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GENAI USE AND RISKS IN HIGHER EDUCATION: A PRELIMINARY REVIEW FOR RESEARCH IN NEW ZEALAND CONTEXTS

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INTRODUCTION

While AI has been used in data processing and technology by academia for some time, it was as recently as 2022 that the OpenAI team released the first publicly available generative AI (GenAI) ChatGPT 3.0 (Hu, 2023). From that moment on, the history and use of AI, as we are familiar with it, has been rewritten. The Oxford English Dictionary (2023) defines AI as the ability of a computer or software to simulate human intelligence, performing tasks that might have previously been considered as only able to be performed by humans. Generative AI-produced text has been subjected to the Turing test designed to distinguish computers from humans and has succeeded in more than 140 instances, with the only observed non-human trait being the willingness of the GenAI interactions (Biever, 2023; Mei et al., 2024). Prior to the release of GenAI, the technology had been embedded in purpose-built software with very defined applications; now, we have publicly available and easily accessed AI that may be used for many purposes including academic learning and teaching.

To achieve such rapid development, GenAI training has used Large Language Models (LLMs), a training model for AI that permits natural language learning and interaction for diverse tasks, including computation and text generation (MIT Technology Review Insights, 2023; Zewe, 2023). Using natural language helps move GenAI towards the appearance of human intelligence. Trained on large data sets of the chosen language (IBM, 2023), GenAI is capable of conversational interaction with users, giving rise to the chatbot, a user-friendly interface to GenAI driven by LLMs that provides easy access for general users; for example, ChatGPT (The AI Navigator, n.d.). Chatbots such as ChatGPT 3+ provide much easier user access to GenAI capabilities without any knowledge of programming languages, using simple prompts in the language of use. Following the OpenAI release of ChatGPT 3 from 2023 to 2025, we have seen the explosive emergence of multiple free open-source GenAI LLMs such as Meta's LLAMA, CLAUDE, BLOOM and MS Copilot (which uses ChatGPT) (AI for Education, 2025). Consequently, GenAI is increasingly accessible to all students and academics.

When undertaking this review, it was observed that publications investigating the New Zealand contexts of GenAI uptake and use are minimal. Furthermore, as far as can be determined, very few studies in the literature set are from academics in polytechnics or their overseas equivalents. This short narrative review examines the impacts of GenAI on global academic institutions, focusing on student and lecturer experience in overseas studies and analysing overseas trends as a background for researching the New Zealand experience in GenAI, with a focus on polytechnics. The literature was surveyed from a range of Education and Computer Science databases and open access sources.

The review aims to discuss GenAI in the following thematic contexts:

1. What are the impacts of GenAI on Higher education?

2. How are students using GenAI and what are the associated issues?
3. What are the academic concerns around student use of GenAI?
4. What do we know about the uptake of GenAI by academic staff, their uses of AI, and perceived issues for GenAI adoption, and
5. Is there variation of GenAI uptake in different disciplines relevant to Unitec and other polytechnics and higher education providers in New Zealand?

The purpose is to identify themes of interest to academics in polytechnic and other higher education institutes in New Zealand to elucidate questions for a GenAI survey that is now in circulation. By understanding concerns about GenAI, we can take steps to better support our academic teaching and support teams as we move into the era of GenAI in higher education.

IMMEDIATE IMPACTS IN HIGHER EDUCATION

The quality of LLM outputs, wherein ChatGPT can write credible homework assignments and answer exam questions, initially surprised academic institutions and promulgated new policies to manage AI use by students in their assessments. Chatbots such as ChatGPT 3+ landing free to market have changed the educational landscape and caused some concerns, prompting bans in AI in some cases or otherwise restrictive policy responses (Delcker et al., 2024; Johnston et al., 2024; Perkins et al., 2024). ChatGPT and similar chatbots can create credible essay answers (Stokel-Walker, 2022). ChatGPT 3.5+ models can pass medical registration exams and other academic tests, including writing at undergraduate and postgraduate levels (Mbakwe et al., 2023; Williams, 2024). OpenAI state that they train their chatbots ChatGPT 3.5, 4 and higher, on the medical registration syllabus (OpenAI, 2025). It is suggested that the ease of GenAI chatbots producing outputs that would pass medical board registration exams is an indictment of the examination process more than an issue with chatbots (Mbakwe et al., 2023).

