



Towards AI Literacy: 101+

Creative and Critical Practices, Perspectives and Purposes



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Introduction

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Artificial Intelligence (AI) has gathered significant attention since November 2022, when ChatGPT, a GAI tool, was released to the broader public, and many other tools and platforms followed. That led to the rapid expansion and explosion of interest and engagement with AI, and in particular Generative Artificial Intelligence (GenAI), including in educational settings.

Since then, discussions and debates around the potential use of AI in education have become widespread. Amongst these are the creators, innovators and experimenters who forge ahead without seeking approval, while others await guidance and reassurance, engage in staff development initiatives, or simply wish to sideline AI, boxing it away in hopes that it will dissipate.

There has been a plethora of dissemination activities, events, and conferences but also speculative papers and experiments, and more and more we also see evaluative research emerging. We live in fascinating times and have

been since the dawn of digital technology, the Internet, social and mobile media, and AI. The technological advancements we have seen, especially in the last couple of years, are mind blowing.

In more recent months we have, started experiencing a shift in the conversation around AI. Is change in the air? Are we accepting that AI is here to stay? Do we realize now more that instead of wishing AI to go away, we need to learn how to use it properly? Responsible? Ethically? Critically and creatively? This seems to have surfaced questions around AI literacy, something that educators and students alike will need to develop to navigate with confidence and competence in this new and alien landscape.

As we contemplate the possible revolution that AI/GenAI can bring to the education field, this collection provides multiple inspirations on how we might navigate this ever-changing terrain as confident and competent explorers.

The collection is the second crowdsourced curation of ideas and practices around AI by education practitioners, open researchers and students from different parts of the world generated by the international #creativeHE community. The collection is edited by an international team - Sandra Abegglen, Chrissi Nerantzi, Antonio Martínez-Arboleda, Marianna Karatsiori, Javiera Atenas, and Chris Rowell - generously supported by Playful Hybrid Higher Education and #creativeHE.

The appetite for sharing has further grown since the release of the first collection, so we have additional ideas on how to use AI in education as well as resources for education practitioners, inspirations on what students do with GenAI, and reflections and positions on AI literacy more generally. However, as the title suggests, this collection is not a repeat or more of what we published in the first collection. The focus is now on experimental practice, perspectives and purposes. While we still see this as an opportunity to celebrate everyday creativity and the newness of learning, teaching and assessing with GenAI, it is also about criticality and thoughts around AI literacy: what could teaching and learning with AI really mean for educators and students now - and in the future?

Included in the collection are:

- Reflections and perspectives towards GenAI literacy
- Practice examples by and for education professionals
- GenAI outputs by students for their learning

These contributions present a chance to engage with voices and concerns about the use of AI in education, and embrace ideas to develop our individual and collective understanding of what we mean by AI literacy. As such, the collection contributes to the wider discussions around AI while also fostering collaboration and partnership between educators and students in co-designing learning, teaching, and assessment that help us all grow as responsible citizens of this world, explore what the practical implications and opportunities are while also addressing any ethical concerns, and gain insights into what we mean by becoming AI literate. There is a need to do all this with transparency and openness, and that is why the open education community plays a key role in these important conversations - and in this collection.

Creative and critical experimentation is at the heart of education. The two are inseparable! One does not exist without the other. Thus, being open to diverse ideas, perspectives and practices will drive our appetite to open-up to new possibilities, to novel discoveries that can lead to new insights to make a positive contribution to our students, our graduates, all of those working in education but also society as a whole.

Sandra Abegglen, Chrissi Nerantzi, Antonio Martínez-Arboleda, Marianna Karatsiori, Javiera Atenas, and Chris Rowell

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The collection has been generously supported by the Imagination Lab Foundation through the Playful Hybrid Higher Education project (<https://playhybrid.education/>) led by Sandra Abegglen and situated in the School of Architecture, Planning and Landscape at the University of Calgary.

Thanks go also to #creativeHE of which we, the editors, are all part of and that has acted as supporter of the creative AI collections from the very beginning. The #creativeHE community hosts all calls and dissemination activities for the AI collections on their website:

<https://creativehecommunity.wordpress.com/>

CONTENTS

Part 1

10 – 119

GenAI Literacy Reflections

Reflections and perspectives
towards GenAI literacy

Part 2

122 – 239

GenAI Learning Resources

Practice examples by and for
education professionals

Part 3

234 – 273

GenAI Student Outputs

GenAI outputs by students for
their learning



PART 01

Dramatizing the future: Theater as a tool for enhancing AI Literacy and education in sustainable futures

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Incorporating plays or theater into education for AI literacy offers a unique and engaging approach to unpacking complex concepts and ethical considerations surrounding artificial intelligence. In our work, we highlight the use of this method for leveraging both the narrative and emotional power of drama and to foster a deeper understanding of AI, its implications, and its sustainable application in society.

The pedagogical foundation for integrating plays into AI education is rooted in constructivist learning theories, which posit that learners construct knowledge through experiences and reflections on those experiences. Within this context, theater is an experiential learning tool that provides a rich, immersive environment where abstract AI concepts can be contextualized, making them more accessible and relatable to learners. Furthermore, the collaborative nature of theater-making reflects the interdisciplinary teamwork essential in AI development,

fostering skills such as collaboration, creativity, and critical thinking. To effectively use theater in AI literacy, we propose that educators should begin by identifying key AI concepts and ethical dilemmas relevant to their curriculum. These might include machine learning, algorithmic bias, data privacy, and the societal impacts of AI.

Following this, educators can work with students to develop scripts or improvise scenes that explore these themes. This process not only aids in demystifying AI but also encourages students to engage with the material critically, examining potential consequences and ethical considerations from multiple perspectives.

Using these key elements for enhancing AI literacy in education, we have developed a methodology which revolves around playing a fictional AI system designed to optimize energy usage in a city, aiming to reduce carbon emissions and promote sustainability.

The narrative follows diverse characters affected by the AI system, including engineers who grapple with technical and ethical challenges, citizens who experience the benefits and drawbacks firsthand, and policymakers who must balance technological advancement with social equity.

Through the unfolding drama, students can explore topics such as the environmental impact of AI, the importance of inclusive and transparent AI development, and the potential for unintended consequences. This method also anticipates the inclusion of specific topics through specific scenes such as dramatizing a town hall meeting where community members debate the AI system's deployment, raising concerns about privacy, security, and the displacement of workers. General and specific scenes are important as they not only highlight the complexities of implementing sustainable AI solutions but also emphasize the relevance of public engagement and ethical decision-making in AI development.

In sum, using theater to teach AI literacy offers a dynamic and empathetic approach to education that can enhance students' understanding of AI and its broader societal implications. By engaging with AI concepts through narrative and character, students

can better grasp the technical, ethical, and social dimensions of AI. Of course, although the working example of a play centered on sustainable AI illustrates how theater can bring to life the challenges and opportunities of AI, it is not the only one where fostering a more nuanced and critical engagement with this pivotal technology can be applied.

Navigating the journey to GenAI literacy

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How do you define GenAI literacy?

GenAI literacy is the capacity to engage effectively, reasonably and ethically, with generative artificial intelligence tools for use in learning and teaching activity.

