Pædagogisk Indblik: Udfordringer og muligheder med store sprogmodeller og AI-chatbots på videregående humanistiske og samfundsvidenskabelige uddannelser

	Reference	Abstract
1	Abbas, M., Jam, F. A., & Khan, T. I. (2024). Is it harmful or helpful? Examining the causes and consequences of generative AI usage among university students. *International Journal of Educational Technology in Higher Education*, *21*(1), 10. https://doi.org/10.1186/s41239-024-00444-7	While the discussion on generative artificial intelligence, such as ChatGPT, is making waves in academia and the popular press, there is a need for more insight into the use of ChatGPT among students and the potential harmful or beneficial consequences associated with its usage. Using samples from two studies, the current research examined the causes and consequences of ChatGPT usage among university students. Study 1 developed and validated an eight-item scale to measure ChatGPT usage by conducting a survey among university students (N = 165). Study 2 used a three-wave time-lagged design to collect data from university students (N = 494) to further validate the scale and test the study's hypotheses. Study 2 also examined the effects of academic workload, academic time pressure, sensitivity to rewards, and sensitivity to quality on ChatGPT usage. Study 2 further examined the effects of ChatGPT usage on students' levels of procrastination, memory loss, and academic performance. Study 1 provided evidence for the validity and reliability of the ChatGPT usage scale. Furthermore, study 2 revealed that when students faced higher academic workload and time pressure, they were more likely to use ChatGPT. In contrast, students who were sensitive to rewards were less likely to use ChatGPT. Not surprisingly, use of ChatGPT was likely to develop tendencies for procrastination and memory loss and dampen the students' academic performance. Finally, academic workload, time pressure, and sensitivity to rewards had indirect effects on students' outcomes through ChatGPT usage.
2	Abbas, N., Whitfield, J., Atwell, E., Bowman, H., Pickard, T., & Walker, A. (2022). Online Chat and Chatbots to Enhance Mature	Mature students transitioning into their first year of higher education face many difficulties that affect their motivation, participation and success. Their feelings of being disconnected from their peers and from their institutions are

	Student Engagement in Higher Education. *International Journal of Lifelong Education*, *41*(3), 308-326. https://doi.org/https://doi.org/10.1080/0260 1370.2022.2066213	among the key barriers to the successful completion of their courses. Encouraging online student engagement among mature students to establish social connection with their instructors and peers can reduce their isolation and enhance their 'sense of belonging'. During the academic year 2020/2021, the Lifelong Learning Centre (LLC) at the University of Leeds in the UK, decided to pilot an online chat platform 'Differ' including a chatbot 'Bo' after it had seen a decline in the use of programme Facebook groups. To promote student engagement and monitor the Differ online communities, sixteen digital student mentors were recruited and trained. During the pilot, feedback was collected from students and student mentors. A mixed-methods approach was adopted to boost robustness through triangulation. Several forms of data collection methods were used: a mentimeter, an online survey, three focus group sessions and a semi-structured interview. This study sheds light on the different aspects of creating student-led online communities and provides recommendations on how to improve the uptake of students in the future.
3	Ait Baha, T., El Hajji, M., Es-Saady, Y. & Fadili, H. (2023). The impact of educational chatbot on student learning experience. *Education and Information Technologies* *29*(8), 10153-10176. https://doi.org/10.1007/s10639-023-12166-w	Artificial Intelligence (AI) technologies have increasingly become vital in our everyday lives. Education is one of the most visible domains in which these technologies are being used. Conversational Agents (CAs) are among the most prominent AI systems for assisting teaching and learning processes. Their integration into an e-learning system can provide replies suited to each learner's specific needs, allowing them to study at their own pace. In this paper, based on recent advancements in Natural Language Processing (NLP) and deep learning techniques, we present an experimental implementation of an educational chatbot intended to instruct secondary school learners Logo, an educational programming language. The related chatbot was implemented and evaluated in Moroccan public schools with the support of teachers from the Regional Center for Education and Training Professions of Souss Massa. The experiments included 109 students grouped into three separate classes. One is

		a control class group that uses a traditional approach, while the other two are experimental groups that employ digital content and the chatbot-based method. Preliminary findings indicate that employing chatbots can greatly enhance student learning experiences by allowing them to study at their own speed with less stress, saving them time, and keeping them motivated. Furthermore, integrating these AI systems into a smart classroom will not only create a supportive environment by encouraging good interactions with students, it will also allow learners to be more engaged and achieve better academic objectives.
4	Al Hashimi, S., Al Muwali, A., Zaki, Y., & Mahdi, N. (2019). The Effectiveness of Social Media and Multimedia-Based Pedagogy in Enhancing Creativity among Art, Design, and Digital Media Students. *International Journal of Emerging Technologies in Learning*, *14*(21), 176-190. https://doi.org/10.3991/ijet.v14i21.10596	Rapidly growing technological advances in big data, cloud computing, social media, artificial intelligence, virtual reality and digital media have led many educators to embark upon the pursuit and deployment of various digital tools in the classroom. They started implementing a technology-centered educational system in order to expand their pedagogical approaches and increase the possibilities of creatively putting ideas together and innovatively conveying their knowledge to their students. In this paper, we explore the convergence of creativity, technology, with art and design education, and we advocate the use of digital tools and repurposing of social media applications to support creative thinking. We discuss existing multimedia-based classroom practices that might encourage student creativity and suggest new forms and applications of technology aimed at providing the reflective teacher with more effective and efficient strategies to cultivate creativity while teaching art, design, and digital media courses.
5	Al-Hoorie, A. H., Hiver, P., Tae-Young, K., & De Costa Peter, I. (2021). The Identity Crisis in Language Motivation Research. *Journal of Language and Social Psychology*, *40*(1), 136-153.	The 40th anniversary of the Journal of Language and Social Psychology occurs around the corner of another anniversary, the language motivation field reaching 60 years. At this occasion, we pause to reflect on the contribution of language motivation research to language teaching practice. We argue that this contribution has been negligible and put forward two main reasons. The

	https://doi.org/https://doi.org/10.1177/0261927X20964507	first is related to an identity crisis in the language motivation field, falling at the intersection of applied linguistics, education, and psychology; the second is the marginalization of the role of context. To address these issues, we first present insights from two perspectives—sociocultural theory and complex dynamic systems theory—and then propose three solutions to incorporate these insights: (1) moving from the abstract notion of "motivation" to the more tangible construct of "engagement", (2) encouraging rigorous transdisciplinary research, and (3) taking advantage of the potential of artificial intelligence to translate research findings into practice.
6	Al-Kaisi, A. N., Arkhangelskaya, A. L. & Rudenko-Morgun, O. I. (2021). The Didactic Potential of the Voice Assistant "Alice" for Students of a Foreign Language at a University. *Education and Information Technologies*, *26*(1), 715-732. https://doi.org/https://doi.org/10.1007/s10639-020-10277-2	Students learning a new language are aided by the use of a voice assistant when practicing speech, as it allows them to intensify their independent studies and master the elementary level of a foreign language. Moreover, the didactic potential of the Russian voice assistant "Alice" has hardly been studied in the context of teaching a foreign language at the university level. The purpose of this study is to test the effectiveness of educational interactions between students who are mastering a beginner level of Russian as a foreign language at university with the aid of the voice assistant "Alice". This study involved foreign students of the Peoples' Friendship University of Russia. The observation method allowed us to determine five educational functions of "Alice" while studying a foreign language and five scenarios of educational interaction students had with "her" in the process of their independent study. The flipped classroom model was selected to implement the proposed scenarios. The effectiveness of these educational interactions is confirmed by the results of the exam, which tested whether students meet the requirements for a beginner level of proficiency in Russian as a foreign language. After the exam, foreign students left positive feedback about working with "Alice". The results of the study indicate the didactic potential of the Russian voice assistant for those studying Russian at a university as an international student.

| 7 | Albdrani, R. N., & Al-Shargabi, A. A. (2023). Investigating the Effectiveness of ChatGPT for Providing Personalized Learning Experience: A Case Study. *International Journal of Advanced Computer Acience & Applications*, *14*(11). https://doi.org/10.14569/IJACSA.2023.01411 122 | The demand for personalized learning experiences that cater to the unique needs of individual learners has increased with the emergence of data science. This paper investigates the potential use of ChatGPT, a generative AI tool, in providing personalized learning experiences for data science education, specifically focusing on Deep Learning. The paper presents a case study that applies the 5Es model to test personalized learning for students using ChatGPT. The study aims to answer the question of how educators can leverage ChatGPT in their pedagogy to enhance student learning, and whether ChatGPT can provide a better learning experience than traditional teaching methods. The paper also discusses the limitations faced during the study and the findings. The results suggest that ChatGPT can be a valuable resource for data science education, providing personalized and instant feedback to learners. However, ethical considerations such as the potential for biased or inaccurate responses and the need for transparency in AI-generated content should be carefully ad-dressed by educators. The study highlights ChatGPT's potential as a research tool for data science educators to investigate the effectiveness of AI in personalized learning experiences. Overall, this paper contributes to the ongoing dialogue on the role of AI in data science education and provides insights into how educators can utilize ChatGPT to enhance student learning and engagement. |
| 8 | Amane, M., Aissaoui, K., & Berrada, M. (2023). New perspective of learning objects in e-learning system. *International Journal of Information and Learning Technology*, *40*(3), 269-279. https://doi.org/10.1108/IJILT-08-2022-0161 | Purpose: Together, learning objects (LOs) and e-pedagogical practices have the potential to improve the performance of e-learning systems in several ways. They can make e-learning more personalised and adaptable, providing students with a more engaging and effective learning experience. Design/methodology/approach: The development of LOs and e-pedagogical practices have significantly influenced and changed the performance of e-learning systems. LOs are self-contained, reusable units of instructional content that create instructional materials, such as online courses, tutorials |

		and assessments. They provide a flexible and modular approach to designing and delivering e-learning content, allowing educators to easily customise and adapt their materials to the needs of their students. e-pedagogical practices refer to the use of technology to enhance and support the teaching and learning process. They include strategies such as online collaboration, gamification and adaptive learning to improve student engagement, motivation and achievement. Findings: To achieve this objective, this study consists of two main phases. First, the authors extract metadata from LOs using latent semantic analysis algorithms, which are considered a strong tool in web-mining exploration techniques. Second, they identify LOs according to a particular form of similarity using fuzzy c-means (FCM) algorithms. To improve classification accuracy, the FCM is used as a clustering algorithm. Originality/value: Finally, in order to assess the effectiveness of LOs with FCM, a series of experimental studies using a real-world dataset are conducted. The results of this study indicate that the proposed approach exceeds the traditional approach and produces good results.
9	Anson, D. W. J. (2024). The impact of large language models on university students' literacy development: a dialogue with Lea and Street's academic literacies framework. *Higher Education Research & Development*, 1-14.	Large Language Models have already begun to affect the higher education landscape. However, there is currently a lack of work investigating how these models interface – and possibly interfere – with literacy development. Considering literacy is critical because student learning is only made possible through language. This paper considers implications for university students' literacy development by drawing on Lea and Street's academic literacies framework. I argue that LLMs pose different levels of risk for students' development of each aspect of literacy contained within the framework: study skills are least at risk, academic socialisation is most at risk, and academic literacies represent an intermediate risk. Implications for instructors include dedicated instructional time and support for students to engage with reading and writing practices without LLM support before they begin to incorporate

		them into their literacies repertoire. If students rely too heavily on LLMs initially, there is a danger they will not undergo the enculturation and cognitive development necessary for success at university.
10	Awal, M. R., & Asaduzzaman. (2024). Curse or blessing? Students' experience from ChatGPT with an application of Colaizzi's phenomenological descriptive method of enquiry and content analysis. *Higher Education Skills and Work-based Learning*. Ahead of print. https://doi.org/10.1108/HESWBL-09-2023-0249	PurposeThis qualitative work aims to explore the university students' attitude toward advantages, drawbacks and prospects of ChatGPT. Design/methodology/approach: This paper applies well accepted Colaizzi's phenomenological descriptive method of enquiry and content analysis method to reveal the ChatGPT user experience of students in the higher education level. Findings: The study's findings indicate that ChatGPT enhances the quality of learning and facilitates faster learning among university students. However, despite numerous positive outcomes, it is noted that ChatGPT may diminish students' creativity by swiftly addressing their critical queries. Over time, students may experience a decline in patience and critical thinking skills as they excessively rely on ChatGPT, potentially leading to ethical misconduct. Originality/value: This paper primarily explores the advantages and drawbacks of using ChatGPT in the university context of Bangladesh. The present study creates a platform for future research in this domain with comprehensive study design. The study results alert the policy makers to improve upcoming version of ChatGPT with convenient user experience and academicians as this paper unleash several positive as well as negative consequences of using this AI-enabled chatbot.
11	Ayedoun, E., Hayashi, Y., & Seta, K. (2020). Toward Personalized Scaffolding and Fading of Motivational Support in L2 Learner-Dialogue Agent Interactions: An Exploratory Study. *IEEE Transactions on Learning Technologies*, *13*(3), 604-616.	This article proposes a computer-based approach to effectively enhance second language learners' willingness to communicate in the target language. To do so, we implemented a conversational agent embedding a dialogue management model based on two conversational strategies (i.e., communication strategies and affective backchannels), serving as scaffolds for enhancing learners' willingness to communicate in the target language. Here,

	https://doi.org/https://doi.org/10.1109/TLT.2020.2989776	we report on differences observed among second language learners' preferences for both conversational strategies according to their initial level of willingness to communicate and on variations of their willingness with respect to such differences. Although we found that most students generally preferred a combination of both strategies, learners' preferences and the effects of the support provided by these strategies varied according to their level of willingness to communicate. Learners with lower willingness to communicate tended to prefer affective backchannels, whereas those with higher willingness to communicate seemed to favor communication strategies. These results were consistent with post-test results, which showed that learners' expected willingness to communicate tended to be higher after interacting with systems embedding their preferred strategies. In sum, these results are preliminary evidence of the meaningfulness of accounting for such learners' preferences in adaptively using and fading the strategies employed by conversational agents to motivate second language learners to communicate in the target language.
12	Bacalja, A., Beavis, C., & O'Brien, A. (2022). Shifting landscapes of digital literacy. *Australian Journal of Language and Literacy*, *45*(2), 253-263. https://doi.org/https://doi.org/10.1007/s44020-022-00019-x	This paper explores how changing digital literacy practices in educational contexts require that we continually revisit conceptualisations of digital literacy education. We begin by analysing the positions taken by stakeholders who contribute to digital literacy discourses in Australia, exploring how competing interests produce effects which manifest in ways that differently consecrate social and cultural practice in the digital age. We advocate the need for pedagogic frameworks that support digital literacy education. Existing approaches tend to privilege the operationalisation of digital technology. By contrast, teaching is needed which focusses on meaning-making and creating. However, the 'datafication of everyday life' (Barassi, 2018, p.170) has included extraordinary interventions into schooling that have significant implications for teachers and students. We argue that preparing young people for digital citizenship must include a focus on critical digital literacies that are responsive

		to contemporary digital forces (e.g. platformatisation, artificial intelligence, edu-apps, algorithms) as well as those digital technologies that are yet to make their way into formal schooling.
13	Baker, B., Mills, K. A., McDonald, P., & Wang, L. (2023). AI, Concepts of Intelligence, and Chatbots: The "Figure of Man," the Rise of Emotion, and Future Visions of Education. *Teachers College Record*, *125*(6), 60-84. https://doi.org/10.1177/0161468123119129 1	Background: Artificial intelligence (AI) applications have been implemented across all levels of education, with the rapid developments of chatbots and AI language models, like ChatGPT, demonstrating the urgent need to conceptualize the key debates and their implications for a new era of learning and assessment. This adoption occurs in a context where AI is dramatically remapping "the human," the purposes of schooling, and pedagogy. Focus of Study:The paper examines how different formulations of "human" became interwoven with the sliding signifier of "intelligence" through a series of violent exclusions, and how the shifting contour of "intelligence" produces uneven and unjust ontological scales undergirding both education and AI fields. Its purpose is to engage the education research community in dialogue about biases, the nature of ethics, and decision-making concerning AI in education. Research Design:This paper adapts a historical-philosophical method. It traces the effects of colonialism and racialization within humanism's emergence through Sylvia Wynter's historiography of "figure of Man," especially via the invention of "intelligence," which has linked education and computer science. It also investigates themes central to modern education such as justice, equity, and in/exclusion through a philosophical examination of the ontological scales of "human." Conclusions: After outlining how "intelligence" has shifted from reason-as-morality to concepts of natural intelligence, we argue that current examples of AI in Education (AIEd), like classroom chatbots and social agents, constitute an intermediary point in the arc toward a new computational superintelligence-the emergence of man3-illustrating the opportunities, risks, and ethical issues in pedagogical applications based on emotion. We outline three differing visions of AIEd's future, concluding with a series of provocations

		(onto-epistemological, practice-based, and purposes of schooling) that exceed such models and that, given rapid innovations in machine learning, require urgent consideration from multiple stakeholders.
14	Bakla, A. (2023). ChatGPT in academic writing and publishing: An overview of ethical issues. In *Transforming the Language Teaching Experience in the Age of AI* (pp. 89-101). IGI Global. https://doi.org/10.4018/978-1-6684-9893-4.ch005	Generative artificial intelligence systems are disruptive technologies that have been found useful in various domains, including academia and education. Being one of these technologies, ChatGPT can have smart conversations with its human users, answer questions and produce content virtually on any topic. Like other conversational agents, ChatGPT has advanced text processing capabilities, such as writing paragraphs, essays, research reports and paraphrasing texts. The use of this technology in academic writing classes and scholarly publications necessitates a discussion of possible problems and challenges that might undermine ethical and responsible use. This is because the ability of this new technology to produce content that sounds like human output has wider ethical implications not only for academic writing and publishing but also for learning and instruction. The issues of concern are related to transparency and credibility of the content, ownership of the text produced and integrity.
15	Ballantyne, D., Livingston, C. & Garraway, J. (2021). Cultural-Historical Activity Theory as a Framework for Exploring Pre-Service Teachers' Use of an Intelligent Tutoring System for English Language Proficiency. *Africa Education Review*, *18*(3-4), 1-24. https://doi.org/https://doi.org/10.1080/18146627.2022.2150245	The purpose of this study was to examine pre-service teachers' perceptions of their use of an intelligent tutoring system (ITS) as an English language proficiency tool. Pre-service teachers' perceptions were analysed using Engeström's second-generation cultural-historical activity theory (CHAT). A qualitative interpretivist paradigm was used. Six pre-service teachers who were learning to be English home language teachers but were not English home language speakers were interviewed. The study's findings indicated that when the ITS was integrated into an activity system for teaching and learning, participants had a favourable opinion of it. The ITS was perceived to aid pre-service teachers in enhancing their language skills and to be instrumental in achieving goals and objectives as a tool for learning.

| 16 | Bašić, Ž., Banovac, A., Kružić, I., & Jerković, I. (2023). ChatGPT-3.5 as writing assistance in students' essays. *Humanities and Social Sciences Communications*, *10*(1), 1-5. https://doi.org/10.1057/s41599-023-02269-7 | ChatGPT-3.5, an AI language model capable of text generation, translation, summarization, and question-answering, has recently been released for public use. Studies have shown it can generate abstracts, research papers, and dissertations, and create quality essays on different topics. This led to ethical issues in using ChatGPT in academic writing, AI authorship, and evaluating students' essays. However, it is still unknown how ChatGPT performs in students' environments as a writing assistant tool and if it enhances students' essay-writing performance. In the present study, we examined students' essay-writing performances with or without ChatGPT as an essay-writing assistance tool. The average essay grade was C for both control (traditional essay-writing, n = 9) and experimental (ChatGPT-assisted essay-writing, n = 9) groups. None of the predictors affected essay scores: group, writing duration, study module, and GPA. The text unauthenticity was slightly higher in the experimental group, but the similarity among essays was generally low in the overall sample. In the experimental group, the AI classifier recognized more potential AI-generated texts. Our results demonstrate that the ChatGPT group did not perform better in either of the indicators; the students did not deliver higher quality content, did not write faster, nor had a higher degree of authentic text. We anticipate that these results can relieve some concerns about this tool's usage in academic writing. ChatGPT-assisted writing could depend on the previous knowledge and skills of the user, which might, in certain instances, lead to confusion in inexperienced users and result in poorer essay writing performance. |
| 17 | Bearman, M., & Ajjawi, R. (2023). Learning to work with the black box: Pedagogy for a World with Artificial Intelligence. *British Journal of Educational Technology*, *54*(5), 1160-1173. | Artificial intelligence (AI) is increasingly integrating into our society. University education needs to maintain its relevance in an AI-mediated world, but the higher education sector is only beginning to engage deeply with the implications of AI within society. We define AI according to a relational epistemology, where, in the context of a particular interaction, a computational |

https://doi.org/10.1111/bjet.13337	artefact provides a judgement about an optimal course of action and that this judgement cannot be traced. Therefore, by definition, AI must always act as a 'black box'. Rather than seeking to explain 'black boxes', we argue that a pedagogy for an AI-mediated world involves learning to work with opaque, partial and ambiguous situations, which reflect the entangled relationships between people and technologies. Such a pedagogy asks learners locate AI as socially bounded, where AI is always understood within the contexts of its use. We outline two particular approaches to achieve this: (a) orienting students to quality standards that surround AIs, what might be called the tacit and explicit 'rules of the game'; and (b) providing meaningful interactions with AI systems. Practitioner notesWhat is already known about this topic Artificial intelligence (AI) is conceptualised in many different ways but is rarely defined in the higher education literature.Experts have outlined a range of graduate capabilities for working in a world of AI such as teamwork or ethical thinking.The higher education literature outlines an imperative need to respond to AI, as underlined by recent commentary on ChatGPT.What this paper adds A definition of an AI that is relational: A particular interaction where a computational artefact provides a judgement about an optimal course of action, which cannot be easily traced. Focusing on working with AI black boxes rather than trying to see inside the technology.Describing a pedagogy for an AI-mediated world that promotes working in complex situations with partial and indeterminate information.Implications for practice and/or policy Focusing on quality standards helps learners understand the social regulating boundaries around AI.Promoting learner interactions with AI as part of a sociotechnical ensemble helps build evaluative judgement in weighting AI's contribution to work.Asking learners to work with AI systems prompts understanding of the evaluative, ethical and practical necessities of working with a black box.

