

Uninvited Generative AI has joined our students. Tackling disinformation and creating content with the help of generative AI apps.

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Abstract

The debate around generative artificial intelligence in education (AIED) is open and widely participated. UNESCO (2024) has released many publications addressing the implications of using such applications in school settings. At the same time, waiting for official regulations from the Italian Education Minister, generative AI has entered from the window, thanks to the students who are their early bird adopters in the educational context [2]. This paper presents a workshop held during the second semester of 2023/2024 in 5 different grades at a High School in Italy. The activities focused on disinformation and the environment; they involved students of various ages working in groups to produce a brief article following Wikipedia Pillars (https://en.wikipedia.org/wiki/Wikipedia:Five_pillars). In a BYOD setting, they were asked to make storytelling on given sub-topics, write a short text, and create an image with a generative artificial intelligence app. At the end of the workshop, the students evaluated the experience by filling out a self-compiling questionnaire regarding self-efficacy, knowledge of tools, and perception of effectiveness with these teaching strategies. As a result, the students seemed to appreciate the strategy and tools, as well as the overall instruction design of the workshop. Furthermore, they have been shown to interact natively with all the technologies, even if not constantly aware of their nature: they were conscious of being in contact with a generative AI application while generating images, less when interacting with apps that integrate AI without being transparent about this feature.

Keywords ¹

Information literacy, AIED, generative AI, disinformation, high school.

1. Introduction

Since its appearance, ChatGPT has started to spread at a pace unseen before. Similarweb - an analytics firm- says this app had an average of about 13 million unique visitors per day in January 2023, more than double its first months since the release. If we compare this data with other worldwide operating apps like TikTok, it is an actual exploit in the history of Internet apps.


Such success triggered a transformative process among different fields and, at the same time, a process of questioning the consequences, whatever they may be, positive or negative.


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Education made no exception. While the first reaction was of alert on cheating - one for all, the Australian Universities went back to the on-paper text to avoid cheating risks linked to the use of ChatGPT- and the focus was more on the risks like BIAS and hallucinations or even the impact on learning. Nowadays, there is a more balanced approach, even if cultural differences affect how policymakers and educational institutions manage the adoption of generative AI in learning environments.

Whether we like it or not, AI transforms education [9]. This process presents both opportunities and challenges for students, educators, and institutions. While offering benefits such as easy natural language interaction, personalised learning experiences, enhanced engagement, and the possibility of instant feedback, generative AI also raises concerns such as disinformation, privacy and ethical use [4]. To tackle these potential issues in the educational landscape, generative AI necessitates a collaborative and holistic approach among stakeholders to develop ethical guidelines and frameworks [1]. The integration of generative AI in education underscores the need for media literacy and critical thinking skills to navigate the complexities of information in the digital age. This necessity is highlighted by the findings of Chan, who proposes an AI Ecological Education Policy Framework to enhance the understanding of AI's implications among students and educators alike [5]. Integrating digital literacy into educational curricula is also crucial, as various studies highlight the need for comprehensive digital literacy programs encompassing media, information, and AI literacy [7]. This is particularly relevant in an era where misinformation and algorithmic biases.

2. Lead Section: Uninvited Generative AI in Education

As said, ChatGPT has conquered the trust of millions of users, and students are among them. Initially uninvited, rapidly adopted, generative AI entered our schools and education systems, significantly transforming how students learn and create content. AI's widespread adoption indicates that students may utilise AI tools independently in their learning experience even when teachers do not integrate these technologies into their instruction [10]. As these technologies gain traction, they raise pivotal questions about their implications. Notably, while generative AI offers innovative benefits, it poses challenges related to disinformation and ethical use that educators and policymakers must address.

Generative AI tools like ChatGPT, DALL·E 2, and educational platforms like Khan Academy's AI tutor are reshaping the learning landscape by providing customised resources and instant feedback, thus enabling a more interactive learning environment. These advancements have allowed students to access tailored educational materials, improve engagement, and foster social-emotional development. Incredibly, in the beginning, policymakers appear more focused on the impact of AI on the adult population than on the younger [18]. We had to wait until 2024 (UNESCO, 2024) for a Student and Teacher AI competency Framework (AI CFT) at the international level. From the teacher side, they underline the need to develop AI literacy (Fig. 1). From the student side, the framework considers four competence aspects: 1) Human-centred mindset, 2) Ethics of AI, 3) AI techniques and applications, and 4) AI system design.

