Quick Guide on Generative Artificial Intelligence in Learning and Assessment (Faculty Guidance)

This quick guide starts with a broad definition of Artificial Intelligence (AI) /Generative AI and then gives some advice for UCD Faculty/Staff on how it's being used in higher education learning and assessment.

Introduction: What is Artificial Intelligence?

Artificial Intelligence began in the mid-1950s with scientists and philosophers training and programming machines to mimic human behaviours. Since then, several different forms of AI have evolved e.g. Machine Learning, Deep Learning, Natural Language Processing, Reactive, Self-Aware, and more. Early or "traditional" AI systems and machines were trained to recognise patterns and make predictions, such as predictive text on your mobile phone chats, or when you call a help centre and have to navigate through a series of automated responses.

While **Generative AI** has been studied and developed for the past several decades, it has recently come to the forefront of discussions due to recent significant technical improvements. Generative AI is a form of artificial intelligence which creates new texts, images, or audio. One form of Generative AI, Chat GPT, has been the topic of many academic discussions and debates. It's important to know that ChatGPT is not the only generative AI tool - other tools include Bing Search, GPT-4, and DALL·E 2, and more are emerging daily.

Artificial Intelligence in Education (AIEd)

In the area of education, more specifically, Hwang et al. (2020) put forth an overarching descriptive definition of **Artificial Intelligence in Education (AIEd)** stating "*AIEd refers to the use of AI technologies or applications in educational settings to facilitate instruction, learning, and decision making processes of stakeholders, such as students, instructors, and administrators*" (p. 1). There are various types of AI tools currently used by both faculty and students within higher education. For example, student-focused AI tools may include; intelligent tutoring systems, AI-assisted apps, AI-assisted simulations, AI to support learners with disabilities, automatic essay writing, chatbots, automatic formative assessment and AI-assisted learning/research assistants (Holmes & Tuomi, 2022). Examples of teacher-focused or institutional-focused AI tools commonly used may include: plagiarism detection software, smart curation of learning materials, classroom monitoring, automatic summative assessment, AI teaching assistants and e-Proctoring (Holmes & Tuomi, 2022). Within blended and online learning contexts, AI applications (e.g. intelligent tutoring systems, teaching robots, learning analytics dashboards, adaptive learning systems) have been used to engage students, provide more personalised learning pathways and monitor the student learning experience and progress. It is evident there are multiple variations of AI tools and applications currently used in higher education and while many offer

educational enhancements some may also present ethical or pedagogical dilemmas which need careful consideration.

Ethics of Artificial Intelligence

The use of any technology comes with its own set of affordances and constraints and it is important to consider the ethical implications of using AI in educational settings. Generative AI has sparked fascinating conversation around the use (and misuse) of the tools. The Civics of Technology (CoT) project, (which takes the stance that technologies are not neutral), provides a set of three heuristics: a Technoethical Audit, Discriminatory Design Audit, and Five Critical Questions About Tech. These exercises encourage nuanced conversations around the use of technology in educational environments. These conversations are beneficial for faculty and students to consider as we start to understand how generative AI impacts not only our classrooms and learning environments, but the world around us. It is important to take these ethical points into consideration when utilising AI.

Learning and Assessment Design Considerations

There is a growing debate on the most effective and ethical approach to the use of Generative AI in higher education. Some ways that people are using AI in learning and assessment, include **designing in** (using and acknowledging Generative AI to enhance student learning) and **designing to minimise** the use of Generative AI (discouraging its use in student learning).

The approach(es) that you decide to use in your module may depend on the disciplinary nature of your module and your own view on the use of Generative AI in this context. Whichever approach you use, you should clearly communicate this to the students in the module documentation and you should encourage dialogue with your students on the use of it in the module.

DESIGNING IN: USING AND ACKNOWLEDGING AI TO ENHANCE STUDENT LEARNING

The following bullet points share ways to design AI into assessment and learning:

- Integrate AI responses and support students in their critique of its use as part of the learning and writing process:
    - For example, having invited students to first write a draft response to a question, then invite them to submit an AI response, following up with a variety of discussion points, comparing answers, qualifying statements, critiquing any ethical issues /dilemmas in its use.
    - Support them to '*evaluate the validity, appropriateness and relevance of the information provided by ChatGPT*' (Choi et al., 2023)
- Use for structuring their work:
    - For example, deconstruct an essay process and encourage students to utilise AI to build up the essay components or research paper plan (e.g. abstract, research questions, methodology etc) then invite them to revise and amend their own process accordingly. A useful prompt can be "*Please provide an essay plan for an academic [insert field] essay entitled ["insert title"]; including, but not restricted to, the following topics: "[Topic 1; Topic 2; Topic 3]"]*" (Smart & Botha, 2023).
    - Develop students in their ability to write the most effective questions that prompts AI to elicit the most appropriate answers. This can support students' ability to develop good

questions, grades could be awarded for what is considered a 'good question and why they chose this question'. This can support students to understand the nature of inquiry/research.