Literacy, according to Winstone and Carless (2020, p. 23), consists chiefly of knowledge and competencies. Expanding on this foundation, the following definition of GenAI literacy comprises three domain specific components: AI knowledge, AI competence and AI self-efficacy. The model offered has transferability to and use in other domains such as feedback literacy, digital literacy, and stress literacy.

AI knowledge comprises what is known intellectually about AI; its origins, development, abilities, reasonable use and ethical implications. AI competence pertains to the individual's capacity to use, (and demonstrate the use of), AI tools effectively and reasonably. AI self-efficacy is an individual's self-assessment of their confidence and capacity to engage successfully with the factors comprising AI use in higher education. Success in this context pertains to effective, reasonable, and ethical use of AI to achieve a defined goal.

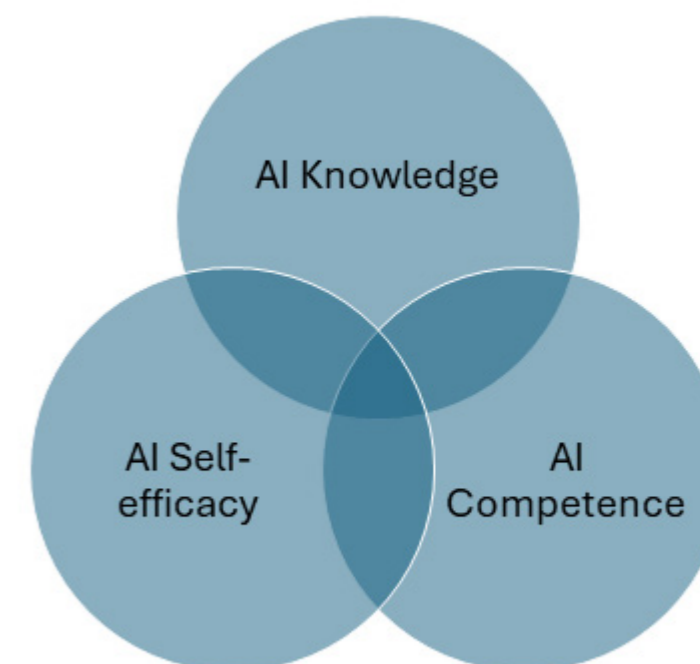
And, what can be done to foster the GenAI literacy of education professionals and/or students?

From the student perspective, GenAI literacy should be introduced early, for example, from induction (as part of a suite of literacies), and repeated at the beginning of each module of study. The general introduction should enable them to develop insight, (through exposure and practice), into the issues that will have an impact on their progress and outcomes at university.

Whilst the source material should reflect an organisational position with regard to values, principles and standards, individual subjects should be encouraged to translate this into their own field considering their context and focus on reasonable and ethical use in practice.

This approach is underpinned by Biggs Tang and Kennedy's (2022) premise that information is required to enable the construction of declarative knowledge, which acts as the foundation of the construction of functioning knowledge.

From a staff perspective, information and opportunities to make sense of that



information should be provided (Race, 2020). Following a similar model to the student body, generic information should be available from multiple sources, in multiple formats, to facilitate inclusive access, for example as a webpage with information and downloadable assets or as a bookable regular CPD event.

To complement the organisational approach, bespoke seminars should be available to help staff with the contextualisation process and to enhance their GenAI literacy.

Relevant literature resources

Biggs, J. Tang C., & Kennedy G. (2022). *Teaching for quality learning at university*. (5th ed.). Open University Press.

Race, P. (2020). *The lecturer's toolkit: A practical guide to assessment, learning and teaching* (5th ed.). Routledge.

Winstone, N., & Carless D. (2020). *Designing effective feedback processes in higher education: A learning focused approach*. Routledge.

GenAI literacy must be values-based

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Considering the emergent, evolving, and still unpredictable nature of AI systems and models, GenAI literacy must be a values-based literacy. To make the right decisions regarding how to use GenAI in education, we must identify, foster, and mobilise our and our students' values. The guiding question should be: how does using GenAI reflect our values and what we want out of learning?

The nature of reading, researching, and writing changes with the application of GenAI. Firstly then, what are we gaining from it? Speed for sure, many shortcuts to time-consuming tasks, and even (faux) confidence. The discomfort associated particularly with writing can be circumvented; AI strips it of emotion and reduces frustrations. It promises to make writing efficient and product-orientated rather than constrained by the writing process. Focused on crafting the most effective prompts and manipulating ideas to create a viable product, writing becomes transactional in nature, freeing the writer from making difficult decisions by offering a suggested way of doing something. While its shortcomings, including hallucinations and biases, have been extensively documented, GenAI is capable of effortlessly producing quality work. It has its place in learning and teaching, with its

impressive range of useful tools that help with different aspects of reading, researching, and writing. I occasionally use it myself.

And yet, I remain extraordinarily sceptical about its power to promote thinking, help us find our voice and grow our authorial identity. The critical question is, what aspects of our learning are we giving away when using it? The ability to tell the difference between using GenAI to create a product that satisfies a certain need and using it to ensure that learning takes place is key.

These issues are particularly salient when applying GenAI to writing. If writing is a way of connecting with the world of ideas and adding to the conversation, then GenAI challenges the idea of authorial voice. If one sees writing as a way of growing, developing thinking, and finding new forms of self-expression, then GenAI interferes with this process by allowing us to outsource thinking.

Writing often involves sitting uncomfortably with ideas that refuse to come and breaking through obstacles that stop us from starting; feeling the mixed emotions involved in producing something and rejoicing once we experience flow; moving slowly and deliberately from word to sentence, sentence

to paragraph, and paragraph to a rounded argument, so that we can join the scholarly conversation.

GenAI changes the rules of this conversation, and something seems lost in that connection between the author and the audience. What we may be giving away is our ability to find ourselves and each other through writing.

I don't have feelings about GenAI, but I do have feelings about writing. I believe that promoting GenAI values-based literacy will help us decide what learning and writing mean to us, so that we can activate our values and make the best decisions about both its role in this process and its impact on our identity as learners and writers.

A student perspective on AI literacy: Limitations, capabilities and student engagement

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Firstly, as I reflect on an all-too-common struggle amongst students – that is to effectively communicate ideas in the written form – GAI unveils itself as an effective tool in the editing process. Specifically employing AI through prompt engineering effectively allows idea communication with the level of clarity demanded in the assessment context. However, this isn't without a meticulous understanding of what I believe constitutes AI literacy, which, firstly, means grasping the fundamentals of how GAI acquires data, and acknowledging its vast capabilities, yet recognizing the potential for misinformation (known as 'hallucinations'). This is especially critical in academia where accuracy and integrity are paramount. Secondly, it is crucial to comprehend the limitations of GAI, including ethical considerations, and perhaps recognize when human cognitive abilities surpass the tool in terms of time-efficiency and creative-content production. Third, developing a thorough understanding of AI capabilities, which, as I will demonstrate, is done only through personal experience with GAI prompt

engineering and practicing output criticism.

However, knowing what constitutes AI literacy is easier to define than solving an issue visible in the Higher Education sector that impacts the all-important communication of AI literacy between educator and student.

The pressing need for timely responses amid institutional changes, coupled with a demand for quick and successful integration of AI into learning, teaching, and assessment proves a difficult balance, and it seems that universities are struggling to implement AI quickly enough for current students to benefit.