18	Blake, J. (2023). Unleashing the potential: Positive impacts of generative AI on learning and teaching. *Generative AI in Teaching and Learning*, 31-45. https://doi.org/10.4018/979-8-3693-0074-9.ch002	Generative artificial intelligence, anchored by large language models (LLMs), is significantly altering the educational landscape. This chapter examines the impact of generative AI on education, illustrating its capability to create personalized content and transform learning environments. Despite concerns over academic dishonesty facilitated by LLMs, the chapter argues against a regressive stance and advocates for the constructive integration of AI into educational practices. By drawing on theories of learning, the chapter elucidates the pedagogical implications of generative AI and describes specific use cases in language learning, computer science, and mathematics. Highlighting both the potential and limitations of this emerging technology, the chapter posits that generative AI is not merely a disruptive force, but a revolutionary tool poised to redefine the methodologies of teaching and learning.
19	Bonner, E., Lege, R., & Frazier, E. (2023, 2023). Large Language Model-Based Artificial Intelligence in the Language Classroom: Practical Ideas For Teaching. *Teaching English With Technology*, *2023*(1). https://doi.org/10.56297/BKAM1691/WIEO1749	Large Language Models (LLMs) are a powerful type of Artificial Intelligence (AI) that simulates how humans organize language and are able to interpret, predict, and generate text. This allows for contextual understanding of natural human language which enables the LLM to understand conversational human input and respond in a natural manner. Recent examples of this, such as the Generative Pre-Trained Transformer (GPT) model, popularized by OpenAI's web application, ChatGPT, are able to complete an astounding variety of tasks when provided with simple language input. For education, LLMs can alleviate teacher curriculum and grading workloads and even perform specific tasks such as generating creative ideas for activities. Specifically for language learning, LLMs can draw on their immense corpus of language content to generate learner-centric materials to aid teachers in delivering targeted, personalized language instruction. The aim of this paper is to provide the reader with examples of how LLMs can be utilized for materials development, classroom activities, and providing feedback. After giving specific examples

		and explanations, the paper will conclude with a discussion of how this technology can provide teachers with new innovative ways to streamline the teaching process to focus on learner needs.
20	Breines, M. R. & Gallagher, M. (2023). A Return to Teacherbot: Rethinking the Development of Educational Technology at the University of Edinburgh. *Teaching in Higher Education*, *28*(3), 517-531. https://doi.org/https://doi.org/10.1080/1356 2517.2020.1825373	In the market discourses of technological disruption, higher education institutions have routinely been positioned in deficit models and of anachronistic approaches to teaching at odds with the types of educational futures being presented by commercial organisations. Predominantly, automation technologies in the form of artificial intelligence are being promoted as the future of teaching. In this paper, on the other hand, we explore the prospects for using non-artificial intelligence automated agents in teaching and its impact on the teacher function at the University of Edinburgh. Through engagement with teachers, staff and students at the university, this research has identified use cases for bots, in what spaces they would be situated, and how they would supplement the teacher function. This paper argues that a community-driven approach combined with a sociomaterial conceptualisation can generate a shift from market discourses and to collaborative development of educational technologies.
21	Bulathwela, S., Pérez-Ortiz, M., Holloway, C., Cukurova, M. & Shawe-Taylor, J. (2024). Artificial Intelligence Alone Will Not Democratise Education: On Educational Inequality, Techno-Solutionism and Inclusive Tools. *Sustainability*, *16*(2). https://doi.org/10.3390/su16020781	Artificial Intelligence (AI) in Education claims to have the potential for building personalised curricula, as well as bringing opportunities for democratising education and creating a renaissance of new ways of teaching and learning. Millions of students are starting to benefit from the use of these technologies, but millions more around the world are not, due to the digital divide and deep pre-existing social and educational inequalities. If this trend continues, the first large-scale delivery of AI in Education could lead to greater educational inequality, along with a global misallocation of educational resources motivated by the current techno-solutionist narrative, which proposes technological solutions as a quick and flawless way to solve complex real-world problems. This work focuses on posing questions about the future of AI in Education,

		intending to initiate the pressing conversation that could set the right foundations (e.g., inclusion and diversity) for a new generation of education that is permeated with AI technology. The main goal of our opinion piece is to conceptualise a sustainable, large-scale and inclusive AI for the education ecosystem that facilitates equitable, high-quality lifelong learning opportunities for all. The contribution starts by synthesising how AI might change how we learn and teach, focusing on the case of personalised learning companions and assistive technology for disability. Then, we move on to discuss some socio-technical features that will be crucial to avoiding the perils of these AI systems worldwide (and perhaps ensuring their success by leveraging more inclusive education). This work also discusses the potential of using AI together with free, participatory and democratic resources, such as Wikipedia, Open Educational Resources and open-source tools. We emphasise the need for collectively designing human-centred, transparent, interactive and collaborative AI-based algorithms that empower and give complete agency to stakeholders, as well as supporting new emerging pedagogies. Finally, we ask what it would take for this educational revolution to provide egalitarian and empowering access to education that transcends any political, cultural, language, geographical and learning-ability barriers, so that educational systems can be responsive to all learners' needs.
22	Caneva, G., Calcagno, S., & Giordano, D. (2023). Socratic Artificial Mind (SAM); Lessons from the evaluation of a GPT-3 based chatbot for Socratic dialogue. *Sistemi Intelligenti*, *35*(2), 413-434. https://doi.org/10.1422/108138	This contribution describes the design and evaluation of SAM, a GPT3-based chatbot trained to hold conversations using Socratic dialogue rules. The system was tested by twenty users and two types of analysis were carried out, one from the user's point of view, the other from a technical point of view, to verify compliance with the principles of the Socratic dialogue. The results show a satisfactory performance concerning the non-violation of the basic tenets of the approach and a highly positive user experience, especially regarding the perceived understanding abilities and competence of SAM and its effect on

		provoking reflection.
23	Cardon, P., Fleischmann, C., Aritz, J., Logemann, M. & Heidewald, J. (2023, 2023/09/01). The Challenges and Opportunities of AI-Assisted Writing: Developing AI Literacy for the AI Age. *Business and Professional Communication Quarterly*, *86*(3), 257-295. https://doi.org/10.1177/2329490623117651 7	Generative AI may significantly disrupt the teaching and practice of business communication. This study of 343 communication instructors revealed a collective view that AI-assisted writing will be widely adopted in the workplace and will require significant changes to instruction. Key perceived challenges include less critical thinking and authenticity in writing. Key perceived benefits include more efficiency and better idea generation in writing. Students will need to develop AI literacy composed of application, authenticity, accountability, and agency?to succeed in the workplace. Recommendations are provided for instructors and administrators to ensure the benefits of AI-assisted writing can outweigh the challenges.
24	Chan, C. & Li, F. (2023). Developing a natural language-based AI-chatbot for social work training: an illustrative case study. *China Journal of Social Work*, *16*(2), 121-136. https://doi.org/10.1080/17525098.2023.217 6901	A chatbot is a computer program designed to simulate conversation with human users. In social services, many chatbots are retrieval based: they analyse users' intents and retrieve preset answers based on decision tree logic. A major limitation of these earlier chatbots was that their conversations were rigid, unnatural, and sounded like a multiple-choice questionnaire. Recent achievements in large-scale generative pretrained transformers (LGPTs) (e.g. GPT-3, Yuan 1.0) have offered new possibilities for chatbot development. Such technology provides a high-quality natural language experience, requires much less resource input than earlier chatbot technologies, and is much more accessible to the public. However, the use of LGPT-based cfhatbots in social work, particularly in a Chinese context, is uncommon or even absent. Using an illustrative case study, this article illustrates the initial development of an LGPT-based chatbot to support social work training in a Chinese context and discusses the possibilities for further development.
25	Chan, C. K. Y. & Colloton, T. (2024). *Generative AI in Higher Education. The ChatGPT Effect*. Taylor & Francis.	Chan and Colloton's book is one of the first to provide a comprehensive examination of the use and impact of ChatGPT and Generative AI (GenAI) in higher education.

		Since November 2022, every conversation in higher education has involved ChatGPT and its impact on all aspects of teaching and learning. The book explores the necessity of AI literacy tailored to professional contexts, assess the strengths and weaknesses of incorporating ChatGPT in curriculum design, and delve into the transformation of assessment methods in the GenAI era. The authors introduce the Six Assessment Redesign Pivotal Strategies (SARPS) and an AI Assessment Integration Framework, encouraging a learner-centric assessment model. The necessity for well-crafted AI educational policies is explored, as well as a blueprint for policy formulation in academic institutions. Technical enthusiasts are catered to with a deep dive into the mechanics behind GenAI, from the history of neural networks to the latest advances and applications of GenAI technologies. With an eye on the future of AI in education, this book will appeal to educators, students and scholars interested in the wider societal implications and the transformative role of GenAI in pedagogy and research.
26	Choi, L. J. (2022). Interrogating Structural Bias in Language Technology: Focusing on the Case of Voice Chatbots in South Korea. *Sustainability*, *14*(20), 13177. https://doi.org/10.3390/su142013177	The increasing use of language technology applications requires a more critical evaluation of the current state of language technology and its application than simply viewing it as an ideal and effective language learning aid. While an increased number of scholars have examined the issue of potential biases and hidden ideologies in language technology such as racism and gender discrimination, little attention has been paid to how the newly emerging language technology can contribute to reproduce the native speaker fallacy. This paper, focusing on the case of voice chatbots in Korea, critically examines how learning technology, in particular language technology applications, can potentially reproduce and reinforce the essentialist discourse of native speakerism, which posits native speaker accents as an ideal form of English and marginalizes nonnative English teachers and students.
27	Chrysafiadi, K., Virvou, M., Tsihrintzis, G. A.,	Nowadays, the improvement of digital learning with Artificial Intelligence has

	& Hatzilygeroudis, I. (2023). Evaluating the User's Experience, Adaptivity and Learning Outcomes of a Fuzzy-Based Intelligent Tutoring System for Computer Programming for Academic Students in Greece. *Education And Information Technologies*, *28*(6), 6453-6483. https://doi.org/https://doi.org/10.1007/s10639-022-11444-3	attracted a lot of research, as it provides solutions for individualized education styles which are independent of place and time. This is particularly the case for computer science, as a tutoring domain, which is rapidly growing and changing and as such, learners need frequent update courses. In this paper, we present a thorough evaluation of a fuzzy-based intelligent tutoring system (ITS), that teaches computer programming. The evaluation concerns multiple aspects of the ITS. The evaluation criteria are: (i) context, (ii) effectiveness, (iii) efficiency, (iv) accuracy, (v) usability and satisfaction, and (vi) engagement and motivation. In the evaluation process students of an undergraduate program in Informatics of the University of Piraeus in Greece participated. The evaluation method that was used included questionnaires, analysis of log files and experiments. Also, t-tests were conducted to certify the validity of the evaluation results. Indeed, the evaluation results are very positive and show that the incorporated fuzzy mechanism to the presented ITS enhances the system with Artificial Intelligence and through this, it increases the learners' satisfaction and new knowledge learning and mastering, improves the recommendation accuracy of the system, the efficacy of interactions, and contributes positively to the learners' engagement in the learning process.
28	Crawford, J., Allen, K. A., Pani, B. & Cowling, M. (2024). When artificial intelligence substitutes humans in higher education: the cost of loneliness, student success, and retention. *Studies in Higher Education*, *49*(5), 883–897. https://doi.org/10.1080/03075079.2024.2326956	Artificial intelligence (AI) may be the new-new-norm in a post-pandemic learning environment. There is a growing number of university students using AI like ChatGPT and Bard to support their academic experience. Much of the AI in higher education research to date has focused on academic integrity and matters of authorship; yet, there may be unintended consequences beyond these concerns for students. That is, there may be people who reduce their formal social interactions while using these tools. This study evaluates 387 university students and their relationship to - and with - artificial intelligence large-language model-based tools. Using structural equation modelling, the study finds evidence that while AI chatbots designed for information provision

		may be associated with student performance, when social support, psychological wellbeing, loneliness, and sense of belonging are considered it has a net negative effect on achievement. This study tests an AI-specific form of social support, and the cost it may pose to student success, wellbeing, and retention. Indeed, while AI chatbot usage may be associated with poorer social outcomes, human-substitution activity that may be occurring when a student chooses to seek support from an AI rather than a human (e.g. a librarian, professor, or student advisor) may pose interesting learning and teaching policy implications. We explore the implications of this from the lens of student success and belonging.
29	Damaševičius, R. (2023). The rise of ChatGPT and the Demise of Bloom's taxonomy of learning stages. In J. Keengwe (Ed.), *Creative AI Tools and Ethical Implications in Teaching and Learning* (pp. 115-134). IGI Global. https://doi.org/10.4018/979-8-3693-0205-7.ch006	This chapter explores the impact of the development and implementation of the ChatGPT language model on the traditional framework of Bloom's taxonomy of learning stages. Through examination of data and case studies, the study argues that the advanced natural language processing capabilities of ChatGPT have led to a shift away from the linear, hierarchical model of Bloom's taxonomy, towards a more dynamic and fluid approach to knowledge acquisition and application. The results of the study suggest that the incorporation of ChatGPT and similar language models into education and training programs may lead to more effective and efficient learning outcomes.
30	Davis, R. O., & Lee, Y. J. (2024). Prompt: ChatGPT, Create My Course, Please! *Education Sciences*, *14*(1), 24. https://doi.org/https://doi.org/10.3390/educsci14010024	The introduction of ChatGPT for public use has generated increasing interest among educational researchers in evaluating the utility of artificial intelligence (AI) in pedagogical settings. This study aims to contribute to this growing body of research by developing an entire course curriculum and lesson plans exclusively using ChatGPT. Case study findings support many of the affordances and limitations observed in previous studies, such as identifying appropriate topics and subtopics for lessons, as well as identifying the occurrence of hallucinations that fabricate data. This study also revealed new limitations in the design capabilities of ChatGPT. Specifically, lessons are

		designed as standalone units of information. Unlike human educators, AI lacks the ability to integrate prior lessons with current learning experiences or strategically prepare students for future learning outcomes. Understanding these affordances and limitations allows ChatGPT to be a useful tool for educators engaging in instructional design.
31	Dawson, S., Joksimovic, S., Mills, C., Gašević, D., & Siemens, G. (2023). Advancing theory in the age of artificial intelligence. *British Journal of Educational Technology*, *54*(5), 1051-1056. https://doi.org/https://doi.org/10.1111/bjet.13343	-
32	Delcker, J., Heil, J., Ifenthaler, D., Seufert, S., & Spirgi, L. (2024, 2024/03/18). First-year students AI-competence as a predictor for intended and de facto use of AI-tools for supporting learning processes in higher education. *International Journal of Educational Technology in Higher Education*, *21*(1), 18. https://doi.org/10.1186/s41239-024-00452-7	The influence of Artificial Intelligence on higher education is increasing. As important drivers for student retention and learning success, generative AI-tools like translators, paraphrasers and most lately chatbots can support students in their learning processes. The perceptions and expectations of first-years students related to AI-tools have not yet been researched in-depth. The same can be stated about necessary requirements and skills for the purposeful use of AI-tools. The research work examines the relationship between first-year students' knowledge, skills and attitudes and their use of AI-tools for their learning processes. Analysing the data of 634 first-year students revealed that attitudes towards AI significantly explains the intended use of AI tools. Additionally, the perceived benefits of AI-technology are predictors for students' perception of AI-robots as cooperation partners for humans. Educators in higher education must facilitate students' AI competencies and integrate AI-tools into instructional designs. As a result, students learning processes will be improved.
33	Dhamdhere, S. E., & Andres, F. E. (2022).	In higher education systems, equal importance must be given to differently

	Assistive Technologies for Differently Abled Students. Advances in Educational Technologies and Instructional Design. IGI Global. https://doi.org/https://doi.org/10.4018/978-1-7998-4736-6	abled students. However, not all educational institutions have infrastructure and facilities to admit these students even though accessibility and support for these students is growing. There are many schemes, facilities, services, and financial assistance available to these students along with new assistive technologies that are making teaching and learning processes more effective. While using new technologies in education systems such as e-learning and blended learning, these students need special attention as well as some advanced training and additional features in the technology itself that better help them become familiar with it. Understanding the demands and requirements of differently abled students is the best way to provide them with quality education. "Assistive Technologies for Differently Abled Students" explores how to implement effective assistive technologies and other related services for providing differently abled students an education that is high quality and equal to their peers, enabling them to go on and excel in their field and obtain employment. Topics that are highlighted within this book include an overview for the different types of diverse assistive technologies for all types of students including students with visual impairments, learning disabilities, physical challenges, and more. This book is ideal for school administrators, researchers of higher educational institutes, non-governmental organizations, assistive technology experts, IT professionals, social workers, inservice and preservice teachers, teacher educators, practitioners, researchers, academicians, and students looking for information on the types of assistive technologies being employed in education for all types of differently abled students.
34	Dianova, V. G. & Schultz, M. D. (2023). Discussing ChatGPT's Implications for Industry and Higher Education: The Case for Transdisciplinarity and Digital Humanities.	This comment builds on the example of chat generative pretrained transformer (ChatGPT) to discuss the implications of generative AI on industry and higher education, underlining the need for more transdisciplinary digital literacy education. The release of ChatGPT has generated significant academic and

