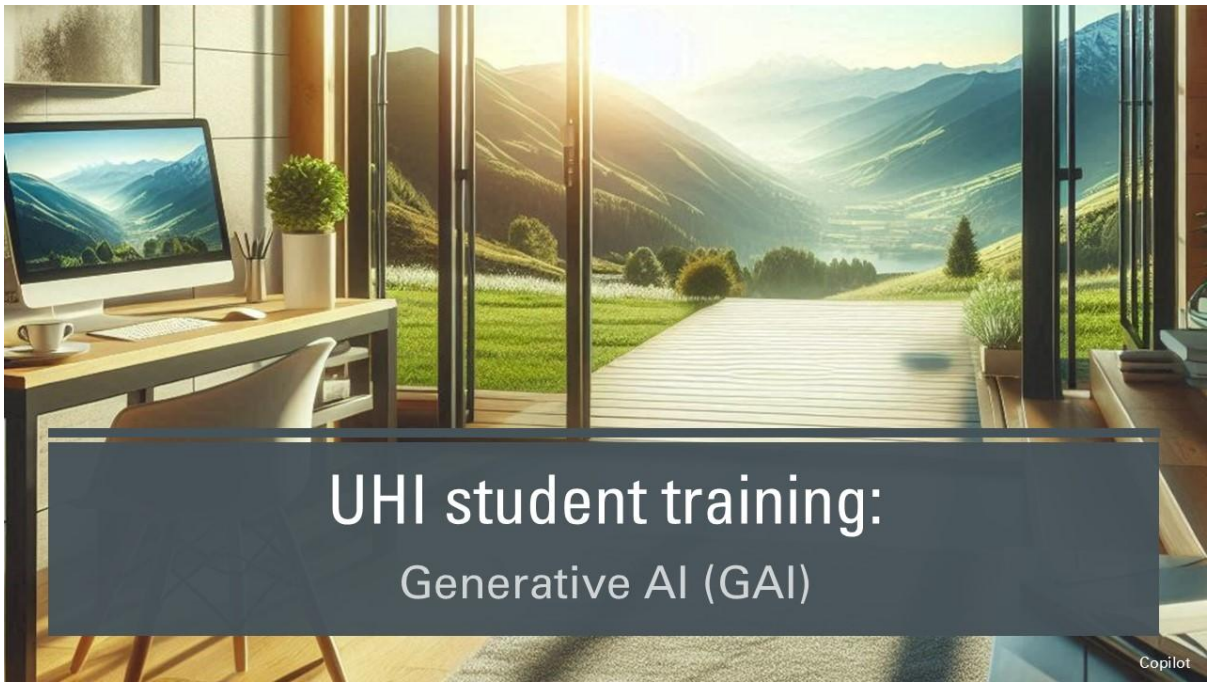
UHI student training: Generative AI (GAI) – information for unit and module leaders



Overview

This resource is intended as a companion piece to a resource created for students, introducing them to Generative AI (GAI) within a UHI context. The two resources are basically the same, except this one will preface most pages with statements like "**The following is what UHI students will be told...**". These statements will be displayed in green boxes with bookmark icons. In several places the student guidance indicates that if they are in any doubt about GAI use, they should talk to their tutor/lecturer. It's important that you are in possession of the appropriate information to guide them.

The first, and probably most crucial of all statements of advice in the student guide relates to whether or not they are allowed to use GAI tools in a particular unit/module/assignment. This information is displayed in the form of a disclaimer:

Disclaimer

For you to be able to use Generative AI (GAI) tools in a unit/module at UHI your tutor/lecturer needs to say it's ok to do so. Please check with your tutor/lecturer before reading any further.

Exactly how and which GAI tools may be used for study purposes and submitted work might differ from class to class or even assignment to assignment within a unit or module (especially if a particular learning outcome mentions GAI directly). Your tutor will lay this out for you. It is also the case that the majority of GAI tools approved for your use feature age restrictions (you either need to be 18 and above or have written permission from a parent/guardian).

Next, students are given an overview of GAI:

This resource introduces you to Generative AI (GAI), as well as giving you a practical introduction to a selection of GAI tools that have been approved for student use at UHI.

(Image Copilot)

"At its most basic, GAI is a **data machine**: it can consume, analyse and synthesise huge quantities of data and help us to make more powerful data-informed decisions than we could never make alone" (Hardman 2024a).

The huge quantities of data mentioned above relates to information stored online. GAI companies collect this data, through a variety of methods. Sometimes the datasets are incredibly broad ranging; however, they can also be ring-fenced to focus on one specific field (for example, academic papers related to a particular cancer).

GAI tools (using what are called 'Large Language Models or LLMs) are 'trained' on this data, processing it so as to understand the nuances of language — the end goal being the ability to **predict likely next words or phrases in a given context**. This predictive capability enables AI tools to generate coherent and contextually relevant text, which can be used for a variety of applications such as conversation, translation, and content creation.

Caution: Although GAI appears to be able to answer your questions, GAI tools cannot think or properly rationalise. GAI tools do not know what they are writing, and instead are just predicting which word should follow its last word. GAI is also known to hallucinate, e.g. it makes up references and data, is known to be biased against and towards certain groups and communities. Do not use GAI generated information without checking it first.

GAI companies combine the abilities of their LLMs with an interface that allows you, the user, to converse with it – usually via a text box (what you type in the text box is called a **prompt** — a prompt could be just a few words, or something lengthier); some invite you to upload material. Outputs also come in various forms: text, images, audio, video, 3D models, all from text prompts.

Note: AI, which refers to computer systems designed to perform tasks that typically require human intelligence, is not new – strictly speaking its roots are in the 1950s (Stanford Graduate School of Education, 2024); however, publicly available generative AI, which can create new content based on patterns learned from existing data, hit the headlines in December 2022 with the release of ChatGPT 3.5.

How might GAI be used in your classes?

This next page is a critical one as it lays out the circumstances under which students can, or cannot, use GAI in particular units/modules/assignments.