To address the challenge of time constraints and the growing demand for AI literacy in employment, I advocate affording students' full access and agency to GAI once they've reached a level of AI literacy that proves an awareness of the Gen AI model, its limitations, and its capabilities. I firmly believe that genuine AI literacy evolves through hands-on experience and critical thought, which could allow the university to take their time in decision-making,

Delving into the intricate realm of GenAI literacy, my perspective weaves through the transition from a recent English literature graduate to the role of an Academic Affairs Officer for a Students Union. This unique perspective, spanning student-hood, and a quasi-university employee status, illuminates a dynamic that unveils an issue between slow-moving institutional decision-making and the very current and growing demands for GAI in real-world workplaces and academia.

trusting the students to build up their own AI in the meantime.

Further drawing from my personal experiences as an education officer, it's clear that recognizing the foundational technological proficiency of today's students adds intricacy to the realm of AI literacy. The already established digital competency should inspire educators to customise their approach, cultivating a collaborative atmosphere wherein students have autonomy within the digital domain, meaning the set boundaries imposed on students need to be mutually agreed upon and justified.

In essence, it should be noted that GenAI literacy transcends a mere checkbox exercise; it embodies a mindset – a dynamic engagement with technology rooted in responsible use. As we navigate this landscape, it becomes

evident that AI literacy goes beyond the 'hows', delving into the 'whys' and 'whats', nurturing a generation prepared to harness the full potential of GAI responsibly through personalized experience, critical reflection and complete trust in student agency.

A stable concept of GenAI literacy could be harmful

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How do you define GenAI literacy?

A neat definition of GenAI literacy will continue to be a moving target. The concept of a stable or complete literacy is potentially a marker of an undesirable future in which it is used as a closure mechanism against sustained critical enquiry and alternative possible futures. Defining the boundaries of a space of rapidly evolving technology that is over-hyped (Nemorin et al., 2023), poorly understood, and increasingly politicised (Robins-Early, 2023) is hard, and we should not shy away from grappling with its complexity. Reducing the concept of GenAI literacy to something like a curriculum risks an alignment with positivist framings that begin with the belief that this technology should be used (Knox, 2023).

Whilst much of the technical sophistication of GenAI is the product of statistical calculations at scale, the hallucination of sentience remains compelling for many. However, issues of bias and various other harms are increasingly being recognised (Selwyn, 2024), and solutions remain nascent (Schwartz et al., 2022). The implications of GenAI are also highly contextual and the variety of potential interactions across our civic and professional lives, of which education systems are one part,

must mean that the business of GenAI literacy is a shared societal endeavour.

This does not mean that previous work on digital literacies is not relevant or helpful though. Work by doteveryone to define ‘digital understanding’ is an example of the kind of broad framing that could be useful when thinking about the scope of GenAI literacy.

Digital understanding is not about being able to code, it’s about being able to cope. It is about adapting to, questioning and shaping the way technologies are changing the world (Miller et al., 2018).

And, what can be done to foster the GenAI literacy of education professionals and students?

A vital aspect of the dotveryone definition is that it includes a call to action and a recognition of agency in ‘shaping the way technologies are changing the world’. Within engagement with the socio-technical nature and inherent complexity of GenAI is the possibility of exercising that agency, but it requires that critical enquiry and debate are not seen as anti-progress in the face of an inevitable future in which we risk some ill-specified loss in being ‘left behind’.

If the work of fostering GenAI literacy is one of exploring a space of complexity, then the academy is already well positioned to do this work (Knox, 2023). This work will best be achieved through research, discussion, pilots, collaborations, sharing findings, practices, and resources. We will evaluate and codify what we have learned from this work, just as we always have done. Universities are also collections of labour (Connell, 2022) and if the implications of GenAI are highly contextual then we need to consider the full breadth of institutional engagement beyond our learning, teaching and

research activities. For example, should our legal experts be helping to inform emergent regulatory regimes? Should our technology and procurement specialists be developing new decision-making frameworks that keep us aligned with existing pledges to accessibility, labour rights, and sustainability targets? What are the needs and opportunities of, our whole community?

Relevant literature resources

Connell, R. (2022). *The good university: What universities actually do and why it's time for radical change*. Bloomsbury Academic.

Knox, J. (2023). (Re)politicising data-driven education: From ethical principles to radical participation. *Learning, Media and Technology*, 48(2), 200-212. <https://doi.org/10.1080/17439884.2022.2158466>

Miller, C., Coldicutt, R., & Kitcher, H. (2018). *People, power and technology: The 2018 digital understanding report*. Doteveryone.

Nemorin, S., Vlachidis, A., Ayerakwa, H. M., & Andriotis, P. (2023). AI hyped? A horizon scan of discourse on artificial intelligence in education (AIED) and development. *Learning, Media and Technology*, 48(1), 38-51. <https://doi.org/10.1080/17439884.2022.2095568>

Robins-Early, N. (2023, August 21). ‘Very wonderful, very toxic’: How AI became the culture war’s new frontier. *The Guardian*. <https://www.theguardian.com/us-news/2023/aug/21/artificial-intelligence-culture-war-woke-far-right>

Schwartz, R., Vassilev, A., Greene, K., Perine, L., Burt, A., & Hall, P. (2022). *Towards a standard for identifying and managing bias in artificial intelligence (NIST SP 1270; p. NIST SP 1270)*. National Institute of Standards and Technology (U.S.). <https://doi.org/10.6028/NIST.SP.1270>

Selwyn, N. (2024). On the limits of Artificial Intelligence (AI) in education. *Nordisk Tidsskrift for Pedagogikk Og Kritikk*, 10(1), Article 1. <https://doi.org/10.23865/ntpk.v10.6062>

A knowledge equity approach to GenAI in universities

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GAI literacies encompass a wide range of competences that enable humans to engage in an informed, autonomous, critical, ethical, and effective way with tools and processes that are supported by Generative Artificial Intelligence in order to facilitate any human endeavour, including applied knowledge production. Our ability to thrive as citizens, professionals, learners, artists, and knowledge prosumers, individually and collectively, relies increasingly on our AI literacy, which cannot be easily separated from digital, multimodal, language, and professional literacies.

GenAI literacy is intricately tied to the peculiar political economy of AI. On the one hand, AI technology can be embedded in a multitude of digital services and is owned by private industries who have invested heavily in its development. On the other, universities provide foundational research and education to fuel the activities of an industry in need of a workforce and produce quality knowledge that is fed into machine learning. Regrettably, universities play a diminishing role in shaping AI knowledge and capabilities. The Higher Education sector is atomised and

lacks collaborative mechanisms to harness economies of scale in a landscape dominated by multi-billion dollar digital enterprises.

In this ecosystem, we can expect that GenAI will be driven by never-ending product differentiation and product bundling. Consequently, educators in universities will face the ongoing challenge of keeping pace as consumers of a diverse range of GenAI and GenAI-supported services. This dynamic inevitably shapes the framework of GenAI literacy programs, which will have to remain adaptable, subject to market forces and their invisible hand. What we teach our students and what we learn ourselves will depend very much on what services institutions and individuals can afford to subscribe to. The technology providers will deliver their own consumer training and support resources. Our role as educators may end up being that of a GenAI learning facilitator within a specific subject context who needs to undergo permanent re-training on the latest gadgets with little agency, despite being an expert in their subject.