	Industry and Higher Education, *37*(5), 593-600. https://doi.org/https://doi.org/10.1177/09504222231199989	professional interest and instigated a vibrant discussion on the opportunities offered and challenges posed by powerful and readily accessible generative AI reshaping teaching and learning at universities. ChatGPT has reignited an age-old debate on the impact of disruptive technologies on occupations and the labor market, but recent discussions have paid little attention to how university offerings may need to adapt. We strive to open this discussion arguing that while recent GPT technology has, indeed, made more conceivable the substitution of many tasks of white-collar and knowledge workers, and suggested an acceleration of the labor market shift towards technology-centric occupations, it has simultaneously made a stronger-than-ever case for transdisciplinary competences. Consequently, we emphasize the need to foster more transdisciplinary digital literacy in universities with curricula that provide breadth of knowledge and flexibility of mind, bridging humanities with STEM disciplines. Digital humanities education is in a unique position to promote the responsible use of generative AI, while encouraging critical reflection on its socio-cultural embeddedness.
35	Dieterle, E., Dede, C., & Walker, M. (2022). The cyclical ethical effects of using artificial intelligence in education. *AI and Society*. https://doi.org/10.1007/s00146-022-01497-w	Our synthetic review of the relevant and related literatures on the ethics and effects of using AI in education reveals five qualitatively distinct and interrelated divides associated with access, representation, algorithms, interpretations, and citizenship. We open our analysis by probing the ethical effects of algorithms and how teams of humans can plan for and mitigate bias when using AI tools and techniques to model and inform instructional decisions and predict learning outcomes. We then analyze the upstream divides that feed into and fuel the algorithmic divide, first investigating access (who does and does not have access to the hardware, software, and connectivity necessary to engage with AI-enhanced digital learning tools and platforms) and then representation (the factors making data either representative of the total population or over-representative of a subpopulation's preferences,

		thereby preventing objectivity and biasing understandings and outcomes). After that, we analyze the divides that are downstream of the algorithmic divide associated with interpretation (how learners, educators, and others understand the outputs of algorithms and use them to make decisions) and citizenship (how the other divides accumulate to impact interpretations of data by learners, educators, and others, in turn influencing behaviors and, over time, skills, culture, economic, health, and civic outcomes). At present, lacking ongoing reflection and action by learners, educators, educational leaders, designers, scholars, and policymakers, the five divides collectively create a vicious cycle and perpetuate structural biases in teaching and learning. However, increasing human responsibility and control over these divides can create a virtuous cycle that improves diversity, equity, and inclusion in education. We conclude the article by looking forward and discussing ways to increase educational opportunity and effectiveness for all by mitigating bias through a cycle of progressive improvement.
36	Doroudi, S. (2023). What happened to the interdisciplinary study of learning in humans and machines? *Journal of the Learning Sciences*. https://doi.org/10.1080/10508406.2023.2260159	When the Learning Sciences emerged in 1991, there was an ethos of studying learning in humans and machines in conjunction with one another. This ethos reflected three decades of prior work on the interdisciplinary study of learning; however, in the three decades since the emergence of the Learning Sciences, it seems to have largely disappeared. I begin by describing the ethos that was prevalent in 1991 using quotations from the inaugural editorial of the Journal of the Learning Sciences. I then describe how this ethos was prevalent decades before the Learning Sciences in four distinct approaches to cognitive science research, which I call the "Four C's"-cognitivism, constructivism, cybernetics, and connectionism. I suggest three reasons why the Learning Sciences moved away from the use of artificial intelligence as a central tool for thinking about learning, noting that these reasons do not suggest a fundamental incompatibility between the two. I end by discussing how Learning Scientists

		might once again embrace artificial intelligence and computational modeling and use them as tools for gaining insight into the constructivist, situated, and socio-cultural nature of learning.
37	Doroudi, S. (2023). The Intertwined Histories of Artificial Intelligence and Education. *International Journal of Artificial Intelligence in Education*, *33*(4), 885-928. https://doi.org/10.1007/s40593-022-00313-2	In this paper, I argue that the fields of artificial intelligence (AI) and education have been deeply intertwined since the early days of AI. Specifically, I show that many of the early pioneers of AI were cognitive scientists who also made pioneering and impactful contributions to the field of education. These researchers saw AI as a tool for thinking about human learning and used their understanding of how people learn to further AI. Furthermore, I trace two distinct approaches to thinking about cognition and learning that pervade the early histories of AI and education. Despite their differences, researchers from both strands were united in their quest to simultaneously understand and improve human and machine cognition. Today, this perspective is neither prevalent in AI nor the learning sciences. I conclude with some thoughts on how the artificial intelligence in education and learning sciences communities might reinvigorate this lost perspective.
38	Escalante, J., Pack, A. & Barrett, A. (2023). AI-generated feedback on writing: insights into efficacy and ENL student preference. *International Journal of Educational Technology in Higher Education*, *20*(1), 1-20. https://doi.org/10.1186/s41239-023-00425-2	The question of how generative AI tools, such as large language models and chatbots, can be leveraged ethically and effectively in education is ongoing. Given the critical role that writing plays in learning and assessment within educational institutions, it is of growing importance for educators to make thoughtful and informed decisions as to how and in what capacity generative AI tools should be leveraged to assist in the development of students' writing skills. This paper reports on two longitudinal studies. Study 1 examined learning outcomes of 48 university English as a new language (ENL) learners in a six-week long repeated measures quasi experimental design where the experimental group received writing feedback generated from ChatGPT (GPT-4) and the control group received feedback from their human tutor. Study 2 analyzed the perceptions of a different group of 43 ENLs who received

		feedback from both ChatGPT and their tutor. Results of study 1 showed no difference in learning outcomes between the two groups. Study 2 results revealed a near even split in preference for AI-generated or human-generated feedback, with clear advantages to both forms of feedback apparent from the data. The main implication of these studies is that the use of AI-generated feedback can likely be incorporated into ENL essay evaluation without affecting learning outcomes, although we recommend a blended approach that utilizes the strengths of both forms of feedback. The main contribution of this paper is in addressing generative AI as an automatic essay evaluator while incorporating learner perspectives.
39	Essel, H. B., Vlachopoulos, D., Essuman, A. B., & Amankwa, J. O. (2024). ChatGPT effects on cognitive skills of undergraduate students: Receiving instant responses from AI-based conversational large language models (LLMs). *Computers and Education: Artificial Intelligence*, 6. https://doi.org/10.1016/j.caeai.2023.100198	This study investigated the impact of using ChatGPT, a state-of-the-art generative AI-based model, on the critical, creative, and reflective thinking skills of university students in Ghana. The study utilized a mixed-methods research approach, incorporating quantitative and qualitative data collection instruments, and an experimental procedure with a pretest-posttest control group. The study ultimately enlisted a sample of 125 students randomly allocated to either the experiment group (60 students) or the control group (65 students). The research was conducted in the context of a Research Methodology course, which had adopted the flipped classroom approach. The students in the experiment group engaged with ChatGPT for in-class tasks, while those in the control group used traditional databases and search engines for similar tasks. Data were collected using the Critical Thinking Scale, Creative Thinking Scale, Reflective Thinking Scale, and a student interview guide (semi-structured). The study's findings illustrated that incorporating ChatGPT influenced the students' critical, reflective, and creative thinking skills and their dimensions discernibly. As a result, the study provides suggestions for academics, instructional designers, and researchers working in educational technology.

40	Essel, H. B., Vlachopoulos, D., Tachie-Menson, A., Johnson, E. E. & Baah, P. K. (2022). The impact of a virtual teaching assistant (chatbot) on students' learning in Ghanaian higher education: Revista de Universidad y Sociedad del Conocimiento. *International Journal of Educational Technology in Higher Education*, *19*(57). https://doi.org/https://doi.org/10.1186/s41239-022-00362-6	Chatbot usage is evolving rapidly in various fields, including higher education. The present study's purpose is to discuss the effect of a virtual teaching assistant (chatbot) that automatically responds to a student's question. A pretest–posttest design was implemented, with the 68 participating undergraduate students being randomly allocated to scenarios representing a 2 × 2 design (experimental and control cohorts). Data was garnered utilizing an academic achievement test and focus groups, which allowed more in depth analysis of the students' experience with the chatbot. The results of the study demonstrated that the students who interacted with the chatbot performed better academically comparing to those who interacted with the course instructor. Besides, the focus group data garnered from the experimental cohort illustrated that they were confident about the chatbot's integration into the course. The present study essentially focused on the learning of the experimental cohort and their view regarding interaction with the chatbot. This study contributes the emerging artificial intelligence (AI) chatbot literature to improve student academic performance. To our knowledge, this is the first study in Ghana to integrate a chatbot to engage undergraduate students. This study provides critical information on the use and development of virtual teaching assistants using a zero-coding technique, which is the most suitable approach for organizations with limited financial and human resources.
41	Farazouli, A., Cerratto-Pargman, T., Bolander-Laksov, K. & McGrath, C. (2023). Hello GPT! Goodbye home examination? An exploratory study of AI chatbots impact on university teachers' assessment practices. *Assessment & Evaluation in Higher Education*, 49(3), 363-375. https://doi.org/10.1080/02602938.2023.224	AI chatbots have recently fuelled debate regarding education practices in higher education institutions worldwide. Focusing on Generative AI and ChatGPT in particular, our study examines how AI chatbots impact university teachers' assessment practices, exploring teachers' perceptions about how ChatGPT performs in response to home examination prompts in undergraduate contexts. University teachers (n = 24) from four different departments in humanities and social sciences participated in Turing Test-inspired experiments, where they blindly assessed student and ChatGPT-written

	1676	responses to home examination questions. Additionally, we conducted semi-structured interviews in focus groups with the same teachers examining their reflections about the quality of the texts they assessed. Regarding chatbot-generated texts, we found a passing rate range across the cohort (37.5 - 85.7%) and a chatbot-written suspicion range (14-23%). Regarding the student-written texts, we identified patterns of downgrading, suggesting that teachers were more critical when grading student-written texts. Drawing on post-phenomenology and mediation theory, we discuss AI chatbots as a potentially disruptive technology in higher education practices.
42	Freeman, J. (2024). Provide or punish? Students' views on generative AI in higher education. *HEPI Policy Note*, Issue 51, Higher Education Policy Institute.	-
43	Fuchs, K. & Aguilos, V. (2023). Integrating Artificial Intelligence in Higher Education: Empirical Insights from Students about Using ChatGPT. *International Journal of Information and Education Technology*, *13*(9), 1365-1371. https://doi.org/10.18178/ijiet.2023.13.9.1939	The world has evolved dramatically in the last several decades and continues to do so. ChatGPT has sparked intense speculation and interest among academic stakeholders about how this emerging technology will transform higher education. In particular, there is ambiguity among researchers and teaching professionals on how to deal with the integration of natural language processing models (e.g., ChatGPT) practically and ethically. The use of ChatGPT is an emerging area of interest that presently lacks the perspective of students on this new technology. Thus, an exploratory study design was applied as a methodological frame to investigate the problem empirically. Semi-structured interview data was gathered from current university students to thematically analyze the phenomenon. The thematic analysis revealed three themes: (1) support for autonomous learning, (2) digital and artificial tutoring, and (3) academic misconduct and ethical considerations. The article presents theoretical and managerial implications and advances the discussion about natural language processing models in higher education. Moreover, the study

		contributes to the body of knowledge by closing a theoretical gap in the literature on how university students utilize artificial chatbots for and during their studies.
44	Fütterer, T., Fischer, C., Alekseeva, A., Chen, X., Tate, T., Warschauer, M., & Gerjets, P. (2023). ChatGPT in education: global reactions to AI innovations. *Scientific reports*, *13*(1), 15310-15310. https://doi.org/10.1038/s41598-023-42227-6	The release and rapid diffusion of ChatGPT have caught the attention of educators worldwide. Some educators are enthusiastic about its potential to support learning. Others are concerned about how it might circumvent learning opportunities or contribute to misinformation. To better understand reactions about ChatGPT concerning education, we analyzed Twitter data (16,830,997 tweets from 5,541,457 users). Based on topic modeling and sentiment analysis, we provide an overview of global perceptions and reactions to ChatGPT regarding education. ChatGPT triggered a massive response on Twitter, with education being the most tweeted content topic. Topics ranged from specific (e.g., cheating) to broad (e.g., opportunities), which were discussed with mixed sentiment. We traced that authority decisions may influence public opinions. We discussed that the average reaction on Twitter (e.g., using ChatGPT to cheat in exams) differs from discussions in which education and teaching-learning researchers are likely to be more interested (e.g., ChatGPT as an intelligent learning partner). This study provides insights into people's reactions when new groundbreaking technology is released and implications for scientific and policy communication in rapidly changing circumstances.
45	Fyfe, P. (2023). How to cheat on your final paper: Assigning AI for student writing. *AI and Society*, *38*(4), 1395-1405. https://doi.org/10.1007/s00146-022-01397-z	This paper shares results from a pedagogical experiment that assigns undergraduates to "cheat" on a final class essay by requiring their use of text-generating AI software. For this assignment, students harvested content from an installation of GPT-2, then wove that content into their final essay. At the end, students offered a "revealed" version of the essay as well as their own reflections on the experiment. In this assignment, students were specifically asked to confront the oncoming availability of AI as a writing tool. What are

		the ethics of using AI this way? What counts as plagiarism? What are the conditions, if any, we should place on AI assistance for student writing? And how might working with AI change the way we think about writing, authenticity, and creativity? While students (and sometimes GPT-2) offered thoughtful reflections on these initial questions, actually composing with GPT-2 opened their perspectives more broadly on the ethics and practice of writing with AI. In this paper, I share how students experienced those issues, connect their insights to broader conversations in the humanities about writing and communication, and explain their relevance for the ethical use and evaluation of language models.
46	Gallent-Torres, C., Zapata-González, A., & Ortego-Hernando, J. L. (2023). The impact of Generative Artificial Intelligence in higher education: a focus on ethics and academic integrity. *RELIEVE. Revista Electrónica de Investigación y Evaluación Educativa*, *29*(2). https://doi.org/10.30827/relieve.v29i2.29134	Generative Artificial Intelligence (GAI) has revolutionized the field of higher education, and sparked debates on the potential of tools such as ChatGPT, Humata.ai or Sudowrite in teaching, learning and assessment processes. While their integration in this context offers numerous opportunities (e.g., instant feedback, generation of resources and teaching materials, adaptive learning, interactivity, etc.), it also poses significant challenges that raise ethical and academic integrity concerns, such as the reliability of information, transparency regarding the sources used, or data privacy and security. The aim of this article is to examine the ethical implications of GAI in higher education from a three-fold perspective (students, faculty, and institutions). Additionally, it aims to analyze its impact on aspects related to security, accessibility, sustainability and even new forms of plagiarism and academic fraud that involve impersonation of authorship. Based on the literature review conducted, and in accordance with the ideas proposed by some authors, possibilities for integrating GAI into university classrooms will be explored. This will be achieved through pedagogical practices that guide students in the proper use of GAI and enable faculty to seek new educational approaches. This transformation process will require the establishment of clear

		guidelines that align with ethical codes and integrity policies of higher education institutions. Ultimately, the reflection on how to combine education, innovation, and academic integrity will provide these three groups with a new opportunity to drive improvements in university education.
47	Gao, Y., Wang, Q. K., & Wang, X. C. (2024). Exploring EFL university teachers' beliefs in integrating ChatGPT and other large language models in language education: a study in China. *Asia Pacific Journal of Education, 44(1), 29-44.* https://doi.org/10.1080/02188791.2024.2305173	Nowadays, the prevalence of ChatGPT and other Large Language Models (LLMs) has posed significant challenges into the education field, particularly in English education. In response, this study aimed to investigate the beliefs of 95 EFL university teachers from Chinese universities regarding the integration of LLMs in language education, as well as the relationships between their beliefs and other factors. The study yielded several findings: (1) According to the quantitative and qualitative results, we revealed several concerns among Chinese EFL university teachers regarding LLMs integration, such as neglection of traditional learning resources, academic integrity, and excessive reliance. (2) Previous experiences with LLMs, frequency of LLMs use, and self-evaluation on stages of LLMs integration all played vital roles in shaping university teachers' beliefs in integrating LLMs in language education. (3) No significant correlation was observed between university teachers' beliefs in integrating LLMs in language education and the availability of IT personnel. (4) No significant correlation was observed between university teachers' beliefs in integrating LLMs in language education their evaluation on IT infrastructure. This research has provided some insights into university teachers' beliefs in ChatGPT and other LLMs to promote effective policies and strategies in the digital era.
48	Gibson, D., Kovanovic, V., Ifenthaler, D., Dexter, S., & Feng, S. (2023). Learning theories for artificial intelligence promoting learning processes. *British Journal of Educational Technology*, *54*(5), 1125-1146.	This paper discusses a three-level model that synthesizes and unifies existing learning theories to model the roles of artificial intelligence (AI) in promoting learning processes. The model, drawn from developmental psychology, computational biology, instructional design, cognitive science, complexity and sociocultural theory, includes a causal learning mechanism that explains how

https://doi.org/10.1111/bjet.13341	learning occurs and works across micro, meso and macro levels. The model also explains how information gained through learning is aggregated, or brought together, as well as dissipated, or released and used within and across the levels. Fourteen roles for AI in education are proposed, aligned with the model's features: four roles at the individual or micro level, four roles at the meso level of teams and knowledge communities and six roles at the macro level of cultural historical activity. Implications for research and practice, evaluation criteria and a discussion of limitations are included. Armed with the proposed model, AI developers can focus their work with learning designers, researchers and practitioners to leverage the proposed roles to improve individual learning, team performance and building knowledge communities. Practitioner notes What is already known about this topic Numerous learning theories exist with significant cross-over of concepts, duplication and redundancy in terms and structure that offer partial explanations of learning. Frameworks concerning learning have been offered from several disciplines such as psychology, biology and computer science but have rarely been integrated or unified. Rethinking learning theory for the age of artificial intelligence (AI) is needed to incorporate computational resources and capabilities into both theory and educational practices. What this paper adds A three-level theory (ie, micro, meso and macro) of learning that synthesizes and unifies existing theories is proposed to enhance computational modelling and further develop the roles of AI in education. A causal model of learning is defined, drawing from developmental psychology, computational biology, instructional design, cognitive science and sociocultural theory, which explains how learning occurs and works across the levels. The model explains how information gained through learning is aggregated, or brought together, as well as dissipated, or released and used within and across the levels. Fourteen roles for AI in education are aligned with the model's features: four roles at the

		individual or micro level, four roles at the meso level of teams and knowledge communities and six roles at the macro level of cultural historical activity. Implications for practice and policy Researchers may benefit from referring to the new theory to situate their work as part of a larger context of the evolution and complexity of individual and organizational learning and learning systems. Mechanisms newly discovered and explained by future researchers may be better understood as contributions to a common framework unifying the scientific understanding of learning theory.
49	Gibson, P. (2023). Enacting Empowerment Through an Automated Teaching Event: A Posthuman and Political Perspective. *Postdigital Science and Education*, *5*(1), 77-99. https://doi.org/https://doi.org/10.1007/s42438-022-00346-9	This paper problematises the way that the power of the automated teacher is understood by arguing that the question of power is not a humanist one, concerned with human/technology oppositions, but rather, it can be understood as a posthuman question, concerned with automated teaching as an ethically regulated process. Research has largely ignored the political aspect of these covert shifts of power from humans to technology. This paper reports on a chatbot that was developed to co-teach with a human teacher at a UK University. 'Flors' the Teacherbot imbues posthuman critical theory which helps to understand automated teaching in a more relational, rather than a transmissive, way. Cartographies draw upon a qualitative analysis of the data to map the political experiences of the students as they collectively author a narrative with(in) Flors. It is at a somewhat whimsical juncture, where Flors remixes the story, that Flors' agential capacity as a co-author is encountered. Through such intra-relational teaching moments, student expressions of adequate understandings around the restrictive and empowering forces emerge. I suggest that, when the political structures within an automated teacher are acknowledged, it is possible to understand authority as something other than a one-directional form of control, but rather a relational encounter with freedom.
50	Gombert, S., Fink, A., Giorgashvili, T., Jivet,	Various studies empirically proved the value of highly informative feedback for

	I., Di Mitri, D., Yau, J., Frey, A. & Drachsler, H. (2024). From the Automated Assessment of Student Essay Content to Highly Informative Feedback: a Case Study. *International Journal of Artificial Intelligence in Education*. https://doi.org/10.1007/s40593-023-00387-6	enhancing learner success. However, digital educational technology has yet to catch up as automated feedback is often provided shallowly. This paper presents a case study on implementing a pipeline that provides German-speaking university students enrolled in an introductory-level educational psychology lecture with content-specific feedback for a lecture assignment. In the assignment, students have to discuss the usefulness and educational grounding (i.e., connection to working memory, metacognition or motivation) of ten learning tips presented in a video within essays. Through our system, students received feedback on the correctness of their solutions and content areas they needed to improve. For this purpose, we implemented a natural language processing pipeline with two steps: (1) segmenting the essays and (2) predicting codes from the resulting segments used to generate feedback texts. As training data for the model in each processing step, we used 689 manually labelled essays submitted by the previous student cohort. We then evaluated approaches based on GBERT, T5, and bag-of-words baselines for scoring them. Both pipeline steps, especially the transformer-based models, demonstrated high performance. In the final step, we evaluated the feedback using a randomised controlled trial. The control group received feedback as usual (essential feedback), while the treatment group received highly informative feedback based on the natural language processing pipeline. We then used a six items long survey to test the perception of feedback. We conducted an ordinary least squares analysis to model these items as dependent variables, which showed that highly informative feedback had positive effects on helpfulness and reflection.
51	Guerrero, T. A., & Wiley, J. (2019, June 25–29). Using "Idealized Peers" for Automated Evaluation of Student Understanding in an Introductory Psychology Course. *20th*	Teachers may wish to use open-ended learning activities and tests, but they are burdensome to assess compared to forced-choice instruments. At the same time, forced-choice assessments suffer from issues of guessing (when used as tests) and may not encourage valuable behaviors of construction and