Do you have any students in your class that are under 18? One of the most important elements in your decision making on allowing GAI use in your class relates to age. Almost all the GAI tools approved for student use at UHI feature an age restriction (18+).

The alternative to this is to have written permission from a parent/guardian on record at UHI. If you want your students to use GAI tools as part of a learning outcome, and you have any students under the age of 18, you first need to contact Andy Brown (andy.brown@uhi.ac.uk).

When it comes to using GAI in a particular unit or module, your tutor will tell you one of the following 3 things:

- You are **not to** use GAI tools for any purpose
- You **can use GAI tools to assist you with** a particular assignment/assignments
- Use of GAI is integral to a particular assignment

Exactly how GAI tools may or may not be used might differ from assignment to assignment within a unit or module (especially if a particular learning outcome mentions GAI directly). Your tutor will lay this out for you. It is also the case that the majority of GAI tools approved for your use feature age restrictions (you either need to be 18 and above or have written permission from your parent or guardian on record at UHI).

Important: If GAI tools are allowed by your tutor/lecturer, your use of them must be acknowledged (full details on how to do this are on page 7 of the UHI Generative Artificial Intelligence Policy).

GAI use in assignments

Scenario 1: You are not to use GAI tools for any purpose

The following statement applies to the use of all GAI: "You will be informed by your tutor/lecturer if and how you may use GAI for your studies and assessed work.

Note:

- If you have not been told anything about the use of GAI, then its use is not permitted.
- If you are not certain it you may use it, you must check with your tutor/lecturer first."

(UHI Generative Artificial Intelligence Policy 2024)

There could be various reasons for GAI use not being permitted in your unit/module (other than being given no information about it, as described above), it could be that an external awarding body (like the SQA) has stated that use of GAI tools is not to be allowed. **If you are in any doubt, contact your tutor/lecturer.**

Scenario 2: You can use GAI tools to do background research

Tutors/lecturers may inform you that the use of GAI tools is **permitted** in particular work or assignments. The details of this will be specified in the assessment instructions. **Please note**: Use of GAI in submitted work must be correctly acknowledged, cited, and referenced as

specified in UHI's Generative AI policy (referencing AI-related resources is covered later in this resource).

Scenario 3: A GAI tool is integral to an assignment

Tutors/lecturers may inform you that the use of GAI tools is **required** for a particular assignment/s. As above, the details of this will be specified in the assessment instructions. **Please note**: Use of GAI in submitted work must be correctly acknowledged, cited, and referenced as specified in UHI's Generative AI policy (referencing AI-related resources is covered later in this resource).

Next

So you can start seeing some of the opportunities GAI tools can bring, the next thing we're going to do is touch on the **UHI AI policy**, and then have a good look at the various **tools that UHI has approved for your use**.

UHI GAI policy and guidance

The university has created and shared a variety of policy and guidance documentation around GAI. Some of it is directed at staff only, some at students only and some a combination of the two. The following page signposts for students a variety of documents that are essential for them to be aware of. There's also an important note below, in blue, telling students to bookmark links rather than downloading documents. This is important because, especially in an ever-changing area such as GAI, the linked documents could be updated or amended at any time.

The following link will take you to a document on UHI's web site: Student guidance on the use of Generative AI. This is version 1.2 of this document and will likely feature further updates in the coming months and years. **Note**: Make sure you read the latest copy and always look at the document online rather than downloading it.

The various sections cover some very practical instructions, designed to help you use AI tools (while staying safe and legal). The document focuses on three aspects of GAI:

- May GAI be used for course and assessed work?
- Ethical use of GAI.
- Examples of good practice for students.

"It is essential that use of GAI is implemented in a responsible and ethical manner, guided by the principles of transparency, accountability, sustainability, and privacy." (UHI 2024)

You should bookmark Student guidance on the use of Generative AI for reference but here are a few highlights:

- Your tutor/lecturer will tell you if and how GAI may be used in your unit/module. All use of GAI must be acknowledged, and full details of how to do this are in the GAI policy.
- Cite Them Right, UHI's referencing guidance tool, features information on the Use of artificial intelligence (AI) sources in academic work.
- The document finishes with five suggestions for some of the ways in which you can use GAI tools to support you, such as "Using GAI tools to assist with planning your project. Conversation-based tools are useful for brainstorming and generating initial ideas and alternatives." **Just remember, you can only use these tools if your tutor tells you that you**

can and you are over 18 (or have written permission from your parent or guardian on record at UHI).

Next

Let's look at how to communicate successfully with GAI tools, through **prompt engineering**.

Prompt engineering

Well-engineered prompts are key to any successful interaction between a human and a GAI tool. This page details for students the different elements of well-written prompts. It is also important for them to realise that they don't have to get everything right in the first prompt, trial and error and iteration are totally valid approaches.

The vast majority of GAI tools operate by having you, the user, type (or speak) in words in the form of a question or a set of instructions - this string of words is called a **prompt**.

A bit like searching the internet, there are tips and tricks here, skills to be learned, in order to make the most of the tool you are working with. Trial and error, and iteration will often get you close to what you want (and can be fun, especially with images) but knowing a few techniques going in will help you to hit the ground running.

Structured prompting can make a huge difference. Prompts can be anything from a short sentence to a series of lengthy instructions, with examples. What will work best will depend on your needs but **in essence, the clearer the better**. If you were to ask 5 different chatbots for the key elements in a well-engineered prompt you are likely to get some or all of the following:

Clarity

The prompt should be clear and unambiguous, providing straightforward instructions to the GAI.

> **Unclear Prompt:**
>
> "Tell me about technology."
>
> (This is vague and could lead to a broad range of responses, from the history of technology to its impact on society, or specific technologies.)
>
> **Clear Prompt:**
>
> "Explain the impact of artificial intelligence on education in the last five years."
>
> (This is specific, guiding the model to focus on a particular technology, timeframe, and field, resulting in a more relevant and useful response.)