Can there be true literacy without criticality and autonomy? Can all technologies empower learners?

Of course, there is a better alternative to this. GenAI can be driven by communities of educators, developers, and researchers who can collaborate to build subject-specific GenAI applications adapted to the needs of our learners and the needs of the communities and professions that will receive them after graduation.

The HE sector can pool their resources, take advantage of their unique position as knowledge producers, and engage, through extensive consortia, in the production of AI systems and applications, in collaboration with developers, public agencies, and businesses that share an equitable and educational ethos. In this more promising, slightly utopian but not unfeasible scenario, GenAI will be more accessible, inclusive, and transparent; the relationship between users and producers of GenAI will be less commercial and more educational; and the fostering of GenAI literacy will become inseparable from the very development of GenAI, as learning and producing, research and education, and universities and communities become intertwined in virtuous open rhizomes for social transformation.

Artificial Intelligence in higher education: A perfect storm

BAIBEL (BUILDING AI-BASED EDUCATION LANGUAGES)

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There is no doubt that the arrival of ChatGPT significantly impacted many aspects of higher education. Initially, most attention was focussed on concerns related to academic misconduct and the integrity of assessment. Conversations regarding GAI (GenAI) abounded in universities and society and for several months it felt as if everything was about to change. While many are rightly moving on to conversations about how we as educators can best use GenAI to enhance student education and prepare students for an AI driven world, we should also consider the context of these technologies in the current landscape of higher education.

Commercialisation: Financial considerations are at the heart of all academic practice. Increasing student tuition fees have caused many learners to question the value of

higher education. In an effort to make degree programmes more attractive to learners many universities have redesigned their curricula to make their courses more attractive – often by surfacing transferable skills and programmes that link to employability and enhanced student outcomes.

Industrialisation: At the same time, universities are increasingly streamlining their programmes to consolidate teaching and optimise resources to develop sustainable educational practices. Cohort sizes are increasing, impacting contact time between academic staff and students. Many of our innovative and transformative pedagogies designed to enhance student engagement are not achieving this and serve to polarise significant subsets of students into becoming more disengaged.

Democratisation: The changing job market, continuing professional development and the increasing costs of in person taught education have fuelled the demand for short courses and online learning. Learners are now able to take more control of their learning. In response to this many HE institutions are also partnering with online learning platforms, offering vignettes of their programmes to attract these professional learners.

Normalisation: These processes combine and interact to create an environment where continual learning for professional development is essential. We need to be able to train students to be lifelong learners to ensure continued professional success. For this to be sustainable, students need ready access to high quality and affordable content that fits in with the demands of their working lives.

Higher Education is changing; the precarious funding landscape, streamlining and revision of curricula, online learning, and changing student attitudes are all contributing to a moment when the value of undergraduate and postgraduate taught education is in the balance. We need to recognise this and develop our programmes, curricula, and pedagogies appropriately. If we fail to do so we run the risk of students opting to disengage with HE in the traditional sense altogether in favour of cheaper and quicker alternatives. The advent of GenAI specifically has provided these alternatives and there is no doubt that students will use these widely available tools to aid their learning. If we as educators fail to take this into account appropriately and don't support learners to use them ethically and effectively, we run the risk of making HE seem costly and irrelevant.

Artificial Intelligence in higher education: A perfect storm

BAIBEL (BUILDING AI-BASED EDUCATION LANGUAGES)

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POSITION STATEMENT ON GENAI LITERACY

Against the backdrop of the ongoing evolution of Artificial Intelligence (AI) tools and the varying degrees to which people use these in their professional and personal lives, the term ‘GAI (GenAI) literacy’ can encompass different expectations for different people. In the pursuit of formulating a unifying basis for what ‘GenAI literacy’ means, a robust approach would be to work upwards from the definition of ‘literacy’. As defined by UNESCO, ‘literacy is a means of identification, understanding, interpretation, creation, and communication’. Deriving from this, ‘digital literacy’ is defined as ‘the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies’. By extension, ‘GenAI

literacy’ entails the same action verbs applied to GenAI tools. The advantage of leveraging the definition of ‘digital literacy’ here is that it adds two key words to the broader definition of literacy – ‘information’ and ‘safely’ – both of which are important in the context of GenAI.

Being able to comprehend and critically evaluate content or ‘information’ output from GenAI tools is a core requirement. This means not just focusing on the output but understanding how the content generated is a function of the input. Thereby, the user is aware of the capability of a tool and its limitations. The second core requirement of GenAI literacy centres on ethical use. Along with principles of data privacy as defined for

‘digital safety’, an awareness of misuse and the biases of GenAI technology is essential.

Equitable access to AI is a crucial aspect that must be integrated into the broader framework of GenAI literacy by incorporating the principle of equitable access into the discourse of GenAI literacy. It is essential that individuals across diverse demographics and socio-economic backgrounds have equal opportunities to acquire GenAI literacy to avoid the risk of exacerbating the technological divide that further marginalises certain sections of society. This approach aligns with the broader goals of promoting social justice and fostering a more inclusive and sustainable future in the era of AI.

Fostering GenAI literacy among education professionals and students needs to be a holistic process, addressing both the cognitive and affective domains of learning. There is a pressing need to capture, understand and address the expectations and apprehensions regarding the use of GenAI. This will require engaging closely with the different stakeholders in higher education to elicit their opinions and lived experiences, enabling us to demystify GenAI in a compassionate

and inclusive manner for professionals and students alike in higher education. This is the approach being pursued at the University of Leeds by the interdisciplinary ‘Building AI-Based Education Languages’ (BAIBEL) project team.

In order to address the cognitive aspects of GenAI literacy, it is important to consider both formal and informal pathways. Although the conventional approach of delivering training programmes for education professionals would be beneficial, these often have long lead times from design to delivery, which could be a challenge for such programmes to keep pace with the fast-evolving landscape of GenAI. Informal staff networks or forums, where staff share their ideas and discuss outputs from GenAI tools, benefit from a low barrier to participation and draw on peer support. The specifics of GenAI that students would need to be trained on would primarily be informed by how such tools are being used in research and industry in their respective disciplines. In addition, providing multiple low-stakes opportunities – for example, through formative assessments – for students to engage with GenAI tools can improve their ability to critically evaluate the content being generated.

Relevant literature resources

<https://www.unesco.org/en/literacy/need-know>

<https://unevoc.unesco.org/home/TVETipedia+Glossary/show=term/term=Digital+literacy>

Fostering GenAI literacy in educational settings through play and partnership

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Generative Artificial Intelligence (GenAI) is broadly known as advanced technological systems that synthesize new content through the analysis of extensive datasets via complex algorithms. In an era where GenAI permeates various facets of life, the imperative for GenAI literacy among educators and students has never been more pronounced. I define GenAI literacy as a competency in understanding and utilizing GenAI tools. This literacy is not merely a functional proficiency but encompasses a critical understanding of the workings of these tools, their potential applications, and their implications.