In Italy, we can find the perspective of the first in the new Ministerial Guidelines for Civic Education (Ministero dell'Istruzione e del Merito, 2024), which underlines the importance of digital citizenship in developing the ability to critically access information, sources, and digital content.

Aspects	Progression		
	Acquire	Deepen	Create
1. Human-centred mindset	Human agency	Human accountability	Social responsibility
2. Ethics of AI	Ethical principles	Safe and responsible use	Co-creating ethical rules
3. AI foundations and applications	Basic AI techniques and applications	Application skills	Creating with AI
4. AI pedagogy	AI-assisted teaching	AI–pedagogy integration	AI-enhanced pedagogical transformation
5. AI for professional development	AI enabling lifelong professional learning	AI to enhance organizational learning	AI to support professional transformation

Figure 1: Unesco Student and Teacher AI Competency Framework (AI CFT).

Despite the advantages, using generative AI in education raises critical privacy and ethical concerns. Students, particularly those in the arts and social sciences, have expressed worries about personal data collection, fearing that AI systems could infringe on their privacy by gathering information from their communications. In a recent scoping review work on these topics, Biagini concludes, ‘ In conclusion, this scoping review has identified and evaluated a range of tools designed to assess AI literacy self-perception, revealing a diverse array of methodologies aimed at capturing the nature of AI literacy. (...) The diversity of these tools reflects the evolving understanding of AI literacy as a multidimensional construct that encompasses cognitive, technical, affective, behavioural, and ethical dimensions.’[13].

Conversely, GAI can be a valuable ally in building critical consciousness if teachers are trained to include it in their didactic practice, considering the risks that come alongside the opportunities it brings.

The challenge lies in integrating generative AI into educational practices to enhance learning without compromising ethical standards or student integrity.

3. Tackling Disinformation

As per the American Library Association, information literacy is a set of abilities that allow people to "recognise when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association. Presidential Committee on Information Literacy. <https://www.ala.org/acrl/publications/whitepapers/presidential>). What are the implications of the arrival of GAI in the educational context linked to information literacy? Why do we bother to consider it? Research confirms that students were among the early adopters of generative AI apps, even before the schools introduced them [2]. Therefore, there is a need to acquire research and critical thinking skills to access information consciously.

3.1.Educational Efforts

One of the most effective strategies to tackle disinformation is through education, which should begin at an early age. Integrating media literacy and critical thinking courses into school curricula empowers students to recognise and act against disinformation. This includes evaluating source credibility, understanding various disinformation techniques, and developing a healthy skepticism towards unsupported information. From a systematic literature review [16], media and information literacies are the most relevant in addressing disinformation. It also indicates standard teaching practices, workshops and lesson plans, emphasizing critical thinking, knowledge co-construction, and civic education values. These studies underscore the need for interdisciplinary approaches in tackling disinformation through education.

3.2.The Role of AI in Disinformation

AI systems significantly contribute to disinformation, both through hallucinations and by enabling the creation of realistic fake content and facilitating its targeted dissemination. This raises significant ethical and human rights concerns. In response, new AI tools are being developed to detect and moderate disinformation, although these also pose challenges related to freedom of expression [17].

3.3.The Need for Information Literacy

Information literacy becomes crucial as the volume of information increases in our data-driven world and as generative AI contributes to disinformation. While education focused on the critical evaluation of information has always been essential, its significance has magnified with the rapid dissemination of content online, even more so now in the AI age.

Initiatives promoting media literacy, digital skills, and critical thinking are crucial for empowering individuals to navigate the complexities of modern information environments and effectively counter disinformation's effects [8]. More than ever, the educational systems have the urgency to promote initiatives to develop media and information literacy skills among their students.

4. Creating Content with AI

Creating content with AI can be an effective way to support students in their learning path. In the experience presented, the students get involved in an activity in their civic education curriculum to raise their awareness of the risk of disinformation while accessing the Internet and AI to search for information.