Specificity

It should be specific, detailing the exact request and avoiding vague language.

Context

Including relevant context helps the AI understand the broader scenario or background of the request. This is a particularly interesting point, and one that not all know is possible with AI. Because of the vast database behind the tool, you can tell a chatbot to take on a particular

persona and assume a level of knowledge. For example: "You are a university professor, published several times...". This context will affect the phrasing and type of responses you will get.

Constraints

Setting constraints on the format, length, style, or content can guide the AI's output more effectively. You can tell the AI what you want, but you can also tell it what you do not require.

Examples

Providing examples, such as questions and answers can illustrate the desired output and help the AI generate similar results. Examples could also be tied contextually to a text which you cite in the chat box or upload as an attachment (only certain tools allow this).

Important guidelines:

It is very important that you **do not input existing course materials or assessment questions in GAI sites**. As stated in the official UHI Student GAI guidance, UHI owns the copyright to course materials. Instead, ask general questions that may help you with your initial approach to an assessment.

Also, **do not upload significant amounts of text** (articles, book extracts) **if you do not have the copyright for them** (even if you do own the copyright, you should be very careful about what you share with an online tool).

You **can** include small amounts of text that is not your own in a prompt but cite the original source as you would when quoting in an essay, for example:

> Elon Musk said, "The first step is to establish that something is possible; then probability will occur" (Musk 2014). Based on this idea, create a series of bullet points for an upcoming tutorial session that outline key factors influencing the future of the global economy. Include technological advancements, potential challenges, and opportunities for growth.

Feedback loops/iteration

Remember that there is never any need to try and get everything right in one prompt. Iteratively refining prompts based on the GAI's outputs is totally normal and can improve the quality of the interaction. Interactions with GAIs are conversational and like good conversations they can go off in unexpected directions then return to the beginning! Some tools are very good at suggesting follow-up questions for you – so the iteration doesn't even need to come from you!

Tip

If in doubt about what will work best, consider asking the AI tool directly "**what else do you need from me?**" (e.g. "I want to use find literature to support the following argument...What do you need from me?").

Others have come up with helpful acronyms:

CLEAR (Lo 2023):

Concise: brevity and clarity in prompts. A concise prompt removes superfluous information, allowing AI language models to focus on the most important aspects of the task.

Logical: structured and coherent prompts. A logically structured prompt enables AI models to better comprehend the context and relationships between various concepts.

Explicit: clear output specifications. Explicit prompts provide precise instructions regarding the desired output format, content, or scope.

Adaptive: adaptability entails experimenting with various prompt formulations, phrasings, and temperature settings in order to establish a balance between creativity and concentration. For example, if an initial prompt "What are some ways to conserve water?" leads to generic responses, try a more targeted and adaptive prompt like, "List household practices for conserving water and their potential impact."

Reflective: continuous evaluation and improvement of prompts. Adopting a reflective perspective enables users to evaluate the performance of their AI model based on user feedback and their own assessments, identifying areas for improvement and adjusting their approach accordingly.

Followed, logically, by **TASTE** (Wallbank 2023) which is designed to focus GAI users on evaluating the results of prompts:

Test: request and sample different outputs and try different variations/add additional prompts to refine.

Adjust: rephrase topic, action and parameter keywords (fine-tune for increasing precision, detail and context).

Simplify: a common pitfall when entering prompts is vagueness, wordiness or woolly instructions, which confuse AI's algorithms. Students should constantly revise the topic, action and parameter (TAP) keywords and phrases with a view to simplifying them.

Trust: a great deal of ink has already been spilled on the issue of AI and ChatGPT producing fake information. Students need to check the accuracy and truth of the outputs before they even begin the work of critical analysis.

Examine: here students can begin the conventional work of critical evaluation and analysis, but with a particular focus on identifying flawed or invented arguments, bias and misrepresentations… Of all the elements in this model, this is the most vital and needs to be accompanied by reading academic, trusted sources.

A visual example

Have a look at the picture (Generated with Copilot).

The prompt used was "*a university lecturer poised over a computer keyboard, thinking of what to input into the prompt area of a generative AI screen*." Note the gender bias, and the anomalies (weird keyboard, monitor that apparently is see-through!).

(Image Copilot)

Tip

Some AI image creators feature galleries of images. Clicking on these often reveals the phrasing of the prompt used to create the image.

Supplemental resources

Jisc: Question generation demonstration (demonstration* of how chatbots can create sets of questions and answers; use pre-existing prompts or self-define) *requires UHI login.

LearnPrompting: Prompt Engineering Guide (features links to free beginners and advanced courses* in prompt engineering) *Requires [free] account to be created.

Prompt Engineering Guide (includes detailed examples of many different types of prompts: zero-shot, few-shot, tree-of-thoughts, etc.).

Ways that you could put GAI tools to use as a student

Undergraduates

After telling students how to construct well written prompts, it seemed fitting to make a few suggestions about what purposes those prompts could be put to. The following page does mention some specific GAI tools but its largely generic in nature. Tips and notes are added where appropriate and intended to keep students on the right side of things ethically.

If you have permission and are old enough (you either need to be 18 and above or have written permission from a parent/guardian on record at UHI) to use UHI approved GAI tools, the following list might give you some good ideas of how you could put them to use.

Some of these ideas are similar to those listed in UHI's Student guidance on the use of Generative AI. Acknowledgement is also given to a resource made available by Birmingham University.

1. Scope out a topic
    - As you might search the internet for information, GAI can be a starting point for getting a handle on a topic area.
    - Remember, you can hone your prompts as you see the kinds of results you get. For example, you may start with broad requests and move towards very specific ones. You can also ask for different types of resources, including video and journal articles.

- **Tip**: If you find success with a particular prompt, take note of it (prompt diaries/journals can also be very helpful for referencing).

