Perceptions of University Students on Generative Artificial Intelligence Use: A Cross-Cultural Study

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Abstract

Our primary purpose in exploring Higher Education (HE) students' perspectives was to address the lack of student voice and participation in the Generative Artificial Intelligence (GenAI) policies and educational framework. Based on 35 semi-structured interviews with journalism students, we examine and compare the perceptions of Australian and Chinese university students regarding their familiarity with GenAI, willingness to use, opportunities, ethical challenges and effective institutional adoption and implementation. Findings indicated that HE students, regardless of nationality or gender, use GenAI selectively to enhance knowledge acquisition and learning efficiency, but are concerned about potential negative reliance on GenAI. The findings corresponded to the TAM and UTAUT models of technology, highlighting perceived usefulness and ease of use. Students called for comprehensive and culturally sensitive ethical frameworks and urged academic institutions to take responsibility for their development, while also acknowledging the unethical nature of excessive GenAI use. These findings have important real-world implications for higher education providers and policymakers as they develop GenAI frameworks that strike a balance between ethical standards and learning enhancement, guaranteeing advantages for students, teachers, institutions and society as a whole.

Keywords

generative artificial intelligence, higher education, ethical concerns, policy framework, Australia, China

1. Artificial Intelligence in Education (AIED)

The term Artificial Intelligence (AI) was coined in 1955 by John McCarthy, an American computer scientist and one of the founders of the field. He defined AI as "the science and engineering of making intelligent machines" [1, 1], where intelligence is "the ability to learn and perform suitable techniques to solve problems and achieve goals, appropriate to the context in an uncertain, ever-varying world" [1] use. Broadly, AI refers to the use of computers to imitate human intelligence, enabling machines to learn, make judgments, and perform decision-making processes similar to those of humans [2, 3]. Over the last few decades, AI has developed markedly, and is reshaping areas like business [4], medicine [5], education [6] and agriculture [7]. Development of AI in education (AIEd) has been recognised as a disruptive innovation [8, 9], and is integrated within administration, instruction and learning, in many countries [10]. AIEd operates intelligently in the latter three formats using virtual learning environments, analytics, and predictive analytics, using machine learning, learning analytics and data mining [11]. Recently, five main ways that AIEd is used in higher education are reported in the literature, as (1) assessment/evaluation, (2) prediction, (3) AI assistants, (4) intelligent tutoring systems (ITS), and (5) management of student learning [12]. Although these tools increase productivity, their effects on academic achievement are not always consistent; metaanalyses have found only slight gains in learning outcomes but no discernible change in grades [13]. Transparency, bias, fairness, data privacy and human agency are some of the ethical issues that come with AIEd's expansion [14, 15, 16, 17, 18]. Although ethical frameworks for AIEd have been proposed by scholars to guide stakeholders [19], little is known about how students view these issues, particularly in journalism education, where many students have optimistic viewpoints that may cause them to overlook ethical risks [20, 21].

Generative Artificial Intelligence (GenAI) uses deep generative models (DGMs) to produce novel content, such as text and images, based on user prompts [22]. Unlike discriminative AI, which classifies data, GenAI learns the data generation process, enabling creative applications [22]. GenAI has impacted sectors like education, journalism, healthcare and marketing [23, 24, 25, 26, 27, 8]. In HE, tools like ChatGPT, DeepSeek and Midjourney are widely used, with a global survey of 3,000+ students indicating that 60% find

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GenAI enhances learning efficiency, though 45% express concerns about academic integrity [28]. A UK survey of 8,000+ students reported 70% usage of GenAI tools, but only 30% felt confident in their ethical application [29].

Ethical concerns include risks to academic integrity, cognitive debt from over-reliance and misalignment with pedagogical values [30, 31]. Kosmyna et al. found that GenAI use in essay writing may reduce critical thinking, termed "cognitive debt" [31]. International students face additional challenges, as GenAI tools often lack linguistic and cultural inclusivity, raising fairness issues [32]. Institutional responses vary, with some banning GenAI tools and others integrating them into curricula [33]. Sánchez-Reina et al. note student resistance to GenAI, driven by concerns about learning quality and AI limitations [34]. A longitudinal study by Donne and Hansen suggests that while GenAI improves task efficiency, its impact on deep learning is inconsistent, necessitating context-specific policies [35].

In journalism, GenAI supports content creation, fact-checking and audience engagement [26]. A \$10 million partnership between Open AI and the American Journalism Project in 2023 exemplifies efforts to integrate GenAI into newsrooms [36]. In journalism education, GenAI's role is less studied. Students value GenAI for brainstorming but are cautious about its impact on originality and credibility [21, 34]. These concerns highlight the need to balance GenAI's efficiency with ethical considerations, such as misinformation risks [24].

2. Adoption Theories and GenAl in Education

Technology adoption theories, such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), provide frameworks for understanding students' engagement with GenAI in HE [37, 38]. TAM posits that perceived usefulness (PU) and perceived ease of use (PEOU) drive technology acceptance [37]. In the context of GenAI, PU relates to students' belief that tools like ChatGPT enhance learning efficiency, while PEOU reflects their comfort with the technology's usability [28]. UTAUT extends TAM by incorporating social influence and facilitating conditions, which are critical in educational contexts where peer perceptions and institutional support shape adoption [2]. For instance, Chan and Hu [21] found that students' positive perceptions of GenAI's usefulness correlate with higher adoption rates, but concerns about ethical risks, such as academic integrity, reduce acceptance [21, 34].

Cultural and contextual factors further mediate adoption. In China, limited English proficiency and reliance on local GenAI tools like DeepSeek and Baidu's Ernie Bot may lower PEOU due to interface differences and language barriers [39]. In Australia, widespread access to English-based tools like ChatGPT may enhance PEOU but increase concerns about over-reliance [32]. This study leverages TAM and UTAUT to explore how Australian and Chinese journalism students' perceptions of GenAI's usefulness, ease of use and ethical implications influence their adoption, providing insights into context-specific barriers and facilitators. Moreover, students' perceptions of GenAI are shaped by educational contexts, including language, culture, and technology access [40]. Learning style preferences (LSP), defined as "characteristic strengths and preferences in the ways [students] take in and process information" [41], influence GenAI engagement [42]. This study compares Australian and Chinese journalism HE students. In Australia, English is the primary language, and students frequently use tools like ChatGPT [43]. In China, where English is less accessible, students rely on local GenAI models like DeepSeek, Ernie Bot and Qwen, which have received limited academic attention [39, 44]. These contextual differences shape students' adoption and perceptions of GenAI.