	International Conference on Artificial Intelligence in Education (AIED), Chicago.	generation of understanding (when used as learning activities). Previous work demonstrates that automated scoring of constructed responses such as summaries and essays using latent semantic analysis (LSA) can successfully predict human scoring. The goal for this study was to test whether LSA can be used to generate predictive indices when students are learning from social science texts that describe theories and provide evidence for them. The corpus consisted of written responses generated while reading textbook excerpts about a psychological theory. Automated scoring indices based in response length, lexical diversity of the response, the LSA match of the response to the original text, and LSA match to an idealized peer were all predictive of human scoring. In addition, student understanding (as measured by a posttest) was predicted uniquely by the LSA match to an idealized peer.
52	Guo, K. & Wang, D. (2023). To resist it or to embrace it? Examining ChatGPT's potential to support teacher feedback in EFL writing. *Education and Information Technologies*, *29*, 8435-8463. https://doi.org/10.1007/s10639-023-12146-0	ChatGPT, the newest pre-trained large language model, has recently attracted unprecedented worldwide attention. Its exceptional performance in understanding human language and completing a variety of tasks in a conversational way has led to heated discussions about its implications for and use in education. This exploratory study represents one of the first attempts to examine the possible role of ChatGPT in facilitating the teaching and learning of writing English as a Foreign Language (EFL). We examined ChatGPT's potential to support EFL teachers' feedback on students' writing. To reach this goal, we first investigated ChatGPT's performance in generating feedback on EFL students' argumentative writing. Fifty English argumentative essays composed by Chinese undergraduate students were collected and used as feedback targets. ChatGPT and five Chinese EFL teachers offered feedback on the content, organisation, and language aspects of the essays. We compared ChatGPT- and teacher-generated feedback in terms of their amount and type. The results showed that ChatGPT produced a significantly larger amount of feedback than teachers and that compared with teacher feedback, which

		mainly focused on content-related and language-related issues, ChatGPT distributed its attention relatively equally among the three feedback foci (i.e., content, organisation, and language). Our results also indicated that ChatGPT and teachers displayed tendencies towards using different feedback types when evaluating different aspects of students' writing. Additionally, we examined EFL teachers' perceptions of using ChatGPT-generated feedback to support their own feedback. The five teachers reported both positive and negative perceptions of the features of ChatGPT feedback and the relation between ChatGPT and teacher feedback. To foster EFL students' writing skills, we suggest that teachers collaborate with ChatGPT in generating feedback on student writing.
53	Gupta, A., Atef, Y., Mills, A. & Bali, M. (2024). Assistant, Parrot, or Colonizing Loudspeaker? ChatGPT Metaphors for Developing Critical AI Literacies. *Open Praxis*, *16*(1), 37-53. https://doi.org/10.55982/openpraxis.16.1.631	This study explores how discussing metaphors for AI can help build awareness of the frames that shape our understanding of AI systems, particularly large language models (LLMs) like ChatGPT. Given the pressing need to teach "critical AI literacy", discussion of metaphor provides an opportunity for inquiry and dialogue with space for nuance, playfulness, and critique. Using a collaborative autoethnographic methodology, we analyzed metaphors from a range of sources, and reflected on them individually according to seven questions, then met and discussed our interpretations. We then analyzed how our reflections contributed to the three kinds of literacies delineated in Selber's multiliteracies framework: functional, critical and rhetorical. These allowed us to analyze questions of ethics, equity, and accessibility in relation to AI. We explored each metaphor along the dimension of whether or not it was promoting anthropomorphizing, and to what extent such metaphors imply that AI is sentient. Our findings highlight the role of metaphor reflection in fostering a nuanced understanding of AI, suggesting that our collaborative autoethnographic approach as well as the heuristic model of plotting AI metaphors on dimensions of anthropomorphism and multiliteracies, might be

		useful for educators and researchers in the pursuit of advancing critical AI literacy.
54	Hammond, K. M., Lucas, P., Hassouna, A. & Brown, S. (2023). A Wolf in Sheep's Clothing? Critical Discourse Analysis of Five Online Automated Paraphrasing Sites. *Journal of University Teaching and Learning Practice*, *20*(7). https://doi.org/10.53761/1.20.7.08	Research on academic integrity used to focus more on student character and behaviour. Now this research includes wider viewing of this issue as a current teaching and learning challenge which requires pedagogical intervention. It is now the responsibility of staff and institutions to treat the creation of a learning environment supporting academic integrity as a teaching and learning priority. Plagiarism by simply copying other people's work is a well-known misconduct which undermines academic integrity; moreover, technological developments have evolved plagiarism to include the generation and copying of computer-generated text. Automated paraphrasing tool (APT) websites have become increasingly common, offering students machine-generated rephrased text that students input from their own or others' writing. These developments present a creeping erosion of academic integrity under the guise of legitimate academic assistance. This also has implications for arrival of large language model (LLM) generative AI tools. In accessing these sites, students must discern what is a legitimate use of the tool and what may constitute breaching academic integrity. This study critically analysed the text from five online paraphrasing websites to examine the discourses used to legitimise and encourage APT use in both appropriate and inappropriate ways. We conceptualised these competing discourses using Sheep and Wolf metaphors. In addition, we offer a metaphor of the Educator as a Shepherd to become aware of APT website claims and assist students to develop critical language awareness when exposed to these sites. Educators can assist students with this through knowledge of how these sites use language to entice users to circumvent learning.
55	Henry, E. S. (2023). Hey ChatGPT! Write Me an Article about Your Effects on Academic	-

	Writing. *Anthropology now*, *15*(1), 79-83. https://doi.org/10.1080/19428200.2023.2230097	
56	Hu, Y. H., Fu, J. S. & Yeh, H. C. (2023). Developing an early-warning system through robotic process automation: Are intelligent tutoring robots as effective as human teachers? *Interactive Learning Environments, 32*(6), 2803-2816. https://doi.org/10.1080/10494820.2022.2160467	Artificial intelligence aims to restructure and process re-engineering education and teaching processes and accelerate the evolution of the whole education system from information to intelligence. Robotic Process Automation (RPA) robots learn by observing people at work, analyzing user processes repeatedly, and adjusting or correcting automated processes. By using Natural Language Processing (NLP) and Machine Learning (ML), knowledge representation, inference, large-scale parallel computing, and Rapid Domain Adaptation, RPA robots can automatically extract the data needed for decision-making and continuously learn from users' feedback. We have used RPA and predictive analytics to provide distance learning students with the Intelligent Tutoring Robot (ITR), which can provide an automatic response. By optimizing the ITR in the above context, we have examined the feasibility of transforming a prediction model, using a student learning database, into an early-warning system. This article adopts the randomized control-group pretest-posttest design, dividing 123 students into a control group to describe interactions between ITR and students and experimental groups to describe interactions between human teachers and students. The findings present no significant difference between the control and the experimental groups in terms of academic performance, however higher average marks were achieved in the former group.
57	Huang, J., & Zhou, D. (2024). A scalable real-time computer vision system for student posture detection in smart classrooms. *Education and Information Technologies*, *29*(1), 917-937.	Technological advancements have ushered in a new era of global educational development. Artificial Intelligence (AI) holds the potential to enhance teaching effectiveness and foster educational innovation. By utilizing student posture as a proxy, computer vision technology can accurately gauge levels of student engagement. While previous efforts have focused on refining posture

		classification models, this study uniquely addresses the comprehensive implementation of a real-time posture detection workflow, encompassing software, hardware, and network aspects. The proposed posture detection system leverages surveillance cameras equipped with cutting-edge computer vision technology, specifically employing the Open Visual Inference & Neural Network Optimization (Open VINO) model for precise student posture detection. Data transmission is facilitated using the Message Queuing Telemetry Transport (MQTT) protocol, effectively establishing a seamless posture detection workflow within the classroom setting. To validate the system, video recordings from a real teaching environment (a fifth-grade class in the Chinese compulsory education system) were analyzed, resulting in posture classifications with impressive accuracies of 0.933 for standing, 0.772 for sitting, and 0.959 for hand-raising. Achieving a frame processing time ranging from 109 to 758 milliseconds, the system efficiently delivers real-time posture data to educators. Consequently, the posture detection system developed in this study possesses the capability to intelligently monitor student postures in the classroom, with the potential to enhance teaching quality in smart classrooms.
58	Jafari, F. & Keykha, A. (2023). Identifying the opportunities and challenges of artificial intelligence in higher education: a qualitative study. *Journal of Applied Research in Higher Education, 16*(4), 1228-1245. https://doi.org/10.1108/JARHE-09-2023-0426	Purpose: This research was developed to identify artificial intelligence (AI) opportunities and challenges in higher education. Design/methodology/approach: This qualitative research was developed using the six-step thematic analysis method (Braun and Clark, 2006). Participants in this study were AI PhD students from Tehran University in 2022–2023. Purposive sampling was used to select the participants; a total of 15 AI PhD students, who were experts in this field, were selected and interviews were conducted. Findings: The authors considered the opportunities that AI creates for higher education in eight secondary subthemes (for faculty members, for students, in the teaching and learning process, for assessment, the

https://doi.org/https://doi.org/10.1007/s10639-023-12365-5

		development of educational structures, the development of research structures, the development of management structures and the development of academic culture). Correspondingly, The authors identified and categorized the challenges that AI creates for higher education. Research limitations/implications: Concerning the intended research, several limitations are significant. First, the statistical population was limited, and only people with characteristics such as being PhD students, studying at Tehran University and being experts in AI could be considered the statistical population. Second, caution should be exercised when generalizing the results due to the limited statistical population (PhD students from Tehran University). Third, the problem of accessing some students due to their participation in research grants, academic immigration, etc. Originality/value: The innovation of the current research is that the authors identified the opportunities and challenges that AI creates for higher education at different levels. The findings of this study also contribute to the enrichment of existing knowledge in the field regarding the effects of AI on the future of higher education, as researchers need more understanding of AI developments in the future of higher education.
59	Jenks, A., Lowman, C., & Straughn, I. (2024). AI for Learning: Experiments from Three Anthropology Classrooms. *Anthropology News*, American Anthropological Association. https://www.anthropology-news.org/articles/ai-for-learning-experiments-from-three-anthropology-classrooms/	-
60	Jin, S.-H., Im, K., Yoo, M., Roll, I., & Seo, K.	Self-regulated learning (SRL) is crucial for helping students attain high

	(2023). Supporting students' self-regulated learning in online learning using artificial intelligence applications: Revista de Universidad y Sociedad del Conocimiento. *International Journal of Educational Technology in Higher Education*, *20*(1), 37. https://doi.org/https://doi.org/10.1186/s412 39-023-00406-5	academic performance and achieve their learning objectives in the online learning context. However, learners often face challenges in properly applying SRL in online learning environments. Recent developments in artificial intelligence (AI) applications have shown promise in supporting learners' self-regulation in online learning by measuring and augmenting SRL, but research in this area is still in its early stages. The purpose of this study is to explore students' perceptions of the use of AI applications to support SRL and to identify the pedagogical and psychological aspects that they perceive as necessary for effective utilization of those AI applications. To explore this, a speed dating method using storyboards was employed as an exploratory design method. The study involved the development of 10 AI application storyboards to identify the phases and areas of SRL, and semi-structured interviews were conducted with 16 university students from various majors. The results indicated that learners perceived AI applications as useful for supporting metacognitive, cognitive, and behavioral regulation across different SRL areas, but not for regulating motivation. Next, regarding the use of AI applications to support SRL, learners requested consideration of three pedagogical and psychological aspects: learner identity, learner activeness, and learner position. The findings of this study offer practical implications for the design of AI applications in online learning, with the aim of supporting students' SRL.
61	Kaiss, W., Mansouri, K. & Poirier, F. (2023). Effectiveness of an Adaptive Learning Chatbot on Students' Learning Outcomes Based on Learning Styles. *International Journal of Emerging Technologies in Learning*, *18*(13), 250-261. https://doi.org/10.3991/ijet.v18i13.39329	Intelligent learning systems provide relevant learning materials to students based on their individual pedagogical needs and preferences. However, providing personalized learning objects based on learners' preferences, such as learning styles which are particularly important for the recommendation of learning objects, re-mains a challenge. Recommending the most appropriate learning objects for learners has always been a challenge in the field of e-learning. This challenge has driven educators and researchers to implement

		new ideas to help learners improve their learning experience and knowledge. New solutions use artificial intelligence (AI) techniques such as machine learning (ML) and natural language processing (NLP). In this paper, we propose and develop a new personalization approach for recommendation that implements the adaptation of learning objects according to the learners' learning style mainly focused on the use of a chatbot, named LearningPartnerBot, which will be integrated into the Moodle platform. We use the Felder-Silverman Learning Styles Model to determine learners' learning styles in order to recommend learning objects, and also to overcome the cold start problem. A chatbot is an automated communication tool that attempts to imitate a conversation by detecting the intentions of its user. The proposed LearningPartnerBot should be able to answer learners' questions in real time and provide a relevant set of suggestions according to their needs.
62	Kelly, A., Sullivan, M., & Strampel, K. (2023). Generative artificial intelligence: University student awareness, experience, and confidence in use across disciplines. *Journal of University Teaching and Learning Practice*, *20*(6). https://doi.org/10.53761/1.20.6.12	The global higher education sector has been significantly disrupted by the proliferation of generative artificial intelligence tools such as ChatGPT, especially in relation to its implications for assessment. However, few studies to date have explored student perspectives on these tools. This article reports on one of the first large-scale quantitative studies of student views on generative artificial intelligence at an Australian university (n = 1,135). When the survey was conducted, most students had low knowledge, experience, and confidence in using these tools. These results varied across disciplines and across some student sub-groups, such as mature-age students and international students. Confidence appeared to increase with experience, although the data also revealed a portion of students that have never used these tools yet still felt confident in using them. In exploring these results, this article aims to shed new light on this fast-evolving landscape and inform the future direction of supporting students to engage with generative artificial intelligence tools appropriately. Practitioner Notes 1. Students need to be

		explicitly taught how to use generative artificial intelligence tools appropriately. 2. Learning activities that build student skills in using generative artificial intelligence should be embedded into curricula. 3. The ways in which students learn how to use generative artificial intelligence will need to vary based on the needs of each disciplinary area. 4. Student reports of self-confidence in using generative artificial intelligence may be overstated. 5. Assessment tasks need to be redesigned to reduce the academic integrity risks associated with using generative artificial intelligence.
63	Kenwright, B. (2023). Is it the end of undergraduate dissertations? Exploring the advantages and challenges of generative AI models in education. In S. Hai-Jew (Ed.), *Generative AI in Teaching and Learning* (pp. 46-65). IGI Global. https://doi.org/10.4018/979-8-3693-0074-9.ch003	This chapter delves into the intriguing realm of generative artificial intelligence (AI) models and their potential impact on undergraduate dissertations in the field of education. As AI continues to advance and permeate various aspects of our lives, the educational landscape is not immune to its transformative influence. The chapter begins by providing an overview of generative AI models, including their underlying principles and techniques such as deep learning, natural language processing, and neural networks. It then explores how these models can be harnessed to generate written content that is coherent, creative, and relevant, raising the question of whether undergraduate dissertations, as we know them, are destined to become obsolete. Advantages of employing generative AI models in education are scrutinized, highlighting their potential to enhance the efficiency and quality of student work.
64	Kim, M. & Adlof, L. (2024). Adapting to the Future: ChatGPT as a Means for Supporting Constructivist Learning Environments. *TechTrends*, *68*(1), 37-46. https://doi.org/10.1007/s11528-023-00899-x	ChatGPT, an artificial intelligence (AI) language model, holds significant promise for improving the quality and efficiency of teaching and learning. However, its potential challenges and disruptions in education systems require further investigation for a deeper understanding and mitigation. Given that ChatGPT is already being utilized and complete prohibition is unlikely, it becomes crucial to consider how educators can harness its potential to enhance teaching and learning experiences, assuming successful

		implementation. This article explores the potential benefits and disruptions within the current education system, and proposes strategies for integrating ChatGPT into educational settings from a constructivist learning perspective. It focuses on four educational system attributes: context, collaboration, conversation, and construction. The article particularly emphasizes the utilization of ChatGPT as a means, rather than an end, to enhance student learning within a constructivist learning environment. This approach aims to address present concerns and challenges effectively.
65	Kohnke, L. (2022). A qualitative exploration of student perspectives of chatbot use during emergency remote teaching. *International Journal of Mobile Learning and Organisation*, *16*(4), 475-488. https://doi.org/10.1504/IJMLO.2022.125966	In this study, a chatbot was developed using Dialogflow Messenger to support learning during face-to-face class suspension due to COVID-19. The pandemic has changed how students and teachers engage with course content and use technologies. By working with the chatbot, language for specific purposes students received guidance and support to complete homework and assignments during the face-to-face class suspension. Twenty-two (22) students participated in this interpretive qualitative study, and data were collected using focus group interviews and analysed thematically. The findings indicate that students found the pedagogical chatbot supportive by providing human-like interactions, which enhanced their sense of engagement. Participants also indicated that their interactions with the chatbot eased their sense of isolation, which had a positive impact on their learning. The findings provide insight and enrich existing knowledge for integrating chatbots into teaching and they discuss the advantages of learning future chatbot design for language acquisition.
66	Kong, S.-C., Cheung, W. M.-Y. & Zhang, G. (2023). Evaluating an Artificial Intelligence Literacy Programme for Developing University Students' Conceptual Understanding, Literacy, Empowerment and Ethical	Emerging research is highlighting the importance of fostering artificial intelligence (AI) literacy among educated citizens of diverse academic backgrounds. However, what to include in such literacy programmes and how to teach literacy is still under-explored. To fill this gap, this study designed and evaluated an AI literacy programme based on a multi-dimensional conceptual

	Awareness. *Educational Technology & Society*, *26*(1), 16-30.	framework, which developed participants' conceptual understanding, literacy, empowerment and ethical awareness. It emphasised conceptual building, highlighted project work in application development and initiated teaching ethics through application development. Thirty-six university students with diverse academic backgrounds joined and completed this programme, which included 7 hours on machine learning, 9 hours on deep learning and 14 hours on application development. Together with the project work, the results of the tests, surveys and reflective writings completed before and after these courses indicate that the programme successfully enhanced participants' conceptual understanding, literacy, empowerment and ethical awareness. The programme will be extended to include more participants, such as senior secondary school students and the general public. This study initiates a pathway to lower the barrier to entry for AI literacy and addresses a public need. It can guide and inspire future empirical and design research on fostering AI literacy among educated citizens of diverse backgrounds.
67	Kong, S. C., Zhang, G., & Cheung, M. Y. (2022). Pedagogical Delivery and Feedback for an Artificial Intelligence Literacy Programme for University Students with Diverse Academic Backgrounds: Flipped Classroom Learning Approach with Project-based Learning. *Bulletin of the Technical Committee on Learning Technology*, *22*(1), 8-14.	There have been few systematic discussions of curriculum design and pedagogical delivery to promote artificial intelligence (AI) literacy to university students of diverse academic backgrounds. This study introduces the curriculum and pedagogy of an AI literacy programme for university students, and collects and presents feedback from the participants on its effectiveness. The course focused on machine learning, deep learning and developing AI applications. It was delivered using a flipped classroom learning approach with project-based learning. Feedback from the participants, collected through a flipped classroom survey, focus group interviews and reflective writing, showed that they enjoyed the flipped classroom learning approach, while the project-based learning helped them to develop concepts and ethical awareness concerning AI. It is recommended that the programme be extended to include more participants, such as senior secondary school students and the public.

		This study initiates a pathway for the delivery of AI literacy programmes. It may guide and inspire future empirical and design research on fostering AI literacy among citizens from diverse academic backgrounds.
68	Kramm, N. & McKenna, S. (2023). AI amplifies the tough question: What is higher education really for? *Teaching in Higher Education*, *28*(8), 2173-2178. https://doi.org/10.1080/13562517.2023.2263839	The dominant response within higher education to the emergence of free online text- and graphic-generating software has been a concern with identifying AI usage in students' work. We argue that this is both a waste of time and neglects our educational responsibilities. A police-catch-punish approach to AI, as with the use of this process in relation to plagiarism, ignores the broader purposes of higher education. If higher education is understood as being a space for nurturing transformative relationships with knowledge, AI can be harnessed to enhance learning experiences. Such an approach would also enable a critical understanding of the limitations and ethical deliberations around AI usage. Those critical academics who emphasise transformative learning over surveillance-driven approaches are likely to foster more meaningful higher education experiences.
69	Lai, C.-L. (2021). Exploring University Students' Preferences for AI-Assisted Learning Environment: A Drawing Analysis with Activity Theory Framework. *Educational Technology & Society*, *24*(4), 1-15.	This study employed drawing and co-word analysis techniques to explore students' preferences for AI-assisted learning environments. A total of 64 teacher education students from a university in Taiwan participated in the study. The participants were asked to describe their perceptions of AI-assisted learning in the form of drawings and text descriptions. In order to analyze the content of the students' drawings, a coding scheme was developed based on the activity theory framework. Based on the results of the analysis, it was found that students placed more importance on personalized guidance and appropriate learning content provision. In addition, students acknowledged that AI technology can be used flexibly in different fields and situations. Interestingly, more than half of the students agreed that robots play important roles in AI-assisted learning. This indicates that the students expected a social AI learning companion. However, it was found that students' expectations of

		an AI learning environment were less connected to the real environment and did not reveal learning activities with higher order thinking. In addition to the need for accurate and fast AI computing, this result indicated that professional instructional guidance is also an expectation that students have of AI education.
70	Lange, J. (2021). Platform stabilization: an autoethnographic exploration of the multiple relations and role of data behind the interface of online tutoring software. *Critical Studies in Education*, *62*(1), 82-96. https://doi.org/10.1080/17508487.2020.1786708	The paper considers digital tutoring platforms as commercial products in the shadow education sector. In particular, it focuses on relatively new platforms which purportedly act as tutors themselves: web-based learning software providing "intelligent tutoring systems.' The question is not how effective and beneficial these platforms are for learning success. Following science and technology studies, the focus is on product design and its role as an actor in a network of relations. Autoethnographic interaction with a paradigmatic platform is used to show a variety of inscriptions and translations. The classifications, standardizations and quantitative calculations that emerge here are analyzed as practices for generating data, which in turn stabilize the platform as a specific ontological configuration. The data give the impression of being personal. On closer examination, however, they are the product of manifold relations between different actors in the network.
71	Lawson, A. P., Mayer, R. E., Adamo-Villani, N., Benes, B., Xingyu, L., & Cheng, J. (2021). Do Learners Recognize and Relate to the Emotions Displayed By Virtual Instructors? *International Journal of Artificial Intelligence in Education*, *31*(1), 134-153. https://doi.org/https://doi.org/10.1007/s40593-021-00238-2	There has been much research on the effectiveness of animated pedagogical agents in an educational context, however there is little research about how the emotions they display contribute to a learner's understanding of the lesson. The positivity principle suggests that learners should learn better from instructors with positive emotions compared to those with negative emotions. Additionally, the media equation theory (Reeves and Nass 1996) would suggest this principle should be true for animated instructors as well. In an experiment, students viewed a lesson on binomial probability taught by an animated instructor who was happy (positive/active), content (positive/passive), frustrated (negative/active), or bored (negative/passive).