Institutional responses have shifted as more LLM models have entered the field, and as academics have had time and access to these tools to assess the likely benefits of GenAI. Maintaining academic integrity and quality of writing will always be essential, whether in a polytechnic or university environment, and students are expected to take responsibility for their own academic integrity. Incorporating GenAI into learning and teaching, rather than banning it, is now the topic of discussion (Jin et al., 2024). Institutional policies in New Zealand are generally open to using GenAI in all aspects of education, putting the burden on academics to choose where to permit GenAI use (NZQA, n.d.; The University of Auckland, n.d.). The very open nature of the New Zealand Qualifications Authority (NZQA)'s advice means that polytechnics must carefully produce their policies based on this source information. This review considers principles of GenAI implementation that could influence such academic staff responses.

STUDENT USE

Internationally, students entering tertiary education are likely to be articulate in GenAI chatbot use, although this is only demonstrated for university students in the surveyed literature. According to Johnston et al. (2024), students have already learned to use LLMs to provide research leads and help produce assessments, including writing them in full. LLMs may also help students for whom writing has been a barrier, such as neurodiverse students, to achieve in their tertiary studies (Heidt, 2024; Ooi et al., 2023; Xia et al., 2024). Without prompting, students harness GenAI in other ways that support their studies, including assembling revision or creating prep notes, and assisting their time management (Heidt, 2025).

However, it is also shown that students risk delaying assessment work knowing that an LLM will write it for them; hence, procrastination is a risk for students who regularly use GenAI for their writing, particularly under high academic workloads (Delcker et al., 2024). Students have also shown some understanding that chatbots

can hallucinate, impacting learning and propagating false information. The veracity of information generated by GenAI is prone to limitations derived from the training databases, and students need to be aware of the risk of false information produced by GenAI (Acerbi & Stubbersfield, 2023). These limitations regarding the training of GenAI also emerge in discipline-specific considerations, which are discussed below. GenAI has also been shown to produce false references, although this tendency may be reduced with newer LLMs (Spennemann, 2025). Students need to be aware of these limitations of GenAI.

Some studies have also shown that students' use of AI to write their essays, in addition to procrastination, may result in reduced memory, limited development of critical thinking, and decreased academic performance (Johnston et al., 2024; Smerdon, 2024; Zhang & Xu, 2025). One response to GenAI use has been implementing the detection of GenAI in student written work, leading to a potential standoff between the writing bots and detectors (Liu et al., 2024). A further issue is the economic pressure for students to purchase better performance (AI for Education, 2025), including improved paraphrasing of AI-generated writing to avoid detection.

CONCERNS OF ACADEMICS AND IMPLICATIONS FOR ACADEMIC QUALITY

Lecturers may have anticipated the emergence of GenAI, and many are cognisant of AI associated with analytic and business applications from prior use. However, the ability of LLMs to write high-quality exam and assessment responses was not anticipated (Williams, 2024). The academic response has been mixed, with some embracing AI and others expressing concern for the effects GenAI may have on assessment and certification (Byrnes, 2024; Jin et al., 2024; Ooi et al., 2023; Xia et al., 2024). Some lecturers are searching for alternate ways to assess their students due to academic quality concerns (Cotton et al., 2024; Xia et al., 2024).