2. Develop personalised study or research resources
   - You can tell a GAI tool that it is an expert in student support and ask for guidance on any number of study skills: time management, presentation skills, how to engage an audience, literature searching techniques, exam preparation, etc. Also, bear in mind that many GAI tools can produce more than just plain text. Where appropriate, consider asking for results in tables, graphs, as flashcards, etc.
   - You can personalise the recommendations you get to your own situation (e.g. 'I have x number of hours of classes on Monday, y on Tuesday…', etc.) but be careful not to include any personal information in your prompts.
   - **Remember**: UHI has a fantastic Student Support team. You also have access to the suite of Essential Student Skills resources. Think of GAI as adding to these, not replacing them.
   - **Tip**: many GAI tools are able to create tables and/or downloadable templates for you to use.
3. Test your critical thinking skills
   - GAI tools like ChatGPT, Copilot for Bing and Phind can accurately process requests relating to terms like 'critical thinking'. One way to start would be simply to ask, 'How can [GAI tool] help me [call yourself a 'university student' or similar, nothing personal] improve my critical thinking skills?' The tools will create bulleted or sectioned lists which by themselves help to define what critical thinking is.
   - Use the prompt results to narrow your search for help/strategies related to your particular subject or topic.
   - **Tip**: You can ask any of the GAI tools to provide you with links to literature and academic guides; Phind will automatically give you links to appropriate sources.
4. A revision aid to test knowledge
   - Many GAI tools can be asked to create quiz question sets. You can factor in different levels of difficulty if you want. This can be a great way of testing your knowledge.
   - As always, be careful not to include personal information in your prompts, or copyright information, which includes any teaching materials.
   - **Tip**: one of the approved GAI tools, AI Tutor Pro, is designed purely for helping people develop and test their knowledge and skills. Once you choose the topic and level, the tool will ask you questions and give you feedback. The conversation can go on as long as you want/need.
5. Summarise and understand research
   - There are many GAI tools available to help summarise information, make comparisons between text or data, and make reading articles easier and quicker. However, before you can compare anything you have to find appropriate resources.
   - As you saw in the Prompt Engineering section, when you are asking a GAI tool for something, it's important to specify the kinds of resources you want. If you want peer reviewed journal articles with references, it's best to state that in your prompt. Doing so will get solid results from ChatGPT, and Copilot for Bing. In addition, Perplexity has an 'Academic' focus setting which will search only for published academic papers, and Phind clearly displays academic source material when asked. Semantic Scholar is a tool similar to our own Library Search (see note below). It is able to search through 221

million papers 'from all fields of science' but does not have the same sort of prompting interface as the others. Searching here is done via titles, keywords etc.

- **Tip**: You will get the best responses from GAI tools if you clearly define what it is you want either summarised or compared. This could include methodologies used, findings, conclusions, implications, etc.
- Important notes:
    - When using GAI tools, you must not upload material that you do not own the copyright for. Rather than supplying text from an article, by copying and pasting it directly into the prompt area, use the article title, DOI, or a link. The GAI tool will be able to find the content itself and work with it from there.
    - Also remember that the training data used by GAI tools does not usually come up to the present. To find the most up to date literature, remember that the UHI library service offers a wealth of curated, high-quality resources through Library Search and other online collections, carefully selected to meet study and research needs.

Taught postgraduates

In many ways, the guidance on appropriate use of GAI tools is very similar regardless of the level: undergraduate, postgraduate, PhD. This is because the same UHI GAI policy applies to all students. The differences between levels of students relates more to their **likely uses** of GAI tools (possibly related to research projects), and their level of **academic skills** like literature searching and referencing. The following is a short list of potential uses that taught postgraduates might make of approved UHI GAI tools.

Acknowledgement: Some of the structuring and wording of this list came initially from interactions with Claude AI.

1. Brainstorming research ideas
    - Collaborate with GAI to hone your research topic/question – this has two benefits: first, with this collaborative approach, you will be moving towards something the gets at the heart of your interest; second, you will improve your prompt engineering skills as you go (which can include asking 'is there anything I'm missing/anything else I should be asking?').
    - **Student's critical approach** (you must apply a critical eye to all responses you get from GAI tools; the bullet points below show the actions you can take to prove that):
        - Doesn't accept suggestions verbatim
        - Evaluates each suggestion
        - Considers:
            i. Feasibility
            ii. Research potential
            iii. Personal interest
            iv. Methodological viability
    - **Skill development** (what you learn through this process):
        - Deconstructing broad topics
        - Understanding research question architecture
        - Developing analytical thinking

2. Generating initial literature review strategies

- Collaborate with GAI to go from broad topic queries to ones that ask about theoretical frameworks, methodologies, suggested keywords.
- Student's critical approach:
    - Cross-references GAI suggestions with:
        i. Academic databases
        ii. Peer-reviewed journals
        iii. Supervisor guidance
    - Develops independent research strategy
    - Uses GAI as a starting point, not a conclusion
- Skill development:
    - Systematic literature review techniques
    - Understanding theoretical framework selection
    - Developing research design skills

3. Helping structure complex arguments
    - Collaborate with GAI by engaging in a systematic analysis of your position. Begin by asking the GAI to help deconstruct complex positions into their fundamental components. On your own, try to identify potential weaknesses or gaps in your reasoning. Next, prompt the tool to explore multiple perspectives on the issue, ensuring you have considered various viewpoints and their implications. You could ask for relevant examples and evidence that could strengthen your arguments, while using the GAI to test the logical consistency of your reasoning. Leverage the tool's ability to spot gaps in argumentation and to map the relationships between different elements of your argument. Throughout this process, maintain an iterative dialogue with the GAI, keeping a note of how you refine your prompts based on its responses and your critical evaluation of them.
    - Student's critical approach:
        - Evaluates suggested argument structures for:
            i. Logical coherence
            ii. Completeness
            iii. Relevance to the topic
            iv. Strength of connections between components
        - Questions the GAI's suggested counterarguments by:
            i. Checking for logical fallacies
            ii. Verifying factual claims
            iii. Assessing relevance to their position
        - Critically examines suggested examples by:
            i. Verifying accuracy
            ii. Testing applicability
            iii. Evaluating strength of support for arguments
        - Independently identifies:
            i. Additional perspectives not mentioned
            ii. Context-specific factors
            iii. Discipline-specific considerations
    - Skill development:
        - Argument mapping and visualisation
        - Recognition of logical fallacies

    - Understanding of argument structure principles
    - Critical analysis of counter-positions
    - Evaluation of evidence quality
    - Identification of implicit assumptions
    - Integration of multiple perspectives
    - Enhanced prompt engineering for complex topics
    - Metacognitive awareness of reasoning processes

4. Proofreading and language refinement
    - You can use GAI tools collaboratively to discuss better phrasing, scholarly writing style (e.g. how best to incorporate citations, and how many, etc.) but this should remain at the generic level and not include your own written work.

