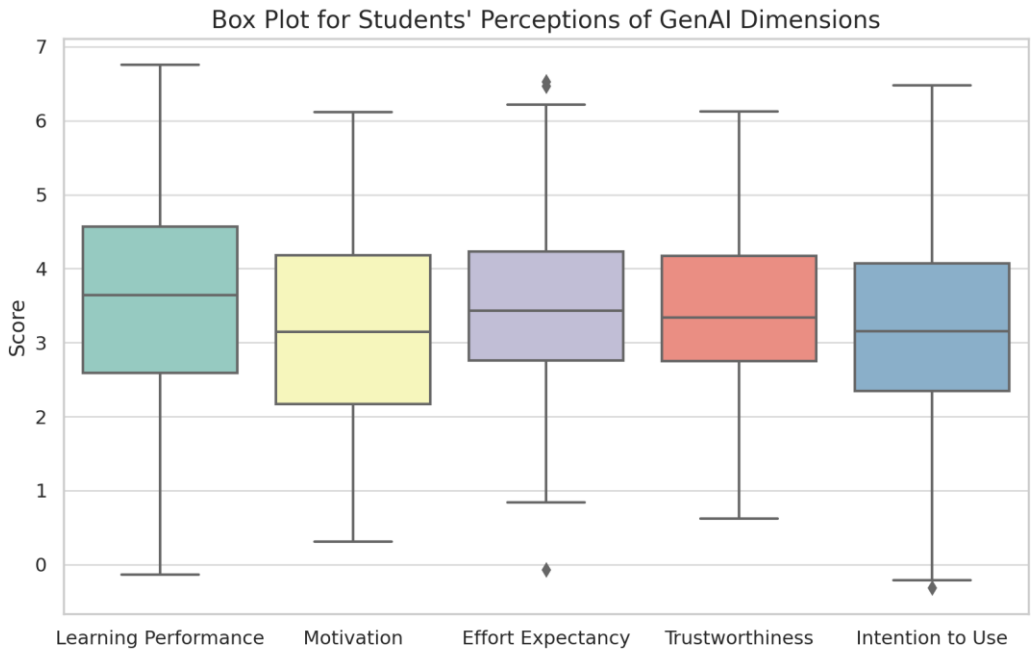

Figure 1: Descriptive Statistics of Students' Perceptions of Using GenAI in Higher Education

Discussion and Conclusion

Capturing students' perceptions is not without its challenges. Attitudes toward GenAI can vary widely based on factors such as academic discipline, prior exposure to technology, and

cultural background. Additionally, perceptions may evolve as students gain more experience with these tools, requiring continuous engagement and research. The gap between students' stated perceptions and their actual use of GenAI further complicates the picture, underscoring the need for nuanced and ongoing exploration.

Addressing these complexities requires a multifaceted approach. Research that combines surveys, interviews, and observational studies can provide a comprehensive understanding of students' perceptions. Such efforts should not only capture the benefits students see in GenAI but also delve into the barriers and concerns they face. Involving students in the design and implementation of GenAI tools ensures that these technologies align with their needs and expectations, increasing the likelihood of acceptance and effective use.

Our findings highlight both the opportunities and challenges associated with integrating GenAI tools into higher education. In general, The analysis of the data highlights notable trends across key dimensions of students' perceptions regarding the use of GenAI tools in higher education. Among the examined factors, "trustworthiness" received the highest average score, indicating that students generally perceive these tools as reliable and credible. This trustworthiness may serve as a foundation for their willingness to engage with GenAI tools in academic settings. Additionally, effort expectancy and learning performance were found to be rated relatively high, suggesting that students found these tools both easy to use and effective in enhancing their academic success. These scores reflect the potential of GenAI tools to support students in achieving their educational objectives. However, motivation and intention to use both received low scores, highlighting potential challenges in fostering enthusiasm and sustained engagement with these tools. These lower ratings may point to barriers such as a lack of intrinsic interest or concerns about the long-term value of GenAI in their studies.