The ubiquity of GenAI tools in creating text, images, video, audio, and other types of content and media necessitates that education professionals and students become adept at leveraging these tools in meaningful ways, responsibly and innovatively. To achieve this, GenAI literacy needs to be integrated into educational curricula, and educators need to foster learning environments that are conducive to exploratory learning and encourage collaborative engagement with these technologies and with each other.

One approach to cultivating GenAI literacy is through play. I'm suggesting that learning through play in this context involves a dual-focused educational framework that combines foundational knowledge about GenAI mechanisms with hands-on learning. Arguably, through interactive play with GenAI tools, learners can demystify the technology's intricacies and foster a deeper understanding of its capabilities and limitations.

When educational professionals and students adopt a 'students as partners' way of thinking, this can further enrich learning through play. By engaging students as co-creators in the educational journey, we not only empower them but also facilitate a community of learners who collectively navigate the complexities of using GenAI. This partnership can be particularly effective in discovering innovative applications of GenAI that enhance pedagogy and learning outcomes. Educators can harness GenAI to design dynamic teaching materials and assessments tailored to diverse learning needs. Simultaneously, students can employ GenAI to generate ideas and create sophisticated academic content,

thereby augmenting their learning experience. Together, educators and students can co-create.

For instance, Casecraft (Sabbaghan & Brown, 2023) – <https://casecraft.dev/> – is a GenAI application that was developed for educational professionals and students who wish to learn through play and co-create case scenarios for learning. Case-based learning is considered a signature pedagogy in education and Casecraft was developed to provide an opportunity for instructors and students to generate custom cases for teaching and learning purposes. Such applications serve to prepare students for a future where AI is a ubiquitous part of the workforce.

As GenAI technology continues to evolve, the importance of GenAI literacy will escalate; it is a critical competency that enables educators and students to navigate the digital landscape with agility and foresight. By embedding GenAI literacy in education, we can equip current and future generations with the knowledge and skills necessary to thrive in a digital age.

Position statement

BEVERLEY PICKARD-JONES, LECTURER IN PSYCHOLOGY

FAY SHORT, PROFESSOR

BANGOR UNIVERSITY

UK

GenAI (GenAI) represents the latest technological revolution among a series of previous revolutions. Like the advances in personal computing in the 1970s and 1980s, the internet revolution of the 1990s, and the mobile and social innovations of the 2000s and beyond, the knee-jerk reaction to new technology has been to express concerns about the potential adverse effects of this technology on developing minds and the economic prospects of our workforce. This is not a new concern; with each technological wave we fall into the same 2500-year-old trap as Socrates, who, horrified by the educational advancement known as writing, fretted that: If men learn this, it will implant forgetfulness in their souls; they will cease to exercise memory because they rely on that which is written, calling things to remembrance no longer from within themselves, but by means of external marks. Like the ability to write, GenAI skills aren't just 'nice to have'; they are vital to ensure students are ready to excel in a world increasingly driven by AI. As industries and jobs evolve, those who do not have these skills will be disadvantaged.

Yet leaning too heavily on GenAI does trigger a valid debate about its influence on students'

education and cognitive development. Relying too much on AI for problem-solving and creative tasks might stunt the development of critical thinking and analytical skills – the cornerstone of higher education. Without experiencing the challenge of critically analysing complex information or creatively solving problems, it is possible that GenAI might lead to a reduction in deep, active learning. Active learning has been shown to improve formal reasoning skills and enhance the ability to generalise knowledge in new situations. Therefore, a reduction in active learning might foster a passive learning style, turning students into consumers rather than creators of knowledge. The core of university education – prompting students to question ideas, think critically, and dive deep into subjects – may be watered down if AI turns into the main way students interact with academic content, and thus the very tools meant to enrich learning could unintentionally stifle the intellectual and creative processes that traditional educational methods aim to nurture.

Nevertheless, GenAI cannot and should not be ignored. Our primary foci must now be to identify where AI has the potential to genuinely enhance learning and to determine

which tasks we should still prioritize for learning – or learning using traditional methods. For instance, is it imperative to learn to code if a machine can perform such functions on our behalf? Is it still important to maintain the ability to spell and write with grammatical precision, or to scour literature to formulate an argument? Our secondary focus must be to integrate this knowledge into our curricula to ensure students get the best possible educational experience and are prepared for the rapidly-changing technological landscape into which they will graduate.

GenAI errors are different from human errors

NAIR CAROLINA MAZZEO

LUCIANA BENOTTI

VÍA LIBRE FOUNDATION

ARGENTINA

GenAI is increasingly used in professional and personal contexts, and it continues to revolutionize various sectors with its different types of uses. GenAI literacy needs to include awareness of the errors that these technologies have; everybody needs to understand the kind of errors that GenAI suffers. In particular, it is essential to know what social biases are embedded in these models, as these social biases replicate stereotypes that can further stigmatize the most vulnerable sectors.

A person can lie intentionally, whereas AI has no intention of lying when it generates false information. These models learn, among other things, by recognizing which words or pixels appear in similar contexts, repetitively, and may consider them synonyms. A language model, which is a type of AI, can generate false information when it uses synonym words that are not synonyms. For example, it may consider that 'John' and 'Peter' are synonyms, because it does not have the tools to interpret that they refer to different people. Raising awareness of the reasons behind mistakes and biases and the ethical implications associated with the generation of content is the beginning of true literacy.

From the ethics team of the Vía Libre Foundation, we have been immersed in the investigation of these failures, as well as in education and communication about these problems in GAI models. We are currently planning professional development courses for high school teachers, who can then transfer the content to their classrooms. Our course is aimed especially at teachers with training in Comprehensive Sexual Education, a method implemented and legislated in the Argentine educational system. Their training provides knowledge about various social biases, and phenomena such as bullying, trolling, cyberbullying and cancel culture.

They are teachers who come with an awareness of these problems and their impact both in the classroom and on social networks. From the team, to complement these processes, we have developed a tool called 'E.D.I.A' (Stereotypes and Discrimination in Artificial Intelligence). EDIA allows, for example, for interactively evaluating the biases in different language models previously loaded on the platform.

Most AI models are aligned with native English speakers from the Northern Hemisphere.

E.D.I.A was created and designed from a Latin

American perspective and was designed and implemented in Spanish. Although there are similar tools in English, Spanish has its structural linguistic differences, for example, in gender. Therefore, this specific approach seeks to avoid the perpetuation of linguistic and cultural biases that are also rooted in their place of origin and language.

Relevant literature resources

An introductory video of the EDIA tool: https://www.youtube.com/watch?v=CJowS8Y5NWI&ab_channel=Fundaci%C3%B3nV%C3%ADaLibre

EDIA Tool: <https://huggingface.co/spaces/vialibre/edia>

Repercussions of the use of EDIA by adolescents in a workshop held in Khipu: <https://www.vialibre.org.ar/menstruacion-salud-y-sexualidad-representaciones-desde-la-inteligencia-artificial/>

The 12 Days of AI

CHRIS ROWELL, DIGITAL LEARNING PRODUCER

UNIVERSITY OF THE ARTS LONDON

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What can be done to foster the GenAI literacy of education professionals and/or students?

