

Chat GPT and other generative AI tools: What ANU academics need to know

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Introduction

The emergence of ChatGPT, a form of generative artificial intelligence (AI), has sparked a whirlwind of discussion in the media about the ethics and implications of the use of this tool in higher education. ChatGPT is the most sophisticated natural language AI chatbot to date, growing to reach 1 million registered users in just 5 days of launch. ChatGPT is capable of creating original text based on a prompt and joins a growing array of emerging generative AI technologies that use algorithms to create novel content in a wide range of media formats including code, music and images.

With the explosion of ChatGPT in the media coinciding with the start of semester and the uncertainty of the impact it may have on academia, it is not surprising that it is at the forefront of people's minds in academic circles. Now more than ever, the key concern is how student learning can be reliably and fairly assessed, given that generative AI tools may be used inappropriately in the completion of assessment tasks. Clearly, this new technology requires robust and measured discussion around its place in higher education.

This document aims to present an overview of the salient points on ChatGPT as they relate to learning and teaching at The Australian National University (ANU) and provides information on how the ANU is working towards a position on the use of AI tools such as ChatGPT. This is a first step and will be followed by more detailed advice on policy and practices. It summarises the potential negative impacts that generative AI tools may have on assessment and academic integrity, as well as the opportunities for incorporating such tools to support learning.

What is ChatGPT?

ChatGPT is a chatbot. It uses AI technology to understand natural language inputs (called prompts) and to generate natural language outputs (called completions). Users interact with ChatGPT in a question and answer style “conversation”. ChatGPT has been developed by [OpenAI](#), a not-for-profit, AI research and deployment company based in San Francisco, USA. OpenAI itself governs a for-profit subsidiary called OpenAI LP.

The technology underpinning ChatGPT has been evolving over recent years. ChatGPT comes from a family of large language models known as Generative Pre-trained Transformers (GPTs): software that has been trained to predict the next word in a sentence. GPT-3, the third generation of the technology, “is able to perform tasks it was not explicitly trained on, like translating sentences from English to French”, according to [Human-Centred Artificial Intelligence at Stanford University](#).

ChatGPT is based on a GPT-3.5 language model for which training finished in early 2022. Fine-tuning for ChatGPT included using a technique known as reinforcement learning with human feedback. As a result, ChatGPT is much better at following instructions in English than earlier GPT-3 language models, as well as generating responses that better align with what human users want.

What can ChatGPT do?

ChatGPT produces text responses in response to text prompts. The text responses span a diverse range of written outputs. For instance, ChatGPT can craft an original story, write an essay on a given topic (with citations and references), compose a poem, summarise an article, translate text (e.g. from English to French), and explain various concepts -like prime numbers, or Einstein’s theory of relativity. ChatGPT can also generate computer programming code in a variety of programming languages, including but not limited to Java, PHP, Python, and SQL.

While ChatGPT itself may be an impressive “all-rounder” for natural and programming language tasks in the written text domain, it is important to keep in mind three things:

- the AI technology underpinning ChatGPT is already available for others to purchase, customise and build into different kinds of specialised applications -to find out more, you can explore some of [OpenAI's example applications](#)
- different AI models are currently available that can take input or generate output formats besides text -for example, OpenAI also offers image models that can create images from natural language text descriptions, see <https://openai.com/dall-e-2/>
- OpenAI isn’t the only player on the field.

How is the higher education sector responding?

There are two distinct responses from the higher education sector to the recent emergence of generative AI reported in news articles and social media:

- concern about possible threats to student learning and academic integrity
- excitement about its potential to support and enhance learning and teaching

The responses from Australian higher education governing organisations have been reported in news articles. Tertiary Education Quality and Standards Agency (TEQSA) is ‘evaluating whether ChatGPT is in breach of anti-cheating laws. TEQSA would identify risks and strategies for dealing with artificial

intelligence in academia this year'. Universities Australia is 'reviewing policies and procedures, working on updating its academic integrity guide and meeting with experts to discuss the rise of AI and how to approach it'.

