

AI Training in Higher Education: Students' Experiences and Expectations Across Disciplines

Randi Elisabeth Hagen and Thale Charlotte Tveita

University of Inland Norway, Lillehammer, Norway

randi.hagen@inn.no

thale.tveita@inn.no

Abstract: As generative AI tools such as ChatGPT become increasingly embedded in higher education, students across disciplines are using them extensively—often without sufficient guidance. This study investigates how students from two contrasting faculties—economics and administration, and health and social sciences—experience current AI training and what they expect from future education in this area. Using a mixed-methods approach, the study analyses survey data from spring 2025, combining quantitative results with thematic analysis of open-ended responses. The study aims to offer practical insights to inform the development of effective, discipline-specific AI training in higher education.

Keywords: Artificial Intelligence, Innovation, Students, Training, Discipline-specific

1. Introduction

Artificial intelligence (AI), particularly following the emergence of generative AI tools such as large language models (LLMs), is rapidly changing the landscape of higher education. These technologies offer significant advantages, such as enhancing teaching through personalized support, dynamic content generation, and promoting active learning strategies. ChatGPT also fosters efficient and self-directed learning habits among students while assisting educators with administrative tasks, thereby enabling more time for pedagogical innovation (Sarker et al., 2023). Students are increasingly using AI for tasks such as searching for information, generating ideas, improving writing quality or organizing notes (Jereb & Urh, 2024; Zhou et al., 2024). Norway's 2024 National Student Survey by NOKUT, 'Studiebarometeret', with 26,000 respondents, underscores this trend, revealing that a substantial 81% of students used AI in their studies in 2024 (NOKUT, 2025). Yet, whilst many students have begun to use AI tools, 67% of students stated they lacked sufficient instruction on the responsible use of AI. This gap highlights a significant mismatch between student reliance on these technologies and the institutional support provided. The NOKUT survey also indicated clear interdisciplinary differences: 79% of economics and business students reported using AI frequently or sometimes, compared to only 48% of students in health, social work and sports sciences.

As large language models are rapidly integrated into higher education, often without sufficient pedagogical alignment or institutional support, both students and staff face significant challenges. Key concerns include ethical and legal uncertainties, unreliable AI-generated content, the potential for plagiarism, inequity in assessment, difficulty in detecting AI-generated work, and a lack of clear guidelines for ethical use. These issues threaten academic integrity, suppress student creativity, and create digital divides due to unequal access. They also highlight the urgent need for institutions to develop proactive strategies, including updated assessment designs, clear policies, and comprehensive training for both staff and students (Peláez-Sánchez et al., 2024; Cotton et al., 2023).

This study investigates how students from different disciplines perceive current AI training and their expectations for future learning in this area. The findings aim to equip universities with insights for designing tailored and relevant AI training.

2. Literature Review

According to Ng et al. (2021), AI literacy can be described as the foundational knowledge, abilities, and mindset that people require to comprehend, apply, assess, and develop AI technologies in a responsible and ethical manner across everyday life, professional settings, and educational contexts. Laupichler et al. (2022) emphasize that AI literacy is not limited to technical expertise, but includes the ability to critically engage with AI, communicate and collaborate with AI systems, and make informed decisions about their use. They argue that AI literacy must be adapted to the needs of specific groups—particularly non-experts in higher and adult education—who are increasingly expected to interact with AI in their professional lives.

An AI literacy course should give students a clear and practical understanding of artificial intelligence, including both how to use it and how to think about it responsibly. According to Hazari (2024), students should learn key

terms and concepts related to AI, and be able to write and improve prompts to interact effectively with AI tools. They should also know how to apply these skills in different situations, such as academic writing, creative projects, and business communication. In addition, students need to be able to judge whether AI-generated content is reliable, understand possible biases, and think about the ethical issues involved. They should also learn how AI can be used in different fields of study.