- Use for feedback to students: Some AI tools (i.e. ChatGPT) allow students to submit work for feedback.
    - Encourage learners to undertake peer review utilising AI to prompt and formulate potential feedback responses. Then appraise the quality provided before composing their own final version of constructive feedback.
    - For editing/proofing: ChatGPT can support students to get some specific feedback on their work, if they request this e.g. Prompt "Please make the following essay coherent, well-structured, and remove unnecessary words. It should be written in the style of [.. discipline..], using the [insert preferred referencing system] referencing system: "[copy and paste passage]" (Smart & Botha, 2023). Using this prompt, students can currently copy and paste their work, up to 25,000 words into the ChatGPT
- Support student and staff's understanding of Generative AI literacy through ongoing conversation and debates on its use in learning.
- Where AI is used in teaching, learning and assessment, its contribution should be acknowledged through the noted disciplinary citation methods.

DESIGNING TO MINIMISE: DISCOURAGING THE USE OF AI IN STUDENT LEARNING

- Use assessments that are more unique and relevant to the students, often described as more authentic assessment/real world assessments. For example:
    - Carry out interviews (social studies)
    - Create a patient information leaflet (health care)
    - Create a poster publication (research)
    - Use an oral debate (politics) (National Forum, 2017)
- Support students in personalising their assessments, reflecting on their own examples and experiences. For example, asking students to draw on experiences in their personal, work, professional lives, as *students who feel connected to their writing will be less interested in outsourcing their work to an automated process'* (Mills & Goodlad, 2023).
- Encourage students to relate their work to the materials and activities done in class.
- Develop student writing skills, including sharing the process of their writing
    - For example, submitting work with tracked changes, comments and revisions
- Develop environments that support more critical and creative thinking in students' work. These include supporting '*Learning motivation, cooperativity, peer interaction, peer engagement, and a smart classroom environment*' (Almulla, 2023).
- Use orals/videos reflective assignments and group work, where appropriate. Although be aware that some emerging technologies can also produce video outputs.
- Encourage students to include visual representations in the work, such as mind maps/concept maps/ tables, figures.
- Support student and staff's understanding of Generative AI literacy through ongoing conversation and debates on its use in learning

Citation and Reference Considerations

This is a rapidly changing area and new citation guidance continues to emerge daily. It's important to note that some programmes, publications, and conferences have specified rules and regulations regarding the use of text generated by AI. While there are differences in guidance on *how* to cite, there is common consensus that if one chooses to use generative AI, it should *always* be acknowledged and cited. As an example, one of the leading conferences on artificial intelligence (the International Conference on Machine Learning) is grappling with this as well and provided this statement for their recent conference. Furthermore, the Committee on Publication Ethics has recently provided guidance to authors of scholarly publications.

The following referencing styles have published emerging guidance on the use of AI in writing:
- MLA
- Chicago

Utilise the guidelines of your disciplinary norms and check with programme coordinators, school heads of teaching and learning, or library resources to see if there is specific guidance for your discipline. You can keep abreast of style guides for individual disciplines by visiting: https://libguides.ucd.ie/academicintegrity/citingstyles

References

Almulla, M. A. (2023). Constructivism learning theory: A paradigm for students' critical thinking, creativity, and problem solving to affect academic performance in higher education. *Cogent Education,* 10(1) https://doi.org/10.1080/2331186X.2023.2172929

Choi, E. P. H., Lee, J.J., Ho, M., Kwok, J. Y. Y., & Lok, K. Y. W. (2023) Chatting or cheating? The impacts of ChatGPT and other artificial intelligence language models on nurse education, *Nurse Education Today,* 125, 105796. https://doi.org/10.1016/j.nedt.2023.105796

Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. *European Journal of Education,* 57(4), 542-570 https://doi.org/10.1111/ejed.12533

Hwang, G., Xie, H., Wah, B. W., & Gašević, D. (2020). Vision, challenges, roles and research issues of artificial intelligence in education. *Computers and Education. Artificial Intelligence,* 1, 100001. https://doi.org/10.1016/j.caeai.2020.100001

Mills A., & Goodlad, L. M. E. (January 17, 2023) Adapting college writing for the age of large language models such as ChatGPT: Some next steps for educators. *Critical AI.* https://criticalai.org/2023/01/17/critical-ai-adapting-college-writing-for-the-age-of-large-language-models-such-as-chatgpt-some-next-steps-for-educators/

National Forum for the Enhancement of Teaching and Learning. (2017) *Authentic assessment in higher education*. https://hub.teachingandlearning.ie/resource/authentic-assessment-in-irish-higher-education/

Smart B. & Botha C. (2023) "A Practical Guide to Ethical Use of ChatGPT in Essay Writing" Mail & Guardian March 14.

Resources

Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, ahead-of-print(ahead-of-print), 1-12. https://doi.org/10.1080/14703297.2023.2190148

European Commission (February 15, 2023) European University Association (EUA) urges higher education sector to adapt to AI impact. https://euraxess.ec.europa.eu/worldwide/asean/news/european-university-association-eua-urges-higher-education-sector-adapt-ai

Quality and Qualifications Ireland (February 2, 2023) What to do about AI text generators? Next steps for educators. https://www.qqi.ie/events/what-to-do-about-ai-text-generators-next-steps-for-educators

UCD Library (2023). *Referencing and Plagiarism.* UCD Library Guides. Retrieved April 4, 2023, from https://www.ucd.ie/library/students/

UCD Library (2023). *Digital Literacy.* UCD Library Guides. Retrieved April 4, 2023, from https://www.ucd.ie/library/students/

Date: 4th April, 2023