      Important note: Improving written work is commonly touted as a use for GAI tools. When it comes to sharing your work though, in its Student guidance UHI is very clear: **students should not upload anything of their own to a GAI tool without very careful consideration** (especially if it is something that could become part of an assessment – uploading it could mean that originality software flags it as unoriginal later). As an alternative you could ask the GAI tool to invent two pieces of text for you to compare (ask for one to be exemplary and the other to be lacking in various ways).
    - Student's critical approach:
        - Reviews writing for:
            i. Flow
            ii. Consistency
            iii. Academic conventions
            iv. Organisation
            v. Accuracy of technical terms
            vi. Backing up arguments with appropriate citations
    - Skill development:
        - Enhanced academic vocabulary
        - Recognition of effective academic writing patterns
        - Understanding of discipline-specific conventions
        - Improved sentence structure variation
        - Better paragraph organization
        - Increased awareness of audience expectations

5. Deepening conceptual understanding
    - Collaborate with GAI to firstly request complex conceptual explanations from diverse perspectives, then cross reference these against academic texts (found via the UHI library). Compare and contrast the findings.
    - Student's critical approach:
        - Compare multiple GAI explanations
        - Cross-reference with academic texts
        - Develop personal critical interpretation
    - Skill development:
        - Theoretical analysis
        - Multi-perspective thinking

    - Conceptual integration skills

6. Generating potential research methodologies to explore
    - Collaborate with GAI to develop potential research approach. Students can ask for pros and cons of different approaches.
    - Student's critical approach:
        - Evaluate suggested methodologies
        - Understand research method limitations
        - Develop nuanced research design
        - Demonstrate methodological reasoning
    - Skill development:
        - Research methodology comprehension
        - Critical evaluation of research approaches
        - Understanding research method selection criteria

7. Best practices identification
    - Collaborate with GAI tools to identify best practices in areas relevant to taught postgraduate students, such as: project management (which includes time management, organisation, planning and goal setting), and communication skills (which includes writing, data visualisation, and presentation skills as well as interpersonal and networking skills), etc.

Overarching principles

- GAI as a learning catalyst – **use GAI to get the ball rolling**. Efficiency. “Use GAI as a starting point, not a destination” (Claude AI)
- Academic integrity – never lose sight of the idea that taking shortcuts never helps in the long run
- Develop independent scholarship – it is possible, through the collaborative approaches described above to get to the point where you are generating original intellectual contributions. As you do so, **reflect on your thinking** as this will help you to demonstrate your intellectual journey (and prove that GAI did not do the work for you, e.g. think about how you challenged the suggested perspectives, identified gaps in GAI-generated thinking, brought in personal experience).
- Use technology to enhance, not replace, thinking.

Key recommendations

- Always be transparent about the use you make of GAI tools
- Critically evaluate GAI contributions
- Develop meta-cognitive awareness (thinking about thinking). Reflective journals are good for this, especially if GAI use is part of the process (think about my interpretations, assumptions, etc.). A meta-cognitive approach differs from a traditional one in that it involves questioning the information source, personalising the process and thinking about adaptation. Keep notes, discuss with others, practice critical questioning.

Next

Let's look at the **GAI tools that are approved for student use** in detail.

UHI approved tools

UHI has a rigorous method for approving new software and new GAI tools. Once a tool has been approved, it is listed in a spreadsheet held in SharePoint. There is a spreadsheet for tools approved for student use and a separate one for staff use. Each tool on the student spreadsheet lists crucial information such as: how to access it, what it is capable of and how to access its various terms and conditions.

It is incumbent upon teaching staff that they are aware of what students need to do in order to use particular tools and direct them to where the information can be found.

On the page below, students are given a link to the student spreadsheet, they are also given direct links to the eleven tools currently approved for their use. When you are introducing these tools to them, consider sharing a few possible scenarios of how these could be used in class, for example seeking literature to support an argument, checking and improving upon sentence construction, getting help with planning a project or presentation.

Be very clear from the beginning about how you want their interactions with these tools to be recorded and acknowledged.

We have a spreadsheet that lists the GAI tools approved for student use. If you are instructed by your tutor/lecturer that you can use a GAI tool, before you use the tool for the first time, you must visit the spreadsheet to make sure:

1. it has been approved,
2. you meet the age requirements, and
3. you have read the terms and conditions.

Important notes:

If you are creating an account, **use your UHI email address** but **do not use your UHI password** (create a new, unique one for each tool. Passwords must be 8 characters or more, not be a proper word, feature a combination of letters and numbers, lower and uppercase. For further information visit: Security - Keeping your password secure). There are many fake GAI tools/sites designed to capture your information, passwords, and put malware on your device. Never use your UHI password to register for any external service. To protect your device from malware, viruses etc., you must ensure your device meets UHI's minimum specifications: Information for Students - Buying your own device.

Environmental impact: Before using GAI tools, consider the environmental impact. GAI tools use high amounts of energy and water. For some GAI tools/sites, it takes the same amount of electricity to create one image as it does to charge your mobile phone. Plan your use of GAI in advance if you can, to make focused use of GAI for the specific tasks you want to use it for. Also ask yourself, would a search engine work just as well? Have you used library search or used online chat to speak to a librarian?