3. Research Gap and Significance

While AIEd and GenAI scholarship is growing, student perspectives on GenAI's ethical and practical roles in journalism education remain underexplored [21, 28]. Most studies adopt a top-down approach, prioritising teacher or institutional views [20]. By centring Australian and Chinese journalism students' voices and applying adoption theories, this study addresses this gap. It contributes to ethical frameworks and pedagogical practices by exploring how contextual factors and adoption dynamics shape GenAI perceptions in journalism education.

4. Objectives of the Study

The primary research objectives of this study are:

- 1. To explore how and why (if) journalism/media students integrate Generative Artificial Intelligence (GenAI) into their everyday educational activities.
- 2. To explore journalism students' perspectives about the impact of Generative AI on their learning and skills.
- 3. To identify the ethical and privacy issues related to the use of Generative AI in journalism education.
- 4. To explore and evaluate how students perceive and use locally developed GenAI tools versus globally available AI platforms (e.g., ChatGPT) in their academic work.
- 5. To compare how students from Australia and China access and use GenAI tools in their academic environments.

5. Method and methodology

Research methodology provides the theoretical framework that justifies the selection and application of specific research methods, while methods are the practical techniques used to collect and analyse data [45]. This study adopts a qualitative interpretivist methodology, which seeks to understand participants' subjective experiences and perceptions within their specific contexts [46]. An interpretivist approach is particularly suited to exploring Australian and Chinese journalism students' perceptions of generative artificial intelligence (GenAI) in higher education (HE), as it prioritises participants' lived experiences and allows for nuanced insights into their views on a rapidly evolving technology [47]. This methodology aligns with the study's aim to centre student voices, addressing the gap in top-down perspectives prevalent in existing GenAI scholarship [21, 20].

The study employed semi-structured interviews as the primary method for data collection. Semi-structured interviews offer flexibility to explore participants' perspectives in depth while maintaining a guided focus on key themes, enabling researchers to "understand and present the world as it is seen and experienced by the participants without predetermining those viewpoints" [46]. This method was chosen over quantitative approaches, such as surveys used in prior studies (e.g., [21, 28]), to capture holistic and context-specific insights into students' perceptions of GenAI's role in journalism education. Unlike surveys, which may limit responses to predefined options, semi-structured interviews allow for emergent themes and richer qualitative data, critical for understanding complex issues like ethical concerns and cultural influences [48].

6. Participants Selection

A total of 35 journalism and media studies HE students participated in the study, with 18 from Melbourne, Australia (A1-A18), and 17 from Guangzhou, China (C1-C17). Participants were recruited using convenience sampling due to constraints of cost, access and time, a common approach in qualitative research when targeting specific populations [49]. Students were selected from diverse journalism and media programs at universities in both cities, ensuring a range of academic levels (undergraduate and postgraduate) and experiences with GenAI tools. While convenience sampling limits generalizability, it was deemed appropriate given the exploratory nature of the study and the need to access participants familiar with GenAI in journalism education [47].

7. Data Collection

Interviews were conducted both in person and online via Zoom (for Australian participants) and Tencent Meeting (for Chinese participants) between January and June 2025. Each interview lasted 30 — 45 minutes and was audio-recorded with participants' consent. The semi-structured interview guide was developed based on prior studies exploring GenAI in education [21, 50] and adoption theory frameworks, such as the Technology Acceptance Model (TAM) [37]. Questions focused on four key areas: (1) perceived usefulness and ease of use of GenAI tools, (2) ethical concerns (e.g., academic integrity, bias), (3) contextual influences

(e.g., language, culture), and (4) implications for journalism education. The guide was piloted with five students (not included in the final sample) to ensure clarity and relevance, with minor adjustments made based on feedback [48]. Interviews were conducted in English for Australian participants and Mandarin for Chinese participants, with Mandarin interviews translated into English by a bilingual researcher and verified for accuracy by a second translator to ensure fidelity [51].

8. Data Analysis

Interview transcripts were analysed using thematic analysis, a flexible method for identifying, analysing, and reporting patterns within qualitative data [52]. The analysis followed Braun and Clarke's six-phase process: (1) familiarisation with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report [52]. Transcripts were coded inductively to allow themes to emerge from the data, supplemented by deductive coding informed by TAM constructs (e.g., perceived usefulness, perceived ease of use) and ethical frameworks [19]. NVivo software was used to manage coding and ensure systematic analysis. To enhance reliability, two researchers independently coded 20% of the transcripts, achieving an inter-coder reliability of 85% (Cohen's kappa), with discrepancies resolved through discussion [53].

9. Ethical Considerations

Participants provided informed consent, were assured of anonymity and could withdraw at any time without consequence. Data were stored securely on password-protected servers, and pseudonyms were used in reporting to protect participants' identities.

10. Findings

Reflexive thematic analysis of semi-structured interviews with 35 jour-nalism and media studies students (18 Australian: A1 - A18; 17 Chinese: C1 - C17) from Melbourne, Australia, and Guangzhou, China, revealed seven themes: (1) Usage and adoption of GenAI, (2) GenAI impact on students' learning, (3) Institutional adoption and implementation of GenAI, (4) Global vs. local experience, (5) Ethical considerations of GenAI, (6) Security, privacy and accuracy concerns, and (7) GenAI im-pact on the future of journalism work.

