

Introduction to ChatGPT and other Artificial Intelligence content creation tools

This guide provides an introduction to ChatGPT and other Artificial Intelligence (AI) content creation tools. It is intended to raise awareness of these tools, how they might be used in learning and teaching and the positive and negative impacts that this might have. Staff looking to update their assessments to take account of these issues are directed to the existing resources on assessment design.

What is ChatGPT?

ChatGPT is an example of an artificial intelligence (AI) writing tool. There are many other AI content creation tools, focused not just on writing but a range of content creation¹. You have probably already used these tools without even realising e.g. Microsoft editor.

ChatGPT writes content which is appropriately structured, grammatically correct and on the whole sounds like a human wrote it. Interacting with it feels like talking to another person, rather than to a 'bot' which makes it a more comfortable user experience for many people.

How do ChatGPT and other AI content tools work?

AI writing tools work by drawing on natural language processing which enable them to simulate natural conversation and write content by predicting the next word in a sequence based on their immense database. They can develop well-structured paragraphs or papers based on learning from this database. These tools continue to learn from user responses and other available data e.g. from the internet. AI visual content tools such as OpenArt, Dalle-2, Hugging Face, work in a similar way but based on image/shape recognition combined with natural language processing.

Why is this a current issue?

Whilst AI content creation tools have been available for some time, awareness of ChatGPT has risen considerably since it was made freely available in November 2022. This free access is part of their process of training the artificial intelligence tool. By making it freely available the company widened the pool of testers and data available to it. Every time a person posts a query to ChatGPT or "likes" an answer helps train it further.

This free access created opportunities for people to experiment with ChatGPT, testing what it can and cannot do. However, it also raised concerns regarding how it might be used, in particular that students might inappropriately use it to write their assessments breaching academic integrity rules.

¹ For the purposes of this briefing we have focused on ChatGPT, however other AI content creation tools exist and operate in a similar manner. They mostly pose the same opportunities and risks as ChatGPT.

Questions were also raised regarding the extent to which a student may use a tool such as ChatGPT before the work submitted might be considered to no longer represent their own learning.

The current version is explicitly a 'research preview' so this free access is likely to be temporary. OpenAI (the company which owns ChatGPT) is a private company with a mandate to make profit. Currently it makes money from harvesting and selling the user data (emails and phone numbers) to third parties but in future it may choose to charge for access to the tool.

Whatever happens with access to ChatGPT, AI content creation tools will continue to develop and more will become available, so it is important to be able to respond to these developments in an informed and measured way.

What ChatGPT can and cannot do?

ChatGPT can produce text (e.g. essays, papers, poetry, blogs, newspaper articles). The text produced generally looks as if it was written by a human, following standard writing conventions for the specified type of text. ChatGPT can also produce computer code, albeit not always correctly.

It is not good at writing essays based on a single prompt; a more iterative process provides more effective results (Webb, 2022a). It is not always able to provide in-depth answers or to provide critical thinking or engage with ethical issues (such as we might expect in higher education), nor does it always provide accurate information (Webb, 2022b; Davis, 2023). Its database only runs to 2021 so questions regarding matters after that date will often return a response that no answer is possible.

It also struggles to provide answers on topics which require specific information, for example, ask it whether the answers it provides are subject to copyright or whether it is compliant with data protection laws and it will suggest that you should consult a lawyer, or on a more personal level it will be unlikely to produce an answer about you, unless you have a substantial public profile online (See Webb (2022b) for a practical example). In the most part, ChatGPT does not provide reference to its' sources, particularly not in academic format, so anyone using it would still need to provide these manually.

What can I do to prevent students using ChatGPT?

We cannot prevent students using ChatGPT. Some universities have sought to block access to such software on campus, but this ignores that students have mobile devices and study in places other than campus so will be able to access it elsewhere. Rather than trying to prevent access we can educate our students to think critically about new tools, such as ChatGPT, and educate them how to use such tools in an appropriate manner that supports their learning and develops their skills.

How can I support students to use ChatGPT to support their learning?

From a learning and teaching perspective, we should not require students to use any software which is not institutionally licensed as this may open them up to privacy and / or cyber security issues.

However, recognising that some students will want to use such tools, it is better that we educate them to do this ethically and effectively.