Academic teams acknowledge the need to engage students in understanding and recognising the limitations of GenAI and taking responsibility for academic integrity in their writing (Aung et al., 2021; Cotton et al., 2024; Gruenhagen et al., 2024; Yusuf et al., 2024). One such approach could be encouraging students to take pride in their voice and research even when using GenAI to help write their assignments (Blackwell-Starnes, 2025). Lecturers also recognise the need to change their assessment modes. While face-to-face or in vivo assessments such as in-person exams or oral evaluation may help isolate GenAI and validate testing of individuals for certification (Lye & Lim, 2024), assessors also need to adopt approaches that embrace GenAI.

Can GenAI be avoided? Designing assessments welcoming GenAI use may confront faculty. Embracing the AARDVARC model, using alignment of tasks, authenticity, reliability of judgements, developmental appropriateness, validity of assessment, accessibility to student, realism, and constructiveness, could allow assessments to include AI without losing their value (Chapman et al., 2024). Lecturers must consider all these values and may also use GenAI to design assessment activities or contexts while applying the same lenses (Chapman et al., 2024). Such assessments may be aligned with learning by assessment, whereas conflicts may arise if the assessment's purpose is to certify or benchmark learning. Personal reflection, peer assessments, and self-assessment modes can help avoid GenAI impacts (Lye & Lim, 2024). Some assessments may lend themselves to using GenAI for components such as preparation and research and are valued because they provide training opportunities for work-readiness in the age of GenAI (Lye & Lim, 2024; Wach et al., 2023).

The pitfalls of GenAI detection also need to be addressed. Undisguised AI-promulgated text may be detected one hundred percent of the time by Turnitin, Copyleaks, and Originality.ai (Berek, 2024). However, such GenAI detectors are only partially successful at detecting well-disguised AI written work. Another problem with AI detection is false positives. Studies by Gao et al. (2022) and Rashidi et al. (2023) showed 12 percent and 8 percent false positives respectively; in other words, detectors suggested that this proportion of human-derived or historic (pre-GenAI) abstracts were machine-generated. Gao et al. (2022) also noted false negative detections marking machine-generated text as human. Further, using grammar correction software such as Grammarly (without AI switched on), which is generally perceived as acceptable academic integrity practice, can also result in 100 percent

GenAI-detection rates (Chemaya & Martin, 2024). Assessors must therefore be exceptionally careful when reporting GenAI detection or addressing these issues in academic integrity investigations. The same considerations apply to academics' use of GenAI for their own writing.

ACADEMIC USE OF GENAI

There are many opportunities for using GenAI in learning and teaching that academics are exploring (Ooi et al., 2023). Providing specific and individualised feedback and facilitating individual learning experiences for students are good examples of the beneficial use of GenAI (Dai et al., 2024; Zhan & Yan, 2025). Opportunities also exist to create support for students powered by AI (Dai et al., 2024). Further possibilities of GenAI including gamifying learning using chatbots, providing electronic avatars of historical figures (Heidt, 2025), supporting lesson planning (Peikos & Stavrou, 2025), content generation, and research. Academics for whom English is a second language may benefit from GenAI to support content generation and planning for their lessons (Heidt, 2024).

Implementing AI into learning and teaching, to some extent, varies by discipline. It is helpful here to consider the uses of GenAI in disciplines relevant to educators from polytechnics and other providers.

GenAI is more often likely to be recommended by business faculty when their real-world industry has a high AI uptake. Business faculty understand the uses of GenAI and integration of GenAI into business learning and teaching practices (Ooi et al., 2023). Using GenAI as a technology support in business training can improve understanding of GenAI's capability. It can also improve business students' goal orientation and willingness to use technology. Conversely, where students overly rely on such technology, it has contributed to reduced motivation (George et al., 2025). Unsurprisingly, faculty in Information Technology and programming disciplines have been faster in adopting GenAI for many purposes, including coding, where they note that GenAI can code well but is often inefficient. Hence, it can be a tool for training students to code more efficiently, but students who over-rely on GenAI for coding show reduced results (Lepp & Kaimre, 2025). Globally, GenAI use in language training is widely reported. One of the very few studies performed in New Zealand on GenAI shows benefits for language training through active research with students in a German Language course at the University of Otago (Alm, 2024).