GAI can be a medium to raise awareness of its pros and cons, as Ali et al. (2023) show in their paper on a workshop held in the school context.

4.1. Classroom experience

These opportunities were tested in a classroom experience in a secondary school: creating images through generative AI was at the center of the children's work process as a point of arrival and, simultaneously, a point of departure. The point of arrival and the image they generated should have focused on all the information gathered in the first work phase. The starting point is to support an oral presentation to their peers.

According to the Student and Teacher AI Competency Framework (UNESCO, 2024), the activity was structured in three phases, corresponding to the three moments of content acquisition, deepening and creation.

In the first phase, students sought information explaining the exclusion and inclusion criteria adopted to find the right source on the assigned topic. The aim was to make them think about disinformation and misinformation and what criteria to adopt to consider information reliable.

In the second phase, the students were asked to read and elaborate on what they had found on their topic and to discuss in groups what information to highlight with other classmates.

Finally, the students had to create an image with a Generative AI app of their choice, encapsulating the core elements they had selected on the topic. Then, they had to summarise the chosen information and rework it in a short new text to complete the presentation of the topic they started with the image. Figure 2 shows an example of what a group of students realised.

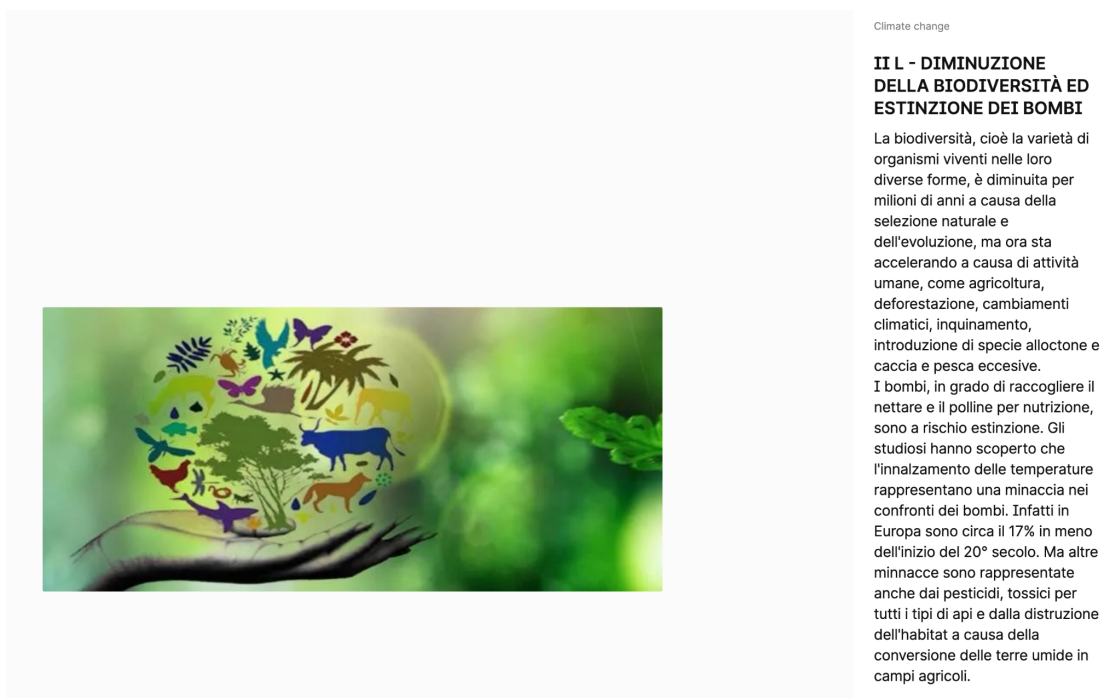


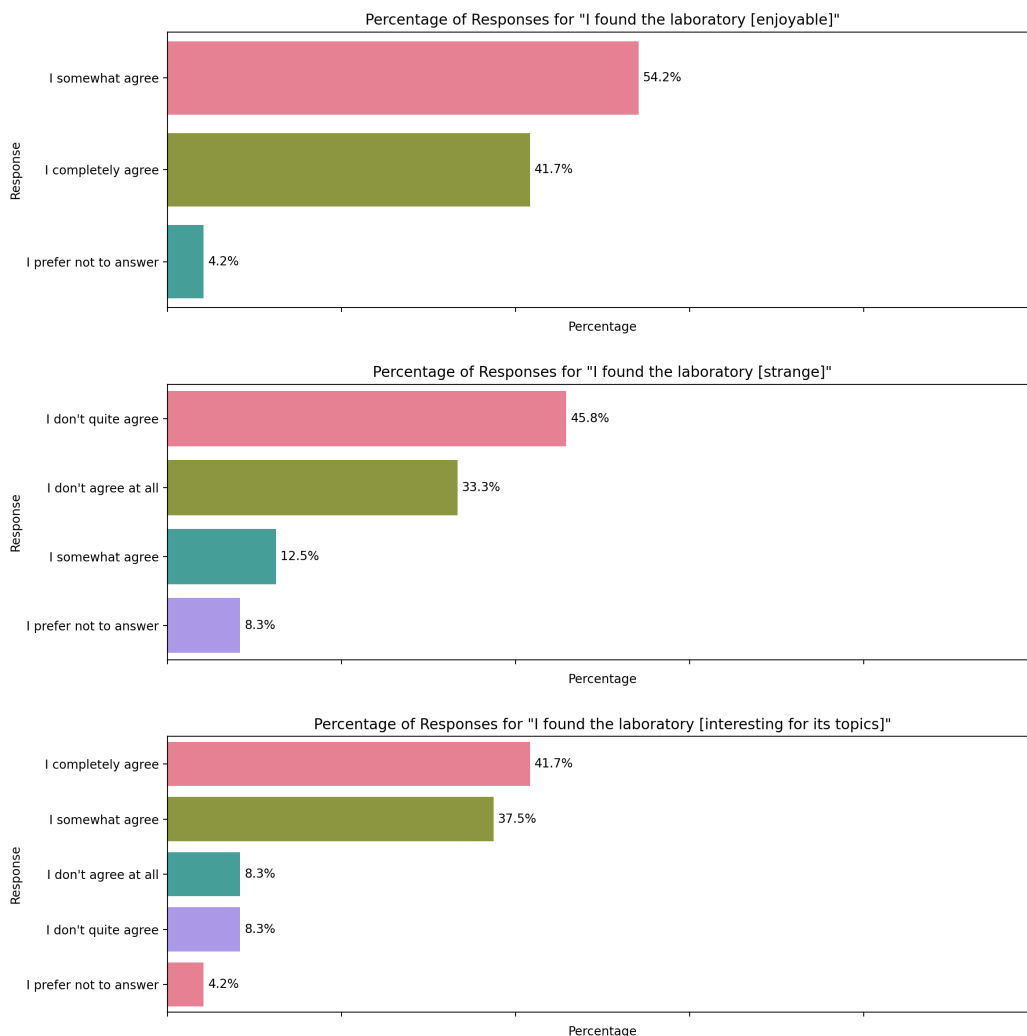
Figure 2: One of the AI-generated images and explanation of declining biodiversity.

To obtain feedback from the teacher and their peers, the groups were asked to present orally in class the information they had gathered and schematised from the image they had created with

generative AI. This moment of confrontation helped reflect on the operations that had led them to generate the image.

A final questionnaire was submitted using Google Forms to investigate their perception of the workshop. The questionnaire explored the level of students' engagement and perceived efficacy. The participants were asked to answer on a Likert scale from 1 to 4, from 'totally agree' to 'not agree at all'. They could also indicate, 'I do not intend to answer' to avoid forcing the answers. It shows that most students found the workshop fun, interesting for the topics covered and how it was conducted and valuable for learning. Furthermore, most students stated that they disagreed that they found the workshop strange, tedious, or more boring than the other lessons. In line with this, almost all students indicated that they felt satisfied with how the activity was carried out, how their group worked and how they were involved in their work with their peers. Finally, there is almost the same number of responses among those who felt knowledgeable about access to information before starting the activity and after completing it.

When asked if they felt they had learned, the response was definitely positive, as half of them declared "to be totally agree" with the assumption "The workshop was useful as I feel I have learnt", and 39% chose the second option "to be enough agree" (fig 3, last Graph).