When ChatGPT 3 was released in November 2022 it immediately sent ripples of interest and unease across education and the HE sector. Whilst many were intrigued by its potential use, the most common response was to focus on its ability to write students' assignments. There were constant reports on how ChatGPT could be used to pass university level assignments and what the response should be to this potential threat to academic integrity. My own institution's first response was to add an extra sentence to the academic misconduct policy explicitly stating that AI tools like ChatGPT should not be used and any student caught using it would be breaking this policy guidance.

This was a very common response and was repeated at many other universities. However, the HE sector quickly moved on and both staff and students wanted to develop their AI literacy skills so that they could understand the implications of using AI in a teaching and learning context. This is why we set up and produced the 12 Days of AI (12DoAI), enabling teaching staff to develop their confidence in dealing with this new challenge and become more AI literate.

The 12DoAI is an online programme, which in 20 minutes a day over 12 days, gets participants using a variety of different AI tools. It was aimed at teaching and learning staff who hadn't used AI before or those that had experimented a little with some AI tools. These are the course objectives:

- How to set up and use 12 AI tools
- How these tools could be used in a teaching and learning context
- Discussions about the potential and limitations of using these AI tools

The 12DoAI course was set up on a WordPress blog and on each day during the 12-day program, a blog post gave details about, a 20 minute task that had to be done using an AI tool, such as writing a prompt, summarising text or creating a video. Each blog post guided the learner through a different AI tool, offering custom tips and suggestions on how it could be applied effectively in an educational context. Once the task was complete participants were invited to answer a series of questions about the activity. The questions were aimed to get some reflection on the task and to critically look at some of the issues related to their use in a classroom setting.

Whilst the course was run as a 'live' event the blog is still available for others to complete asynchronously or adapt for their own institution. The 12DoAI site has now been given a Creative Commons licence so that other institutions can now take the model and adapt it their own institution's needs. This is a free resource that is available to any institution that can be used and adapted for non-commercial purposes, as long as it acknowledges the source and shares the version under the same licence.

Relevant literature resources

12DoAI course: <https://12daysofai.myblog.arts.ac.uk/>

Creative Commons Licence: <https://12daysofai.myblog.arts.ac.uk/creative-commons/>

Critical stance on AI in education

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The context: One part of the University of the Arts London's (UAL) response to the recent interest in the use of Artificial Intelligence (AI) in education was to set up a series of webinars called 'AI Conversations'. During the series speakers who had a particular interest or specialism in the use of AI in higher education, such as AI and Assessment, How AI is being used by University Students, or AI and the Art School were invited to take part in the series. The webinars took the form of a 20-30 interview followed by 10-15 minutes of questions and comments from the audience. The target audience were staff at UAL but they were open to everyone else who wanted to join. The series was well attended, with over 300 people registering for the weekly webinars and approximately 80-90 attending the live sessions.

Why did I do it?

It is always useful to have recordings of our staff development sessions as they can be shared as links with participants at UAL (and beyond) at a later date. However, these recordings can often be difficult to find as time passes, so I have been searching for a new ways to collate them into one theme or topic. One way of curating these resources has been to create a digital book where all the information can be contained within one easily accessible place.

Two previous examples I have produced have been on 'Presence and Belonging in Digital Education' and 'Experiences Using Educational Video and Audio'. The aim was to do a similar thing and collate the AI Conversations series into a similar digital book. It soon became apparent that such a book could be developed and enhanced using a variety of AI tools.

How I did it: The webinar series was recorded in MS Teams and a full transcript was automatically generated by AI of the interview and the subsequent discussion that followed by the participants in the session. The transcript was then downloaded from Teams and



Claude was used to make a 800 word summary of the whole session (interview and discussion). Claude's summary was then used by ChatGPT to create a 500-blog post, which was initially posted on the blog called 'TotallyRewired' soon after the session. Both DALL-E and Adobe Firefly were used to create accompanying images. Finally, the links to the live recording, AI generated summaries and associated images were assembled as book chapters in the digital book called 'AI Conversations: Critical Conversations about Ai, Art and Education', using the platform called Book Creator.

Conclusion: Using AI tools to generate the text for a book does have its pros and cons. The AI generated summaries did not fully capture the nuanced discussion that took place, but they did provide a good indication of the main points in the sessions. Having one resource, the digital book, where all the resources are collated together (in different formats) has been a useful way of disseminating the information to a much larger audience than those who came to the live sessions.

Relevant literature resources

Rowell, C. (Ed.) (2022). Presence and belonging in digital education. <https://read.bookcreator.com/1XnAu70GzoR2F2qa5J402V54G4Q2/1nZ6n1pWRkqUg0GbfxEeRg>

Rowell, C. (Ed.) (2023). Experiences using educational video and audio. <https://read.bookcreator.com/1XnAu70GzoR2F2qa5J402V54G4Q2/u5Pfba9HQ9yoX-LjNEetGQ/d9WIL4otT1qj3YGeoEgRTg>

Rowell, C. (Ed.) (2024). Book cover: AI conversations: Critical conversations about AI, art and education. <https://read.bookcreator.com/1XnAu70GzoR2F2qa5J402V54G4Q2/e5fYeh7DSZitvgZezQL4gA/UIbmISEKS-iQ1UTQRLZvwQ>

AI reflection

CRISTINA COSTA, ASSOCIATE PROFESSOR

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How do you define GenAI literacy?

I am going to go with a critical definition. To be GenAI literate is to be able to understand what GenAI is able to produce. Whereas at first sight it produces information, a closer look will unveil a propensity to foster ‘thinking sedentarism’. It is a bit like sweets/candy – they taste good, but when taken in high quantities their side effects are far from beneficial.

And, what can be done to foster the GenAI literacy of education professionals and students?

This is a question that hinges on a moral dilemma regarding how to approach this ‘information machinery’ for the benefit of society and not the self. I am not sure that society is ready to take on a moral stance when it comes to the convenience of information selection that can be passed off as one’s own (original) knowledge. The trick then might be to move away from what Lingard calls pedagogies of indifference. This requires as much a policy effort as it does a curricular/pedagogical one; one that will encourage what hooks describes as engaged practice. The practice of learning then needs to count for/ matter more than an essay or exam. Education needs a full overhaul to tackle this, but I am not sure we are ready.

Both students and staff will need to want to be challenged and will want intellectual growth. Right now, neither has time to do so because we are so engrained in a mentality of time efficiency and productivity that does not fit with the art of thinking. The art of thinking – which is essentially what GenAI is undercutting – demands time, as well as effort and genuine involvement.

In fostering GenAI literacy we need to appeal to people’s moral codes and interest them in the benefits of developing their intellectual capacity for themselves.

Mindful AIwareness

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How do you define GenAI literacy?

By acknowledging that GenAI is a means rather than an end, GenAI literacy refers to a range of skills and competencies that are crucial for using GenAI ethically and responsibly. This includes a deep understanding of both the strengths and limitations of these tools, ensuring their use aligns with ethical standards and responsible practices.

And, what can be done to foster the GenAI literacy of education professionals and students?

By demonstrating, modeling, and increasing awareness of the ethical and responsible

benefits of GenAI, all stakeholders in education, including learners, instructors, and administrators, can be motivated to integrate GenAI across various areas. It’s crucial to cultivate mindful awareness to empower users, transforming them into active users of GenAI services rather than passive recipients who feed GenAI models with their behavioral, cognitive, and social inputs.

