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Student Guide to Using Generative Artificial Intelligence Tools

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1st Part

GenAI tools – Contextualization and risks of use

Content documentation

The information presented below was documented based on consulting the informational content provided either on their own websites or on those related to the IT departments of the universities listed as follows:

- Edinburgh Napier University. (n.d.). *Artificial Intelligence tools and your learning*. https://my.napier.ac.uk/your-studies/improve-your-academic-and-study-skills/referencing-and-academic-integrity/artificial-intelligence-tools
- Harvard University Information Technology. (n.d.). *Initial guidelines for the use of Generative AI tools at Harvard*. https://www.huit.harvard.edu/ai/guidelines
- Imperial College London. (n.d.). *Generative AI guidance*. https://www.imperial.ac.uk/admin-services/library/learning-support/generative-ai-guidance/
- MIT Information Systems & Technology. (n.d.). *Generative AI use at MIT*. https://ist.mit.edu/ai
- Stanford University IT. (n.d.). *Responsible AI at Stanford: Enabling innovation through AI best practices*. https://uit.stanford.edu/security/responsibleai
- University College London. (2023). *References, citations and avoiding plagiarism: An introduction to the function and practice of referencing your sources*. https://library-guides.ucl.ac.uk/referencing-plagiarism/acknowledging-genAI
- University of Cambridge. (n.d.). *How we use generative AI tools*. https://www.communications.cam.ac.uk/generative-ai-tool-guidelines
- University of Jyväskylä. (n.d.). *Principles for the Use of Generative AI at JSBE*. https://www.jyu.fi/en/for-students/instructions-for-bachelors-and-masters-students/principles-for-the-use-of-generative-ai-at-jsbe#toc-detailed-ai-instructions
- University of Nottingham. (n.d.). *Generative artificial intelligence: Guidance for students*. https://xerte.nottingham.ac.uk/play_46905?_gl=1*4s295l*_gcl_au*OTE1MDQyNjMxLjE3NDExNzg2MjY.#page1
- University of Oxford. (n.d.). *Use of generative AI tools to support learning*. https://www.ox.ac.uk/students/academic/guidance/skills/ai-study

Introductory elements

When approaching the concept of artificial intelligence (AI) more broadly, there are a multitude of applications, tools and platforms capable of formulating quick answers,

providing feedback or creating ideas. However, when students opt for using AI tools, it is advisable to consider a number of aspects, given that such an approach can have a considerable impact on the educational path, but also on the professional one. Along with the transformations, perhaps faster than ever, in the field of information technology, the sphere of applicability of AI is likely to become increasingly widespread during the professional life of any student.

Many aspects regarding how the communication process is carried out will certainly be influenced by specific AI tools, whether in education, in the professional field, or in society in general. Depending on the specifics of the fields of study and, implicitly, of the complementary jobs, the role of generative artificial intelligence (GenAI) can be operationalized differently. In some, it can play an increasingly important role in relation to certain tasks and processes. In others, the role played can contribute decisively to highlighting certain essential human skills. Therefore, it is advisable that the assessment of the implications associated with digital tools to be carried out critically and responsibly.

The year 2022 was the year in which ChatGPT was launched by the OpenAI organization, which activates in the field of AI research. Later, Microsoft Copilot and Google Gemini are two examples of similar tools that appeared in this market. Other circumstances regarding AI integration refer to various accessibility-related tools, search engines, scientific databases, etc.

Although the influence of tools such as ChatGPT will have an effect on the general specificity of certain assessments, the core activities associated with academic studies will not radically change. Examples of important skills for which there will still be expectations include:

- Testing one's own understanding of highly complex ideas;
- Applying the mentioned ideas in different contexts;
- Critically evaluating informational content;
- Reflecting on one's own development and academic or professional practice.

Under the conditions in which the final form of a produced material integrates a significant contribution from an AI platform, it is fundamental to explain how it was used. Consequently, the adherence to the principle of transparency will contribute to optimizing the understanding of the role played by the use of AI in the structure of the produced material, as well as to strengthening one's own academic integrity.

Aspects regarding the functionality

GenAI tools are a type of software that automatically generates content based on user-entered prompts and can generate text, code, images, and other types of content. ChatGPT, Microsoft Copilot, and Google Gemini are among the most well-known tools of this type. GenAI is a specific AI technique that has both transformative and disruptive potential, and the derivative tools will be an integral part of many academic and professional contexts.