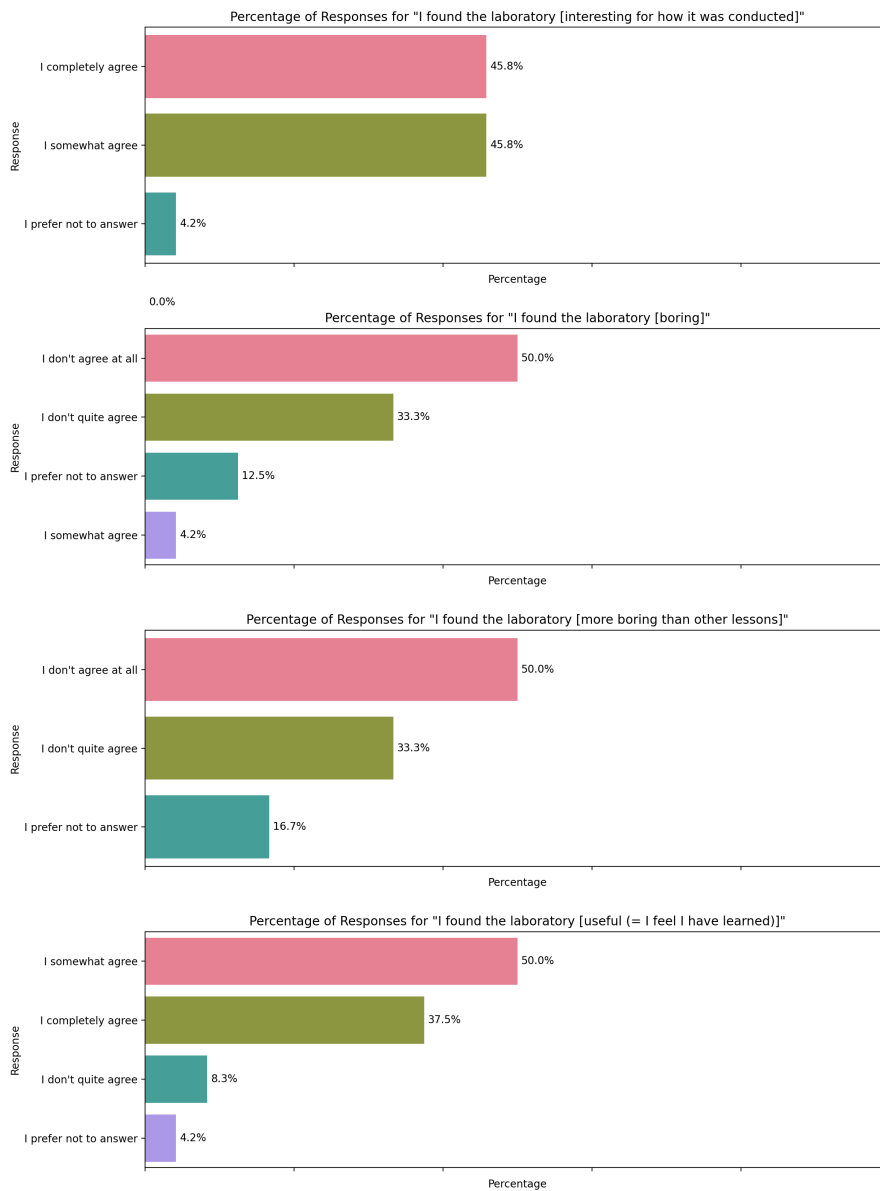


Figure 3: Students' assessment of the workshop in terms of satisfaction, from left: fun, weird, interesting for the topics, valuable for the methodologies, tedious, more tedious than usual lessons, valuable (=I feel I have learned).

