Inquiry into generative artificial intelligence in education sectors

Swinburne's submission to The House of Representatives Standing Committee on Employment, Education and Training

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Introduction

Swinburne University of Technology welcomes the opportunity to contribute to the inquiry on generative artificial intelligence (AI). As a university of technology, Swinburne has a vision: People and technology working together to build a better world exploring the nexus between technology and people and that one cannot prosper without the other.

Artificial intelligence education has been undertaken at Swinburne for more than 10 years and continues to evolve. In 2021 we introduced a major sequence of undergraduate study relating to AI, which now accounts for 10% of enrolments in our Bachelor of Computer Science. Education in AI is further represented in the information systems discipline specifically within business analytics and analysis.

We recognise that generative AI is a fast-evolving issue, and the solution does not lie with any one educational body. Swinburne calls for a collective and collaborative approach in sharing the issues and opportunities for generative AI in the way we teach, assess and graduate students.

Swinburne recognises the vast issues and opportunities to the Australian education sectors that generative AI presents and the need for both educational institutions and governments to work together to formulate a response through key areas including:

- Driving generative AI work integrated learning practices
- Co-creation of a generative AI framework between educators and students
- Access and equity in the use of generative AI in education sectors
- Integrity versus Agility: policy and practice

In response to the inquiry's terms of reference, we have focussed on these key areas linking to our recent submission to the Universities Accord Discussion Paper and our vision of people and technology working together to build a better world.

Driving generative AI work integrated learning practices

This section addresses terms of reference 1 & 6

The rapid emergence of generative AI has important implications for the employability of university graduates. Generative AI is already affecting workplaces across the economy. This will only intensify as businesses and government become more familiar with the technology and the ways productivity may be enhanced as AI platforms evolve.

This will profoundly alter future employment types and the skill sets needed to service them. Employers will be seeking students with enhanced "generative AI literacy" as well as the practical ability to apply it effectively and ethically to solve business problems. While some generative AI skillsets will be common across different discipline areas, many will also be industry or domain specific and embedded in evolving work practices as each sector adapts to the emerging trends and future advancements in AI.

Work-integrated learning (WIL) has a critical role to play in preparing and educating students for this rapidly changing employment context. While courses of study must necessarily consider how generative AI impacts the teaching of specific subject matter, it is WIL that is best placed to link this discipline knowledge to industry practice and promote graduate attributes that align with the needs of different sectors.

Therefore, WIL will need to include two primary practices for students and industry:

- Tracking the emerging trends of generative AI use and its impact on workplace practices across all sectors that graduates seek employment within; and
- Embedding targeted opportunities in WIL offerings for students to gain exposure to industry-specific generative AI workplace practices, ensuring graduates are capable of applying such tools effectively

and responsibly in accordance with evolving industry standards.

Swinburne's strategic plan is aimed at producing work-ready graduates that the nation needs. In our Horizon 2025 Strategic Plan, Moon Shot 1 (below) sets our students up for success in their studies and in the workforce, which provides a pipeline for modern industry to build, innovate and develop with the help of students from dedicated fields of study.

Moon shot 1: Every Swinburne learner gets a work experience
All Swinburne undergraduate learners will experience work integrated learning and real industry experience during their degree, including placements, internships or industry-linked projects. This is made possible by Swinburne's extensive partnerships with leading Australian and global organisations. Learning by doing will define how we teach, assess and engage with students and industry. We will become curators of rich learning experiences, overcoming the boundary between work and study.

Embedding WIL opportunities into every student's degree course provides an exemplar of how the outlined two primary practices for students and industry could be achieved through:

Industry-linked projects

Industry-linked projects are currently being integrated into all Swinburne degree courses, offering an ideal platform for embedding specific generative AI educational content and direct use-cases. Where students engage directly with industry, there is also an opportunity for the student to lead the use of generative AI in practice. To properly facilitate and assess this exposure and experience, targeted assessments/tasks can be embedded to promote documentation of and critical self-reflection on the use of generative AI. End of project presentations, for example, could be required to directly address how generative AI was applied to the problem, what principles guided its use, and how these align with industry practice.

Placements and internships

Swinburne has a well-established tradition of on-the-job learning through industry placements and internships. Our students are exposed to workplace practices and learn how to apply their discipline knowledge effectively in an industry setting. Such work experiences may include exposure to workplace practices relating to generative AI, and it is likely that this exposure will intensify dramatically over the coming months and years. Students will thus be influenced and guided by encounters with generative AI in the workplace. At the same time, this direct exposure will present educators with the challenge of supporting and moderating generative AI use to promote professional reflection on generative AI as well as and critical and ethical engagement within their workplace context.