The manner in which AI-integrated writing tools work refers to simulating natural conversation and rendering content by predicting the next word in a sequence by operating a very large database of their own. Based on the operationalization of this method, the aforementioned tools are able to generate well-structured paragraphs or papers. GenAI tools that work with text-based operating models are also called Large Language Models (LLMs) and work on the principle of building a knowledge base of information by integrating previously formulated prompts by users, becoming its new database. Therefore, any prompt entered into a GenAI tool can be used as training data for that tool.

IAGen does not have the ability to reflect on its own practice and does not "experiment" in the traditional sense of the word. Most of the updates and "fixes" applied to the GenAI tools have been achieved through the introduction of additional or revised training data. It is also important to note that GenAI is able to generate content exclusively based on its own training data. Consequently, in situations where the data is incomplete, the information obtained may be somewhat distorted.

Another important aspect to consider when using AI is the *de facto* awareness of how the platform or platforms work. Many functionalities in the GenAI sphere require the creation of a user account. Therefore, obtaining access is conditional on the collection of personal information. It is also important to emphasize that any data entered into third-party AI systems is transmitted and stored on external third-party servers that cannot be directly controlled. This may involve the risk of data compromise or even loss. Given the fact that models using AI operate with large amounts of data available online, the issue of taking cognizance or consent of the original creators arises.

In order to protect the confidentiality of data, it is not advisable to enter data that could be classified as confidential. The information entered in the default form is not private, so there is a risk of its exposure to unauthorized parties. Accordingly, there will be completely avoided the distribution of content related to one's own or other people's

intellectual property such as: patents, registered trademarks, designs, sensitive information or any other type of content, in a general sense.

Responsible use

Using GenAI tools to create the entire content of an academic paper and, thereafter, presenting it as the student's own work is prohibited. There are many opinions according to which the fact that GenAI tools use ideas formulated by human authors without referencing them can be viewed as a form of plagiarism.

In general, the use of AI entails relating to this process as a starting point rather than being used to generate a "product" in its final form. As a result, AI should not be treated as the "author" of any material produced by students in an academic context. When considering the process of writing the content of an academic material, the obtained outputs can be generic so that the author's own "voice" may be lost. The latter is a notable part of the academic writing process, and its development consistently contributes to shaping its unique character. In order to facilitate the approach of certain technical aspects, such as identifying errors or optimizing the structuring of a sentence, various AI-assisted tools can be useful. However, the determinant of originality lies in the ideas formulated by the author.

Another shortcoming that characterizes GenAI is the inability of subsequent tools to be conscious and, implicitly, to have the ability to "think" or "create" in a conventional manner. Based on previous examples, it can be stated that intelligence is, in effect, imitated through algorithmic predictions.

Familiarizing with a topic, generating ideas, processing unfinished content, or streamlining certain manual tasks are just a few examples of how AI tools can be useful. This usefulness can be transposed into developing the student's critical thinking skills as part of the process by which prompts formulated in the context of a particular topic are refined.

When using GenAI as a starting point for research, the principle on which any search engine works can be considered. Beyond this, it is not advisable to use GenAI in in-depth research efforts or as a substitute for using credible sources of information such as scientific databases.

In order to use GenAI as a facilitator of the operationalization of the activities exemplified above, it is advisable to take into account the following aspects that may exert negative influences:

→ GenAI may include information that may be inaccurate, erroneous or outdated;

→ GenAI, given that it operates on the basis of reproducing information from sources that are often unidentifiable, cannot be treated as an original or credible source of information;

→ GenAI may generate false quotes and citations.

Beyond the issues involved in using GenAI, when opting for the use of GenAI tools, consideration of the following activities is compulsory:

↔ Critical evaluation of each output;

↔ Careful verification of quotes and citations;

↔ Correct documentation of the degree of use in order to formulate the appropriate acknowledgement;

↔ Preserving intermediate forms of the material that was produced in order to certify the way in which the process was carried out.

The following enumeration refers to the elements that are recommended to be saved when using GenAI tools:

- Name and version of the tool;
- Date and time of use;
- Prompt or query;
- Response;
- Follow-up questions and answers;
- Name of the person who formulated the prompts.

