

Professor Rowena Harper
Deputy Vice-Chancellor (Education)



14 July 2023

JOONDALUP CAMPUS

270 Joondalup Drive, Joondalup
Western Australia 6027
☎ 134 328

www.ecu.edu.au

The House Standing Committee on Employment, Education and Training

ABN 54 361 485 361 CRICOS IPC 00279B

Inquiry into the use of generative artificial intelligence in the Australian education system

Edith Cowan University (ECU) is a large public university with a strong reputation for providing high quality student support, and excellence in teaching and research. ECU is committed to fostering and promoting diversity, equity and inclusion, both within our institution and the wider community. As ECU's Deputy Vice-Chancellor (Education), I appreciate the opportunity to contribute to this vital conversation about the opportunities and threats posed by generative artificial intelligence to higher education.

Terms of Reference

1. The strengths and benefits of generative AI tools for children, students, educators and systems and the ways in which they can be used to improve education outcomes.

In March 2023, ECU conducted a survey of students to gather their experiences with and perspectives on Artificial Intelligence (AI), and over 1,500 students responded. One student, who also works in IT, neatly captured the potential role AI might play for students and educators: "a co-worker and teacher". Generative AI tools based on large language models are capable of:

- summarising complex information in accessible ways
- formatting information in a variety of styles
- translating text into a target language, or everyday language
- explaining concepts and processes in different ways
- creating texts in any genre
- providing iterative feedback
- proofreading or error-checking

Other AI tools are capable of generating or editing images, video, and sound and can be used for art and content production, captioning, text-to-speech (including voice cloning), image-to-speech and more. All of these functions have the potential to support and accelerate learning for students, and support curriculum development and teaching for educators.

As a tool, however, AI is only as capable as its users. To *actually* improve education outcomes, educators and students must be taught to use AI both productively and ethically. Writing prompts for AI tools is quickly becoming a new core capability, one which everyone will need to learn in order to leverage the affordances of AI. But perhaps more important is the *judgement* required to discern when AI can be used as a co-worker (e.g. to speed up tasks, or for cognitive offloading), when it can be used as a teacher (e.g. to build one's own knowledge and understanding), and when it should not be used at all.

2. The future impact generative AI tools will have on teaching and assessment practices in all education sectors, the role of educators, and the education workforce generally.

Many educational researchers predict that Generative AI will prompt significant transformation of university curriculum, teaching, and assessment in the short, medium and longer term. The likely shifts are outlined below. These shifts have been underway for some time, but they will likely accelerate and be required at scale in response to AI.

Curriculum shift from knowledge to skills. Graduates will need to be able to articulate to their communities and prospective employers what they offer, over and above the outputs of AI tools. Knowledge, as an end point of learning, will remain important, but will need to be reviewed to make more room for uniquely human skills and capabilities. Disciplines will need to rationalise what content students are required to 'know' to enact higher order thinking and operate safely as citizens and professionals, and what content is no longer required (if students can generate that content on demand if/when needed).

Teaching shift towards new pedagogies. To support a shift from knowledge to skills, there will likely be an ongoing reduction in the use of content transmission as a teaching practice. Teaching will require more systematic use of intentional pedagogies. Educators will need a working understanding of learning theories which explain how people learn so they can deploy the best pedagogies for enabling students to meet revised learning outcomes. Learning technologies and learning spaces must be capable of supporting these pedagogies.

Assessment shift towards authentic, integrative tasks. The most immediate risk posed by Generative AI in higher education is to the integrity of assessment. There are countless media reports of AI successfully passing university assessments in a wide range of disciplines. AI now poses a far larger threat to educational integrity than contract cheating, which has been the focus of significant government investment and policy and practice renewal. Proportional investment will be needed to respond to the threats of AI.

The *Higher Education Standards Framework (Threshold Standards) 2021* require that learning outcomes are articulated at the course level (1.4.1), that methods of assessment are capable of assuring learning against those outcomes (1.4.3) and that on completing a course, students have met those learning outcomes. Most university courses undertake this process cumulatively at the unit level, with unit results also determining students' academic progression. As a result, current practice demands that every individual assessment task (on average 2-4 assessments in every unit) must be 'secured' in the interest of academic integrity. This is not sustainable, as the resources required to secure these assessments against contract cheating and now AI are considerable and would be better invested in practices that directly support learning.

In my view, the future of university assessment should involve fewer, high-quality summative assessments that operate at the course (rather than unit) level. These would be highly authentic, applied, and integrative of the learnings across all units. Student development towards these summative tasks would be supported by enhanced teaching practices and low- or no-stakes formative assessments that provide rich, personalised feedback. There are precedents for these approaches in Australia and overseas, but such shifts would have significant implications for how a majority of university courses are organised, including both intra- and inter-institutional implications for processes such as academic progression, credit transfer, and recognition of prior learning. It would therefore be infeasible for individual institutions to make these changes at scale without broader sector-wide commitment.

With regard to the higher education workforce, both at the collective and individual levels, it divides its time between the two priorities of teaching and research. The additional demands to transform curriculum, teaching and assessment in the coming years will create tensions with research

performance for individuals and institutions that will need to be managed. However, AI will become an important avenue for research in every discipline.