Complimentary Career Development Learning (CDL)

*W*ell-designed preparatory and complementary Career Development Learning (CDL) will be vital to maximising the effectiveness of matching theory and practice of generative AI via WIL. Students could experience this within the core of their course, as an elective, or as an integral part of any WIL unit. Generative AI is a generalisable example of the changing nature of education and industry and underlines the need for students learning from experience and understanding their own approach to lifelong learning - important themes at Swinburne. Embedding CDL exposes students to an interdisciplinary approach which can incorporate such themes as the future of work, the nature of creativity and problem-solving ethical and social dimensions, labour market and economy-wide effects. It is also a subject to which students bring their own experience.

Swinburne makes the following recommendations on the future of WIL:

- Use of generative AI tools should be a key component of student learning and thus fostered through targeted WIL pedagogy that embeds opportunities for students to experience general as well as discipline-specific generative AI workplace applications.

- Universities and regulatory bodies track emerging trends in the use of generative AI and its impact on workplace practices across all sectors and reflect these in course curricula.
- Universities, as educators of the future workforce, must equip graduates with the critical thinking skills and reflective practices required to navigate the effective, responsible and ethical use of generative AI in the future workplace. This reflects both the need of industry for AI-literate graduates and the influential role such graduates will have on future workplace practices involving the use of generative AI.

Universities should incorporate, where appropriate, generative AI tools into aspects of learning and assessment, with clear direction on how such tools may be used in the workplace. WIL pedagogy should support educators in the design of assessments that embrace the presence of generative AI and give students purposeful ways to apply generative AI in the context of industry relevant problems and practices.

Co-creation of a generative AI framework between educators and students

This section addresses terms of reference 1, 2, 3

The use of generative AI is rapidly expanding across the education sector and is having a significant impact on the ways in which students and staff engage with learning and teaching design and assessment. Like other universities, Swinburne is evaluating the benefits and limitations of generative AI tools for both educators and students to inform changes to our learning and teaching practices.

To ensure our curriculum stays relevant and responsive to learner needs, educators and students should co-create ways to incorporate generative AI tools into the classroom, projects and other assessment. Indeed, students' ability to use generative AI is likely to outpace educators, making their insight and experience relevant to the design of contemporary learning experiences. This approach promotes a culture of mutual learning, self-assessment and continuous improvement in the use of AI, making the learning process responsive, inclusive and adaptable to rapid and unpredictable technological advancements.

In early 2023, Swinburne convened an Artificial Intelligence Tools Taskforce to review current practice across the schools and the sector to investigate:

- Swinburne's position on the use and applications of generative AI tools.
- AI tools and their applications in different fields for both students and educators.
- the development of professional learning opportunities for educators.
- resources for staff and students.

Swinburne is currently developing several strategies that propose methods of co-creation to engage with students and their future learning.

Swinburne makes the following recommendations to support co-creation of AI tools between educators and students:

- Universities should be required to work with both students and staff to co-create approaches to the ethical use of generative AI tools with a focus on academic integrity.
- An agreed higher education response to communicating expectations regarding the use of AI in assessments, supported by broader professional learning opportunities for educators and clear guidelines for students, should be developed.
- Universities should re-evaluate existing assessments to ensure that they are aligned with desired student learning outcomes and are responsive to the capabilities of generative AI tools.
- TEQSA, as the regulator of higher education, should continue to provide timely resources for

institutional use on academic integrity as generative AI evolves.

Access and equity in the use of generative AI in education sectors

This section addresses terms of reference 4 & 6

Swinburne recognises the importance of supporting learners from diverse backgrounds to achieve their full potential in a tech-rich future. A critical aspect is ensuring that all students can develop digital literacy skills, including knowing how to use generative AI critically, safely and ethically.

For students from diverse backgrounds to engage in a lifelong education journey, intentional efforts must be made to ensure that the use of generative AI does not exacerbate or create new barriers for people to participate and thrive in further education.

Early access is best, taking note of ethnically and socially diverse communities to ensure that there is equal access to themes of AI.

Swinburne acknowledges that generative AI also provides opportunities to address access to education, including:

- Developing outreach programs to the community, industry and other education sectors which focuses on generative AI and equipping diverse groups to use generative AI. In doing so consideration would need to be given to ethics, access, use and consent.
- Preparing students from all backgrounds to engage successfully in higher education. As part of the transition of students to universities, providing support for students from socio, cultural and linguistically diverse backgrounds in the understanding of basic concepts which provide for richer learning experiences.

  In Victoria, the Tech Schools provide a platform to introduce new technologies earlier in the education ecosystem. Robotics, science, advanced manufacturing are variously built into curriculum. Swinburne's KIOSC is one such place, where high school students are exposed to future learning. Introducing AI to this environment from an ethical lens to a practical application is necessary and best practice.
- Using generative AI tools to provide personalised support and services to students. Generative AI is expected to provide opportunities to students with learning challenges, enhancing their experience, and improving their chances of success.
- Working in partnership with generative AI providers to develop ethical, safe, equitable and fair tools that support learning and teaching.