Click on the headings below for more information.

Copilot (Age restriction: 18+ only)

Described by Microsoft as an 'AI companion', Copilot is capable of providing information, creating images, working with code and engaging in conversation. Copilot comes under the

umbrella of our institutional contract with Microsoft. One benefit of this is that, when logged into Copilot, your interactions are protected. When Microsoft says your data is protected in Copilot, it means that your chat data is encrypted both in transit and at rest, and Microsoft does not retain your prompts or responses. Furthermore, this data is not used to train the underlying large language models, ensuring the privacy and security of your information).

Copilot features a variety of options for you to prompt, based on the kind of output you are looking for, this includes Notebook view, where your prompts can go up to 18,000 characters (approx. 3000 words). This is significantly higher than most tools.

Create an account (using your UHI ID) in: Copilot (we would advise you to use the **Edge** browser to access Copilot as this is the native Microsoft browser)

ChatGPT 4o (Age restriction: 18+ only)

A free version of OpenAI's Generative Pre-trained Transformer (GPT) model, designed for natural language processing and understanding. ChatGPT 4o, a product of OpenAI, can produce textual outputs in a variety of formats and can work with computer code and multiple programming languages.

Create an account (using your UHI ID - but not your UHI password) in: ChatGPT 4o

Phind (Age restriction: 18+ only)

An AI-powered search engine and chatbot. Notably fast in its response times, Phind can be used for providing detailed, step-by-step solutions to technical questions, offering code examples, and assisting with debugging issues. The quality of its auto-generated follow-up question suggestions is a notable feature of Phind, allowing conversations to carry on and even branch out.

Create an account (using your UHI ID - but not your UHI password) in: Phind

Claude AI (Age restriction: 18+ only)

Claude is an AI assistant from Anthropic, designed to assist users, via chat prompts, in a variety of tasks involving language, reasoning, analysis, and coding. The interface puts more focus than some on your previous chats. When you log back in, clicking on any one of your previous chats instantly brings back the full conversation chain, allowing you to continue the discussion. File uploads are possible (max 5 x 10mb).

Important: If uploading files please do not include any personal information – this includes metadata (e.g. creation date, modification date, author, file size, file type), as this could lead to unintended sharing and potentially expose the information to unauthorised access. To remove metadata from a Word document or other Microsoft files, go to File > Info. **Please note**: not all elements of metadata can be removed from files – if you are uncertain about uploading a file, do not do it.

Create an account (using your UHI ID - but not your UHI password) in: Claude AI

Perplexity (Age restriction: 18+ only)

Similar to Claude, Perplexity gives quick, referenced, answers to questions. Notably, it draws attention to the sources it uses and divides feedback into different formats, like text, imagery

and video. Like others, it offers auto-generated follow-up questions that can help you to dig deeper into a subject.

Note from the Library Service:

Before using AI tools like Elicit, Perplexity, or Semantic Scholar, remember that the UHI library service offers a wealth of curated, high-quality resources. Our extensive subscriptions provide access to a vast range of academic materials through Library Search and other online collections, carefully selected to meet your study and research needs.

To make the most of these resources, we highly recommend installing the Lean Library browser extension. This tool ensures that UHI resources are easily discoverable even when you are searching through platforms like Google or Google Scholar. By beginning your research in the UHI library, you may find all the relevant and authoritative materials you need, saving you time and providing more accurate results.

Create an account (using your UHI ID - but not your UHI password) in: Perplexity

Semantic Scholar (Age restriction: 18+ only)

Sematic Scholar differs from the tools above. Searches within this tool only interrogate research documents (currently over 217 million 'papers from all fields of science'). Offered freely to the world by Paul Allen's (Microsoft founder) Allen Institute for AI, this vast corpus is being used by other AI tools for powering their academic search functions.

Note from the Library Service:

Before using AI tools like Elicit, Perplexity, or Semantic Scholar, remember that the UHI library service offers a wealth of curated, high-quality resources. Our extensive subscriptions provide access to a vast range of academic materials through Library Search and other online collections, carefully selected to meet your study and research needs.

To make the most of these resources, we highly recommend installing the Lean Library browser extension. This tool ensures that UHI resources are easily discoverable even when you are searching through platforms like Google or Google Scholar. By beginning your research in the UHI library, you may find all the relevant and authoritative materials you need, saving you time and providing more accurate results.

Create an account (using your UHI ID - but not your UHI password) in: Sematic Scholar

Satlas (Age restriction: 18+ only)

Satlas is a platform (again provided free by the Allen Institute for AI) for visualizing and downloading global geospatial data products generated by AI using satellite images. Currently, it includes three types of data: marine infrastructure (offshore wind turbines and platforms), renewable energy infrastructure (onshore wind turbines and solar farms), and tree cover, but they hope to include many more over time. They hope that this data will be useful for earth and environmental scientists, as well as for organizations working in a variety of geospatial domains.

Access: Satlas (no login required but if you do, use your UHI ID - but not your UHI password)

Elicit (Age restriction: 13+ only)

Elicit is a research assistant. It is not designed to operate like a chatbot (e.g. ChatGPT). Three of its advertised features are that it can offer single sentence abstracts of lengthy academic articles, that it can help you select relevant papers (and automatically search for related ones), and that it can extract particular data from papers and tabulate that for you. It does have a free account (which gives 5000 'credits' - these credits do not renew but one search equates to approx. 7 credits, so they should last a while).

Elicit is the only approved tool that features an age restriction less than 18

Note from the Library Service:

Before using AI tools like Elicit, Perplexity, or Semantic Scholar, remember that the UHI library service offers a wealth of curated, high-quality resources. Our extensive subscriptions provide access to a vast range of academic materials through Library Search and other online collections, carefully selected to meet your study and research needs.