Hornberger et al. (2023) found that students in computer science and engineering more often have access to AI-related courses, while students in the humanities and social sciences are less likely to encounter such content in their study programs. This unequal distribution leads to significant differences in students' AI competence across disciplines. For example, engineering students score significantly higher than social science students on tests measuring AI literacy. Based on these findings, Hornberger et al. (2023) argue that AI education should be made more widely available in higher education and tailored to students' prior knowledge and disciplinary background. The goal is to ensure that all students, regardless of their field of study, are prepared to engage with AI technologies in their future careers. Lérias, Guerra, and Ferreira (2024) emphasize that teachers and educational leaders play a important role in the successful integration of artificial intelligence (AI) in higher education.

Students' experiences with AI education differ significantly between fields of study. In business studies, students often see AI as a tool for promoting innovation and improving efficiency. Many express a strong interest in learning more about AI, viewing it as an important asset for their future careers (Almaraz-López et al., 2023). In health sciences, students tend to approach AI with more caution. There is a strong focus on the ethical and professional consequences of using AI, especially in sensitive areas like patient care. As a result, these students call for education that not only teaches technical skills but also encourages a thoughtful and responsible attitude toward the use of AI in healthcare (Vázquez-Parra et al., 2024).

3. Aims and Research Questions

The study explores students' experiences with current AI training and their expectations for future training across disciplines. The aim is to identify what students need to effectively use AI in their studies and future professions. This leads to the following research questions:

How do students in different disciplines experience the training they have received in the use of AI in their studies?

What training do students in different disciplines wish they had received in the use of AI in their studies?

4. Method

This study uses a mixed-methods research design. While the research primarily emphasizes quantitative survey data, it is supplemented by an open-ended qualitative question designed to provide deeper insights into students' experiences with the AI training they have received and their expressed needs or wishes for future AI education within their respective disciplines.

Data was collected in spring 2025 through a digital survey sent to students in two faculties: economics and administration, and health and social sciences. Including these contrasting disciplines enables comparison between groups with differing AI use, as indicated by the national student survey Studiebarometeret (NOKUT, 2025). The survey was conducted via Nettskjema.no and distributed through Canvas and in-person during lectures.

Quantitative data derived from the survey will be analysed using SPSS. Qualitative data from the open-ended question will be subjected to thematic analysis to identify recurring patterns and themes in students' perceptions of how lecturers employ AI in their teaching.

Thematic analysis, as outlined by Braun and Clarke (2006, 2019), is a flexible and widely used method for identifying, analysing, and reporting patterns (themes) within qualitative data. It involves a systematic process typically encompassing familiarisation with the data, generating initial codes, searching for themes, reviewing potential themes, defining and naming themes, and finally, producing the report. This approach is particularly suited for exploring the full range of students' experiences, perceptions, and expectations expressed in the open-ended survey responses. It allows for a rich, detailed, and complex account of the data, providing deeper insights into how students understand and relate to AI training, and what they require from future AI initiatives.

Key limitations include the single-university sample (two faculties), which may affect generalisability; reliance on self-reported data, risking response bias; and the cross-sectional design, which makes it impossible to see long-term training effects.

5. Contributions

A challenge in developing AI training within higher education is the considerable variation in students' needs and expectations across different academic disciplines. Merely offering a generic, 'one-size-fits-all' approach to an AI curriculum may prove unsatisfactory. This study aims to make a contribution by directly addressing this issue, specifically examining how students from distinct faculties experience the formal AI training they receive and articulate their preferences for future AI training.

Ethics Declaration

No sensitive personal data were collected through anonymous surveys. The project complied with national ethical standards and was assessed as not requiring SIKT (Norway's Agency for Shared Services in Education and Research) approval. Participation was voluntary, with informed consent obtained via a pre-survey information text to the students (adults).

AI Declaration

Artificial intelligence (AI) was used as a support tool to improve language and phrasing in drafts of the paper. All academic analyses were carried out solely by the authors. No AI tools were used to generate content, but selected text sections were translated with assistance from ChatGPT. The authors have ensured the quality of the content.