Theme One: Usage and Adoption of GenAl. Most students, regardless of country or gender, indicated selective use of GenAl tools in classroom activities, such as ChatGPT, DeepSeek, Midjourney, ERNIE Bot, Kimi, and Skywork AI, to generate initial ideas for educational tasks and projects. All Australian students (A1 – A18) were proactive users, integrating GenAl into regular coursework (see Appendix A, Excerpt 1). Participants highlighted GenAl tools like ChatGPT as transformative for tasks such as generating ideas, summarising complex topics, and assisting with writing (see Appendix A, Excerpt 2). Many participants used GenAl for academic references and translation (see Appendix A, Excerpt 3). Students frequently emphasised selective usage, opposing disproportionate reliance on GenAl, viewing it as an academic assistant rather than a primary tool (see Appendix A, Excerpt 4). Students noted that GenAl often lacked depth and creativity for specialised tasks (see Appendix A, Excerpt 5). Some Chinese students expressed a preference for traditional research methods for specialised coursework (see Appendix A, Excerpt 6). The opaque nature of GenAl and its unpredictable development led students to approach it cautiously, with some maintaining a "safe distance" due to fear of its unknown aspects (see Appendix A, Excerpt 7). Chinese students varied in their approach: proactive explorers (C1, C5, C9), neutral collaborators (C2, C7, C10, C14), and conservative worriers (C3, C4, C6, C8, C11 – C17).

Theme Two: GenAl Impact on Students' Learning. Australian students (A1 – A18) agreed that GenAl enhanced learning by providing effective support (see Appendix A, Excerpt 8), particularly for simplifying complex topics and data analysis (see Appendix A, Excerpt 9). Chinese students (C1 – C17) were less confident about its impact, viewing it as supplementary, useful for repetitive tasks but limited for deeper learning (see Appendix A, Excerpt 10; Excerpt 11). Chinese students preferred GenAl for non-creative

tasks (see Appendix A, Excerpt 12; Excerpt 13). Both groups valued GenAI for broadening knowledge, offering new perspectives (see Appendix A, Excerpt 14).

Theme Three: Institutional Adoption and Implementation of GenAI. Students from both countries emphasized the need for regulated GenAI adoption in education, advocating for a human-centered approach. They called for training on ethical use and prompt-writing, citing outdated curricula and inadequate teacher preparedness (see Appendix A, Excerpt 15). Training was seen as essential for effective GenAI use (see Appendix A, Excerpt 16). Chinese students noted challenges with teacher integration (see Appendix A, Excerpt 17). Students viewed GenAI as inevitable, akin to the internet's rise (see Appendix A, Excerpt 18), and urged institutions to train students on responsible use (see Appendix A, Excerpt 19).

Theme Four: Global vs. Local Experience. Australian students (A1 — A18) preferred global tools like ChatGPT and Midjourney (see Appendix A, Excerpt 20), while most Chinese students (C1 — C3, C5 — C17) used local tools (DeepSeek, Skywork AI) due to language preferences or specific niche needs (see Appendix A, Excerpt 21; Excerpt 22). A minority of Chinese students favoured ChatGPT for reliability and comprehensive capabilities (see Appendix A, Excerpt 23; Excerpt 24). 此外,对于一些比较复杂的需求,一些中国学生还会使用本土平台(coze)开发的智能体来高效达成目的。In addition, for more complex needs, some Chinese students also use intelligent agents developed on local platforms (Coze) to efficiently achieve their goals (see Appendix A, Excerpt 25; Excerpt 26).

Theme Five: Ethical Considerations of GenAl. Students viewed GenAI use as contextually ethical, depending on the extent and intent. They raised concerns about plagiarism, authorship, and AI detection errors (see Appendix A, Excerpt 27; Excerpt 28). Concerns about AI detection errors impacting human agency were noted (see Appendix A, Excerpt 29; Excerpt 30). Students argued that ethicality depends on context (see Appendix A, Excerpt 31; Excerpt 32). Data ownership and transparency were concerns (see Appendix A, Excerpt 33; Excerpt 34).

Theme Six: Security, Privacy, and Accuracy Concerns. Students expressed stress over data privacy, avoiding sharing original work due to potential storage or plagiarism risks (see Appendix A, Excerpt 35; Excerpt 36). Accuracy issues shifted reliance to scepticism, encouraging critical thinking (see Appendix A, Excerpt 37; Excerpt 38).

Theme Seven: GenAl Impact on Future Journalism Work. Students expressed mixed views on GenAl's impact on journalism jobs, expecting automation of basic tasks but emphasising human creativity and emotions as irreplaceable (see Appendix A, Excerpt 39; Excerpt 40; Excerpt 41). Continuous learning was seen as key to staying relevant, especially when it comes to mastering AI tools (see Appendix A, Excerpt 42; Excerpt 43).

11. Discussion

As Generative Artificial Intelligence (GenAI) tools increasingly integrate into journalism education, the differing educational environments and cultural contexts significantly influence journalism students' behaviours and perceptions regarding GenAI, thereby affecting their learning style preferences (LSP). As the primary stakeholders in higher education (HE), students' voices and perspectives must not be overlooked when discussing the role of GenAI in the educational context. This study leverages semi-structured interviews with 35 journalism and media studies students (18 from Melbourne, Australia and 17 from Guangzhou, China) to consider the influence of context in a cross-cultural way. Using reflexive thematic analysis, we identified seven themes that showed how Australian and Chinese students engaged with GenAI in their educational routines, perceived its impact on their learning, and how they negotiated the ethical and privacy concerns surrounding these tools. The findings are consistent with the TAM and UTAUT models, which identify perceived usefulness (PU), perceived ease of use (PEOU), and facilitating conditions as antecedents to technology use [37, 38]. Australian students' proactive use of developed global tools such as ChatGPT is indicative of PU and PEOU, based on the easy access of the interface in an English-based application. In contrast, Chinese students preferred developing local tools such as ERNIE

Bot, DeepSeek and Kimi, where they faced limitations in language and barriers to access, even with the existence of the facilitating conditions [39, 28]. Such contrasts illustrate how cultural and technological contexts moderate the degree of GenAI adoption and were found in previous studies [32].

Students' selective use of GenAI for tasks like brainstorming and formatting, as found in this study, aligns with global surveys indicating that 60% of HE students view GenAI as enhancing learning efficiency, though concerns about over-reliance persist [28, 29]. Australian students reported that GenAI simplifies complex topics, enhancing self-learning, which supports Chan and Hu's findings on GenAI's benefits in creative disciplines [21]. However, Chinese students' skepticism about its impact on learning styles reflects UTAUT's social influence factor, as cultural norms and limited English proficiency may lower PEOU [32]. Both groups expressed concerns about over-reliance, echoing Kosmyna et al.'s concept of "cognitive debt," where excessive GenAI use may reduce critical thinking [31]. This duality in perceptions highlights the need for balanced integration, as over-reliance could undermine the development of investigative and creative skills essential to journalism [35].