Universities are working to address the potential benefits and risks of this technology. Responses from Australian and international universities include:

- bringing education and technology experts together to discuss the implications of AI tools
- recognising that this technology will impact higher education and will become more sophisticated with time
- investigating productive ways to work with ChatGPT and other AI tools to improve learning and teaching
- rethinking approaches to teaching and assessment
- updating academic integrity policies to address student use and misuse of AI tools
- exploring AI detection technologies
- developing plans for staff and student training around productive and responsible use of AI tools
- devising strategies and designing assessments accordingly to mitigate the risks posed by ChatGPT

What action is ANU currently taking on the use of ChatGPT?

In the short term, ANU has no plans to ban the use of ChatGPT.

ChatGPT is one of various AI language models and other AI tools that students can access. It would be ineffectual to ban access to ChatGPT. We also recognise that the use of AI tools by students can support their learning. The application of AI tools in some professions is growing and students need to be able to use them effectively. The ANU plans to work with staff so they can help students develop skills around the appropriate and responsible use of AI tools as part of an ongoing conversation about academic integrity, ethics and professional practice.

Importantly, a revision of the ANU Academic Integrity Rule, Policy, Procedure and Best Practice Principles for Teachers and for Learners, and of the Student Assessment (Coursework) Policy, is in preparation to ensure that they account for the emergence of ChatGPT and similar AI tools. The purpose of the review is to ensure that artificial intelligence is used ethically and responsibly. The review and proposed revisions will be presented to Academic Board for consideration for approval on 7 March. The review recommends that the Course Convenor may place specific additional restrictions in the Class Summary on the use of artificial intelligence, as is currently the case for other materials and interactions. Staff will be updated on this very shortly and ahead of Semester One.

Can generative AI tools be used productively in learning?

Yes, ChatGPT and other generative AI tools can be used in learning.

Some suggestions for how they might be used:

1. Feedback: Enable students to get immediate feedback about their writing, grammar and content. You can train ChatGPT to give prompt, personalised and supportive feedback on student essays. See Dr Phillipa Hardmans' results here: <https://learningfuturesdigest.substack.com/p/chatgpt-the-future-of-feedback>

2. Study aids: ChatGPT can be used to generate flashcards, summaries, and other study aids for students, making it easier for them to learn and retain information.
3. Generating model answers for students. These model answers can be deconstructed by students and teacher to illustrate where there might be errors, or students can be asked to critique or improve on ChatGPT's response.
4. Educate students to be discerning and critical when using ChatGPT. Crafting a prompt that will produce a high-quality response is a skill in itself and students will need practice with this. Additionally, students will need to critically analyse and evaluate the quality of each response and determine its suitability. This could potentially lead to them revising their prompts in order to generate better responses.

Perhaps the most important suggestion is to try it out yourself as the subject matter expert and learn a little about how they work and what some errors or pitfalls might be. You will then be well placed to notice if there are grave errors or indeed unique ways in which AI could be used.

What do we know about the limitations of ChatGPT?

The current limitations of ChatGPT will change because it is still in development and progressing at an exponential rate. As of today, we know that ChatGPT outputs are:

1. **Very occasionally incorrect:** information and facts produced by the product are remarkably accurate, but are always stated with certainty despite being sometimes wrong. Current figures suggest that ChatGPT hallucinates 15-21% of the time.
2. **Unsubstantiated:** it cannot create an academic reference list or explain where the information is from.
3. **Out-of-date:** it operates offline and is trained from data from mostly pre-2021, so does not and cannot consider the most recent events or developments in a field.
4. **Biased:** all datasets contain some form of bias, and AI will reflect any biases contained in its training data.
5. **Lower quality and slower if you request longer responses:** it is still a long way from writing a thesis or novel.
6. **Often lack-lustre:** the outputs tend to be reasonably generic and lack the colour, nuance, personality and elegance that writing should have. Topics or questions that are complex, abstract, or require a deep understanding of a particular context are particularly challenging for the model.
7. **Reliant on the input:** writing effective prompts is a skill that requires practice.