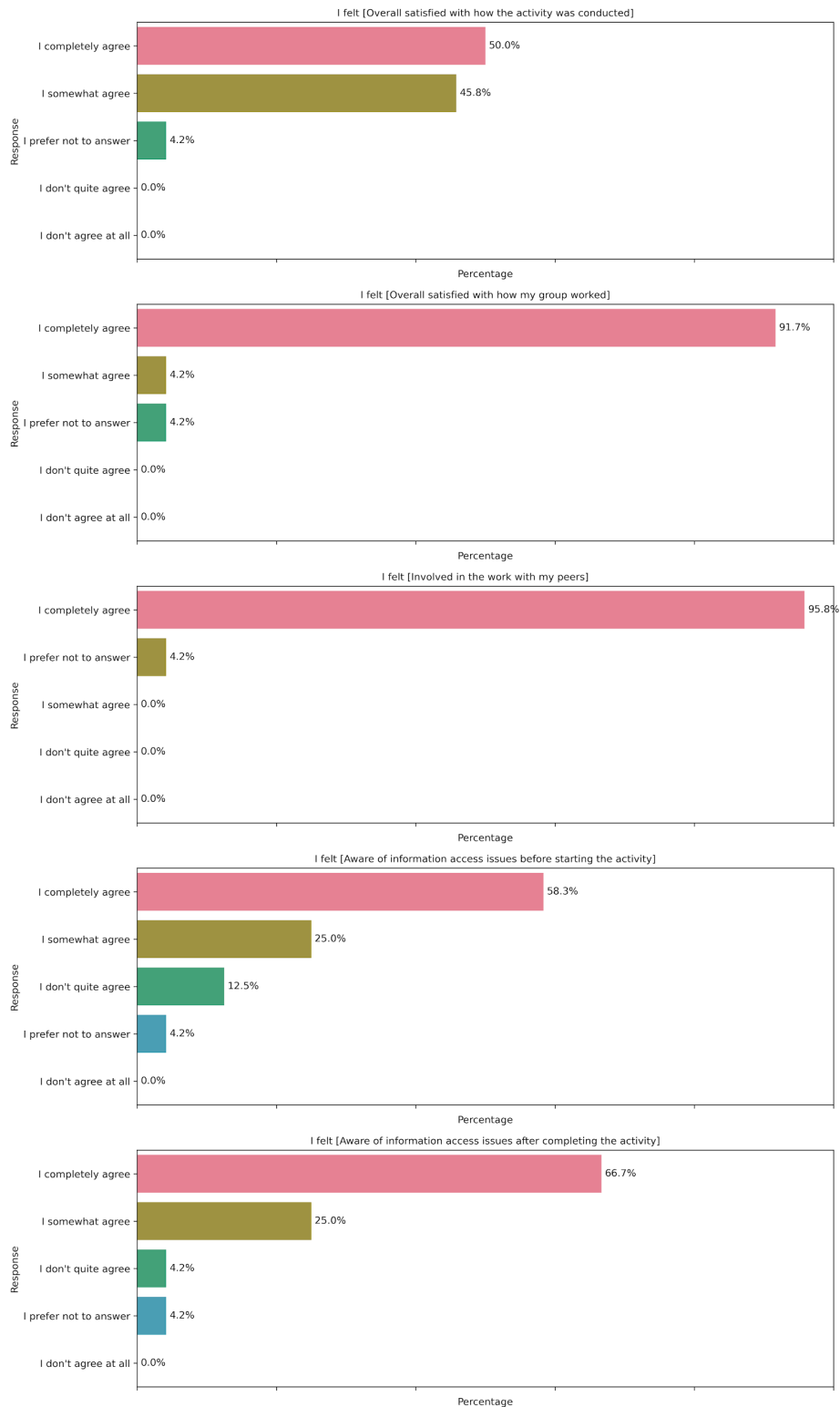


Figure 4: Students' evaluation of how they felt during the workshop.

5. Conclusions

The last figure reported shows that students already feel knowledgeable about access to information and aware that they are navigating a world of disinformation and misinformation. Nevertheless, they were engaged and showed interest in the topics; moreover, as many researchers have already

pointed out, collaborative peer learning is beneficial when facing educational challenges [11]. It is essential to underline another significant output from this data: students have the perception that they learn while having fun.

Generative AI tools can significantly help teachers design challenging activities, allowing students to reflect critically on the reality around them and have fun despite the workload.

While we wait for the world to fix it, we, as educators, must act now, using our best to improve the students' readiness to face this new world.