Ethical considerations were central to students' narratives, with both Australian and Chinese students advocating for nuanced frameworks to assess GenAI use, rather than blanket judgments of immorality. This aligns with Nguyen et al.'s (2023) call for stakeholder-driven ethical guidelines and contrasts with top-down approaches prevalent in prior scholarship [19, 54]. Students' concerns about plagiarism, authorship and AI detection errors resonate with Cantens, who notes the difficulty in distinguishing human and AI-generated text, potentially straining student-teacher relationships [55, 34]. Privacy and data ownership concerns, particularly among Australian students wary of private AI companies, reflect broader mistrust in GenAI's "black box" processes [34]. Chinese students' preference for local tools, driven by functionality and accessibility, suggests marketisation influences adoption, as local platforms align with cultural and linguistic needs [39].

The cross-cultural comparison revealed distinct attitudes toward GenAI's future impact on journalism. Australian students' optimism about human intelligence surpassing AI aligns with TAM's PU, viewing GenAI as a supportive tool [37]. Chinese students, however, emphasised responsible use as a prerequisite for optimism, reflecting UTAUT's facilitating conditions, such as institutional support [38]. Media environments also shape perceptions, with Australian students exposed to global narratives about GenAI's potential and Chinese students influenced by localised media portrayals [56]. While language and access barriers affect Chinese students' tool preferences, the diversity of local GenAI options (e.g., ERNIE Bot for writing, Kimi for reading) addresses varied needs, supporting market-driven adoption [39]. These findings highlight the interplay of cultural, educational and technological factors, suggesting that HE institutions must tailor GenAI integration to local contexts [33].

Unlike prior studies focusing on institutional policies [57] or quantitative surveys [21, 58], this research is among the first to qualitatively explore cross-cultural student perspectives on GenAI in journalism education. By centring student voices, it addresses the gap in top-down ethical frameworks, aligning with calls for inclusive policymaking [19, 33]. However, the study's focus on individual perceptions limits deeper exploration of specific cultural or media influences, which future research could investigate to enhance global understanding of GenAI's role in HE.

12. Conclusion

This research sheds light on the experiences and perspectives of HE journalism students, from Australia and China, about GenAI in their education, as well as the challenges and opportunities that are presented in the different cultural contexts. Overall, the research indicates a need for culturally appropriate, student-centred conceptual frameworks for GenAI integration in education that ensure the enhancement of learning while adhering to ethical standards. For example, Australian students were enthusiastic about using global tools and apps representative of one industry, whilst Chinese students predominantly adopted localised options in each of their individual classes, showing how the complexity of culture and market forces impacted the students' adoption of GenAI tools or resources in those projects. Media environments influence how students perceive educational tools, adopting localised narratives that ultimately influence examples of tools they each prefer [57]. Although the study was limited by sample size and its focus solely on their individual perceptions, we acknowledge that generalisation of findings within the study, particularly for social-structural analyses, is an important consideration for future research. Future research is recommended to include specific cultural factors and media that may influence the samples in which they access GenAI

applications, with larger deviations and diversity. The findings can be understood in the broadest sense on the perceptions of GenAI in journalism education; furthermore, they can provide insight into developing ethical and pedagogical frameworks for the integration of GenAI as an educational tool in formal academic programs.

13. Implications

The study's findings stressed the need for higher education institutions (HEIs) to develop culturally responsive and student-centred education frameworks for integrating generative AI (GenAI) in education. HEIs should formulate explicit and thorough ethical procedures and policies that facilitate the responsible use of GenAI to reduce the possibility of an over-reliance on GenAI, which could diminish critical thinking and journalistic skills, noted by students and Kosmyna et al.'s idea of cognitive debt [31]. These guidelines must account for varying levels of GenAI engagement, responding to students' calls for issues such as plagiarism, authorship and detection errors [19, 55]. The contrasting preferences for global (ChatGPT) and local AI interfaces (DeepSeek) suggest that policymakers and institutions should focus on pedagogical frameworks that respect cultural contexts and markets and should avoid generalised guidelines [32, 39]. In addition to these activities, HEIs also need to offer training on effective GenAI uses, like prompt-writing and provide ongoing opportunities for students to engage in collaborative dialogues. This will ensure that students' voices are considered when it comes to curricula and policies, while addressing their privacy, transparency and employment concerns [33, 34]. This combined process will help ensure innovative learning is balanced with ethical practices and students are equipped for a journalism ecosystem that will be increasingly GenAI-driven.

Declaration on Generative Al

During the preparation of this work, the author(s) used Grammarly for spelling and grammar corrections and Grok (x.ai) for interview translation purposes.

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Data Availability Statement

The dataset analysed during the current study will be available from the corresponding author upon reasonable request.

References

- [1] C. Manning, Artificial intelligence definitions, Technical Report, Stanford Institute for Human-Centred Artificial Intelligence (HAI), 2020. URL: https://hai-production.s3.amazonaws.com/files/2020-09/AI-Definitions-HAI.pdf.
- [2] D. Kaur, S. Uslu, K. J. Rittichier, A. Durresi, Trustworthy Artificial Intelligence: A Review, ACM Computing Surveys 55 (2023) 1–38. doi:10.1145/3491209.
- [3] Y. Xu, X. Liu, X. Cao, C. Huang, E. Liu, S. Qian, X. Liu, Y. Wu, F. Dong, C.-W. Qiu, J. Qiu, K. Hua, W. Su, J. Wu, H. Xu, Y. Han, C. Fu, Z. Yin, M. Liu, R. Roepman, S. Dietmann, M. Virta, F. Kengara, Z. Zhang, L. Zhang, T. Zhao, J. Dai, J. Yang, L. Lan, M. Luo, Z. Liu, T. An, B. Zhang, X. He, S. Cong, X. Liu, W. Zhang, J. P. Lewis, J. M. Tiedje, Q. Wang, Z. An, F. Wang, L. Zhang, T. Huang, C. Lu, Z. Cai, F. Wang, J. Zhang, Artificial intelligence: A powerful paradigm for scientific research, The Innovation 2 (2021) 100179. doi:10.1016/j.xinn.2021.100179.
- [4] S. M. C. Loureiro, J. Guerreiro, I. Tussyadiah, Artificial intelligence in business: State of the art and future research agenda, Journal of Business Research 129 (2021) 911–926. doi:10.1016/j.jbusres. 2020.11.001.