Results related to perceived usefulness and trustworthiness, align with technology adoption frameworks, such as the Unified Theory of Acceptance and Use of Technology (UTAUT), which emphasize usability and trust as critical components of adoption (Venkatesh et al., 2012; Dwivedi et al., 2023). Results related to low motivation are in line with previous studies that highlight motivation as a key barrier to the adoption of educational technologies (Zawacki-Richter et al., 2019; Daher & Hussein, 2024). To maximize the potential of GenAI

tools for educational success, institutions must address these barriers by implementing strategies that enhance intrinsic motivation and clearly communicate the tools' long-term benefits. For instance, integrating GenAI into meaningful, goal-oriented tasks can help reinforce its utility while fostering engagement. To provide a more holistic picture, future research should explore the broader implications of GenAI adoption, particularly its perceived impact on critical thinking, creativity, and ethical considerations, to ensure its alignment with educational objectives and sustainable integration.

Institutions can also play a proactive role by offering training and support to help students navigate the opportunities and challenges of GenAI. Workshops, tutorials, and resources that focus on both technical and ethical aspects of AI use can empower students to engage with these tools responsibly. Additionally, involving students in decision-making processes about AI policies fosters a sense of ownership and trust, ensuring that institutional strategies resonate with the experiences and aspirations of the student body. Evaluating the long-term impact of GenAI on students' learning experiences is equally important. By monitoring outcomes such as academic performance, student satisfaction, and perceptions of academic integrity, institutions can refine their approaches and ensure that AI integration contributes to meaningful educational improvements. This ongoing assessment helps create an adaptive framework that evolves alongside technological advancements and students' changing needs (Noroozi et al., 2024). As higher education embraces the possibilities of GenAI, understanding students' perceptions is not merely an academic exercise but a practical imperative. These insights provide the foundation for thoughtful, inclusive, and effective integration of AI into educational practices. By listening to and addressing students' perspectives, institutions can create a learning environment that leverages the strengths of AI while safeguarding the principles of equity, ethics, and academic excellence. In doing so, they not only prepare students for the demands of an AI-driven world but also reaffirm the role of education as a catalyst for growth and innovation.

References

Akhteh, M. P., Noroozi, O., & Banihashem, S. K. (2022a, March). Students' motivation, satisfaction, and perceived learning using online peer feedback in the context of

argumentative essay writing. In The International Society for Technology, Education and Science (ISTES).

Akhteh, M. P., Farrokhnia, M., Banihashem, S. K., & Noroozi, O. (2022b). The Relationship between Students' Satisfaction and Motivation and their Perceived Learning Outcome in an Online Peer Feedback Module. In *Studies on Education, Science, and Technology* (pp. 297-310). ISTES.

Banihashem, S. K., Taghizadeh Kerman, N., Noroozi, O., Moon J., Drachsler, H. (2024). Feedback sources in essay writing: Peer generated or AI-generated feedback?. *International Journal of Educational Technology in Higher Education*, *21*(23), 1-15. https://doi.org/10.1186/s41239-024-00455-4.

Daher, W., & Hussein, A. (2024). Higher Education Students' Perceptions of GenAI Tools for Learning. *Information (2078-2489)*, *15*(7). https://doi.org/10.3390/info15070416

Dwivedi, Y. K., Hughes, D. L., Kar, A. K., Baabdullah, A. M., Grover, P., & Abbas, R. (2023). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice, and policy. *International Journal of Information Management*, *66*, 102573. https://doi.org/10.1016/j.ijinfomgt.2022.102573

Farrokhnia, M., Banihashem, S. K., Noroozi, O., & Wals, A. (2024). A SWOT analysis of ChatGPT: Implications for educational practice and research. *Innovations in Education and Teaching International*, *61*(3), 460-474. https://doi.org/10.1080/14703297.2023.2195846

Noroozi, O., Soleimani, S., Farrokhnia, M., & Banihashem, S.K. (2024). Generative AI in education: Pedagogical, theoretical, and methodological perspectives. *International Journal of Technology in Education*, 7(3), 373-385. https://doi.org/10.46328/ijte.845

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology (UTAUT2). *MIS Quarterly*, *36*(1), 157–178. https://doi.org/10.2307/41410412

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators? *International Journal of Educational Technology in Higher Education, 16*(1), 1-27. https://doi.org/10.1186/s41239-019-0171-0

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