To make the most of these resources, we highly recommend installing the Lean Library browser extension. This tool ensures that UHI resources are easily discoverable even when you are searching through platforms like Google or Google Scholar. By beginning your research in the UHI library, you may find all the relevant and authoritative materials you need, saving you time and providing more accurate results.

Create an account (using your UHI ID - but not your UHI password) in: Elicit

SciSpace (Age restriction: 18+ only)

Similar to Elicit, SciSpace is a research assistant with access to over 270m academic papers. It is designed to help you select conduct literature reviews, create brief summaries with citations, and discover related relevant papers. An interesting filter you can choose is to view only open access journal content (this way you are guaranteed full text access).

Create an account (using your UHI ID - but not your UHI password) in: SciSpace

Note from the Library Service:

Before using AI tools like Elicit, Perplexity, or Semantic Scholar, remember that the UHI library service offers a wealth of curated, high-quality resources. Our extensive subscriptions provide access to a vast range of academic materials through Library Search and other online collections, carefully selected to meet your study and research needs.

To make the most of these resources, we highly recommend installing the Lean Library browser extension. This tool ensures that UHI resources are easily discoverable even when you are searching through platforms like Google or Google Scholar. By beginning your research in the UHI library, you may find all the relevant and authoritative materials you need, saving you time and providing more accurate results.

Leonardo.Ai (Age restriction: 18+ only)

Leonardo.Ai is an image creation tool. Similar to other image creators you can pre-select 'platform', style and contrast. The results are rapid, compared to some other tools. Free version gives 150 tokens/day (14 tokens per 4 image set). Bonus feature: Hover over anything in their Community Creations gallery to see the prompt. This can be a great way of honing your prompting skills.

Create an account (using your UHI ID - but not your UHI password) in: Leonardo.Ai

Activity: Hands-on practice

As it says below, this page features a random question generator, designed to give the students a way of testing and becoming familiar with various GAI tools.

The activity below is designed to let you get some hands-on practice with UHI approved GAI tools.

Important note: Only take part in this activity if use of GAI tools has been approved by your tutor/lecturer. It is also the case that the majority of GAI tools approved for your use feature age restrictions (you either need to be **18 and above or have written permission** from your parent or guardian on record at UHI).

Instructions

It's very straightforward:

1. From the dropdown list below **select the tool that you want to practice with**, then
2. Click **Generate Random Question**.

The idea then is that you use the selected tool to solve the question (you can also compare and contrast the ways that different tools handle the same question). You might want to try a variety of prompt engineering techniques. The questions feature **hints** to help you with strategy. It could be that the tool you pick is not the best choice for answering the prompt - this is fine, feel free to switch to a more appropriate one.

Notes: The questions often mention specific subjects, if you wish to swap that subject out for one you teach, feel free. This tool is mainly intended to help save you time coming up with prompts to practice with. Also, it could be that the tool you pick is not the best choice for answering the prompt - this is fine, just switch to a more appropriate one.

The activity can also be found online.

Referencing GAI

Learning to reference correctly is an important skill for all students, and this includes referencing GAI-related content. UHI's referencing tool **Cite Them Right** covers this, which the page below illustrates for students. Tutors/lecturers will also need to decide if they want students to go any further, for example using an appendix to list the wording of prompts used etc.

Important note: If a tutor/lecturer allows GAI use, they should be open and encouraging about it, and acknowledge their own use of GAI. As Diaz (2024) states "As with any new, potentially transformative technology, the best outcomes for AI will be achieved when community members come together to share information, ideas, concerns, and solutions in an evolving, uncertain space." If you are open about GAI, students will behave the same way. However, students who feel that they are only being allowed to use GAI grudgingly, or that they are being looked down on for lacking originality, are less likely to act with integrity. They may well still use the tools, but they won't acknowledge it.

In August 2023, the UHI Harvard referencing style and guide was replaced by **Harvard Cite Them Right (12th edition)**. Cite Them Right, is the university's official support tool for constructing references correctly (including GAI-related references).

Access Cite Them Right

Click on the following link to access Cite Them Right (Note: you might be asked for your UHI login credentials).

The link above will take you to the overall home page. From there, where it says 'Choose your referencing style', select **Harvard***. Next, scroll down to **Digital and Internet**. Under Software you will find '**Generative AI**'.

*Harvard is the standard for most students at UHI; however, if you are not sure which style to use, read the Libguide: Referencing, and RefWorks and EndNote. After that, if you are still not sure, please ask your tutor/lecturer.

Citing your sources is a key element of academic integrity, required of both teaching staff and students at UHI. Correctly formatted citations and references are examples of the kind of transparency that is required at the university. Typical sources of material requiring to be referenced include printed books and electronic journals - but **this list also now includes content created wholly or in part with the assistance of GAI**.

Examples of GAI-related references

Note: advice about citing and referencing AI tools is constantly evolving. Cite Them Right covers two forms of GAI-generated content: content that can be viewed online via a public url*, and content that is only available to you (as the account holder).

*If a GAI tool's prompt results can be viewed via a public URL this will usually be found in the **Share** function of the interface. You can test the share link using a private/incognito browser window. Not all approved tools produce public URLs; ChatGPT and Perplexity do, but Copilot does not.

Content with public URLs

If the generative AI material is available online, The Cite Them Right website tells you can cite it as an electronic version of a source (such as an artwork or article).

In-text citation

The AI-generated flower (Shutterstock AI, 2023) ...

Reference list

Shutterstock AI (2023) *Photo of pond with lotus flower* [Digital art]. Available at: https://www.shutterstock.com/image-generated/photo-pond-lotus-flower-2252080005 (Accessed: 31 March 2023).

Content without public URLs

If the AI's end product (for example use of ChatGPT in conversation) is only available to you, the Cite Them Right website directs you to cite your use of AI as a personal communication and include a description of the AI generated material in your in-text citation.

In-text citation

When prompted by the author, ChatGPT responded with a 'definition of academic integrity' (OpenAI ChatGPT, 2023). A copy of this response is in Appendix 1.