1. **Teach critical thinking.** This is an academic skill which students do not innately possess. Teaching critical thinking will support their learning beyond using ChatGPT, and it will help them make an informed decision whether to use it (or other tools) and to be able to critique any data provided by it.
2. **Educate students to think critically about ChatGPT.** Take time to discuss the ethical issues regarding its design and operation, personal, ethical and legal implications of use so that students make an informed choice about whether to use it, how use may impact on their learning and their educational outcomes (both positively and negatively), and professional implications.
3. **Support learning how to learn.** Understanding the learning process is not an innate skill but needs to be learned. Students do not always understand that activities or assessments they are asked to undertake are part of the learning process so do not attribute value to them. Be explicit about how and why something will help their learning so that they can understand how use of AI might contribute to or detract from that learning process.
4. **Explore how it might provide a starting point for research.** In the same way that many students (and staff) use Google Scholar, Wikipedia and other online sources, ChatGPT could also provide a starting point for research, provided students understand the limitations of its answers and how to find, use and reference additional sources.
5. **Explain how to develop questions iteratively.** AI tools operate on a Q&A model. They provide more effective responses the narrower the question asked (unless they have insufficient data to provide a response at all). The process of revising the question requires students to think critically about the information they seek.
6. **Critique the answers provided.** AI tools are fallible, students need to be able to identify incorrect data or poor reasoning in the answers as they would critique any other source. Encouraging students to critique the answers they get from an AI tool supports them to develop a transferrable skill which will enhance their employability.
7. **Teach good academic practice.** Support students to understand what good academic practice is, how submitting their own original work contributes to their learning and the value of this to them. Teach students how reference appropriately, when and why it is needed. It is helpful to develop their understanding of these practices as not just hoops to jump through, but important transferrable skills.
8. **Raise awareness of the risks of ChatGPT.** Owing to the way the tool operates it sometimes generates untruths and presents them as facts. This is particular risk for anyone without sufficient knowledge to identify these untruths e.g. students. Due to bias in its training and the way it was trained, ChatGPT does not always provide ethical, unbiased answers and can provide answers which perpetuate bias and discrimination, e.g. cultural, racial, gender.

Is there a risk to academic integrity and assessment security?

As with any technology, it is possible that ChatGPT (and other similar tools) could be used to cheat. It is worth bearing in mind that not all students will cheat and even those who do breach academic integrity may have done so unintentionally (Birks et al., 2020). There are a wide range of factors which influence academic misconduct including individual factors (e.g. under-developed academic literacies and skills, lack of understanding of what constitutes plagiarism / academic misconduct) and situational or contextual factors (e.g. stress, mental health issues, competing priorities) (Morris, 2022a).

A key risk to assessment security is from staff use ChatGPT (or similar software) to test their assessment questions. By doing so, you teach the AI both the question and the expected answer. This in turn will inform the answer it gives to any student who subsequently asks it a similar question. It is more effective to engage with good practice in assessment design and then to confirm with colleagues and External Examiners whether assessments are effective and designed in a secure manner.

What can I do to protect the academic integrity and security of my assessments?

Talking to our students on an ongoing basis about academic integrity and supporting them to develop good academic practice skills is a good starting point (Morris, 2022b).

Having robustly designed assessments that are regularly updated is also important. Many course teams do this already. It is fairly easy for ChatGPT to write an essay on a common topic e.g. the contribution of technology in education; however it much less competent at writing in-depth on specific topics e.g. the contribution of technology to your Heriot-Watt education between 2020-2022. Creating assessments which are more specific and / or more authentic, requiring students to relate their knowledge to personal or practical experience makes them more secure. Having created your assessment do not submit it to ChatGPT to “test” it, this will help it to learn the answer, thus defeating your intended purpose.

Should I use an AI detection tool?

No. At present there are no recognised and effective tools which universities can rely on for accurate identification of misrepresentation of AI created content. As with all rapidly developing learning technologies this situation will be kept under close review for future developments.

The risk to staff and student reputations due to misidentification and false positives would be reputationally challenging. It is better to focus on student education and effective assessment design. Where any concerns do exist around academic integrity, please follow the existing academic policy and process.

Where can I find more information?

- [LTA digital education resources](#)
- [LTA assessment and feedback resources](#)
- [Global Digital Pedagogies Hub: Artificial Intelligence guidance and resources](#) (internal only)
- [LTA SharePoint Hub: Assessment and Feedback resources](#) (internal only)

References

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