Critical approach

An important aspect of using GenAI is that, although it can render informational content, it cannot be said that it is consciously generated. At the same time, GenAI cannot formulate opinions. Therefore, the arguments produced by the use of GenAI do not assume the consideration of a certain level of expertise or connotations, so they are likely to be incomplete, contradictory and derive, essentially, from the training data. From an academic perspective, the meaning of the concept of argument refers to the informed factual response expressed relative to a given topic or question. Given that the formulated arguments assume the transposition of an authentic opinion resulting from the careful examination of a circumstance, thus having more impact, this process is not replicable in the context of GenAI.

Returning to the inability to "think", given the operation based on a language prediction model, the generated answers whose spelling and grammar are correct may seem

somewhat plausible, but are erroneous. Consequently, considering the information generated by AI to a large extent as truthful may lead to the repeated use of false or misleading information.

AI tools can have a negative effect on the learning process by reducing the need for active engagement, which is a key element of deep and meaningful learning. Furthermore, there is needed an awareness of the parallel between using these tools reasonably *vs.* the situation where they have a decisive contribution to obtaining an unfair advantage. By their nature, the tools in question may seem attractive to be used, given that they can provide or create content very quickly, but they have important limitations regarding the fact that the outputs may not be fully viable. Ultimately, students are responsible for the accuracy of any material they have produced, and such a conduct is correlated with the activity of judiciously reviewing all AI-generated content.

When AI tools provide outputs, they may include factually incorrect information, leading to the emergence of so-called "hallucinations". Therefore, the used tool cannot be considered the sole source of information, so the verification of any claim made becomes essential. As another perspective indicates, an AI-generated hallucination describes a situation where AI provides false or incorrect information, but in a very convincing manner.

In turn, even citations and references can be subjected to hallucinations in the sense that mentions to non-existent studies and articles may appear. Hence, it is not recommended to use GenAI to create citations and references, but to adhere to one of the principles of good academic practice according to which only those materials read and, implicitly, used in the documentation process should be cited.

The more unusual the wording of a prompt, the more the AI relies on randomness in formulating answers. The system often struggles to handle specialized topics, ultimately providing overly elaborate, simplistic, or erroneous information.

The use of GenAI is considered to be appropriate for grammar or spelling checking, on the condition of not rewriting a significant part of the material produced. Similarly, tasks such as generating or organizing certain ideas may be considered an appropriate way of using it. Last but not least, it is important to note that the use of GenAI should be approached depending on the specifics of the considered assessment, as there is a direct correspondence between these two areas.

2nd Part

GenAI tools – Recommendations for use

Content documentation

The information presented below was documented based on consulting and, implicitly, adapting the information content provided on the UCL Library Services, Library, Culture, Collections and Open Science (LCCOS) website, University College London:

- University College London. (2023). *References, citations and avoiding plagiarism: An introduction to the function and practice of referencing your sources*. https://library-guides.ucl.ac.uk/referencing-plagiarism/acknowledging-genAI
- ✓ The guide *Acknowledging the use of generative AI and referencing generative AI* © 2023 by UCL - Library Skills is licensed under CC BY-NC-SA 4.0

Additionally, to categorize the use of GenAI, the following guides were used as references. In their turn, they were documented from the aforementioned one:

- University of Leeds. (2024, April). *Generative AI guidance for taught students*. https://generative-ai.leeds.ac.uk/wp-content/uploads/sites/134/2023/12/UoL-GenAI-guidance-for-taught-students.pdf
- University of Reading. (2024, October). *Generative Artificial Intelligence Tools and Assessment*. https://www.reading.ac.uk/cqsd/-/media/project/functions/cqsd/documents/ade/genai-tools-and-assessment.pdf?la=en&hash=BF3295266A4A91A8933E802108C48A67

Categories of use of artificial intelligence in assessment

Firstly, the following categorization can guide students in properly carrying out and completing assessment activities in such a way that they have a defining contribution to the optimization of the learning process. Secondly, it can also be considered by staff for the design and establishment of assessment methods. Last but not least, the three categories that will be explained below are not defined in a rigid manner but, rather, their intended role is integrative. They can be treated as a tool for ensuring that students and staff can refer to a common framework related to understanding the aspects regarding the use of GenAI.

Red category – GenAI tools cannot be used

Within this category, you should not use GenAI. The purpose and format of the assessments make the use of GenAI tools inappropriate or impractical.

Gaining specific learning activities or skills to be assessed may include, on the one hand, the demonstration of basic skills such as remembering, understanding, or developing independent critical thinking skills. On the other hand, it may be considered the application of certain acquired knowledge or the demonstration of fundamental skills associated with the study program within which the student is enrolled.