- [5] M. Moor, O. Banerjee, Z. S. H. Abad, H. M. Krumholz, J. Leskovec, E. J. Topol, P. Rajpurkar, Foundation models for generalist medical artificial intelligence, Nature 616 (2023) 259–265. doi:10.1038/s41586-023-05881-4.
- [6] C. Guan, J. Mou, Z. Jiang, Artificial intelligence innovation in education: A twenty-year data-driven historical analysis, International Journal of Innovation Studies 4 (2020) 134–147. doi:10.1016/j.ijis. 2020.09.001.
- [7] T. Ayoub Shaikh, T. Rasool, F. Rasheed Lone, Towards leveraging the role of machine learning and artificial intelligence in precision agriculture and smart farming, Computers and Electronics in Agriculture 198 (2022) 107119. doi:10.1016/j.compag.2022.107119.
- [8] K. D. Good, B. Hof, Towards global and local histories of educational technologies: introduction, Learning, Media and Technology 49 (2024) 1–7. doi:10.1080/17439884.2023.2250983.
- [9] A. Seldon, O. Abidoye, The fourth education revolution, Legend Press, 2018.
- [10] M. Chassignol, A. Khoroshavin, A. Klimova, A. Bilyatdinova, Artificial Intelligence trends in education: a narrative overview, Procedia Computer Science 136 (2018) 16–24. doi:10.1016/j.procs.2018.08. 233.
- [11] L. Chen, P. Chen, Z. Lin, Artificial Intelligence in Education: A Review, IEEE Access 8 (2020) 75264–75278. doi:10.1109/ACCESS.2020.2988510.
- [12] H. Crompton, D. Burke, Artificial intelligence in higher education: the state of the field, International Journal of Educational Technology in Higher Education 20 (2023) 22. doi:10.1186/s41239-023-00392-8.
- [13] N. Mentzer, E. Mammadova, A. Koehler, L. Mohandas, S. Farrington, Analyzing the impact of basic psychological needs on student academic performance: a comparison of post-pandemic interactive synchronous hyflex and pre-pandemic traditional face-to-face instruction, Educational technology research and development 73 (2025) 91–114. doi:10.1007/s11423-024-10417-2.
- [14] W. Holmes, K. Porayska-Pomsta, K. Holstein, E. Sutherland, T. Baker, S. B. Shum, O. C. Santos, M. T. Rodrigo, M. Cukurova, I. I. Bittencourt, K. R. Koedinger, Ethics of AI in Education: Towards a Community-Wide Framework, International Journal of Artificial Intelligence in Education 32 (2022) 504–526. doi:10.1007/s40593-021-00239-1.
- [15] G.-J. Hwang, H. Xie, B. W. Wah, D. Gašević, Vision, challenges, roles and research issues of Artificial Intelligence in Education, Computers and Education: Artificial Intelligence 1 (2020) 100001. doi:10.1016/j.caeai.2020.100001.
- [16] M. J. Reiss, The use of AI in education: Practicalities and ethical considerations, London Review of Education 19 (2021) 1 14. doi:10.14324/LRE.19.1.05.
- [17] S. Akgun, C. Greenhow, Artificial intelligence in education: Addressing ethical challenges in K-12 settings, AI and Ethics 2 (2022) 431–440. doi:10.1007/s43681-021-00096-7.
- [18] N. Goksel, A. Bozkurt, Artificial Intelligence in Education: Current Insights and Future Perspectives, in: S. Sisman-Ugur, G. Kurubacak, L. Tomei (Eds.), Handbook of Research on Learning in the Age of Transhumanism:, Advances in Educational Technologies and Instructional Design, IGI Global, 2019, pp. 224–236. doi:10.4018/978-1-5225-8431-5.
- [19] A. Nguyen, H. N. Ngo, Y. Hong, B. Dang, B.-P. T. Nguyen, Ethical principles for artificial intelligence in education, Education and Information Technologies 28 (2023) 4221–4241. doi:10.1007/s10639-022-11316-w.
- [20] L. Weidener, M. Fischer, Artificial Intelligence in Medicine: Cross-Sectional Study Among Medical Students on Application, Education, and Ethical Aspects, JMIR Medical Education 10 (2024) e51247. doi:10.2196/51247.
- [21] C. K. Y. Chan, W. Hu, Students' voices on generative AI: perceptions, benefits, and challenges in higher education, International Journal of Educational Technology in Higher Education 20 (2023) 43. doi:10.1186/s41239-023-00411-8.
- [22] L. Banh, G. Strobel, Generative artificial intelligence, Electronic Markets 33 (2023) 63. doi:10.1007/s12525-023-00680-1.
- [23] P. Budhwar, S. Chowdhury, G. Wood, H. Aguinis, G. J. Bamber, J. R. Beltran, P. Boselie, F. Lee Cooke, S. Decker, A. DeNisi, P. K. Dey, D. Guest, A. J. Knoblich, A. Malik, J. Paauwe, S. Papagiannidis, C. Patel, V. Pereira, S. Ren, S. Rogelberg, M. N. K. Saunders, R. L. Tung, A. Varma, Human resource management in the age of generative artificial intelligence: Perspectives and research directions on ChatGPT, Human Resource Management Journal 33 (2023) 606–659. doi:10.1111/1748-8583.12524.