Relevant literature resources

Bozkurt, A. (2023). Generative artificial intelligence (AI) powered conversational educational agents: The inevitable paradigm shift. *Asian Journal of Distance Education*, 18(1), 198-204. <https://doi.org/10.5281/zenodo.7716416>

Bozkurt, A., Xiao, J., Lambert, S., Pazurek, A., Crompton, H., Koseoglu, S., Farrow, R., Bond, M., Nerantzi, C., Honeychurch, S., Bali, M., Dron, J., Mir, K., Stewart, B., Costello, E., Mason, J., Stracke, C. M., Romero-Hall, E., Koutropoulos, A., Toquero, C. M., Singh, L. Tlili, A., Lee, K., Nichols, M., Ossiannilsson, E., Brown, M., Irvine, V., Raffaghelli, J. E., Santos-Hermosa, G. Farrell, O., Adam, T., Thong, Y. L., Sani-Bozkurt, S., Sharma, R. C., Hrastinski, S., & Jandrić, P. (2023). Speculative futures on ChatGPT and generative artificial intelligence (AI): A collective reflection from the educational landscape. *Asian Journal of Distance Education*, 18(1), 53-130. <https://doi.org/10.5281/zenodo.7636568>

Bozkurt, A. (2023). Unleashing the potential of GAI, conversational agents and chatbots in educational praxis: A systematic review and bibliometric analysis of GenAI in education. *Open Praxis*, 15(4), 261-270. <https://doi.org/10.55982/openpraxis.15.4.609>

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We don't learn to use GenAI, by reflecting on GenAI

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UK

How do you define GenAI literacy?

In the context of education, GenAI literacy for me translates into responsible, critical, and creative use of GenAI that harnesses the opportunities it presents and helps us gain new insights, and expand learning, development and application. It has a positive impact on human activity, our planet and knowledge creation, dissemination, and translation so that we can all benefit. GenAI incorporates critical and creative understanding as well as being a competent and confident user and implementer. It also entails being alert and mindful of the shortcomings, pitfalls, equity issues, dangers, and risks of GenAI and mitigating against these individually and collectively through ongoing exploration and willingness to learn to further deepen and widen our understanding in this area. It is an ongoing process and part of digital literacy.

And, what can be done to foster the GenAI literacy of education professionals and students?

Some educators are fearful about GenAI. Some (many?) students are too. This is mainly because they feel that they may be (wrongly)

accused of using GenAI (Gorichanaz, 2023). This doesn't stop many. They are experimenting. And they may be more active using GenAI than educators are. But there are also educators that experiment with GenAI – the curious pedagogic explorers, the rebels, those that are driven by curiosity and wonder. Experimentation makes it sound like it should be normal in Higher Education, doesn't it?

The reality is that we all need to learn how to use GenAI and become literate in using these tools. Avoiding it for as long as possible may not do us any favours. Becoming GenAI literate is not a spectator sport. It does not happen by just reading about GenAI and hearing how others are using it. While dreaming and speculating about it can be enlightening (Bozkurt et al., 2023) it is not enough. Professional development can help especially when it is practice-based. Some years ago, a research participant in a phenomenographic study said characteristically, we don't learn to play the piano, by reflecting on the piano (Nerantzi, 2017). The same could be said about GenAI.

We don't learn to use GenAI, by reflecting on GenAI.

It is the doing! The experimenting! The experiencing it. Also playing with it. Through that play and experimentation and/or playful experimentation, we will see with our own eyes how it works. We will feel it. We will experience it. Recent research suggests that educators who have started using GenAI appear more positive about GenAI than those who don't use it (McGehee, 2023). Is this finding a surprise when we all know the power of experiential learning? Refusing to engage with something, resisting it and shying away from it because it may be alien or very different from what we know may not be a wise strategy going forward (Nerantzi, 2023).

A tool is often designed with a specific purpose in mind but there is the Swiss army knife of course that has multiple uses designed into it. Human intuition and resourcefulness are magical and lead us to the appropriation of

a tool for purposes the tool wasn't designed for. Our curiosity to explore drives us. Think about the toothbrush and for how many different jobs we can and do use it beyond brushing our teeth - a tool for scattering paint over an artwork, a tool to comb our eyebrows (I have not done this yet!), a tool to clean grout between tiles and so on. Do we experience something similar happening with GenAI applications?

At the heart of education is learning. As educators, modelling learning and actively engaging in learning and experimentation with our students is vital. Let's free ourselves! Let's be open and willing to dare to explore new ways of learning, teaching, and assessment. Let's be open about GenAI. Let's be transparent! Let's focus on creating learning partnerships with our students and work with them to become GenAI literate.

Relevant literature resources

Bozkurt, A., Xiao, J., Lambert, S., Pazurek, A., Crompton, H., Koseoglu, S., Farrow, R., Bond, M., Nerantzi, C., Honeychurch, S., Bali, M., Dron, J., Mir, K., Stewart, B., Costello, E., Mason, J., Stracke, C. M., Romero-Hall, E., Koutropoulos, A., Toquero, C. M., Singh, L. Tlili, A., Lee, K., Nichols, M., Ossiannilsson, E., Brown, M., Irvine, V., Raffaghelli, J. E., Santos-Hermosa, G. Farrell, O., Adam, T., Thong, Y. L., Sani-Bozkurt, S., Sharma, R. C., Hrastinski, S., & Jandrić, P. (2023). Speculative futures on ChatGPT and Generative Artificial Intelligence (AI): A collective reflection from the educational landscape. *Asian Journal of Distance Education*, 18(1), 53-130. <http://www.asianjde.com/ojs/index.php/AsianJDE/article/view/709>

Gorichanaz, T. (2023). Accused: How students respond to allegations of using ChatGPT on assessments. *Learning: Research and Practice*, 9(2), 183-196. <https://doi.org/10.1080/23735082.2023.2254787>

McGehee, N. (2023). Balancing the risks and rewards of AI integration for Michigan teachers. Michigan Virtual. <https://michiganvirtual.org/research/publications/balancing-the-risks-and-rewards-of-ai-integration-for-michigan-teachers/>

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Metaphorizing concepts in a healthcare course using ChatGPT

HIEU KIEU, STUDY SKILLS LECTURER, THE GLOBAL BANKING SCHOOL

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My short position statement on GenAI literacy

My definition of GenAI literacy in the higher education context is the ability to engage in GenAI tools to (1) access and navigate information (from basic to complex information) successfully and (2) analyse, evaluate, and interpret information critically and meaningfully.

I advocate the presence and development of GenAI and its application in higher education. It renews and brings joy our experience in learning, teaching, research and leading individually and collectively. Think about Ron Barnett's question (in his 1998 book), What is higher about higher education? One of his answers is the open-ended relationship between students and knowledge. GenAI helps realise the open-endedness and highness in higher learning with various tools to facilitate our practice especially in our relationship with knowledge.

What can be done to foster the GenAI literacy of education professionals and/or students?

I think there should be a universal and unified policy in GenAI literacy and its presence in classroom and learning institutions. Another point I want to emphasise is that using GenAI should be seen as a right – a right to use it, rather than a permission – to be allowed to use it.