Swinburne makes the following recommendations to supporting access and equity in the use of generative AI in education sectors:

- State and federal governments should support equity of access to generative AI across educational sectors, in line with the provision of computers and the internet in primary and secondary schools. In Victoria, this should include specific funding to generate programs for Tech Schools.
- Ensure inclusive and equitable use of generative AI in education through national/state secondary curricula that support equitable access to generative AI tools.
- Support research about generative AI in education to provide an evidence base for future development of AI that supports fairness, equity and safety.

Integrity versus Agility: policy and practice

This section addresses terms of reference 1, 2, 3, 5, 6

The challenge for the sectors both in vocational and higher education is to remain agile so that it can respond quickly to the changing technological landscape ensuring students are equipped with critical thinking, evaluative judgement and ethical application, in particular as they incorporate AI into their learning and future work practices.

Whilst most of the generative AI focus has been on the immediate issue of student assessment integrity, there are broader operational issues that are likely to be impacted. When accepting applicants to our courses, Swinburne has a responsibility to ensure that we are selecting students that have a reasonable prospect of success. Recent developments in generative AI requires us to consider the selection tools and processes that we have in place to ensure students have the appropriate level of academic preparation and English language proficiency to succeed in their studies.

Swinburne needs to be confident that students' prior educational experiences (whether they be secondary education, AQF qualification study, bridging and non-award courses, or tests of ability) are valid and have been completed with integrity. Transparent and authoritative information about the integrity and quality of educational providers and the validity and security of their educational programs needs to be available across all education courses and providers. Robust quality assurance systems are a necessity.

Recent media coverage has impacted the confidence in the integrity of the Australian education system. The integrity of AQF qualifications needs to be maintained. Swinburne is working to identify and tackle the challenges and mitigate the risks across the span of its qualifications, each presenting different challenges and requiring a range of solutions.

Vocational Education and Training (VET)

Vocational regulator accredited training packages provide many advantages to the consistency and quality of education and equivalency of graduates. Unfortunately, the lag time associated with the development and implementation of updates to qualifications means it can be a challenge to keep pace with technological changes. Regulators must offer either expedited approvals processes or some flexibility in the inclusion of local learning outcomes in national training packages to enable institutions to keep pace with technological change and reflect the skills that students are actually learning. Furthermore, vocational educators must be provided with appropriate professional learning opportunities to keep pace with changes in generative AI, particularly from a workplace perspective.

Higher Education

As a self-accrediting institution, Swinburne can respond rapidly to changes in higher education curriculum and unit level assessment. As generative AI develops, the University's academic governance framework and supporting procedures will manage this process. Nevertheless, it is not good practice to change curriculum repeatedly, so Swinburne's focus is on developing effective learning and assessment design that underpins the incorporation of generative AI. This means building fundamental discipline knowledge as well as higher order skills so that tools such as generative AI can be used in the classroom and in the workplace without losing the need for human analysis and insights.

Professional learning for both vocational and higher education staff

Before we can effectively impact student learning, we need to ensure thousands of staff understand the institutional and regulated view and accepted use of the generative AI and then be able to transform this into the curriculum, reimagine assessment to assure the attainment of learning outcomes. Given the span of qualifications on offer across the AQF spectrum, upskilling staff will be complex and Swinburne will be

required to develop an extensive register to monitor staff learning in generative AI.

Swinburne makes the following recommendations in the use of generative AI in dual sector institutions:

- Jobs and Skills Australia to investigate and develop a national skills framework for students working with generative AI.
- Regulatory bodies to develop processes that take in to account generative AI when accredited training packages are updated and to enable vocational education providers to include local learning outcomes that respond to rapid technological change.
- Development of resources to support upskilling of educators to take in to account generative AI in learning and assessments.
- Swinburne values resources such as Country Education Profiles. The Country Education Profiles needs to be maintained. Nations, including Australia, need to ensure that education systems are up front about how they are managing artificial intelligence in their context.

List of recommendations

Driving generative AI work integrated learning practices
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- Universities and regulatory bodies track emerging trends in the use of generative AI and its impact on workplace practices across all sectors and reflect these in course curricula.
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Co-creation of a generative AI framework between educators and students
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- An agreed university response to communicating expectations regarding the use of AI in assessments, supported by broader professional learning opportunities for educators and clear guidelines for students.
- Universities should re-evaluate existing assessments to ensure that they are aligned with desired student learning outcomes and are responsive to the capabilities of generative AI tools.
- TEQSA, as the regulator of higher education, should continue to provide timely resources for institutional use on academic integrity as generative AI evolves.

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