- [24] M. Jovanovic, M. Campbell, Generative Artificial Intelligence: Trends and Prospects, Computer 55 (2022) 107–112. doi:10.1109/MC.2022.3192720.
- [25] N. Kshetri, Y. K. Dwivedi, T. H. Davenport, N. Panteli, Generative artificial intelligence in marketing: Applications, opportunities, challenges, and research agenda, International Journal of Information Management 75 (2024) 102716. doi:10.1016/j.ijinfomgt.2023.102716.
- [26] J. V. Pavlik, Collaborating With ChatGPT: Considering the Implications of Generative Artificial Intelligence for Journalism and Media Education, Journalism & Mass Communication Educator 78 (2023) 84–93. doi:10.1177/10776958221149577.
- [27] R. Peres, M. Schreier, D. Schweidel, A. Sorescu, On ChatGPT and beyond: How generative artificial intelligence may affect research, teaching, and practice, International Journal of Research in Marketing 40 (2023) 269–275. doi:10.1016/j.ijresmar.2023.03.001.
- [28] A. Öztürk, M. Dayıoğlu, Higher education expansion and women's access to higher education and the labor market: quasi-experimental evidence from Turkey, Higher Education 88 (2024) 381–412. doi:10.1007/s10734-023-01122-9.
- [29] J. Neves, J. Freeman, R. Stephenson, Student Academic Experience Survey 2025, Technical Report, Higher Education Policy Institute, 2025. URL: https://www.hepi.ac.uk/wp-content/uploads/2025/06/ SAES-2025_FINAL_WEB.pdf.
- [30] M. Sharples, Towards social generative AI for education: theory, practices and ethics, Learning: Research and Practice 9 (2023) 159–167. doi:10.1080/23735082.2023.2261131.
- [31] N. Kosmyna, E. Hauptmann, Y. T. Yuan, J. Situ, X.-H. Liao, A. V. Beresnitzky, I. Braunstein, P. Maes, Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task, Technical Report, MIT Media Lab, 2025. doi:10.48550/ARXIV.2506.08872.
- [32] P. Bannister, E. Alcalde Peñalver, A. Santamaría Urbieta, International Students and Generative Artificial Intelligence: A Cross-Cultural Exploration of HE Academic Integrity Policy, Journal of International Students 14 (2024) 149–170. doi:10.32674/jis.v14i3.6277.
- [33] E. Brandon, L. Eaton, D. Gavin, A. Papini, In the Room Where It Happens: Generative AI Policy Creation in Higher Education, EDUCAUSE Review (2025). URL: https://www.proquest.com/docview/3225398655.
- [34] J. R. Sánchez-Reina, E. Theophilou, D. Hernández-Leo, D. Ognibene, Exploring Undergraduates' Attitudes Towards ChatGPT. Is AI Resistance Constraining the Acceptance of Chatbot Technology?, in: G. Casalino, R. Di Fuccio, G. Fulantelli, P. Raviolo, P. C. Rivoltella, D. Taibi, G. A. Toto (Eds.), Higher Education Learning Methodologies and Technologies Online, volume 2076, Springer Nature Switzerland, Cham, 2024, pp. 383–397. doi:10.1007/978-3-031-67351-1_26.
- [35] V. Donne, M. A. Hansen, This Isn't Science Fiction: Technology Use During and Post-COVID for Students With Disabilities, Journal of Educational Technology Systems 53 (2024) 116–139. doi:10. 1177/00472395241267713.
- [36] S. Arunasalam, P. Desai, OpenAI partners with American Journalism Project to support local news, Reuters (2023). URL: https://www.reuters.com/business/media-telecom/openai-partners-with-american-journalism-project-support-local-news-2023-07-18/.
- [37] F. D. Davis, Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology, MIS Quarterly 13 (1989) 319. doi:10.2307/249008.
- [38] V. Venkatesh, M. Morris, G. Davis, F. Davis, User Acceptance of Information Technology: Toward a Unified View, MIS Quarterly 27 (2003) 425 478. doi:10.2307/30036540.
- [39] G. Liu, C. A. Bono, F. Pierri, Comparing diversity, negativity, and stereotypes in Chinese-language AI technologies: an investigation of Baidu, Ernie and Qwen, 2024. doi:10.48550/ARXIV.2408.15696.
- [40] Y. A. Alshumaimeri, Understanding context: An essential factor for educational change success, Contemporary Educational Researches Journal 13 (2023) 11–19. doi:10.18844/cerj.v13i1.8457.
- [41] R. M. Felder, Matters of style, ASEE prism 6 (1996) 18-23.
- [42] B. L. McCombs, J. S. Whisler, The learner-centered classroom and school: strategies for increasing student motivation and achievement, Jossey-Bass education series, 1. ed ed., Jossey-Bass, San Francisco, 1997.
- [43] M. North, Generative AI is trained on just a few of the world's 7,000 languages. Here's why that's a problem and what's being done about it, 2024. URL: https://www.weforum.org/agenda/2024/05/generative-ai-languages-llm/.
- [44] J. Huang, J. Li, T. Shu, Y. Zhang, A mixed-methods national study investigating key challenges in

- learning English as a foreign language: A Chinese college student perspective, Frontiers in Psychology 13 (2022) 1035819. doi:10.3389/fpsyg.2022.1035819.
- [45] P. Clough, C. Nutbrown, A Student's Guide to Methodology, Sage Publications, 2012. URL: https://www.torrossa.com/en/resources/an/4913295.
- [46] K. Yilmaz, Comparison of Quantitative and Qualitative Research Traditions: epistemological, theoretical, and methodological differences, European Journal of Education 48 (2013) 311–325. doi:10.1111/ejed.12014.
- [47] J. W. Creswell, Qualitative inquiry and research design: Choosing among five approaches., 4th edition. ed., SAGE Publications, Thousand Oaks, California, 2018.
- [48] A. Bryman, Social research methods, fifth edition ed., Oxford University Press, Oxford; New York, 2016.
- [49] I. Etikan, Comparison of Convenience Sampling and Purposive Sampling, American Journal of Theoretical and Applied Statistics 5 (2016) 1. doi:10.11648/j.ajtas.20160501.11.
- [50] T. Kumar, R. Kait, Ankita, A. Malik, The Role of Generative Artificial Intelligence (GAI) in Education: A Detailed Review for Enhanced Learning Experiences, in: B. Shukla, B. K. Murthy, N. Hasteer, H. Kaur, J.-P. Van Belle (Eds.), Intelligent IT Solutions for Sustainability in Industry 5.0 Paradigm, volume 1185, Springer Nature Singapore, Singapore, 2024, pp. 195–207. doi:10.1007/978-981-97-1682-1_17.
- [51] A. Squires, Methodological challenges in cross-language qualitative research: A research review, International Journal of Nursing Studies 46 (2009) 277–287. doi:10.1016/j.ijnurstu.2008.08.006.
- [52] V. Braun, V. Clarke, Using thematic analysis in psychology, Qualitative Research in Psychology 3 (2006) 77–101. doi:10.1191/1478088706qp063oa.
- [53] C. O' Connor, H. Joffe, Intercoder Reliability in Qualitative Research: Debates and Practical Guidelines, International Journal of Qualitative Methods 19 (2020) 1 13. doi:10.1177/1609406919899220.
- [54] M. Al-kfairy, D. Mustafa, N. Kshetri, M. Insiew, O. Alfandi, Ethical Challenges and Solutions of Generative AI: An Interdisciplinary Perspective, Informatics 11 (2024) 58. doi:10.3390/informatics11030058.
- [55] A. Ateeq, M. Alzoraiki, M. Milhem, R. A. Ateeq, Artificial intelligence in education: implications for academic integrity and the shift toward holistic assessment, Frontiers in Education 9 (2024) 1470979. doi:10.3389/feduc.2024.1470979.
- [56] E. S. Cross, R. Ramsey, Mind Meets Machine: Towards a Cognitive Science of Human Machine Interactions, Trends in Cognitive Sciences 25 (2021) 200–212. doi:10.1016/j.tics.2020.11.009.
- [57] N. McDonald, A. Johri, A. Ali, A. Hingle, Generative Artificial Intelligence in Higher Education: Evidence from an Analysis of Institutional Policies and Guidelines, 2024. doi:10.48550/ARXIV.2402.01659.
- [58] K. Chen, A. C. Tallant, I. Selig, Exploring generative AI literacy in higher education: student adoption, interaction, evaluation and ethical perceptions, Information and Learning Sciences 126 (2025) 132–148. doi:10.1108/ILS-10-2023-0160.