Reference list

OpenAI ChatGPT (2023) ChatGPT response to John Stephens, 2 April.

Supplemental resource: A video introduction to Cite Them Right

The UHI library has a wide array of general information and guidance on Cite Them Right in their Referencing, Refworks and EndNote LibGuide.

The Cite Them Right web site offers many mainly at students but it does cover the broad strokes of what the tool is capable of: https://player.vimeo.com/video/460518283?h=e20fc5a041.

Academic integrity

Citing your sources is a key element of academic integrity, expected of both teaching staff and students at UHI. Correctly formatted citations and references are examples of the kind of transparency that is expected at the university. Typical sources of material requiring to be referenced include printed books and electronic journals - but **this list also now includes content created wholly or in part with the assistance of GAI**.

A failure to cite the work of others, including AI-related sources, is considered plagiarism, which is a form of academic misconduct. Guidance on how to stay on the right side such rules is covered in: Essential Student Skills: Referencing, Plagiarism and Academic Misconduct.

Additional guidance

A clickable list of additional information for students on GAI:

Currently the links below are nested under 'Guidance'. Future editions of this resource may see some sub-division of this heading.

Guidance

The following list represents just a **snapshot of the enormous amount of guidance on AI**! Feel free to branch out from these to other places. In fact, asking the tools themselves for guidance on how to make the most of them isn't a bad strategy.

UHI: UHI AI policy and associated guidance

JISC: Innovation > Artificial Intelligence

Scottish AI Alliance: Living with AI free online course

Contact North: AI in Higher Education Resource Hub

Harvard metaLAB: AI Pedagogy Project

AI for Education: Resource Hub

Australian Framework for Generative AI in Schools

Understanding AI [blog/newsletter]: Large language models, explained with a minimum of math and jargon

Kathryn Conrad: Critical AI Literacy for Educators (categorised links to resources on AI literacy, ethical issues, policy, etc.)

Glossary

Click on any term below to read a full explanation.

Algorithm

A step-by-step procedure for calculations. Algorithms are used for calculation, data processing, and automated reasoning.

Artificial Intelligence (AI)

Computer systems designed to perform tasks associated with human intelligence, such as pattern recognition or decision making.

Chatbot

A program that communicates with humans through text in a written interface, built on top of a large language model. Examples include ChatGPT by OpenAI, Bard by Google, and more. While many people refer to chatbots and LLMs interchangeably, technically the chatbot is the user interface built on top of an LLM.

Deep learning

A subset of machine learning that's based on artificial neural networks with representation learning.

Fine-tuning

The process of tweaking a pre-trained model for a specific task.

Foundational model

A type of model designed to be a general-purpose "foundation" for a wide range of applications. Foundation models can be adapted (or "fine-tuned") for domain- or task-specific purposes. In contrast, "narrow" models are designed such that they are limited to specific tasks.

Generative AI (GAI)

A type of artificial intelligence that includes chatbots and Large Language Models (LLMs), capable of creating new content, such as images, text, or music, based on patterns it learns from data.

GPT (Generative Pretrained Transformer)

A type of language model that uses machine learning to generate human-like text.

Hallucination

In the context of AI, a falsehood presented as truth by a large language model. For example, the model may confidently fabricate details about an event, provide incorrect dates, create false citations, or dispense incorrect medical advice.

LLM (Large Language Model)

A type of AI model that predicts the likelihood of a sequence of words appearing in a sentence. The models are trained on massive corpuses of text that have been taken from the Internet. Examples include GPT-3 and GPT-4 by OpenAI which power ChatGPT, Claude by Anthropic, PaLM by Google, LLaMA by Meta.

Machine Learning

A field of computer science in which a system learns patterns or trends from underlying data. Machine learning algorithms perform tasks like prediction or decision making.

Neural Network

A series of algorithms that endeavors to recognize underlying relationships in a set of data through a process that mimics the way the human brain operates.

Overfitting

A concept in machine learning where a model becomes too complex and performs well on training data but poorly on new, unseen data.

Prompt

An input given to an AI model to generate an output. In the case of a language model, a prompt could be a sentence or a phrase that the model uses to generate text.

Reinforcement Learning from Human Feedback (RLHF)

A technique that trains a model directly from human feedback. RLHF is often used in tasks where it's difficult to define a clear, algorithmic solution but where humans can easily judge the quality of the model's output. With generative AI models, RLHF is one method used to identify and filter out problematic content like violence and hate speech.

Token

A piece of a whole, so a word is a token in a sentence, and a sentence is a token in a paragraph.

Training Data

The data on which a machine learning model is trained. The model learns patterns from this data.

Transformer

A type of model architecture used in deep learning, known for its ability to handle sequential data.

Underfitting

A concept in machine learning where a model is too simple to capture the underlying structure of the data and therefore performs poorly on both the training data and new, unseen data.

Source: Combination of results from Copilot and https://aipedagogy.org/guide/starter/

References

Center for AI Safety (2024) *An overview of catastrophic AI risks*. Available at: https://www.safe.ai/ai-risk (Accessed 15 August 2024).

Diaz, V. (2024) *Exploring the Opportunities and Challenges with Generative AI.* Available at: https://er.educause.edu/articles/2024/2/exploring-the-opportunities-and-challenges-with-generative-ai (Accessed 26 June 2024).

Marr, B. (2023) *The most thought-provoking generative artificial intelligence quotes of 2023*. Available at: https://www.forbes.com/sites/bernardmarr/2023/11/29/the-most-thought-provoking-generative-artificial-intelligence-quotes-of-2023/?sh=537e6d477afa (Accessed 20 June 2024).

Hardman, P. (2024a) *The AI Magpie Effect*. Available at https://drphilippahardman.substack.com/p/the-ai-magpie-effect (Accessed 17 February 2024).

Stanford Graduate School of Education (2024) *Is AI new?* Available at: https://craft.stanford.edu/resource/is-ai-new/ (Accessed 8 April 2024).