References

- Almaraz-López, C., Almaraz-Menéndez, F. and López-Esteban, C. (2023). 'Comparative study of the attitudes and perceptions of university students in business administration and management and in education toward artificial intelligence', *Education Sciences*, 13(6), Art. No. 609. doi: 10.3390/educsci13060609.
- Braun, V. and Clarke, V. (2006). 'Using thematic analysis in psychology', *Qualitative Research in Psychology*, 3(2), pp. 77–101. doi: 10.1191/1478088706qp063oa.
- Braun, V. and Clarke, V. (2019). 'Reflecting on reflexive thematic analysis', *Qualitative Research in Sport, Exercise and Health*, 11(4), pp. 589–597. doi: 10.1080/2159676x.2019.1628806.
- Cotton, D.R.E., Cotton, P.A. and Shipway, J.R., (2024). 'Chatting and cheating: Ensuring academic integrity in the era of ChatGPT.' *Innovations in Education and Teaching International*, 61(2), pp.228–239. <https://doi.org/10.1080/14703297.2023.2190148>
- Hazari, S. (2024). 'Justification and Roadmap for Artificial Intelligence (AI) Literacy Courses in Higher Education.' *Journal of Educational Research and Practice*, 14(1). <https://doi.org/10.5590/jerap.2024.14.1.07>
- Hornberger, M., Bewersdorff, A., & Nerdel, C. (2023). 'What do university students know about Artificial Intelligence? Development and validation of an AI literacy test.' *Computers and Education: Artificial Intelligence*, 5, 100165. <https://doi.org/10.1016/j.caeai.2023.100165>
- Jereb, E. and Urh, M. (2024). 'The use of artificial intelligence among students in higher education', *Organizacija*, 57(4), pp. 333–345. doi:10.2478/orga-2024-0024.
- Lérias, E., Guerra, C., & Ferreira, P. (2024). 'Literacy in Artificial Intelligence as a Challenge for Teaching in Higher Education: A Case Study at Portalegre Polytechnic University'. *Information*, 15(4), 205. <https://doi.org/10.3390/info15040205>
- Laupichler, M. C., Aster, A., Schirch, J., & Raupach, T. (2022). 'Artificial intelligence literacy in higher and adult education: A scoping literature review.' *Computers and Education: Artificial Intelligence*, 3, 100101. <https://doi.org/10.1016/j.caeai.2022.100101>
- Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, M. S. (2021). 'Conceptualizing AI literacy: An exploratory review'. *Computers and Education. Artificial Intelligence*, 2, 100041. <https://doi.org/10.1016/j.caeai.2021.100041>
- NOKUT (2025). 'Studiebarometeret 2024 – hovedtendenser' [Online]. Available from: https://www.nokut.no/globalassets/studiebarometeret/2025/studiebarometeret-2024-hovedtendenser_1-2025.pdf (Accessed: 8 April 2025).
- Peláez-Sánchez, I. C., Velarde-Camaqui, D. and Glasserman-Morales, L. D. (2024). 'The impact of large language models on higher education: Exploring the connection between AI and Education 4.0', *Frontiers in Education*, 9, Art. No. 1392091. doi: 10.3389/feduc.2024.1392091.
- Sarker, D., Eiaz-Ur-Rahman, A. F. M., Sakib, A. R., Terano, H. J. R. and Rahman, M. M. (2023). 'ChatGPT's applications in higher education: Unmasking opportunities and challenges', *Journal of Education, Management and Development Studies*, 3(4), pp. 37–47. doi: 10.52631/jemds.v3i4.250.

- Vázquez-Parra, J. C., Henao-Rodríguez, C., Lis-Gutiérrez, J. P. and Palomino-Gámez, S. (2024). 'Importance of university students' perception of adoption and training in artificial intelligence tools', *Societies*, 14(8), Art. No. 141. doi: 10.3390/soc14080141.
- Zhou, X., Zhang, J. and Chan, C. (2024). 'Unveiling students' experiences and perceptions of artificial intelligence usage in higher education', *Journal of University Teaching and Learning Practice*, 21(06). doi: 10.53761/xzjprb23.