3. The risks and challenges presented by generative AI tools, including in ensuring their safe and ethical use and in promoting ongoing academic and research integrity.

In the ECU student survey, only about 30% of students who had used AI expressed some confidence in using AI *ethically*. Over 50% of students were not at all confident, had mixed feelings, or felt unable to judge. With this in mind, the biggest risks to society are perhaps posed not by Generative AI but by its *uncritical adoption*.

Generative AI tools use mathematical algorithms to predict or determine their best outputs. They do not think, reason or fact check, but rather use probability. This means they can generate outputs that are partial, inaccurate, incorrect, or fabricated. They carry a range of ethical risks, which emerge not just from the variable quality of the outputs, but also from how they are initially trained, the invisibility of their algorithms, the source materials they draw from, how they learn from user feedback, and how they imply reliability.

Bias and a lack of transparency. Tools are trained primarily on materials accessible on the web, which are often poor quality and reflect the biases of the real world. Outputs can therefore reflect existing absences, mis-representations, stereotypes and prejudices. There is little transparency about sources or about how the algorithms work. One risk is that the ‘veneer of objectivity’¹ of large language models, for example, makes educators and students naïve to their quality issues and discriminatory potential. Another risk is reputational and commercial damage caused by educators building curriculum materials from outputs based on unknown sources.

Privacy. Outputs can contain sensitive information or personally identifiable information (PII), and there is a risk that users (students or educators) may input these types of information into AI tools.

Human exploitation, including copyright and Intellectual Property infringement. The materials on which tools are trained were created by humans who, in most cases, have not provided their consent to their materials being used in these ways. AI algorithms are trained by large populations of people in precarious, often low-paying employment², some of whom must engage with harmful and toxic content in order to sanitise the outputs³. This system of exploitation appears to be contributing to a further concentration of wealth and deepening of financial inequality⁴. The risk is that – unchecked – AI will accelerate existing socio-political division and volatility⁵.

At this stage, risks are still emerging so mitigation strategies may be mostly absent or immature. And there is not yet consensus on the sector’s risk appetite. For example, in the research integrity context, there are reported instances of researchers using AI to support the development of conference proposals, and of grant reviewers using AI to help prepare feedback for applicants. Is the use of AI, in itself, a threat to integrity in this context? And if not, when might the use of AI cross a line? The challenges are similar in relation to education. Academics have been seeing assignment submissions that use AI to generate ideas, format texts, reduce wordiness, or improve language use. Whether or not these uses constitute a breach of academic integrity may depend on the learning outcomes being assessed.

The *UNESCO Recommendation on the Ethics of Artificial Intelligence*⁶ highlights a wide range of risks across the AI system life cycle, and asserts the importance of transparency, accountability and ethical decision making for all actors involved in any part of this life cycle. It is a useful guide for policy makers at a range of levels.

4. How cohorts of children, students and families experiencing disadvantage can access the benefits of AI.

Enabling equitable access to AI should be supported by state and federal strategy, given that many reports indicate that AI and automation are most likely to disrupt employment for populations in areas of lower educational attainment. Access to reliable internet will be required, which remains a challenge in many regional areas. Subscription models for some tools and access to appropriate hardware will make access cost prohibitive, but Schools and Libraries could be leveraged to support community access and engagement.

Summary of recommendations

1. Universities should be supported to lead public debate about the ethics of AI, as university graduates should be equipped not just as users of AI, but future leaders of ethical AI development and adoption. Educational programs for educators and students should therefore include all known ethical issues, risks and challenges.
2. Investments will need to be made in the higher education workforce to:
 - develop their knowledge and skills in the productive and ethical use of AI to enable them to create relevant curricula for students;
 - enhance their teaching capabilities to enable the use of intentional pedagogies that develop uniquely human skills, and
 - build their assessment design abilities so they can reconceptualise assessment to maintain course integrity.
3. The Australian Qualifications Framework must be capable of enabling the necessary curriculum renewal, particularly in its framings, definitions and specifications for knowledge and skills.
4. Professional accreditation bodies, industry and universities will need to be aligned in their positions in order to enable responsive and coherent courses.
5. Federal sponsorship would best enable the sector-wide collaboration needed to conceptualise and guide assessment renewal while maintaining the quality and reputation of Australian higher education.

Yours sincerely,

Professor Rowena Harper
Deputy Vice Chancellor (Education)
Edith Cowan University

-
- ¹ <https://news.harvard.edu/gazette/story/2020/10/ethical-concerns-mount-as-ai-takes-bigger-decision-making-role/>
 - ² <https://www.theverge.com/features/23764584/ai-artificial-intelligence-data-notation-labor-scale-surge-remotasks-openai-chatbots>
 - ³ <https://time.com/6247678/openai-chatgpt-kenya-workers/>
 - ⁴ <https://www.technologyreview.com/2022/04/19/1049378/ai-inequality-problem/>
 - ⁵ <https://www.newyorker.com/science/annals-of-artificial-intelligence/will-ai-become-the-new-mckinsey>
 - ⁶ <https://www.unesco.org/en/artificial-intelligence/recommendation-ethics?hub=32618>