GenAI has been readily adopted in medical practice for uses such as triage assistance, leveraging GenAI to filter text from patient records and help manage large caseloads (Hackl, 2024). Human radiographic analysis has long used AI-driven specialised software to assist radiographic analysis, and the capability of ChatGPT to fulfil this role has also recently been demonstrated (Kalidindi & Baradwaj, 2024). Limits on GenAI implementation have been identified in veterinary radiography, and the need for further developing veterinary radiography AI systems has been identified (Kim et al., 2022). Veterinary faculty and students are ready for GenAI implementation (Chu, 2024; Worthing et al., 2024), so it may be a matter of how quickly faculty catch up with peers in other disciplines. Nursing training faculty are also catching up on GenAI uses in training compared to medical faculty but have identified potential benefits of GenAI adoption (Chan, 2025; Simms, 2025).

In the Life Sciences, such as parasitology, the use of GenAI is limited by bias in the training of the AI and its content (also noted elsewhere), such as its misdiagnosis and provision of incorrect answers in parasitology tests. Hence, further training of the AI is necessary, but one study by Šlapeta (2023) shows potential for the future. Conservation science's adoption of GenAI has been impacted by issues of false or misleading data due to training issues, but the possibility for beneficial future use is acknowledged (Sandbrook, 2024). Conservation science has leveraged AI-driven software in photo traps to monitor wildlife and the AI trapping of pests (Gewin, 2025), although these are not instances of GenAI use. Researchers in life sciences seem less likely to use GenAI in learning and teaching currently, although GenAI is shown to be a helpful aid in lesson planning (Peikos & Stavrou, 2025). In the author's school (Environmental and Animal Sciences at Unitec), our stakeholders have clearly told us that our graduates need experience using GenAI for report writing and other mahi (L. Roberts, personal communication, June 9, 2025).

CONCLUSIONS

Other than opinion (Byrnes, 2024), minimal publications, and policy statements, research on GenAI in New Zealand is limited in the extent to which it addresses questions arising from the emergence of GenAI tools freely accessible to students across disciplines, including in New Zealand polytechnics. Our understanding is predominantly derived from overseas experience, of which this work represents a limited review. The rise of GenAI in academic settings is irreversible, and the challenge is how we respond as academics. This review has identified many ways that GenAI can enhance higher education experiences for students and assist academics in providing better and individualised learning experiences. We need to learn how to use GenAI, so research into academic attitudes to GenAI in New Zealand Higher Education, especially in polytechnics, is necessary to help develop our academic skills working with GenAI.

Many students in our system may benefit from GenAI to help provide a more level playing field, a benefit equally applicable to educators, particularly those for whom English is a second language. The adoption of GenAI by academics seems to correlate with the extent of GenAI use in their disciplines. For instance, business and medical faculty are more likely to have used GenAI and support its use in their field than ecologists or veterinarians in disciplines where the technology penetration has been more limited. The most common limitation of GenAI impacting academia is its tendency to hallucinate and produce false data. Academic staff need to be able to highlight the risks and essential ethical considerations for students using GenAI.

This review indicates a gap in New Zealand-derived data as the observations described here are almost entirely from overseas studies. We need to observe the uptake of GenAI in New Zealand higher education by students and academics alike. An opportunity for research into the status of GenAI uptake and academics' attitudes to GenAI is indicated, and the author is already surveying academics to address this gap. Further research to understand our student responses and use of GenAI is also necessary. Such studies should survey student understanding of GenAI's limitations as well as its opportunities, and cover the critical issue of academic honesty in GenAI use by students. Modification of learning and assessment methods will also be necessary as we join our students on the journey with GenAI.

LIMITATIONS

The studies in this review are predominantly built around earlier generations of GenAI and focus primarily on ChatGPT 3 and 3.5 use, with limited reflection on ChatGPT 4+ or any of the many new models emerging into the public domain. This limit on the range of GenAI reported is unlikely to impact the trends that have been observed.

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