		Learners were able to recognize positive from negative emotions, rated the positive instructors as better at facilitating learning, more credible, more human-like, and more engaging. Additionally, learners who saw positive instructors indicated they tried to pay attention to the lesson and enjoyed the lesson more than those who saw negative instructors. However, learners who saw positive instructors did not perform better on a delayed test than those who saw negative instructors. This suggests that learners recognize and react to the emotions of the virtual instructors, but research is needed to determine how the emotions displayed by virtual instructors can promote better learning outcomes.
72	Lee, H.-Y., Chen, P.-H., Wang, W.-S., Huang, Y.-M. & Wu, T.-T. (2024). Empowering ChatGPT with guidance mechanism in blended learning: effect of self-regulated learning, higher-order thinking skills, and knowledge construction. *International Journal of Educational Technology in Higher Education*, *21*(1), 16-28. https://doi.org/10.1186/s41239-024-00447-4	In the evolving landscape of higher education, challenges such as the COVID-19 pandemic have underscored the necessity for innovative teaching methodologies. These challenges have catalyzed the integration of technology into education, particularly in blended learning environments, to bolster self-regulated learning (SRL) and higher-order thinking skills (HOTS). However, increased autonomy in blended learning can lead to learning disruptions if issues are not promptly addressed. In this context, OpenAI's ChatGPT, known for its extensive knowledge base and immediate feedback capability, emerges as a significant educational resource. Nonetheless, there are concerns that students might become excessively dependent on such tools, potentially hindering their development of HOTS. To address these concerns, this study introduces the Guidance-based ChatGPT-assisted Learning Aid (GCLA). This approach modifies the use of ChatGPT in educational settings by encouraging students to attempt problem-solving independently before seeking ChatGPT assistance. When engaged, the GCLA provides guidance through hints rather than direct answers, fostering an environment conducive to the development of SRL and HOTS. A randomized controlled trial (RCT) was employed to examine the impact of the GCLA compared to traditional ChatGPT use in a

		foundational chemistry course within a blended learning setting. This study involved 61 undergraduate students from a university in Taiwan. The findings reveal that the GCLA enhances SRL, HOTS, and knowledge construction compared to traditional ChatGPT use. These results directly align with the research objective to improve learning outcomes through providing guidance rather than answers by ChatGPT. In conclusion, the introduction of the GCLA has not only facilitated more effective learning experiences in blended learning environments but also ensured that students engage more actively in their educational journey. The implications of this study highlight the potential of ChatGPT-based tools in enhancing the quality of higher education, particularly in fostering essential skills such as self-regulation and HOTS. Furthermore, this research offers insights regarding the more effective use of ChatGPT in education.
73	Limna, P., Kraiwanit, T., Jangjarat, K., Klayklung, P., & Chocksathaporn, P. (2023). The use of ChatGPT in the digital era: Perspectives on chatbot implementation. *Journal of Applied Learning and Teaching*, 6(1), 64-74. https://doi.org/10.37074/jalt.2023.6.1.32	The rapid advancement of technology has led to the integration of ChatGPT, an artificial intelligence (AI)-powered chatbot, in various sectors, including education. This research aims to explore the perceptions of educators and students on the use of ChatGPT in education during the digital era. This study adopted a qualitative research approach, using in-depth interviews to gather data. A purposive sampling technique was used to select ten educators and 15 students from different academic institutions in Krabi, Thailand. The data collected was analysed using content analysis and NVivo. The findings revealed that educators and students generally have a positive perception of using ChatGPT in education. The chatbot was perceived to be a helpful tool for providing immediate feedback, answering questions, and providing support to students. Educators noted that ChatGPT could reduce their workload by answering routine questions and enabling them to focus on higher-order tasks. However, the findings also showed some concerns regarding the use of ChatGPT in education. Participants were worried about the accuracy of

		information provided by the chatbot and the potential loss of personal interaction with teachers. The need for privacy and data security was also raised as a significant concern. The results of this study could help educators and policymakers make informed decisions about using ChatGPT in education.
74	Loos, E., Gröpler, J. & Goudeau, M.-L. S. (2023). Using ChatGPT in Education: Human Reflection on ChatGPT's Self-Reflection. *Societies*, *13*(8), 196. https://doi.org/10.3390/soc13080196	ChatGPT is a fascinating AI text generator tool. It is a language model developed by OpenAI, a research and deployment company with the mission, according to OpenAI's website: "to ensure that artificial general intelligence benefits all of humanity". ChatGPT is able to generate human-like texts. But how does it work? What about the quality of the texts it provides? And is it capable of being self-reflective? Information sources must be efficient, effective and reliable in education, in order to enhance students' learning process. For this reason, we started a dialogue with ChatGPT-3 while using, among others, a SWOT analysis it generated about its own functioning in an educational setting. This enabled us, as human authors, to analyze the extent to which this AI system is able to practice self-reflection. Finally, the paper sketches implications for education and future research.
75	Lozić, E. & Štular, B. (2023). Fluent but not factual: A comparative analysis of chatgpt and other ai chatbots' proficiency and originality in scientific writing for humanities. *Future Internet*, *15*(10), 336.	Historically, mastery of writing was deemed essential to human progress. However, recent advances in generative AI have marked an inflection point in this narrative, including for scientific writing. This article provides a comprehensive analysis of the capabilities and limitations of six AI chatbots in scholarly writing in the humanities and archaeology. The methodology was based on tagging AI-generated content for quantitative accuracy and qualitative precision by human experts. Quantitative accuracy assessed the factual correctness in a manner similar to grading students, while qualitative precision gauged the scientific contribution similar to reviewing a scientific article. In the quantitative test, ChatGPT-4 scored near the passing grade (-5) whereas ChatGPT-3.5 (-18), Bing (-21) and Bard (-31) were not far behind. Claude 2 (-75) and Aria

		(−80) scored much lower. In the qualitative test, all AI chatbots, but especially ChatGPT-4, demonstrated proficiency in recombining existing knowledge, but all failed to generate original scientific content. As a side note, our results suggest that with ChatGPT-4, the size of large language models has reached a plateau. Furthermore, this paper underscores the intricate and recursive nature of human research. This process of transforming raw data into refined knowledge is computationally irreducible, highlighting the challenges AI chatbots face in emulating human originality in scientific writing. Our results apply to the state of affairs in the third quarter of 2023. In conclusion, while large language models have revolutionised content generation, their ability to produce original scientific contributions in the humanities remains limited. We expect this to change in the near future as current large language model-based AI chatbots evolve into large language model-powered software.
76	Lu, Q., Yao, Y., Xiao, L. H., Yuan, M. Z., Wang, J., & Zhu, X. H. (2024). Can ChatGPT effectively complement teacher assessment of undergraduate students' academic writing? *Assessment & Evaluation in Higher Education*, *49*(5), 616–633. https://doi.org/10.1080/02602938.2024.2301722	The integration of ChatGPT as a supplementary tool for writing instruction has gained traction. However, uncertainties persist regarding how ChatGPT complements teacher assessment and the overall effectiveness of this combined approach. To address this, we conducted a mixed-methods investigation involving 46 undergraduate students from a research university in southern China, engaging them in a Chinese academic writing task. The intraclass correlation coefficient results revealed ChatGPT's efficiency in scoring students' writing, showing moderate to good consistency with teacher evaluations. A paired sample t-test unveiled significant differences in feedback quantity and types between ChatGPT and teacher assessments. Drawing from both interview data and quantitative findings, the study uncovers three ways in which ChatGPT complements teacher assessment, benefiting students with various writing proficiency levels: (1) fostering deeper comprehension of teacher assessments among students, (2) encouraging students to make

		judgments regarding feedback, and (3) promoting independent thinking about revisions. This study contributes to a more comprehensive understanding of the role of ChatGPT within the context of a combined assessment approach. It underscores that certain inherent weaknesses in ChatGPT's functioning can paradoxically lead to favorable outcomes. By shedding light on the synergy between ChatGPT and teacher assessments, this research seeks to inform and enhance writing instruction in higher education.
77	Luckin, R., Cukurova, M., Kent, C. & du Boulay, B. (2022). Empowering educators to be AI-ready. *Computers and education. Artificial intelligence*, *3*, 100076. https://doi.org/10.1016/j.caeai.2022.100076	In this paper, we present the concept of AI Readiness, along with a framework for developing AI Readiness training. 'AI Readiness' can be framed as a contextualised way of helping people to understand AI, in particular, data-driven AI. The nature of AI Readiness training is not the same as merely learning about AI. Rather, AI Readiness recognises the diversity of the professions, workplaces and sectors for whom AI has a potential impact. For example, AI Readiness for lawyers may be based on the same principles as AI Readiness for Educators. However, the details will be contextualised differently. AI Readiness recognises that such contextualisation is not an option: it is essential due to the multiple intricacies, sensitivities and variations between different sectors and their settings, which all impact the application of AI. To embrace such contextualisation, AI Readiness needs to be an active, participatory training process and aims to empower people to be more able to leverage AI to meet their needs. The text that follows focuses on AI Readiness within the Education and Training sector and starts with a discussion of the current state of AI within education and training, and the need for AI Readiness. We then problematize the concept of AI Readiness, why AI Readiness is needed, and what it means. We expand upon the nature of AI Readiness through a discussion of the difference between human and Artificial Intelligence, before presenting a 7-step framework for helping people to become AI Ready. Finally, we use an example of AI Readiness in action within

		Higher Education to exemplify AI Readiness.
78	Luo, J. H. (2024a). A critical review of GenAI policies in higher education assessment: a call to reconsider the "originality" of students' work. *Assessment & Evaluation in Higher Education*, *49*(5), 651–664. https://doi.org/10.1080/02602938.2024.2309963	This study offers a critical examination of university policies developed to address recent challenges presented by generative AI (GenAI) to higher education assessment. Drawing on Bacchi's 'What's the problem represented to be' (WPR) framework, we analysed the GenAI policies of 20 world-leading universities to explore what are considered problems in this AI-mediated assessment landscape and how these problems are represented in policies. Although miscellaneous GenAI-related problems were mentioned in these policies (e.g. reliability of AI-generated outputs, equal access to GenAI), the primary problem represented is that students may not submit original work for assessment. In the current framing, GenAI is often viewed as a type of external assistance separate from the student's independent efforts and intellectual contribution, thereby undermining the originality of their work. We argue that such problem representation fails to acknowledge how the rise of GenAI further complicates the process of producing original work and what it means by originality in a time when knowledge production becomes increasingly distributed, collaborative and mediated by technology. Therefore, a critical silence in higher education policies concerns the evolving notion of originality in the digital age and a more inclusive approach to address the originality of students' work is required.
79	Luo, J. H. (2024b). How does GenAI affect trust in teacher-student relationships? Insights from students' assessment experiences. *Teaching in Higher Education*, 1-16. https://doi.org/10.1080/13562517.2024.2341005	Many observed that the rise of GenAI is causing an 'erosion of trust' between students and teachers in higher education. Such distrust mainly stems from concerns about student cheating, which is believed to be massively facilitated by recent technological breakthroughs in GenAI. Despite anecdotal discussions, little empirical research has explored students' experiences with trust in the GenAI age. This study engaged university students in concept mapping activities followed by interviews to investigate how they navigate trust-building with teachers in this AI-mediated assessment landscape. The findings highlight

		an absence of 'two-way transparency' - while students are required to declare their AI use and even submit chat records, the same level of transparency is often not observed from the teachers (e.g. ambiguities around teachers' grading process of AI-mediated work). The transparency issue reinforces teacher-student power imbalances and top-down surveillance mechanisms, resulting in a low-trust environment where students feel unsafe to freely explore GenAI use.
80	Malmström, H., Stöhr, C. & Ou, A. W. (2023). Chatbots and other AI for learning: A survey of use and views among university students in Sweden, *Chalmers Studies in Communication and Learning in Higher Education.*	-
81	Mangera, E., Supratno, H., & Suyatno. (2023). Exploring the Relationship between Transhumanist and Artificial Intelligence in the Education Context: Particularly Teaching and Learning Process at Tertiary Education. *Pegem Journal of Education and Instruction*, *13*(2), 35-44.	This studied focus on the relationship between transhumanist and artificial intelligence in the Education Context; Particularly Teaching and Learning Process at private university in Makassar, South Sulawesi, Indonesia. Anchored by a qualitative analysis and participated by five teachers, the data were analyzed in-depth interview. It was designed to find out the type of artificial intelligence used in teaching and learning process. The result of the study showed that the types of Artificial intelligences are; Intelligence of tutoring system, Smart mentor virtual, Automatic assessment, Personalized system, and other finding that even though the artificial intelligence was very great tools can support teaching and learning process but the teacher roles can be not changed them, because teachers taught morality, how to respect each other, it is a role of teacher.

82	Markham, A. N. (2020). Taking Data Literacy to the Streets: Critical Pedagogy in the Public Sphere. *Qualitative Inquiry*, *26*(2), 227-237. https://doi.org/https://doi.org/10.1177/1077800419859024	This article describes an ongoing series of public arts–based experiments that build critical curiosity and develop data literacy via self-reflexive public interventions. Examined through the lens of remix methodology the Museum of Random Memory exemplifies a form of collective–reflexive meta-analysis whereby interdisciplinary researchers generate immediate social change and build better questions for future public engagement. The experiments help people critically analyze their own social lives and well being in cultural environments of growing datafication and automated (artificial intelligence [AI]-driven) decision-making. Reflexivity, bricolage, and critical pedagogy are emphasized as approaches for responding to changing needs in the public sphere that also build more robust interdisciplinary academic teams.
83	Marron, L. (2023). Exploring the Potential of ChatGPT 3.5 in Higher Education: Benefits, Limitations, and Academic Integrity. In E. Meletiadou (red.), *Handbook of Research on Redesigning Teaching, Learning, and Assessment in the Digital Era* (pp. 326-349). IGI Global. https://doi.org/https://doi.org/10.4018/978-1-6684-8292-6	Recent evolutions, such as pervasive networking and other enabling technologies, have been increasingly changing human life, knowledge acquisition, and the way works are performed and students learn. In this societal change, educational institutions must maintain their leading role. They have therefore embraced digitally enhanced learning to provide increased flexibility and access for their students. The "Handbook of Research on Redesigning Teaching, Learning, and Assessment in the Digital Era" provides insights into the transformation of education in the digital era and responds to the needs of learners of any context and background through relevant studies that include sound pedagogical and content knowledge. Covering key topics such as hybrid learning, media, remote learning, and social media, this major reference work is ideal for administrators, policymakers, academicians, researchers, scholars, practitioners, librarians, instructors, and students.
84	Marzuki, Widiati, U., Rusdin, D., Darwin, & Indrawati, I. (2023). The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective.	The primary objective of this study was to examine the range of available Artificial Intelligence (AI) writing tools and assess their influence on student writing, particularly in terms of content and organization, as perceived by English as a Foreign Language (EFL) teachers. Utilizing a qualitative approach,

	Cogent Education, *10*(2), 2236469. https://doi.org/10.1080/2331186X.2023.2236469	the research was constructed within a case study design. The data was collected via semi-structured interviews, targeting information about the diversity of AI writing tools and their impact on students" writing quality. The study gathered data from four EFL teachers across three distinct universities in Indonesia, shedding light on the variety of AI writing tools used in their classrooms. These included applications like Quillbot, WordTune, Jenni, Chat-GPT, Paperpal, Copy.ai, and Essay Writer. Furthermore, these teachers unanimously agreed that the AI writing tools positively improved their students' writing quality, particularly enhancing the quality of their content and organization. The findings of this study imply that integrating AI writing tools can prove beneficial in elevating the quality of EFL student writing. In response to this study's limitations, recommendations for future research were also addressed.
85	Matthews, J. A. & Volpe, C. R. (2023). Academics' perceptions of ChatGPT-generated written outputs: A practical application of Turing's Imitation Game. *Australasian Journal of Educational Technology*, *39*(5), 82-100.	Artificial intelligence (AI) technology, such as Chat Generative Pre-trained Transformer (ChatGPT), is evolving quickly and having a significant impact on the higher education sector. Although the impact of ChatGPT on academic integrity processes is a key concern, little is known about whether academics can reliably recognise texts that have been generated by AI. This qualitative study applies Turing's Imitation Game to investigate 16 education academics' perceptions of two pairs of texts written by either ChatGPT or a human. Pairs of texts, written in response to the same task, were used as the stimulus for interviews that probed academics' perceptions of text authorship and the textual features that were important in their decision-making. Results indicated academics were only able to identify AI-generated texts half of the time, highlighting the sophistication of contemporary generative AI technology. Academics perceived the following categories as important for their decision-making: voice, word usage, structure, task achievement and flow. All five categories of decision-making were variously used to rationalise both accurate

		and inaccurate decisions about text authorship. The implications of these results are discussed with a particular focus on what strategies can be applied to support academics more effectively as they manage the ongoing challenge of AI in higher education. Implications for practice or policy:* Experienced academics may be unable to distinguish between texts written by contemporary generative AI technology and humans.* Academics are uncertain about the current capabilities of generative AI and need support in redesigning assessments that succeed in providing robust evidence of student achievement of learning outcomes.* Institutions must assess the adequacy of their assessment designs, AI use policies, and AI-related procedures to enhance students' capacity for effective and ethical use of generative AI technology.
86	McKnight, L. (2021). Electric Sheep? Humans, Robots, Artificial Intelligence, and the Future of Writing. *Changing English*, *28*(4), 442-455. https://doi.org/10.1080/1358684X.2021.194 1768	With artificial intelligence (AI) now producing human-quality text in seconds via natural language generation, urgent questions arise about the nature and purpose of the teaching of writing in English. Humans have already been co-composing with digital tools for decades, in the form of spelling and grammar checkers built into word processing software. Yet AI has now advanced such that humans need to have less input in the writing process. This article contrasts these developments with findings from a small study of the teaching of writing in Victoria, Australia. The article proposes conceptual framing for these developments through dialogic encounters with Bill Green's model for compos(IT)ing and Rosi Braidotti's concept of the posthuman, making suggestions for updating thinking and offering practical strategies for future directions in the teaching of writing.
87	Meletiadou, E. (2023). Chapter 2: Experimenting With AI-Powered Learning Tools and Mobile-Assisted Learning to Improve Student Learning Performance,	Recent evolutions, such as pervasive networking and other enabling technologies, have been increasingly changing human life, knowledge acquisition, and the way works are performed and students learn. In this societal change, educational institutions must maintain their leading role. They