The purpose of this type of assessment is to support the development of the knowledge and skills that students will need to be able to study optimally and efficiently.

Examples:

- Face-to-face exams;
- Classroom tests;
- Some online tests;
- Some practical and laboratory work;
- Discussion-based assessments;
- Presentations based on asking questions and formulating answers to a significant extent;
- Writing essays or scientific papers in which the student's own critical thinking is assessed;
- Completing bachelor's/ dissertation theses;
- Text translation/ reformulation/ interpretation exercises, when the purpose is to test one's own linguistic skills;
- Completing homework, assignments or projects in which personal creativity is assessed.

Yellow category – GenAI tools can be used in an auxiliary role

Within this category, you can use GenAI from the perspective of an auxiliary role, in accordance with the specifications of the discipline coordinator and those derived from the assessment itself.

Students may use GenAI tools in a limited, critical, and responsible manner. Authorship must continue to belong to the student, while the contribution of GenAI must be limited to supporting and assisting the student in the learning and development process.

Examples:

- *Preparation stage* – Students use GenAI to help them research information, find sources, brainstorm ideas, or create a general structure for the material they have to write.
- *Writing stage* – GenAI can help students when they are facing a creative block (*e.g.*, a convoluted sentence they are trying to formulate). GenAI can also be used to help students receive critical feedback on their approach/ idea or to "discuss" ideas to strengthen them.

Additional examples:

- Grammar and spelling check;
- Suggestions for bibliographic resources (! which must always be verified and validated by the student).

- *Completion stage* – GenAI can help students to identify errors in their papers or reduce text to fit within a certain word count. Many capabilities of GenAI related to paper completion are similar to pre-existing tools, such as spell and grammar checkers (*e.g.*, Grammarly).

  Additional examples (ref. – verification of acquired/ learned knowledge):

  - Explaining complex theoretical concepts in simple terms;
  - Generating examples or counterexamples to understand a phenomenon;
  - Simulating questions and answers associated with preparing the student for certain assessment activities.

Green category– GenAI tools can be used in an integral role

Within this category, you can use GenAI as a primary tool and it should be considered as an integral part of the assessment.

Addressing complex problems and generating creative solutions are some examples of the applicability of how students can effectively and critically demonstrate their ability to use GenAI. In such a context, the use of GenAI and the critical evaluation of the associated outputs will be explicitly an integral part of the task and learning objectives. Therefore, assessments that do not include these specifications are not considered part of this category.

Examples:

- Content outline and structure;
- Idea generation;
- Content comparison (*i.e.* AI generated *vs.* human);
- Content creation in specific styles;
- Content analysis;
- Summarization;
- Paraphrasing;
- Knowledge verification and consolidation;
- Creation of artwork (images, diagrams, graphs, audio and video materials for visual illustration of concepts, etc.);
- Assimilation of a support role and participation in a conversation;
- Content translation;
- Generating preliminary content for critical evaluation by students;

- Automatic generation of self-assessment tests;
- Generating personalized teaching materials (worksheets, summaries, flashcards, etc.) to facilitate the learning process.

Acknowledging the use of GenAI

The use of GenAI should be acknowledged in one of the sections labeled as "Appendices" or "Methodology" within the structure of any academic paper.

The acknowledgement should include at least the following information:

- ✓ Name and version of the GenAI system used;
- ✓ Publisher (the company that created the GenAI system) (*e.g.*, Microsoft, OpenAI, etc.);
- ✓ URL address of the GenAI system;
- ✓ Brief description of the context in which the tool was used.

Example:

> I confirm the use of Microsoft Copilot (version GPT-4, Microsoft, https://copilot.microsoft.com/) to synthesize my initial notes and proofread my final version.

In-text citations and inclusion of AI-generated outputs in the list of references

Some referencing styles suggest that systems which integrate functionalities from the GenAI sphere should be cited similarly to other types of sources, but citing them involves a series of issues:

i. A GenAI tool cannot be classified as an author – it cannot take responsibility for the contribution, nor does it provide original ideas. Its operating principle is that it reproduces ideas detected elsewhere.

ii. One of the most important functions attributed to the list of references is that the reader can identify the original source of the information, an impossible thing in terms of AI-generated content.

However, there may be situations where it is appropriate or necessary for a student to refer to AI-generated outputs in a particular academic material and/ or include them in a certain list of references. For example, when a particular paper addresses the topic of GenAI and, implicitly, a series of discussions regarding the outputs.