A. Interview Excerpts

Excerpt 1 (Student A1): "I use GenAI tools to get initial ideas about the structure/framework of (class) projects. However, I don't rely entirely on them, and I always do manual work to make my work more accurate."

Excerpt 2 (Student A6): "I use GenAI tools like ChatGPT, which I have been using for almost a year now. I wanted to explore how these tools could enhance my educational experience. I' ve been using them to generate ideas, summarise complex topics, and even assist with writing. And I think it has been a game-changer."

Excerpt 3 (Student C4): "I use this tool (ChatGPT) for formatting and references in academic writing. Besides that, I sometimes use it for translations. I don't seem to use it much in other areas, so it is mainly for language translation and format adjustments in my academic writing."

Excerpt 4 (Student A6): "It is important to keep it (GenAI) as a support tool, not a main tool for learning, your brain should always remain as the main tool for learning."

Excerpt 5 (Student C1): "When I try to search for these more specific questions, it usually only gives me very general answers, which I feel are not very useful for me. For instance, when you ask Baidu's 'ERNIE Bot' (https://yiyan.baidu.com) to come up with some news headlines, its suggestions are often too broad and fail to accurately match the theme you want to express. Its responses are filled with many cliché phrases, which might be useful when you need to increase word count or draft general documents. However, if you want to describe specific scenarios in depth, its assistance becomes quite limited."

Excerpt 6 (Student C1): "When dealing with more specialised coursework or more complex concepts, I usually won't turn to GenAI for information. Instead, I prefer to look up books or papers myself, read and understand them directly, rather than relying on GenAI to do this for me."

Excerpt 7 (Student C15): "It's because we often talk about the concept of the 'black box' in technology —we never really know what's going on behind the scenes (of AI) or what its 'thoughts' are. Even though whether it actually has thoughts is still questionable, I still find it terrifying, as it's something I can't control. So I don't want to face any unpredictable outcomes in the future."

Excerpt 8 (Student A9): "It has definitely changed the way I learn. It is great for getting fast answers or simplifying complex topics, which I think saves time."

Excerpt 9 (Student A2): "It has definitely improved my self-learning process especially when I am struggling to understand complicated statistics regarding my data analysis, ChatGPT helps to break it down into a step-by-step approach and it becomes easier for me to follow and understand."

Excerpt 10 (Student C2): "I find GenAI quite useful. While GenAI can't help you make subjective decisions, it can assist in many tasks, acting like an assistant, particularly with handling repetitive tools. In terms of learning, it can help reduce unnecessary trial and error."

Excerpt 11 (Student C5): "I feel that GenAI hasn't yet brought any particularly deep or systematic changes to my learning style. I find that GenAI mainly helps simplify some trivial tasks, like handling repetitive work. Since learning is still quite subjective and personal for me, the changes brought by GenAI haven't been very significant."

Excerpt 12 (Student C1): "I only use AI for tasks I don't want to handle myself or for those that are more formalistic and straightforward. However, for creative and non-formalistic content, I never rely on AI."

Excerpt 13 (Student C1): "I don't think it will impact my skill development. I primarily use AI for tasks that are more procedural in nature. For content where I have a clear opinion, such as writing reviews or film critiques, I never use AI. When it comes to topics, I consider important and non-procedural, I consciously avoid relying on AI. Even when looking up information, I tend to stick to my own methods, such as searching directly on academic platforms like CNKI."

Excerpt 14 (Student C15): "Regarding thinking ability, AI can sometimes offer perspectives that I hadn't considered when thinking about certain issues. For example, when writing a video script, I might struggle because I'm not very familiar with this area, and the outcome might not be very satisfactory. However, after consulting with AI, it often provides content that I hadn't thought of before. So, I see this as a kind of supplement to my own thinking. In this regard, I think it performs quite well."

Excerpt 15 (Student A10): "I would have appreciated some courses on 'how to write prompts' or, maybe, some assignments when one is given an AI-generated essay, and one is assigned to make it sound more human-like. In fact, some assignments where one is supposed to differentiate between a man-written essay, an AI-written essay, and an AI-assisted man-written essay can also help one learn about the pros and cons of using AI in writing, particularly."

Excerpt 16 (Student A18): "I think most people think that GenAI tools are easy to use and often neglect the fact that you need to be aware of the effective strategies and commands that can help you in your work, so these tools can only help you in a meaningful way if you use them in the right way."

Excerpt 17 (Student C14): "I think the teachers haven't fully figured out how to truly integrate GenAI into the teaching system. Sometimes, the GenAI-related assignments they give still seem a bit unreasonable as if they haven't completely thought them through—it even feels somewhat outrageous at times."