6. Future works

This first experiment, with its encouraging results, seems to indicate one of the possible directions for wider experimentation of instructional design that includes the generative AI application. The students were engaged and motivated, interested in discovering a productive application of GAI apps, in the school context. The experience presented is the result of the collaboration among teachers and experts, which played a key role in the success of all the activities. Their insights helped design a tailor-made and inclusive workshop, where the students used and reflected on the technologies.

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8. References

1. Klímová, B., Pikhart, M., & Kacetl, J. (2023). Ethical issues of the use of AI-driven mobile apps for education. *Frontiers in Public Health*, 10. <https://doi.org/10.3389/fpubh.2022.1118116>.
2. Garrel, J., Mayer, J. Artificial Intelligence in studies—use of ChatGPT and AI-based tools among students in Germany. *Humanit Soc Sci Commun* 10, 799 (2023). <https://doi.org/10.1057/s41599-023-02304-7>
3. Miao, F., & Holmes, W. (2024). Guidance for generative AI in education and research. UNESCO.
4. Hagedorff, T. (2024). Mapping the Ethics of Generative AI: A Comprehensive Scoping Review. *ArXiv*, abs/2402.08323.
5. Chan, C. K. Y. (2023). A comprehensive AI policy education framework for university teaching and learning. *International Journal of Educational Technology in Higher Education*, 20(1). <https://doi.org/10.1186/s41239-023-00408-3>
6. (2023). Analysis of the connotation of digital literacy and related literacy. *International Journal of New Developments in Education*, 5(23). <https://doi.org/10.25236/ijnde.2023.052301>
7. Suryani, A. I., Nila Afriyansih, Yuherman, & Erdawati (2023). Socialisation of the use of digital literacy and media literacy for students of SMPN 3 painan. *Asian Journal of Community Services*, 2(7), 587-596. <https://doi.org/10.55927/ajcs.v2i7.4941>

8. Bulger, M., & Davison, P. (2018). The promises, challenges, and futures of media literacy. *Journal of Media Literacy Education*, 10(1), 1-21.
9. Kamalov, F., Santandreu Calonge, D., & Gurrib, I. (2023). New era of artificial intelligence in education: Towards a sustainable multifaceted revolution. arXiv. <https://arxiv.org/pdf/2305.18303v2>
10. Ubah, A. E., Onakpojeruo, E. P., Ajamu, J., Mangai, T. R., Isa, A. M., & Ayansina, N. B. (2022). A review of artificial intelligence in education. In 2022 International Conference on Artificial Intelligence of Things and Crowdsensing (AIoTCs) (pp. 104-109). IEEE. <https://doi.org/10.1109/aiotcs58181.2022.00104>
11. Rutherford, S. (2014). Collaborative learning: theory, strategies and educational benefits.
12. <https://www.miur.gov.it/documents/20182/0/Linee+guida+Educazione+civica.pdf/9ffd1e06-db57-1596-c742-216b3f42b995?t=1725710190643>
13. Biagini, G. (2024). Assessing the assessments: toward a multidimensional approach to AI literacy. *Media Education*. 15. 91–101. 10.36253/me-15831.
14. Ali, S., DiPaola, D., Williams, R., Ravi, P., & Breazeal, C. (2023). Constructing Dreams using Generative AI. <https://doi.org/10.48550/arxiv.2305.12013>
15. <https://www.similarweb.com/website/chat.openai.com/#geography>
16. Valverde-Berrocoso, J., González-Fernández, A., & Acevedo-Borrega, J. (2022). Desinformación y multialfabetización: Una revisión sistemática de la literatura [Disinformation and multiliteracy: A systematic review of the literature]. *Comunicar*, 30(70). <https://www.revistacomunicar.com>.
17. Bontridder, N., & Poulet, Y. (2021). The role of artificial intelligence in disinformation. *Data & Policy*, p. 3, e32. doi:10.1017/dap.2021.20.
18. Irwin, J., Dharamshi, A., & Zon, N. (2021). Children's privacy in the age of artificial intelligence. Canadian Standards Association,[Online]. Available: https://www.csagroup.org/wp-content/uploads/CSA-Group-Research-Children_s-Privacy-in-the-Age-of-Artificial-Intelligence.pdf.