



- ICA-Edu Workshop 2024 Report

‘Developing best teaching and learning practices for the professional use of AI in Life Sciences Higher Education’

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Reflection on the current status

There is growing need for Generative Artificial Intelligence (GenAI) policies in universities. Policies vary widely across institutions. They range from no policy to a general policy stating the need for responsible use and attention for academic integrity and data ethics. Some universities have developed more detailed prescriptions about how teachers could use GenAI in teaching and learning. Some faculties appear to have no interaction with students on GenAI, some have open communication with students on how they can experiment with it but tend to highlight that students are not allowed to use GenAI as the original source (GenAI is not a reference that you can cite!).

The challenges in GenAI development is that it is in continuous evolution (refer to [There's An AI For That® - Discover The Newest And Best AI Tools](#) or [Future Tools - Find The Exact AI Tool For Your Needs](#) and [The AI Forge](#)) and thus guidelines need to be updated on a regular basis. However, independent of this there is probably the need for an overarching GenAI policy framework, preferably on an (trans)national level to address ethical GenAI usage (e.g. reflecting on privacy, academic integrity, ecological footprint, etc.) and highlighting students' responsibility & transparency in the use of GenAI.

GenAI tools will impact teaching & learning and change the way we teach but also consequently will challenge **student's assessment methods**. Already 'early adopters' are investigating innovative pedagogies. GenAI can support teachers in development of learning materials, learning analytics and free up educator's time for meaningful interaction. Debate and oral discussion in lectures, group work, tutorials, etc. demonstrates the importance of one's own (subject-related) knowledge and is (re)gaining importance. The introduction of GenAI tools enhances an evolution towards authentic assessment with working-world relevance. Contextual learning and applying knowledge in a situation students have not yet encountered stimulates critical thinking and problem solving while recognizing the need for a sound knowledge basis. GenAI is an 'enabler' to support ideas' generation and helps to bring down knowledge barriers if used in the right way. It can be the basis for deeper understanding of a problem. As such it can facilitate active learning, encouraging students' engagement and for them to take ownership for their learning and personal development. In that context, accurate evaluation ideally relates to a holistic view of competencies e.g. using oral examinations, presentations or self-reflection report including skill development. It can be useful as part of a process-based approach (e.g. research trail) and not only a product-based approach (written essay).

It was noted from ad hoc informal talks with teachers and students but also from surveys conducted at some universities that there are still significant **teacher concerns and variability in student's readiness** (sometimes also depending upon the type of educational programs and courses included). Some concerns expressed are uncertainty of teachers' or student's own GenAI literacy and lack of competency or time to learn and keep up with advances. This can lead to a fear of being left behind. There is also some hesitation and caution in embracing GenAI tools in part because there are some ethical and sustainability questions that remain open. There were reflections on whether the GenAI tools will negate the need for critical thinking and there is an unclear vision of future working life skills and the role of GenAI tools in the professional field. Nevertheless, many staff and students do also see the opportunities and expressed a positive opinion on a range of GenAI tools and applications.

Priorities to be addressed in developing best teaching and learning practices for the professional use of AI in Life Sciences Higher Education

- It was agreed that **the first priority** is to **promote GenAI literacy among faculty staff and students** (E.g. a teaching module or e-learning path, coaching sessions to inform on the do's and don'ts, opportunities and threats) so that GenAI use is not restricted to use 'ad hoc' by the 'early adopters'. This is also **important to prevent (growing) inequality** in learning and teaching. The lack of that knowledge and digital skills could potentially lead to a bigger gap between groups that are beginners or experts. *"The experts can work better with AI tools because of their already acquired knowledge,*

which allows them to grow further as AI Elite users, while the beginners can lose further ground due to poor prompts and insufficient critical thinking. This Matthew effect, where the strong become stronger and the weak weaker, can also be observed in student groups.” Furthermore, there might be unfair advantage as some might afford paid tools versus lesser performing free-access tools. Thus, universities will need to mind this gap and use negotiation power of collective bargaining with providers to enable equal access to GenAI tools.

- **The second priority** would be developing/updating pedagogical approaches to teaching and integrate **AI literacy into curricula** and to re-evaluate assessment methods. It is the task of higher education institutions to contribute to ‘**digital competences**’ of which GenAI tools are only one part. The Generation Z of incoming students are digital natives and GenAI tools are intrinsically part of the portfolio of tools they use for learning. There is the need to reflect on how to ensure that these new tools lead to better outcomes for teaching and learning in a fair and equitable manner.
- **The third priority is to have discussion with employers.** Higher education institutions need to appropriately prepare students for the workforce and society however, at the moment there is little information on the use, needs and expectations from employers on GenAI or digital competences in general from graduates, particularly in the context of the Life Sciences.

The main take home message from the ICA-Edu workshop in Zagreb was that it is clear that **basic academic competences such as critical thinking** will get more **important as the use of GenAI accelerates**. Content-wise, the quality of the information generated by GenAI tools is variable (depending upon the tool), often fragmented, superficial and missing rationale and not always reliable. This is because the output is often generated based on (very) limited data. If the GenAI tool has insufficient data to answer a specific question (or even no data at all), it will still yield what appears on first reading to be a credible result. Credible but not necessarily true! Thus, basic knowledge to put the outcomes of GenAI tools in context is needed for interpretation. While GenAI offers new opportunities (idea generation, writing assistant, programmer, etc.) it also pushes universities to reflect about what do we want students to do with the knowledge they get. Higher academic education fosters critical thinking skills, encouraging students to analyse a research question, collecting and evaluating evidence from various sources, constructing reasoned arguments and cultivating problem-solving abilities to address complex challenges in professional and personal contexts which needs creativity and application of existing knowledge in a new context. Essay writing skills aim for a structured and coherent approach in elaborating the thesis statement in clear and concise language and not just presenting facts but also explain their significance in the broader context of the topic.

In summary

There is the need for higher education institutes to reflect on digital competences, to find a good balance between the adoption of GenAI tools in teaching and learning while fostering good human interaction (and emotional intelligence). The further elaboration of GenAI policies and guidelines in universities and faculties is ideally a co-creation process where experts, teachers, students and professionals in the field are included. Ethical concerns need to be taken into account. Finally, it is clear that GenAI tools will not replace skills and knowledge but will encourage on refocussing on the basics of academic education.

Further reading:

- Dabis, A., Csáki, C. AI and ethics: Investigating the first policy responses of higher education institutions to the challenge of generative AI. *Humanities and Social Science Communications* 11, 1006 (2024). <https://doi.org/10.1057/s41599-024-03526-z>
- Ghent University Guidelines on GenAI online : [Generative AI in Ghent University Education: Impact and Approach | Education Tips](#)).
- Karaca, O., Çalışkan, S. A. & Demir, K. 2021. Medical artificial intelligence readiness scale for medical students (MAIRS-MS) – development, validity and reliability study. *Medical Education* 21: 112
- View the Workshop programme and the speakers presentations here <https://www.ica-europe.info/events/past-ica-conferences-events/2024-ica-edu-workshop-ai-competences-in-higher-education>

Note

ICA-Edu aims to provide the opportunity to discuss, evaluate and deliver innovative approaches in higher education provided by Life Sciences Universities in support of the European and global agenda for the circular bioeconomy (agriculture, forestry food, biobased economy), sustainable use of natural resources, biodiversity, rural development and the environment