Despite these limitations, outputs are very likely to be of reasonable quality and unique every single time, making them essentially undetectable at this point in time.

What does it mean for my assessments?

There are two obvious concerns related to the use of ChatGPT in assessments: academic integrity and the impact on student learning, particularly deep learning. When assessment tasks are purely focused on a “product”, such as an essay, they are more likely to be vulnerable to academic misconduct. It is worth noting that, while Turnitin has been developing AI writing detection software for some time, ChatGPT-generated content cannot currently be detected by any of our existing tools.

The potential use of ChatGPT in assessment tasks may also impact student motivation to engage with the learning process. If a student feels they can rely on a tool like ChatGPT to “do” their assessments, they may be less inclined to participate actively in the learning activities themselves.

You will be best placed to determine whether or not you need to change aspects of your current assessment tasks. It depends on how effectively the current assessment tasks evaluate mastery of learning outcomes and whether the style of task is vulnerable to the types of input ChatGPT provides.

Even if no changes are needed in the short term, the review of assessment under the new ANU Learning and Teaching Strategy will provide an opportunity to consider AI and assessment more generally. Given that ChatGPT will likely become more widespread in the workplace, we need to ensure we are graduating students who know how to use tools such as ChatGPT ethically and appropriately.

What can I do as a course convenor?

It is important that you acknowledge the potential uses of ChatGPT and their impact on your course. Allocate time to discuss this openly with your students and deal with any questions and/or concerns they may have.

In the short term:

- encourage an ongoing dialogue with students and teaching teams about the use of ChatGPT in assessment tasks and the potential impact on academic integrity
- ensure you are aware of updates to the ANU Academic Integrity Rule
- keep up to date with ANU advice
- disseminate any relevant information and/or updates to teaching teams to ensure consistency of approach
- provide a tutorial about how to use ChatGPT appropriately, including when it may be useful and when it should be avoided. See resources below.
- include students in the decision-making around the use of ChatGPT, in accordance with ANU policy

In the longer term, the emergence of ChatGPT and how we respond will be incorporated into the assessment review work that is part of the new ANU Learning and Teaching Strategy.

In the short term, the Education Design team in the Centre for Learning and Teaching is available to assist with assessment redesign. The team can be contacted via eddesign@anu.edu.au.

Where can I find well-informed discussion of generative AI in education?

1. **LinkedIn:** Prof Phillip Dawson, CRADLE (Centre for Research in Assessment and Digital Learning), Jonathan Boymal (Academic Director, Quality and Learning and Teaching Futures, RMIT University), Prof Rowena Harper (Deputy Vice Chancellor Education, Edith Cowan University)

2. Webinars:

Recordings

- Global Research Alliance for AI in Learning and Education, [ChatGPT and the Future of Education](#) (Recorded on 7 February 2023)
- Studiosity, [Higher Education's thoughtful response to robot writing](#) – (Recorded on 7 February 2023)

Upcoming

- HolonIQ, [AI in Higher Education: Adopting and Adapting](#) - 23 February 2023, 8:00am AEDT

Further reading

[The ChatGPT chatbot is blowing people away with its writing skills. An expert explains why it's so impressive](#)

[What is ChatGPT and why are schools and universities so worried about students using AI to cheat?](#)

[ChatGPT and me: 3 FEIT academics address the advance in AI](#)

[How AI can be used meaningfully by teachers and students in 2023](#)

[ChatGPT Advice Academics Can Use Now](#)

[ChatGPT: students could use AI to cheat, but it's a chance to rethink assessment altogether](#)

[Irish universities to review how they assess students following threat posed by AI chatbot](#)

[What teachers and students should know about AI in 2023](#)