	Autonomy, and Metacognitive Skills: A Case Study of Quizlet. In E. Meletiadou (Ed.), *Handbook of Research on Redesigning Teaching, Learning, and Assessment in the Digital Era*. IGI Global. https://doi.org/https://doi.org/10.4018/978-1-6684-8292-6	have therefore embraced digitally enhanced learning to provide increased flexibility and access for their students. The "Handbook of Research on Redesigning Teaching, Learning, and Assessment in the Digital Era" provides insights into the transformation of education in the digital era and responds to the needs of learners of any context and background through relevant studies that include sound pedagogical and content knowledge. Covering key topics such as hybrid learning, media, remote learning, and social media, this major reference work is ideal for administrators, policymakers, academicians, researchers, scholars, practitioners, librarians, instructors, and students.
88	Meng-yue, C., Dan, L., & Jun, W. (2020). A Study of College English Culture Intelligence-Aided Teaching System and Teaching Pattern. *English Language Teaching*, *13*(3), 77-83.	College English teaching is supposed to cover both language acquisition and culture learning due to the close relationship between language and culture, taking cultural teaching as an indispensible part of college English courses. With the rapid integration of information technology and English curriculum, artificial intelligence has brought new opportunities to college English teaching, and college English cultural teaching methods are now faced with new innovations. In the age of intelligence, to promote teaching quality and learning effect, artificial intelligence technology can be embedded in English teaching practice, exerting its technical advantages and frontier characteristics. In consideration of integrated developing tendency of college English cultural teaching model and modern information technology, the paper is aimed to design and build up an intelligence-aided system so as to extend the depth and width of the application of modern information technology in college English cultural teaching as well as to exploit the great application potential of modern information technology in college English cultural teaching, thus opening a new way and presenting a direction for college English cultural teaching.
89	Merelo, J. J., Castillo, P. A., Mora, A. M., Barranco, F., Abbas, N., Guillén, A., & Tsivitanidou, O. (2023). Chatbots and	Messaging platforms are applications, generally mediated by an app, desktop program or the web, mainly used for synchronous communication among users. As such, they have been widely adopted officially by higher education

| | messaging platforms in the classroom: An analysis from the teacher's perspective. *Education And Information Technologies*. https://doi.org/10.1007/s10639-023-11703-x | establishments, after little or no study of their impact and perception by the teachers. We think that the introduction of these new tools and the opportunities and challenges they have needs to be studied carefully in order to adopt the model, as well as the tool, that is the most adequate for all parties involved. We already studied the perception of these tools by students, in this paper we examine the teachers' experiences and perceptions through a survey that we validated with peers, and what they think these tools should make or serve so that it enhances students learning and helps them achieve their learning objectives. The survey has been distributed among tertiary education teachers, both in universitary and other kind of tertiary establishments, based in Spain (mainly) and Spanish-speaking countries. We have focused on collecting teachers' preferences and opinions on the introduction of messaging platforms in their day-to-day work, as well as other services attached to them, such as chatbots. What we intend with this survey is to understand their needs and to gather information about the various educational use cases where these tools could be valuable. In addition, an analysis of how and when teachers' opinions towards the use of these tools varies across gender, experience, and their discipline of specialization is presented. The key findings of this study highlight the factors that can contribute to the advancement of the adoption of messaging platforms and chatbots in higher education institutions to achieve the desired learning outcomes. |
| 90 | Meron, Y., & Araci, Y. T. (2023). Artificial intelligence in design education: evaluating ChatGPT as a virtual colleague for post-graduate course development. *Design Science*, *9*. https://doi.org/10.1017/dsj.2023.28 | This article explores the ability of ChatGPT to function as a virtual colleague in helping to design materials for higher education design students. Using a self-study methodology, two university educators attempted to collaborate with ChatGPT to create course materials targeted at higher education design students, before reflecting on its strengths and weaknesses during the process. Contextualising ChatGPT as the latest acute example of digital disruptors that |

		design practices and processes have faced, the authors evaluated its current and potential threats and opportunities for the creation of design-focused learning content. The authors found that ChatGPT was a competent partner with regard to saving time, structuring textual content and documentation, and as a brainstorming tool. However, ChatGPT's weaknesses included content generation that was often generic, usually requiring much human prompting, cajoling, and manual editing to produce desirable outcomes. Overall, ChatGPT was found to excel at its stated functionality as a language model, with some potentially useful functionality for the creation of higher education design course materials and outlines, as well as limitations. The reflections discussed can be used to inform design educators who may want to work with ChatGPT when designing course materials. However, acknowledging limitations and potential ethical challenges, the authors' caution that educators may have to evaluate for themselves whether ChatGPT's potential advantages outweigh its disadvantages.
91	Messeri, L. (2023). Teaching with ChatGPT: Critiquing Generative Artificial Intelligence from the Classroom. *Anthropology Now*, *15*(1), 84-92. https://doi.org/10.1080/19428200.2023.2230098	-
92	Messina, C. M., Jones, C. E., & Poe, M. (2023). Prompting Reflection: Using Corpus Linguistic Methods in the Local Assessment of Reflective Writing. *Written Communication*, *40*(2), 620-650. https://doi.org/https://doi.org/10.1177/07410883221149425	We report on a college-level study of student reflection and instructor prompts using scoring and corpus analysis methods. We collected 340 student reflections and 24 faculty prompts. Reflections were scored using trait and holistic scoring and then reflections and faculty prompts were analyzed using Natural Language Processing to identify linguistic features of high, middle, and low scoring reflections. The data sets were then connected to determine if there was a relationship between faculty prompts and scores. Additional

		analysis was completed to determine if there was a relationship between scores and students' GPAs. The corpus linguistics analysis showed that higher-scoring reflections used words that referred to the self, the writing process, and specific rhetorical terms. Additional analysis showed student GPAs did not correlate with holistic scores but that higher scoring reflections were from faculty who included learning goals on reflective writing prompts. Results suggest that teachers can de-mystify reflective writing by linking learning outcomes to textual tasks and that corpus linguistics methods can provide an understanding of how local learning goals are transmitted to students.
93	Miao, F., & Holmes, W. (2023). *Guidance for generative AI in education and research*. UNESCO Publishing.	Publicly available generative AI (GenAI) tools are rapidly emerging, and the release of iterative versions is outpacing the adaptation of national regulatory frameworks. The absence of national regulations on GenAI in most countries leaves the data privacy of users unprotected and educational institutions largely unprepared to validate the tools. UNESCO's first global guidance on GenAI in education aims to support countries to implement immediate actions, plan long-term policies and develop human capacity to ensure a human-centred vision of these new technologies. The Guidance presents an assessment of potential risks GenAI could pose to core humanistic values that promote human agency, inclusion, equity, gender equality, and linguistic and cultural diversities, as well as plural opinions and expressions. It proposes key steps for governmental agencies to regulate the use of GenAI tools including mandating the protection of data privacy and considering an age limit for their use. It outlines requirements for GenAI providers to enable their ethical and effective use in education. The Guidance stresses the need for educational institutions to validate GenAI systems on their ethical and pedagogical appropriateness for education. It calls on the international community to reflect on their long-term implications for

		knowledge, teaching, learning and assessment.
		The publication offers concrete recommendations for policy-makers and While ChatGPT reached 100 million monthly active users in January 2023, only one country had released regulations on generative AI as of July 2023 educational institutions on how the uses of GenAI tools can be designed to protect human agency and genuinely benefit learners, teachers and researchers.
94	Michalon, B., & Camacho-Zuñiga, C. (2023). ChatGPT, a brand-new tool to strengthen timeless competencies. *Frontiers in Education*, *8*. https://doi.org/10.3389/feduc.2023.1251163	In November 2022, the public release of ChatGPT, an artificial intelligence (AI)-based natural language model, was a groundbreaking point in many sectors of human life and education was not the exception. We describe how ChatGPT was integrated in an undergraduate course for an International Relations program in a private Mexican university. Under an action research methodology, we introduced this novel instrument in a course on Future Studies. Students were evaluated on their ability to explain to ChatGPT several discipline-specific methods and to make the AI implement these methods step by step. After six such activities, the outcomes evidenced that the students not only learned how to use the new AI tool and deepen their understanding of prospective methods, but also strengthened three soft or transversal competencies: communication, critical thinking, and logical and methodical reasoning. These results are promising in the framework of Skills for Industry 4.0 and Education for Sustainable Development; even more, they demonstrate how ChatGPT created an opportunity for the students to strengthen, and for the professor to assess, time-tested competencies. This is a call-to action for faculty and educational institutions to incorporate AI in their instructional design, not only to prepare our graduates for professional environments where they will collaborate with these technologies but also to enhance the quality and relevance of higher education in the digital age. Therefore, this work contributes to the growing body of research on how Artificial Intelligence (AI)

		can be used in higher education settings to enhance learning experiences and outcomes.
95	Molenaar, I. (2022b). Towards hybrid human-AI learning technologies. *European Journal of Education*, *57*(4), 632-645. https://doi.org/https://doi.org/10.1111/ejed.12527	Education is a unique area for application of artificial intelligence (AI). In this article, the augmentation perspective and the concept of hybrid intelligence are introduced to frame our thinking about AI in education. The involvement of quadruple helix stakeholders (i.e., researchers, education professionals, entrepreneurs, and policymakers) is necessary to understand the opportunities and challenges of different educational use cases from an integrated point of view. To facilitate a meaningful dialogue, a common language about AI in education is needed. This article outlines elements of such a common language. The detect-diagnose-act framework is used to describe the core functions of AI in education. The six levels of automation model is introduced to develop our thinking about the roles of AI, learners, and teachers in educational arrangements. In this model, the transition of control between teacher and technology is articulated at different levels and related to the augmentation perspective. Finally, the future of AI in education is discussed using self-regulated learning as an example. The proposed common language will help to support a coordinated development of an interdisciplinary dialogue between quadruple helix stakeholders to strengthen meaningful application of AI for learning and teaching.
96	Mollick, E. & Mollick, L. (2023). Assigning AI: Seven Approaches for Students, with Prompts. *Wharton School Research Paper*. https://doi.org/10.48550/arxiv.2306.10052	This paper examines the transformative role of Large Language Models (LLMs) in education and their potential as learning tools, despite their inherent risks and limitations. The authors propose seven approaches for utilizing AI in classrooms: AI-tutor, AI-coach, AI-mentor, AI-teammate, AI-tool, AI-simulator, and AI-student, each with distinct pedagogical benefits and risks. The aim is to help students learn with and about AI, with practical strategies designed to mitigate risks such as complacency about the AI's output, errors, and biases. These strategies promote active oversight, critical assessment of

		AI outputs, and complementarity of AI's capabilities with the students' unique insights. By challenging students to remain the "human in the loop," the authors aim to enhance learning outcomes while ensuring that AI serves as a supportive tool rather than a replacement. The proposed framework offers a guide for educators navigating the integration of AI-assisted learning in classrooms
97	Nguyen, A., Hong, Y., Dang, B. & Huang, X. S. (2024). Human-AI collaboration patterns in AI-assisted academic writing. *Studies in Higher Education, 49(5), 847-864.* https://doi.org/10.1080/03075079.2024.2323593	Artificial Intelligence (AI) has increasingly influenced higher education, notably in academic writing where AI-powered assisting tools offer both opportunities and challenges. Recently, the rapid growth of generative AI (GAI) has brought its impacts into sharper focus, yet the dynamics of its utilisation in academic writing remain largely unexplored. This paper focuses on examining the nature of human-AI interactions in academic writing, specifically investigating the strategies doctoral students employ when collaborating with a GAI-powered assisting tool. This study involves 626 recorded activities on how ten doctoral students interact with GAI-powered assisting tool during academic writing. AI-driven learning analytics approach was adopted for three layered analyses: (1) data pre-processing and analysis with quantitative content analysis, (2) sequence analysis with Hidden Markov Model (HMM) and hierarchical sequence clustering, and (3) pattern analysis with process mining. Findings indicate that doctoral students engaging in iterative, highly interactive processes with the GAI-powered assisting tool generally achieve better performance in the writing task. In contrast, those who use GAI merely as a supplementary information source, maintaining a linear writing approach, tend to get lower writing performance. This study points to the need for further investigations into human-AI collaboration in learning in higher education, with implications for tailored educational strategies and solutions.
98	Nkhobo, T. & Chaka, C. (2023). Student-Written Versus ChatGPT-Generated	This article reports on a comparative analysis of two sets of essays, student-discursive essays (SDEs) and ChatGPT-generated discursive essays (ChatGPT-

	Discursive Essays: A Comparative Coh-Metrix Analysis of Lexical Diversity, Syntactic Complexity, and Referential Cohesion. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, *19*(3), 69-84.	GDEs) on the same essay topic using Coh-Metrix. It focused on three Coh-Metrix indices, lexical density, syntactic complexity, and referential cohesion as the basis for the comparative analysis. The authors also conducted a t test on the Coh-Metrix results, especially the mean scores, in relation to these three linguistic indices. Using convenience sampling, the study selected seven SDEs from the essays that were submitted as part of an assignment for an English Studies module in the second semester of 2020 at the University of South Africa. ChatGPT was prompted with the same essay topic that had been used for the SDEs. Overall, at raw mean score levels, the SDEs outperformed ChatGPT-GDEs in lexical density and referential cohesion, while ChatGPT-GDEs did so in syntactic complexity. Nonetheless, at a t test level, there was no statistically significant difference between the mean scores of the two essay sets in relation to the three Coh-Metrix linguistic indices investigated in this study.
99	Ou, A. W., Stöhr, C. & Malmström, H. (2024). Academic communication with AI-powered language tools in higher education: From a post-humanist perspective. *System*, *121*. https://doi.org/10.1016/j.system.2024.1032 25	AI -powered language tools (AILTs) are commonly used by university students, yet there is a limited understanding of how students utilise and perceive these tools in everyday academic communication practice. Employing a post - humanist lens and based on over 1700 open-ended comments from a nationwide student survey, this qualitative study examined students' lived AILT experiences to explicate the impact of AILTs on academic communication in higher education learning and assessment. Thematic analysis of the data shows that students' academic writing is realised by assemblages of distributed spatial and personal linguistic repertoires, underscoring AILT's role in enhancing students' communicative performance and personal language development. AILTs are also conducive to transforming the academic writing process into an additional learning space. Students have developed a new identity as spatially advised learners, enabling them to assert their agency in terms of language development and subjectcontent knowledge while also

		holding critical perspectives on the limitations of AI. Furthermore, the findings point to divergent and eclectic student viewpoints on the ethical concerns of AILTs in assessment in the absence of university instructions. The study discusses implications for university policymaking and pedagogy in developing teaching and assessment methods that match students' stances and needs in AI -mediated academic communication.
100	Peng, Z., & Wan, Y. (2024). Human vs. AI: Exploring students' preferences between human and AI TA and the effect of social anxiety and problem complexity. Education and Technologies, *29*(1), 1217-1246. https://doi.org/https://doi.org/10.1007/s10639-023-12374-4	Understanding preferences surrounding artificial intelligence (AI) and human teaching assistants (TAs) helps managers improve AI TAs, effectively deploying AI and human TAs, and providing better services to learners. The literature has explored how AI TAs' characteristics affect students' use intention, neglecting students' comparative behaviors between AI and human TAs, and overlooking the influence of differences between AI and human TAs on student preferences. Based on preference theory, trust theory, and the stimulus-organism-response (SOR) framework, we constructed a mechanism model by which differences between AI and human TAs affect student preferences. We held 26 semi-structured interviews and collected 401 valid questionnaires to validate it. We also examined the influence and moderating effect of social anxiety and problem complexity on student preferences. Differences in response quality and communication ability impacted differences in ability trust; differences in service attitude and psychological safety influenced differences in benevolent trust; differences in response time impacted differences in integrity trust. In turn, differences in trust affected student preferences. Social anxiety positively impacted students' AI TA preferences and negatively moderated the effect of differences in ability trust on students' AI TA preferences. Problem complexity negatively affected students' AI TA preferences and moderated the effects of benevolence and differences in integrity trust on students' AI TA preferences. We propose a theoretical model to clarify the effects of differences between AI and human TAs on student

		preferences and to identify boundary conditions. Our findings provide new insights into AI TA research and offer suggestions for AI TA developers, managers, human TAs, and learners.
101	Perkins, M., Roe, J., Postma, D., McGaughran, J. & Hickerson, D. (2024). Detection of GPT-4 Generated Text in Higher Education: Combining Academic Judgement and Software to Identify Generative AI Tool Misuse. *Journal of Academic Ethics*, *22*(1), 89-113. https://doi.org/10.1007/s10805-023-09492-6	This study explores the capability of academic staff assisted by the Turnitin Artificial Intelligence (AI) detection tool to identify the use of AI-generated content in university assessments. 22 different experimental submissions were produced using Open AI's ChatGPT tool, with prompting techniques used to reduce the likelihood of AI detectors identifying AI-generated content. These submissions were marked by 15 academic staff members alongside genuine student submissions. Although the AI detection tool identified 91% of the experimental submissions as containing AI-generated content, only 54.8% of the content was identified as AI-generated, underscoring the challenges of detecting AI content when advanced prompting techniques are used. When academic staff members marked the experimental submissions, only 54.5% were reported to the academic misconduct process, emphasising the need for greater awareness of how the results of AI detectors may be interpreted. Similar performance in grades was obtained between student submissions and AI-generated content (AI mean grade: 52.3, Student mean grade: 54.4), showing the capabilities of AI tools in producing human-like responses in real-life assessment situations. Recommendations include adjusting the overall strategies for assessing university students in light of the availability of new Generative AI tools. This may include reducing the overall reliance on assessments where AI tools may be used to mimic human writing, or by using AI-inclusive assessments. Comprehensive training must be provided for both academic staff and students so that academic integrity may be preserved.
102	Perrotta, C., Gulson, K. N., Williamson, B., & Witzenberger, K. (2021). Automation, APIs and the distributed labour of platform	Digital platforms have become central to interaction and participation in contemporary societies. New forms of 'platformized education' are rapidly proliferating across education systems, bringing logics of datafication,

	pedagogies in Google Classroom. *Critical Studies in Education*, *62*(1), 97-113. https://doi.org/https://doi.org/10.1080/17508487.2020.1855597	automation, surveillance, and interoperability into digitally mediated pedagogies. This article presents a conceptual framework and an original analysis of Google Classroom as an infrastructure for pedagogy. Its aim is to establish how Google configures new forms of pedagogic participation according to platform logics, concentrating on the cross-platform interoperability made possible by application programming interfaces (APIs). The analysis focuses on three components of the Google Classroom infrastructure and its configuration of pedagogic dynamics: Google as platform proprietor, setting the 'rules' of participation; the API which permits third-party integrations and data interoperability, thereby introducing automation and surveillance into pedagogic practices; and the emergence of new 'divisions of labour', as the working practices of school system administrators, teachers and guardians are shaped by the integrated infrastructure, while automated AI processes undertake the 'reverse pedagogy' of learning insights from the extraction of digital data. The article concludes with critical legal and practical ramifications of platform operators such as Google participating in education.
103	Pillai, R., Sivathanu, B., Metri, B. & Kaushik, N. (2024). Students' adoption of AI-based teacher-bots (T-bots) for learning in higher education. *Information technology & People*, *37*(1), 328-355. https://doi.org/10.1108/ITP-02-2021-0152	Purpose: The purpose of this paper is to investigate students' adoption intention (ADI) and actual usage (ATU) of artificial intelligence (AI)-based teacher bots (T-bots) for learning using technology adoption model (TAM) and context-specific variables. Design/methodology/approach: A mixed-method design is used wherein the quantitative and qualitative approaches were used to explore the adoption of T-bots for learning. Overall, 45 principals/directors/deans/ professors were interviewed and NVivo 8.0 was used for interview data analysis. Overall, 1,380 students of higher education institutes were surveyed, and the collected data was analyzed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique. Findings: The T-bot's ADI's antecedents found were perceived ease of use, perceived usefulness, personalization, interactivity, perceived trust, anthropomorphism

		and perceived intelligence. The ADI influences the ATU of T-bots, and its relationship is negatively moderated by stickiness to learn from human teachers in the classroom. It comprehends the insights of senior authorities of the higher education institutions in India toward the adoption of T-bots. Practical implications: The research provides distinctive insights for principals, directors and professors in higher education institutes to understand the factors affecting the students' behavioral intention and use of T-bots. The developers and designers of T-bots need to ensure that T-bots are more interactive, provide personalized information to students and ensure the anthropomorphic characteristics of T-bots. The education policymakers can also comprehend the factors of T-bot adoption for developing the policies related to T-bots and their implications in education. Originality/value: T-bot is a new disruptive technology in the education sector, and this is the first step in exploring the adoption factors. The TAM model is extended with context-specific factors related to T-bot technology to offer a comprehensive explanatory power to the proposed model. The research outcome provides the unique antecedents of the adoption of T-bots.
104	Popescu, A. (2024). AI's Secret Weapon in Education. ChatGPT – The Future of Personalized Learning. *Bulletin of the Transilvania University of Brașov. Series V, Economic science*, 16(2), 45-52. https://doi.org/10.31926/but.es.2023.16.65.2.5	This article delves into the fascinating intersection of AI and education, with a focus on ChatGPT, a conversational AI developed by OpenAI. Noted for its human-like responses, ChatGPT is positioned as a game-changer in personalized learning. The paper aims to highlight the untapped potential of ChatGPT in educational settings and advocate for its broader adoption by educators to enhance student learning outcomes. To achieve this objective, systematic research was conducted using a variety of data sources, literature sources, research studies, and online data focused on the efficacy of ChatGPT in academic environments.
105	Puddifoot, K. & O'Donnell, C. (2018). Human Memory and the Limits of Technology in	Human memory systems perform various functions beyond simple storage and retrieval of information. They link together information about events, build

	Education. *Educational Theory*, *68*(6), 643-655. https://doi.org/https://doi.org/10.1111/edth.12345	abstractions, and perform memory updating. In contrast, typical information storage and access technologies, such as note-taking applications and Wikipedia, tend to store information verbatim. In this article, Katherine Puddifoot and Cian O'Donnell use results from cognitive psychology, neuroscience, and machine learning to argue that the increased dependence on such technologies in education may come at a price: the missed opportunity for memory systems of student learners to form abstractions and insights from newly learned information. This conclusion has important implications for how technologies should be adopted in education.
106	Rahm, L. (2023). Educational Imaginaries of AI. In S. Lindgren (Ed.), *Handbook of Critical Studies of Artificial Intelligence* (pp. 289-300). Edward Elgar Publishing.	-
107	Sandhya, H., & Varghese, B. (2023). Unleashing AI's potential for optimal student learning in education: Ethical implications. *Creative AI Tools and Ethical Implications in Teaching and Learning*, 99-114. https://doi.org/10.4018/979-8-3693-0205-7.ch005	The impact of technology and its advancements has proliferated in all the sectors of the economy, including the education sector. The integration of technology into the education sector is very evident from the teaching pedagogy and strategies followed by educational institutions worldwide. The concept of blended learning has gained much attention due to its multifaceted nature; as it includes blending traditional face to face teaching with the use of online and electronic media. As the integration of technology requires huge amounts of student data to be processed, it can also lead to ethical dilemmas and concerns due to its sensitive and confidential nature. This chapter focuses on the various dimensions of technological integration in the education system and its practical implications on enhancing student learning and engagement. In order to provide a road map for future research on developing an education model that can improve learning and teaching experiences, the article also addresses key hurdles, ethical issues, and potential risks of integrating AI for education.