Excerpt 18 (Student A8): "If someone thinks that we (students) should stay away from AI, I think it is not logical. They (academic institutes) can provide us with a framework for the responsible use of AI, but in a few years, it will be difficult to work/study without them, be it in journalism or any other field."

Excerpt 19 (Student A3): "Academic institutions should train journalism students in the use of GenAI tools, but they should make students understand that they should not completely rely on these tools and that they should always manually check the data generated by GenAI tools."

Excerpt 20 (Student A12): "I use ChatGPT for my educational work and I sometimes use Midjourney. I have been using these two tools for about 2 years now."

Excerpt 21 (Student C1): "I heard that accessing ChatGPT is still a bit of a hassle, and on the other hand, local GenAI tools such as Baidu, ERNIE Bot, Skywork AI and Kimi also work quite well, so I don't use ChatGPT anymore."

Excerpt 22 (Student C1): "I don't think any platform is particularly important for me. To me, they are all tools, each serving slightly different functions. For example, ERNIE Bot is more suited for writing, Skywork AI is better for research, and Kimi is more helpful for reading. I categorise them by their functionalities."

Excerpt 23 (Student C14): "I've mostly been using GPT because it seems more authoritative, it updates well, and its response is fast. Although it does make mistakes, I feel that it's relatively more reliable compared to domestic tools."

Excerpt 24 (Student C4): "Although it (ChatGPT) is primarily in English, it can switch languages. Sometimes I give it instructions in Chinese, and it responds in Chinese; when I give it instructions in English, it replies in English. I find it very user-friendly and easy to use, really easy to get started with."

Excerpt 25 (Student C9): "I was working on an assignment about online public opinion. Our group scraped comments from Instagram and Facebook, but we ran into a problem where the comments were a mix of English, Malay (an Austronesian language) and traditional Chinese. I realised that if I entered these comments directly into translation software, there were two main problems. Firstly, there was a character limit, but more importantly, the software had difficulty recognising both English and Malay at the same time."

Excerpt 26 (Student C9): "Eventually, I found an AI agent on Coze (an AI application and chatbot developing platform) that someone else had built. I chose it somewhat randomly, but it had a high usage rate, so I gave it a try. It turned out to be very convenient for translation. I input around dozens of comments, gave it some context for specific terms, and told it that the comments included English and Malay, and that I wanted everything translated into Chinese. The AI handled the translation smoothly, with almost no errors."

Excerpt 27 (Student C16): "Whether it constitutes cheating depends on the degree to which the student uses GenAI in their learning. If GenAI only provides an idea, it shouldn't be considered cheating. But if you copy its answers, and 80%-90% of the logic and structure are the same, then I think that is cheating."

Excerpt 28 (Student C7): "If an assignment shows 100% AI-generated writing, it is considered cheating. But what if someone only used 10% or 5%? How do you define its ethical guidelines? I think this is a question worth considering."

Excerpt 29 (Student C2): "I'm particularly afraid of being wrongly accused of using GenAI when I haven't. This makes me anxious. I think the boundary between GenAI's writing style and human writing is very blurred."

Excerpt 30 (Student C2): "Although generative AI aims to act like a 'super brain,' it still has many flaws. For example, if AI determines that a paper is written by AI, but it was actually written entirely by a student, and their ideas just happen to be similar or aligned with AI's output, then labelling it as cheating would be unfair to the student. This could lead to confusion and disputes in the classroom and the educational process, which would also strain the relationship between students and teachers."

Excerpt 31 (Student A11): "I think if you're just using it to come up with ideas and you're not using it to do all your work, then it's not unethical."

Excerpt 32 (Student A17): "I think if teachers make it a normal inclusion in our coursework, then it would be easier to set boundaries. Making it a big deal would just push students to explore it or incorporate it excessively into their education work. If you let the students, use it to explore ideas and use it for basic assistance, you are setting a clear boundary, then it would benefit the students."

Excerpt 33 (Student A7): "I always think that if someone is doing some actual research, and I put that work and feed it to an AI machine then that AI machine stores the information forever, which I have done myself and I feel guilty about it."

Excerpt 34 (Student C17): "In real life, the inspiration for ideas is tied to authorship rights or usage rights, and the ownership of such ideas is clear. If you base something on my inspiration, you are not allowed to plagiarise my idea. However, in the context of generative AI, it's impossible to trace the source of the views it presents. This raises a significant ethical issue, one that is difficult to resolve, as we can't understand the underlying logic or the source of the ideas it outputs—the entire process is like a black box."

Excerpt 35 (Student A10): "Most of the companies that own these tools are private corporations, and it is sometimes difficult to trust such private companies with no government control or regulation to share your data with."

Excerpt 36 (Student A2): "I usually never share my own collected data with the GenAI tools because I think there might be a cloud running in the background and it might be storing my data. And it can potentially plagiarise my work and associated data."

Excerpt 37 (Student A14): "Accuracy is a big issue for me because I can't trust the sources of these tools and I always check with other sources available on the internet to make sure it's correct. Especially when it comes to the latest information, you cannot rely on them (GenAI tools)."

Excerpt 38 (Student C1): "I don't understand why GenAI sometimes generates unreliable content. For example, when I asked about books on Cantonese culture, it listed ten books, of which eight were fabricated."

Excerpt 39 (Student C4): "AI will undoubtedly get involved in more and more tasks.... However, for areas that require creativity, it's still up to humans to think. In every field, the top-tier, most advanced aspects won't be replaced by AI."

Excerpt 40 (Student C8): "In the future, the work we do might be quite different from what we' re doing now. Once simple tasks are delegated to machines, human intellect can focus on more complex and profound tasks. So, I maintain a fairly optimistic view of this. While it will affect certain job responsibilities, it won't completely consume our roles, unless you're someone who only does mechanical work and isn't proactive in developing new skills."

Excerpt 41 (Student C9): "AI is going to affect media jobs, but I think for journalism, there has to be a human aspect... human emotions and the human side of the story."

Excerpt 42 (Student A9): "No matter how much AI improves, we humans will always have a central role to play in everything."

Excerpt 43 (Student A12): "I think these tools and their integration into journalism education need some time to mature, but even when they do mature, they still need to be controlled by human resources. I think in the future these tools can reduce the human cost, but still, there will always be a need for people to operate them."