108	Santiago-Ruiz, E. (2023). Writing with ChatGPT in a context of educational inequality and digital divide. *International Journal of Education and Development using Information and Communication Technology*, *19*(3), 28-38.	Mexico faces significant challenges concerning the digital divide and language-related proficiencies. Considering transformative technologies like ChatGPT, it becomes imperative to examine their implications for Mexican universities. This study is situated within the context of campus 095 at the National Pedagogical University (UPN), aiming to ascertain the perceptions and applications of ChatGPT among both students and educators. One key aspect of this research is its empirical nature. The research methodology involved a combination of participant observation and the analysis of students' assignments spanning from January to June 2023. The findings of this investigation reveal that students possess an elementary grasp of ChatGPT's capabilities. Predominantly, it is employed as an information retrieval tool, with limited awareness about its proclivity for generating fabricated content. Many students struggle to identify grammatical or organizational issues in their texts and lack the proficiency to effectively employ prompts to correct them. Conversely, educators exhibit a lack of familiarity with ChatGPT, impeding the learning process as students adopt its use. While the utilization of ChatGPT holds the potential for substantial educational benefits, it is imperative to take tangible measures to ensure that these advantages materialize within education systems characterized by a digital divide and deficiencies in academic writing, like the Mexican context.
109	Schiff, D. M. & Rosenberg-Kima, R. B. (2023). AI in education: landscape, vision and critical ethical challenges in the 21st century. In S. Lindgren (Ed.), *Handbook of Critical Studies of Artificial Intelligence* (pp. 804-814). Edward Elgar Publishing.	-
110	Schutte, N. & van Zyl, Z. (2023). Course correction: The role of reflective writing	In this conceptual paper, borne from the experiences of two academic literacy lecturers at the NWU, we ask, regarding elements of assessment, how we can

	assessment in a postpandemic academic literacy course. *Perspectives in Education*, *41*(3), 77-94. https://doi.org/https://doi.org/10.38140/pie.v4113.7291	sensibly adapt an intervention-style writing course in a post-Covid-19 higher education context. We propose a course correction model, applicable to academic literacy writing courses, to address the pedagogical lacunae highlighted in a pre-pandemic context and compounded in the post-pandemic higher education context. We argue for the adaption of this writing course to contend with the under-preparedness of students for higher education, the issue of online learning and resultant student cognitive overload and additional challenges, such as the rapid development of artificial intelligence (AI) and its effects on teaching and learning, and specifically writing courses. An important element which needs to be reconceptualised within the context of our compounded problem, is that of the writing assessment. In this paper we argue for moving away from placing major emphasis on assessing the final product of writing and shifting some focus to the pedagogical value of examining the student's Journey of writing. We therefore propose incorporating reflective writing as a significant element of assessment through our reflectrewrite-mode/. The goal of this proposed model is to create a space for fostering student self-awareness, responsibility, critical thinking, and evaluation skills. Such outcomes should then contribute to the creation of effective and contextually relevant, academic skills development, which in turn should positively influence student success and mitigate some of the issues currently experienced in the module offering.
111	Selwyn, N. (2019). *Should robots replace teachers : AI and the future of education*. Polity Press.	Developments in AI, robotics and big data are changing the nature of education. Yet the implications of these technologies for the teaching profession are uncertain. While most educators remain convinced of the need for human teachers, outside the profession there is growing anticipation of a technological reinvention of the ways in which teaching and learning take place. Through an examination of technological developments such as autonomous classroom robots, intelligent tutoring systems, learning analytics

		and automated decision-making, this book highlights the need for nuanced discussions around the capacity of AI to replicate the social, emotional and cognitive qualities of expert human teachers. Selwyn pushes conversations about AI and education into the realm of values, judgements and politics, ultimately arguing that the integration of any technology into society must always be presented as a choice.
112	Selwyn, N. (2022). The future of AI and education: Some cautionary notes. *European Journal of Education*, *57*(4), 620-631. DOI: 10.1111/ejed.12532	In light of fast-growing popular, political and professional discourses around AI in education, this article outlines five broad areas of contention that merit closer attention in future discussion and decision-making. These include: (1) taking care to focus on issues relating to 'actually existing' AI rather than the overselling of speculative AI technologies; (2) clearly foregrounding the limitations of AI in terms of modelling social contexts, and simulating human intelligence, reckoning, autonomy and emotions; (3) foregrounding the social harms associated with AI use; (4) acknowledging the value-driven nature of claims around AI; and (5) paying closer attention to the environmental and ecological sustainability of continued AI development and implementation. Thus, in contrast to popular notions of AI as a neutral tool, the argument is made for engaging with the ongoing use of AI in education as a political action that has varying impacts on different groups of people in various educational contexts.
113	Selwyn, N. (2024). On the Limits of Artificial Intelligence (AI) in Education. *Nordisk tidsskrift for pedagogikk*, *10*, 3–14.	The recent hyperbole around artificial intelligence (AI) has impacted on our ability to properly consider the lasting educational implications of this technology. This paper outlines a number critical issues and concerns that need to feature more prominently in future educational discussions around AI. These include: (i) the limited ways in which educational processes and practices can be statistically modelled and calculated; (ii) the ways in which AI technologies risk perpetuating social harms for minoritized students; (iii) the losses incurred through reorganising education to be more 'machine readable';

		and (iv) the ecological and environmental costs of data-intensive and device-intensive forms of AI. The paper concludes with a call for slowing down and recalibrating current discussions around AI and education – paying more attention to issues of power, resistance and the possibility of re-imagining education AI along more equitable and educationally beneficial lines.
114	Singh, S. V., & Hiran, K. K. (2022). The Impact of AI on Teaching and Learning in Higher Education Technology. *Journal of Higher Education Theory and Practice*, *22*(13), 135-148.	Thanks to AI, students may now study whenever and wherever they like. Personalized feedback on assignments, quizzes, and other assessments can be generated using AI algorithms and utilised as a teaching tool to help students succeed. This study examined the impact of artificial intelligence in higher education teaching and learning. This study focuses on the impact of new technologies on student learning and educational institutions. With the rapid adoption of new technologies in higher education, as well as recent technological advancements, it is possible to forecast the future of higher education in a world where artificial intelligence is ubiquitous. Administration, student support, teaching, and learning can all benefit from the use of these technologies; we identify some challenges that higher education institutions and students may face, and we consider potential research directions.
115	Slater, G. B. (2024). Dread and the automation of education: From algorithmic anxiety to a new sensibility. *Review of Education, Pedagogy, and Cultural Studies, 46*(1), 170-182. https://doi.org/10.1080/10714413.2023.2299521	Accelerating digitization, algorithmic computation, artificial intelligence, and machine learning, along with the increasing automation of work, communication, and everyday life, are central to critical studies of technology and political economy, as well as to public discourse concerning technology's role in creating futures. Ongoing transformations in technological capacity have also been scrutinized for their impact on experience, emotion, and culture. Building on David Theo Goldberg's assertion that "tracking capitalism" creates pervasive dread, this article explores how the digital automation of education, specifically, generates forms of algorithmic anxiety that impact teaching and learning, constraining pedagogical visions of alternative futures. Algorithmic anxiety in education contributes to dread's proliferation. If dread is the "driving

		social sensibility" today, and algorithmic anxiety a pedagogical vector of its spread, then a less dreadful education should center an imaginative struggle for new sensibilities.
116	Slimi, Z. (2023). The Impact of Artificial Intelligence on Higher Education: An Empirical Study. *European Journal of Educational Sciences*, *10*(1), 17-33.	Artificial intelligence (AI) has been a topic of growing interest and investigation in various fields, including higher education. This research article explores the impact of AI on higher education by examining its effects on teaching and learning, assessment, ethics, required skills, and future careers. The aim of this study is to analyse the influence of AI on higher education, investigate its impact on the teaching and learning process, examine its effect on assessment and grading, and predict its influence on graduates' future careers. To accomplish this, the study employs a qualitative approach based on a survey of the higher education audience. The results of this study demonstrate the crucial role of AI in the future of higher education. The findings highlight the effectiveness and efficiency of AI in equipping graduates with new skills for their future careers. They also emphasise the importance of considering the ethical implications of AI. The study reveals that higher education institutions need to integrate AI more extensively in their programs to prepare graduates for the future workforce. AI has the potential to revolutionize education by personalizing teaching methods to suit individual student needs, providing prompt feedback, and automating administrative tasks. It can also assist in grading and assessment, freeing educators to focus on developing curriculum and providing quality instruction. The study findings suggest that AI has a positive impact on the learning experience by facilitating the acquisition of new knowledge and skills. This research provides insights into the potential of AI to transform higher education and contribute to the development of new skills for graduates. It has important implications for educators, policy-makers, and other stakeholders in the higher education sector. The study findings suggest that AI should be more extensively integrated into higher education curricula,

		and that institutions need to consider the ethical implications of AI in the development and implementation of their programs. By doing so, they can better prepare graduates for the demands of the future workforce.
117	Sobo, E., Goldberg, D., Hauze, S., Mohamed, A., Ro, C. & Frazee, J. P. (2024). *"I Don't Want to Be Taught and Graded by a Robot": Student-Teacher Relations in the Age of Generative AI*. Anthropology News, American Anthropological Association. https://www.anthropology-news.org/articles/i-dont-want-to-be-taught-and-graded-by-a-robot-student-teacher-relations-in-the-age-of-generative-ai/	-
118	Stone, A. (2023). Student Perceptions of Academic Integrity: A Qualitative Study of Understanding, Consequences, and Impact. *Journal of Academic Ethics*, *21*(3), 357-375. https://doi.org/https://doi.org/10.1007/s10805-022-09461-5	Background: Academic integrity (AI) is of increasing importance in higher education. At the same time, students are becoming more consumer-oriented and more inclined to appeal against, or complain about, a penalty imposed for a breach of AI. This combination of factors places pressure on institutions of higher education to handle alleged breaches of AI in a way acceptable to students that motivates them to continue to engage with their studies. Method: Students (n = 8) were interviewed to discover their perceptions of the process for dealing with breaches of AI. All students were based in one university in a very diverse area of London which has many first-generation students from non-traditional academic backgrounds. Results: Students reported strong emotional reactions featuring high levels of anxiety and stress. Some found the process to be threatening and demotivating and questioned continuation on their course of study, while others used more adaptive coping strategies. Students also went to great pains to make it clear that their own, and their friends', breaches of AI were unintentional, while expressing the view

		that other people were deliberately cheating and should be penalised. Key recommendations include: support for students to re-engage after the intervention; support for students to develop effective self-regulatory learning strategies and time management; provision of specific examples to clarify what is, and is not, acceptable academic practice; recognition of the strong emotions likely to be invoked, especially if accompanied by declarations of unintentionality.
119	Street, B. V. (1984). *Literacy in theory and practice*. Cambridge University Press.	This book challenges conventional theories about literacy, and the practices which often arise from them. It attempts to provide a new perspective through which the variety of literacy practices across different cultures can be viewed and from which the practical issues that arise in specific literacy campaigns and programmes can be approached. Dr Street first examines the explicit theories developed about literacy within different academic disciplines, on the premise that these underlie statements about literacy within development campaigns and in everyday usage. He analyses in detail arguments about the 'technical' and 'neutral' nature of literacy and its supposed 'cognitive' consequences in the work of some psychologists, linguists and social anthropologists. He claims that these amount to a coherent but flawed model that he terms the 'autonomous' model of literacy. Against this he poses an 'ideological' model, one which pays greater attention to the social structure. He attempts to bring together recent shifts in this direction in writings on literacy and to construct a coherent model for further work.
120	Sullivan, M., Kelly, A. & McLaughlan, P. (2023). ChatGPT in higher education: Considerations for academic integrity and student learning. *Journal of Applied Learning & Teaching*, *6*(1), 1-10.	The release of ChatGPT has sparked significant academic integrity concerns in higher education. However, some commentators have pointed out that generative artificial intelligence (AI) tools such as ChatGPT can enhance student learning, and consequently, academics should adapt their teaching and assessment practices to embrace the new reality of living, working, and studying in a world where AI is freely available. Despite this important debate,

		there has been very little academic literature published on ChatGPT and other generative AI tools.
		This article uses content analysis to examine news articles (N=100) about how ChatGPT is disrupting higher education, concentrating specifically on Australia, New Zealand, the United States, and the United Kingdom. It explores several key themes, including university responses, academic integrity concerns, the limitations and weaknesses of AI tool outputs, and opportunities for student learning. The data reveals mixed public discussion and university responses, with a focus mainly on academic integrity concerns and opportunities for innovative assessment design.
		There has also been a lack of public discussion about the potential for ChatGPT to enhance participation and success for students from disadvantaged backgrounds. Similarly, the student voice is poorly represented in media articles to date. This article considers these trends and the impact of AI tools on student learning at university.
121	Suresh Babu, C. V., & Barath Kumar, S. (2023). Navigating the Terrain: Current challenges and solutions in integrating generative AI into education. *Generative AI in Teaching and Learning*, 274-290. https://doi.org/10.4018/979-8-3693-0074-9.ch011	The chapter provides an extensive exploration of Generative AI in education. It investigates the evolution and significance of AI in educational settings while delving into contemporary issues such as ethics, privacy, fairness, and pedagogy. Furthermore, it examines the impact on traditional teaching methods, personalization, and accessibility, addressing educational disparities. The chapter also outlines the best practices and lessons learned from case studies and successful institutions, pointing toward future directions, including emerging technologies like GPT-4 and augmented reality. It emphasizes advancing ethical guidelines, enhancing teacher-student collaboration with AI, proposing policy recommendations, and establishing legal frameworks for student data protection, along with government initiatives and funding in the realm of AI in education.
122	Swiecki, Z., Khosravi, H., Chen, G., Martinez-	In this paper, we argue that a particular set of issues mars traditional

	Maldonado, R., Lodge, J. M., Milligan, S., Selwyn, N. & Gašević, D. (2022). Assessment in the age of artificial intelligence. *Computers and Education: Artificial Intelligence*, *3,* 100075. https://doi.org/10.1016/j.caeai.2022.100075	assessment practices. They may be difficult for educators to design and implement; only provide discrete snapshots of performance rather than nuanced views of learning; be unadapted to the particular knowledge, skills, and backgrounds of participants; be tailored to the culture of schooling rather than the cultures schooling is designed to prepare students to enter; and assess skills that humans routinely use computers to perform. We review extant artificial intelligence approaches that–at least partially–address these issues and critically discuss whether these approaches present additional challenges for assessment practice.
123	Tsao, J. & Nogues, C. (2024). Beyond the author: Artificial intelligence, creative writing and intellectual emancipation. *Poetics*, *102,* 101865. https://doi.org/10.1016/j.poetic.2024.101865	This study explores university students' engagement with Generative Artificial Intelligence (GenAI) tools for creative writing and graphic storytelling, drawing on Jacques Rancière's philosophy of intellectual equality and emancipation. Qualitative data analysis from a co-curricular creative writing programme, including reflections, surveys, and focus-group interviews, reveals emerging artificial intelligence literacies and students' improvisational aptitudes for interpreting, subverting, and transforming notions of authorship. Students decentred authorial attribution through the pragmatic adoption of the technology as a creative catalyst, negotiated creative conventions by adopting non-conventional communication strategies, and reconceptualised creativity as distributed across human and non-human agents. Our approach of student-driven learning for autonomous exploration, sense-making, and criticality with GenAI indicates the potential for promoting conditions for students to exercise intellectual equality and emancipation. The findings contribute to the understanding of authorship and creativity; begin to contour emerging GenAI literacies and competencies; and suggest that creative collaborations with GenAI may be a promising way to foster emancipatory practices in the classroom, while nurturing creative and critical skills.
124	Tseng, W. & Warschauer, M. (2023). AI-	The release and rapid diffusion of ChatGPT has forced teachers and

	writing tools in education: If you can't beat them, join them. *Journal of China computer-assisted language learning*, *3*(2), 258-262.	researchers around the world to grapple with the consequences of artificial intelligence (AI) for education. For second language educators, AI-generated writing tools such as ChatGPT present special challenges that must be addressed to better support learners. We propose a five-part pedagogical framework that seeks to support second language learners through acknowledging both the immediate and long-term contexts in which we must teach students about these tools: understand, access, prompt, corroborate, and incorporate. By teaching our students how to effectively partner with AI, we can better prepare them for the changing landscape of technology use in the world beyond the classroom.
125	Vázquez-Cano, E., Mengual-Andrés, S. & López-Meneses, E. (2021). Chatbot to improve learning punctuation in Spanish and to enhance open and flexible learning environments. *International Journal of Educational Technology in Higher Education*, *18*(1), 1-20. https://doi.org/https://doi.org/10.1186/s41239-021-00269-8	The objective of this article is to analyze the didactic functionality of a chatbot to improve the results of the students of the National University of Distance Education (UNED / Spain) in accessing the university in the subject of Spanish Language. For this, a quasi-experimental experiment was designed, and a quantitative methodology was used through pretest and posttest in a control and experimental group in which the effectiveness of two teaching models was compared, one more traditional based on exercises written on paper and another based on interaction with a chatbot. Subsequently, the perception of the experimental group in an academic forum about the educational use of the chatbot was analyzed through text mining with tests of Latent Dirichlet Allocation (LDA), pairwise distance matrix and bigrams. The quantitative results showed that the students in the experimental group substantially improved the results compared to the students with a more traditional methodology (experimental group / mean: 32.1346 / control group / mean: 28.4706). Punctuation correctness has been improved mainly in the usage of comma, colon and periods in different syntactic patterns. Furthermore, the perception of the students in the experimental group showed that they positively value chatbots in their teaching–learning process in three

		dimensions: greater "support" and companionship in the learning process, as they perceive greater interactivity due to their conversational nature; greater "feedback" and interaction compared to the more traditional methodology and, lastly, they especially value the ease of use and the possibility of interacting and learning anywhere and anytime.
126	Vetter, M. A., Lucia, B., Jiang, J. & Othman, M. (2024). Towards a framework for local interrogation of AI ethics: A case study on text generators, academic integrity, and composing with ChatGPT. *Computers and composition*, *71*, 102831. https://doi.org/10.1016/j.compcom.2024.102 831	At many institutions of higher education, teachers are either being asked to adopt a generic policy for AI and academic integrity, or given different options to allow and/or disallow its use, without sufficient time or resources to engage and explore the implications of generative AI. While there is no shortage of "guidelines" on AI in education that provide recommendations and potential concerns, there is a need for more local engagement with the impacts and uses of text generator (TG) technologies in individual writing classrooms. This article provides an ethical framework and heuristic for college-level writing educators to explore the dynamic issues surrounding AI in their local classrooms. Ethical frameworks for text generators (TGs) in education are generally concerned with personalized instruction, a dependency on data, biases in training data, academic integrity, and lack of creativity from students. While broad-level, institutional guidelines provide value in understanding the ethical dimensions of artificial intelligence (AI) for the classroom, there is a need for a more ecological understanding of how AI ethics might be constructed locally, one that takes into account the negotiation of AI between teacher and student. This article investigates how an educational ethical framework for AI use emerges through a qualitative case study of one composition student's interaction with and understanding of using ChatGPT as a type of writing partner. Analysis of interview data and student logs uncover what we term an emergent "local ethic" – a framework that is capable of exploring unique ethical considerations, values, and norms that develop at the

		most foundational unit of higher education – the individual classroom. Our framework is meant to provide a heuristic for other writing teacher-scholars as they interrogate issues related to pedagogy, student criticality, agency, reliability, and access within the context of powerful AI systems.
127	Walter, Y. (2024). Embracing the future of Artificial Intelligence in the classroom: the relevance of AI literacy, prompt engineering, and critical thinking in modern education. *International Journal of Educational Technology in Higher Education*, *21*(1), 15. https://doi.org/10.1186/s41239-024-00448-3	The present discussion examines the transformative impact of Artificial Intelligence (AI) in educational settings, focusing on the necessity for AI literacy, prompt engineering proficiency, and enhanced critical thinking skills. The introduction of AI into education marks a significant departure from conventional teaching methods, offering personalized learning and support for diverse educational requirements, including students with special needs. However, this integration presents challenges, including the need for comprehensive educator training and curriculum adaptation to align with societal structures. AI literacy is identified as crucial, encompassing an understanding of AI technologies and their broader societal impacts. Prompt engineering is highlighted as a key skill for eliciting specific responses from AI systems, thereby enriching educational experiences and promoting critical thinking. There is detailed analysis of strategies for embedding these skills within educational curricula and pedagogical practices. This is discussed through a case-study based on a Swiss university and a narrative literature review, followed by practical suggestions of how to implement AI in the classroom.
128	Wambsganss, T., Janson, A. & Leimeister, J. M. (2022). Enhancing argumentative writing with automated feedback and social comparison nudging. *Computers and Education*, *191,* 104644. https://doi.org/10.1016/j.compedu.2022.104644	The advantages offered by natural language processing (NLP) and machine learning enable students to receive automated feedback on their argumentation skills, independent of educator, time, and location. Although there is a growing amount of literature on formative argumentation feedback, empirical evidence on the effects of adaptive feedback mechanisms and novel NLP approaches to enhance argumentative writing remains scarce. To help fill this gap, the aim of the present study is to investigate whether automated

		feedback and social comparison nudging enable students to internalize and improve logical argumentation writing abilities in an undergraduate business course. We conducted a mixed-methods study to investigate the impact of argumentative writing on 71 students in a field experiment. Students in treatment group 1 completed their assignment while receiving automated feedback, whereas students in treatment group 2 completed the same assignment while receiving automated feedback with a social comparison nudge that indicated how other students performed on the same assignment. Students in the control group received generalized feedback based on rules of syntax. We found that participants who received automated argumentation feedback with a social comparison nudge wrote more convincing texts with higher-quality argumentation compared to the two benchmark groups ($p < 0.05$). The measured self-efficacy, perceived ease of use, and qualitative data provide valuable insights that help explain this effect. The results suggest that embedding automated feedback in combination with social comparison nudges enables students to increase their argumentative writing skills by triggering psychological processes. Receiving only automated feedback in the form of in-text argumentative highlighting without any further guidance appears not to significantly influence students' writing abilities when compared to syntactic feedback.
129	Wang, L., Chen, X., Wang, C., Xu, L., Shadiev, R., & Li, Y. (2024). ChatGPT's capabilities in providing feedback on undergraduate students' argumentation: A case study. *Thinking Skills and Creativity*, *51*. https://doi.org/10.1016/j.tsc.2023.101440	In argumentation teaching, providing timely and high-quality feedback is always a challenging task for teachers because of the high complexity and large volume of students' argumentation contents. ChatGPT, a large language model introduced in November 2022, offers a potential solution for this problem. To examine the potential reliability and credibility of leveraging ChatGPT for argumentation feedback, the study conducted a retrospective analysis by applying ChatGPT to generate feedback on 50 sets of argumentation contents that human teachers had previously assessed. The

		study first assessed the feedback accuracy of ChatGPT and the factors that influenced the evaluation of arguments. The findings showed that ChatGPT demonstrated impressive precision rate (91.8 %) and recall rate (63.2 %) when providing feedback on arguments, indicating that ChatGPT possesses a fundamental capability to provide feedback on arguments. However, this capability of ChatGPT was significantly affected by the length of arguments and the discourse markers used in the arguments. The study then qualitatively compared the ChatGPT's feedback and teacher's feedback. The results revealed that these two types of feedback each had their own advantages and disadvantages. While ChatGPT could potentially generate comprehensive feedback and textual-based feedback, and limited to the linguistic level when provide affective feedback, teacher's feedback was more focused on student's overall learning progress, based on personal teaching experience to correctly identify immediate critical problem of the student, and consideration on the humanistic empathy interaction. Although the overall findings suggested that ChatGPT exhibited potential reliability and credibility for argumentation feedback, the study did identify several limitations.
130	Wang, Q., Camacho, I., Jing, S., & Goel, A. K. (2022). Understanding the Design Space of AI-Mediated Social Interaction in Online Learning: Challenges and Opportunities. *Proceedings of the ACM on Human-Computer Interaction*, *6*(CSCW1). https://doi.org/10.1145/3512977	Our online interactions are constantly mediated through Artificial Intelligence (AI), especially our social interactions. AI-mediated social interaction is the AI-facilitated process of building and maintaining social connections between individuals through information inferred from people's online posts. With its impending application across a number of contexts, the challenges and opportunities of AI-mediated social interaction remain underexplored. This paper seeks to understand the design space of AI-mediated social interaction in the context of online learning, where students frequently face social isolation. We deployed an AI agent named SAMI in three class discussion forums to help online learners build social connections. Using SAMI as a probe, we conducted semi-structured interviews with 26 students to understand their

		difficulties in remote social interactions and their experiences with SAMI. Through the lenses of social translucence and social-technical gap, we illustrate online learners' difficulties in remote social interactions and how SAMI resolved some of the difficulties. We also identify potential ethical and social challenges of SAMI such as user agency and privacy. Based on our findings, we outline the design space of AI-mediated social interaction. We discuss the design tension between AI performance and ethical design and pinpoint two design opportunities for AI-mediated social interaction in designing towards human-AI collaborative social matching and artificial serendipity.
131	Watermeyer, R., Phipps, L., Lanclos, D. & Knight, C. (2023). Generative AI and the Automating of Academia. *Postdigital Science and Education*, *6(2)*, 446–466. https://doi.org/10.1007/s42438-023-00440-6	The neoliberal transformation of higher education in the UK and an intertwined focus on the productive efficiency and prestige value of universities has led to an epidemic of overwork and precarity among academics. Many are found to be struggling with lofty performance expectations and an insistence that all dimensions of their work consistently achieve positional gains despite ferocious competition and the omnipresent threat of failure. Working under the current audit culture present across education, academics are thus found to overwork or commit to accelerated labour as pre-emptive compensation for the habitual inclemency of peer-review and vagaries of student evaluation, in accommodating the copiousness of 'invisible' tasks, and in eluding the myriad crevasses of their precarious labour. The proliferation of generative artificial intelligence (GAI) tools and more specifically, large language models (LLMs) like ChatGPT, offers potential relief for academics and a means to offset intensive demands and discover more of a work-based equilibrium. Through a recent survey of n = 284 UK academics and their use of GAI, we discover, however, that the digitalisation of higher education through GAI tools no more alleviates than extends the dysfunctions of neoliberal logic and deepens academia's malaise. Notwithstanding, we argue that the proliferating use of GAI tools by academics may be harnessed as a source of positive disruption to

		the industrialisation of their labour and catalyst of (re)engagement with scholarly craftsmanship.
132	Yang, H., Kim, H., Jang Ho, L. & Shin, D. (2022). Implementation of an AI chatbot as an English conversation partner in EFL speaking classes. *ReCALL: the Journal of Eurocall*, *34*(3), 327-343. https://doi.org/https://doi.org/10.1017/S0958344022000039	With the growth of chatbots, concerns about implementing artificial intelligence (AI) chatbots in educational settings have consistently arisen, especially for the purpose of language learning. This study introduced a task-based voice chatbot called "Ellie", newly developed by the researchers, and examined the appropriateness of its task design and performance as an English conversation partner and students' perceptions on using it in EFL class. Korean EFL learners (N = 314) aged 10–15 years performed three speaking tasks with Ellie in their school classroom. The participants took 9.63 turns per session on average using the first 1,000-word band, indicating that the chatbot highly encouraged students to engage in conversation, which rarely occurs in general EFL classes in Korea. The high task success rates (88.3%) showed the design appropriateness of both L2 tasks and operational intents in terms of users' successful understanding and completeness of the given chatbot tasks. The participants' responses to the survey not only supported the positive potential of the chatbot in EFL settings but also revealed limitations to be resolved. Future suggestions for advancing and implementing AI chatbots in EFL classrooms are discussed.
133	Yende, S. J. & Mugovhani, N. G. (2022). Tensions and conflicts in indigenous African cultural heritage at South African universities: An artificial intelligence perspective. *Journal of African Education*, *3*(3), 79-79–96. https://doi.org/https://doi.org/10.31920/2633-2930/2022/v3n3a4	This paper discusses the tensions and conflicts in the indigenous African cultural heritage, ushered in by the inception of artificial intelligence (AI). The rapid upsurge of technology worldwide has become a knife-edge of new political, economic, and cultural realities. This threat has been prevalent and predominant in both semi-peripheral and peripheral countries. AI has exerted pressure on African countries to respond to increasing levels of technology. As a result, indigenous African cultural heritage is confronted with several challenges. Some of the challenges confronting indigenous African musical heritage, for instance, include the absence of reliable indigenous African

		musical heritage teaching materials, neglect of indigenous African cultural heritage, and restoration and protection of indigenous African cultural heritage. This paper is a discourse and brings awareness about the tensions and conflicts in indigenous African cultural heritage at South African universities. A qualitative research method was employed using approaches such as a interviews and review of scholarly writings. This paper concludes by recommending that the stakeholders, policymakers, and decision-makers at South African universities should develop a robust AI policy that contributes to the value of African cultural heritage.
134	Yeo, M. A. (2023). Academic integrity in the age of Artificial Intelligence (AI) authoring apps. *TESOL Journal*, *14*(3), 1-12. https://doi.org/10.1002/tesj.716	What does it mean to write, learn to write, and teach writing in an age when students can use the latest artificial intelligence (AI) co-authoring tools to produce entire essays without even adding an original idea or composing a single sentence? This article addresses questions of authorship and academic integrity concerning the use of AI writing assistants and the latest GPT-3 (Generative Pre-trained Transformer, Version 3) tools. It begins by problematizing the use of these tools, and then illustrates how students can use these tools to paraphrase, summarize, extend, and even create original texts with minimal original input, raising questions about authorship and academic integrity. The author argues that as these tools become more widespread, teachers must find creative ways to integrate them into the teaching and learning process and offer practical suggestions for classroom practice. The author hopes to raise awareness about threats to academic integrity brought about by the use of the latest AI co-authoring tools and aims to equip teachers with strategies to embrace the use of these new digital technologies in the teaching of writing.
135	Yuan-Hsuan, L. (2023). Achieving success in English medium instruction using computer-mediated terminology pretraining under the	Background: Implementing English medium instruction (EMI) has become a proliferating measure in higher education to embrace globalization. Nevertheless, university students reported various challenges in taking EMI

	problem-based learning pedagogy. *Journal of Computer Assisted Learning*, *39*(3), 921-934. https://doi.org/https://doi.org/10.1111/jcal.1 2777	courses. Objectives: This study investigated the effect of the computer-mediated terminology pretraining on university students' EMI success, regarding their efficacy in taking EMI courses, self-directed learning (SDL), and EMI performance. Methods: Participants were 86 university students enrolled in two EMI educational psychology courses. Students in the experimental group were assigned computer-mediated terminology pretraining tasks for 13 consecutive weeks, while those in the control group did not receive the pretraining assignment. Both groups were taught using the problem-based learning (PBL) pedagogy with a computer-mediated structured whiteboard. Results and Conclusion: The study findings showed that the computer-mediated terminology pretraining enhanced learners' response efficacy. Both groups increased their SDL under the PBL pedagogy. Besides, multigroup comparison results demonstrated that efficacy in EMI positively predicted SDL, which was related to better EMI performance in the experimental group but not in the control group. Notably, students conducting computer-mediated terminology pretraining remitted the influence of English ability on their EMI performance. Major Takeaways from the Study: Implications for instruction were made to use the combined strategy of the computer-mediated terminology pretraining and PBL in EMI courses to facilitate university students' efficacy in taking EMI courses, self-directed learning behaviours, and EMI performance.
136	Yusuf, A., Pervin, N. & Román-González, M. (2024). Generative AI and the future of higher education: a threat to academic integrity or reformation? *International Journal of Educational Technology in Higher Education*, *21*(1), 21. https://doi.org/https://doi.org/10.1186/s412	In recent years, higher education (HE) globally has witnessed extensive adoption of technology, particularly in teaching and research. The emergence of generative Artificial Intelligence (GenAI) further accelerates this trend. However, the increasing sophistication of GenAI tools has raised concerns about their potential to automate teaching and research processes. Despite widespread research on GenAI in various fields, there is a lack of multicultural perspectives on its impact and concerns in HE. This study addresses this gap

	39-024-00453-6	by examining the usage, benefits, and concerns of GenAI in higher education from a multicultural standpoint. We employed an online survey that collected responses from 1217 participants across 76 countries, encompassing a broad range of gender categories, academic disciplines, geographical locations, and cultural orientations. Our findings revealed a high level of awareness and familiarity with GenAI tools among respondents. A significant portion had prior experience and expressed the intention to continue using these tools, primarily for information retrieval and text paraphrasing. The study emphasizes the importance of GenAI integration in higher education, highlighting both its potential benefits and concerns. Notably, there is a strong correlation between cultural dimensions and respondents' views on the benefits and concerns related to GenAI, including its potential as academic dishonesty and the need for ethical guidelines. We, therefore, argued that responsible use of GenAI tools can enhance learning processes, but addressing concerns may require robust policies that are responsive to cultural expectations. We discussed the findings and offered recommendations for researchers, educators, and policymakers, aiming to promote the ethical and effective integration of GenAI tools in higher education.
137	Zembylas, M. (2023). A decolonial approach to AI in higher education teaching and learning: strategies for undoing the ethics of digital neocolonialism. *Learning, Media & Technology*, 48(1), 25-37. https://doi.org/10.1080/17439884.2021.2010094	The aim of this article is to use decolonial thinking, as applied in the field of AI, to explore the ethical and pedagogical implications for higher education teaching and learning. The questions driving this article are: What does a decolonial approach to AI imply for higher education teaching and learning? How can educators, researchers and students interrogate the coloniality of AI in higher education? Which strategies can be useful for undoing the ethics of digital neocolonialism in higher education? While there is work on decolonial theory in AI as well as literature on the decolonization of higher education, there is not much theorization that brings those literatures together to develop a decolonial conceptual framework for ethical AI in higher education teaching

		and learning. This article offers this conceptual framing and suggests decolonial strategies that challenge algorithmic coloniality and colonial AI ethics in the context of higher education teaching and learning.
138	Zhang, Y., Chen, H., Pi, Z. L., & Yang, J. M. (2024). Interactive equality in peer assessment: The impacts on preservice teachers' technology-enhanced learning design and feedback uptake. *Teaching and Teacher Education*, *138,* 104408. https://doi.org/10.1016/j.tate.2023.104408	To address the limitation of lacking interactivity in conventional peer assessment, this study proposed an interactive peer assessment approach and examined its effectiveness in an undergraduate course for preservice teachers (PSTs). Seventy-two PSTs were randomly assigned to the interactive or conventional group. The results indicated that the interactive group outperformed the conventional group with regard to technology-enhanced learning design skills, feedback quality and feedback uptake. Furthermore, feedback uptake was identified as a mediating factor to the effectiveness of the interactive approach. The study advocates for the integration of an interactive peer assessment approach into future online teacher educational settings.
139	Zheng, L., Fan, Y., Huang, Z., & Gao, L. (2024). Impacts of three approaches on collaborative knowledge building, group performance, behavioural engagement, and socially shared regulation in online collaborative learning. *Journal of Computer Assisted Learning*, *40*(1), 21-36. https://doi.org/10.1111/jcal.12860	Background: Online collaborative learning has been widely adopted in the field of education. However, learners often find it difficult to engage in collaboratively building knowledge and jointly regulating online collaborative learning. Objectives: The study compared the impacts of the three learning approaches on collaborative knowledge building, group performance, socially shared regulation, behavioural engagement, and cognitive load in an online collaborative learning context. The first is the automatic construction of knowledge graphs (CKG) approach, the second is the automatic analysis of topic distribution (ATD) approach, and the third one is the traditional online collaborative learning (OCL) approach without any analytic feedback. Methods: A total of 144 college students participated in a quasi-experimental study, where 48 students learned with the CKG approach, 48 students used the ATD approach, and the remaining 48 students adopted the OCL approach. Results and Conclusions: The findings revealed that the CKG approach could encourage collaborative knowledge building, socially shared regulation, and

		behavioural engagement in building knowledge better than the ATD and OCL approaches. Both the CKG and ATD approaches could better improve group performance than the OCL approach. Furthermore, the CKG approach did not increase learners' cognitive load, but the ATD approach did. Implications: This study has theoretical and practical implications for utilising learning analytics in online collaborative learning. Furthermore, deep neural network models are powerful for constructing knowledge graphs and analysing topic distribution.
140	Zhou, G., Hamoon, A., Ausin Markel, S., Barnes, T., & Chi, M. (2022). Leveraging Granularity: Hierarchical Reinforcement Learning for Pedagogical Policy Induction. *International Journal of Artificial Intelligence in Education*, *32*(2), 454-500. https://doi.org/https://doi.org/10.1007/s40593-021-00269-9	In interactive e-learning environments such as Intelligent Tutoring Systems, pedagogical decisions can be made at different levels of granularity. In this work, we focus on making decisions at two levels: whole problems vs. single steps and explore three types of granularity: problem-level only (Prob-Only), step-level only (Step-Only) and both problem and step levels (Both). More specifically, for Prob-Only, our pedagogical agency decides whether the next problem should be a worked example (WE) or a problem-solving (PS). In WEs, students observe how the tutor solves a problem while in PSs students solve the problem themselves. For Step-Only, the agent decides whether to elicit the student's next solution step or to tell the step directly. Here the student and the tutor co-construct the solution and we refer to this type of task as collaborative problem-solving (CPS). For Both, the agency first decides whether the next problem should be a WE, a PS, or a CPS and based on the problem-level decision, the agent then makes step-level decisions on whether to elicit or tell each step. In a series of classroom studies, we compare the three types of granularity under random yet reasonable pedagogical decisions. Results showed that while Prob-Only may be less effective for High students, Step-Only may be less effective for Low ones, Both can be effective for both High and Low students. Motivated by these findings, we propose and apply an offline, off-policy Gaussian Processes based Hierarchical Reinforcement Learning (HRL) framework to induce a hierarchical pedagogical policy that

		makes adaptive, effective decisions at both the problem and step levels. In an empirical classroom study, our results showed that the HRL policy is significantly more effective than a Deep Q-Network (DQN) induced step-level policy and a random yet reasonable step-level baseline policy.
141	Zhu, G., Raman, P., Xing, W. & Slotta, J. (2021). Curriculum design for social, cognitive and emotional engagement in Knowledge Building: Revista de Universidad y Sociedad del Conocimiento. *International Journal of Educational Technology in Higher Education*, *18*, 37. https://doi.org/https://doi.org/10.1186/s41239-021-00276-9	Knowledge Building has been advanced as a pedagogy of engaged learning where students identify as a community whose purpose is to advance their shared ideas. This approach, which has been studied for three decades (Scardamalia & Bereiter, in: K. Sawyer (ed) Cambridge handbook of the learning sciences, Cambridge University Press, 2014), includes cognitive, social constructivist, and emotional elements (Zhu et al. in User Modeling and User-Adapted Interaction, 29: 789–820, 2019b). This paper investigates how refining Knowledge Building activities based on students' feedback impacts their social, cognitive, and emotional engagement. Using a design-based research method, we refined successive course activities based on feedback from 23 Masters of Education students. With successive iterations, we found that the density of students' reading networks increased; they theorized more deeply, introduced more authoritative resources, and made greater efforts to integrate ideas within the community knowledge base. As well, their level of negative affect decreased. These findings suggest that soliciting students' input into course design can benefit their engagement and disposition toward learning, with implications for curriculum design.