Co-creating in GenAI literacy with education stakeholders

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URUGUAYAN CATHOLIC UNIVERSITY

URUGUAY

GenAI literacy should include competencies of knowledge, production, and critical thinking. It should not be restricted only to tech competencies, trying to turn teachers into engineers, but to try to understand from a holistic perspective the entire GenAI phenomenon: its possibilities and its boundaries.

There should be teachers involved to think critically about GenAI as they use it in their teaching (planning, grading, etc.). It should be an invitation to them to be involved in these discussions – and take part from the inside and from where decisions are being taken.

Even teachers who could be primarily ‘against’ this technology should be part of proposing critical uses so we could create a more GenAI-literacy centered education from within, rather than using what other professionals from outside education (generally techy professionals) propose to us.

Schools and educational systems should co-create their own strategies on GenAI, how they will prepare their teachers and students, the policies embedded into them, and how families handle this topic. It should take all the stakeholders’ perspectives, as it should not be some

prefabricated path that every school should follow.

As with educational technology approaches, there should not be a ‘one-size-fits-all’ strategy for GenAI. Every educational system and school is positioned in different debates and implementations of EdTech. I am not talking about ‘development’ or ‘position’ as if there is a ranking regarding schools or systems that are doing it better than the rest. My thinking about EdTech is that every system should follow what has worked in other contexts and reflect and decide on its own context and possibilities, what it needs, and what should work better for it. In that sense, GenAI literacy should work similarly; schools and the system should be recognised what are the current debates regarding GenAI, asking the students, teachers, but also other stakeholders, such as families, to know what the urgent needs are to design a curriculum that could embrace these needs. The media literacy approaches should be deepened to incorporate new branches: interacting with AI chatbots, ethics, bias, etc. School communities should be refreshed/reminded that these tools should be used to enhance and broaden knowledge, not to restrain it. So, it is

necessary to maintain critical positions while teachers and students are empowered by digital competencies that allow better/informed uses.

Digital well-being should also be incorporated into GenAI literacy, as this is an important aspect to consider, especially for students.

AI literacy

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In the current world in which Artificial Intelligence (AI) is playing an increasingly important role, it is essential to make AI accountable and therefore, through an ethics by design approach, satisfy the needs and hope of the citizens. But even when this is the case, it is justifiable that the same citizens prepare themselves to face AI, to work with AI, to use AI in an efficient and safe way.

This preparation comes through acquiring AI literacy. This literacy is not about learning to use particular tools, which may well be outdated by next year. Nor is it just about ‘knowing about AI’. It is about acquiring a state of mind, understanding some general principles, and being able to use them safely.

AI is backed by a huge industry and is present through tools which are seamless and appear to be based on natural physical paradigms. These can be misleading; it is important to understand what is happening when we are using AI. In many ways, AI literacy is what allows us to separate (AI) science from magic.

AI makes a large use of randomness. This is a key component, but one with which we are often at unease: having different answers when we repeat the experiment? Not being able to trace back a deductive reasoning? Understand-

ing the non-deterministic and stochastic nature of AI is important.

We all agree that critical thinking is an important competence when dealing with AI (which from now onwards could mean ‘most of the time’), but there are not that many solutions to train the future generations to acquiring this capacity. Through observation alone there may be much to see, but observation is rarely enough to understand the full nature of AI, to anticipate the future technologies and usages. Yet one advantage of these technologies is that coding allows to test these issues from both sides: by building fakes and trying to uncover them, by simulating the effects of disinformation as much as.

Interacting with GAI can be rewarding or deceiving. The question of what qualities, competences are needed to profit from this interaction is to be explored, but it would seem that a specific type of empathy – which may be better called ‘theory of mind’ is required. Possibly, this is just part of computational thinking, which has been advocated as an essential skill of the 21st century for some time.

Moreover, AI questions our own connexions not just with technology but with what matters. Why do we learn? What is private? When

can we say a creation is our own? These questions are mostly ethical. These questions – but not necessarily the answers – also belong to AI literacy.

GenAI: Literate educational environments

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How do you define GenAI literacy? And, what can be done to foster the GenAI literacy of education professionals and/or students?

GenAI literacy is the key strategy to access the knowledge of humanity at the service of all people, either from a click or by swiping your fingers on a smartphone. It is giving every individual the opportunity to create, to build and to preserve the human footprint as the essence of innovation. It represents the opportunity to know, do and learn through technology education. GenAI literacy allows for demystifying those aspects that thought to be negatively associated with its use, since a guide on its qualities allows for channeling its purposes as a complement to learning within the teaching processes. GenAI Literacy is also linked to the Sustainable Development Goal 4 Quality Education belonging to the 2030 Agenda proposed in 2015 by the United Nations, since it promotes the achievement of its goals by increasing the coverage of digital literacy worldwide, covering the needs demanded by the new forms of education since the accelerated technological development. This implies breaking with the differential gaps

between different sectors of the population and transcending the frontiers of access to information. It is a way of being at the forefront from any place, at any time and at any moment.

The way to promote GenAI literacy among education professionals is by creating didactic tools that emphasize the relevance of Generative Artificial Intelligence at the middle and higher education levels. A strategic way to provide literacy on the subject in question is to develop Open Educational Resources or audiovisual educational material (videos, infographics, books, manuals, etc.) with open licenses for use on GenAI, its characteristics, ethical guidelines, advantages, disadvantages, uses and more, since from this approach knowledge becomes universally available to teachers and students, ceasing to be only declarative, becoming instrumental to learning and motivating the different academic generations to venture into research at the higher education level. Other ways to make GenAI literate is to disseminate the latest technological advances through open science, together with the institutions providing students with the necessary infrastructure

to apply the knowledge learned, acquire licenses for the latest generation of software and include the basic fundamentals of ethics regarding the use of Artificial Intelligence in the curricula with the joint purpose of avoiding malpractice: plagiarism, copyright infringement or the uncontrolled dissemination of works with authorship. All of the above,

through collaborative and interdisciplinary work teams, where the teacher and the student become guides, will feed back in a cyclical way, but impact all sectors of the population, generating learning that lasts a lifetime, which is meaningful and directed to the resolution of social problems.

Relevant literature resources

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GenAI: Literate educational environments

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¿Cómo define la alfabetización GenAI?

¿qué se puede hacer para fomentar la alfabetización GenAI de los profesionales de la educación y/o de los estudiantes?

La alfabetización GenAI es la estrategia clave para acceder al conocimiento de la humanidad al servicio de todas las personas, ya sea desde un clic o deslizando los dedos en un smartphone. Es brindarle a cada individuo la oportunidad de crear, de construir y de preservar la huella humana como esencia de la innovación. Representa la oportunidad de conocer, hacer y aprender a través de la educación en tecnología. La alfabetización GenAI permite desmitificar aquellos aspectos pensados como negativos asociados a su uso, puesto que una guía sobre sus cualidades permite encauzar sus fines como complemento para el aprendizaje dentro de los procesos de enseñanza. La Alfabetización GenAI se vincula además con el Objetivo de Desarrollo Sostenible 4 Educación de Calidad perteneciente a la Agenda 2030 propuesta en 2015 por las Naciones Unidas, ya que promueve el alcance de sus metas al aumentar la cobertura de la alfabetización digital a

nivel mundial, cubriendo las necesidades que demandan las nuevas formas de educación tras el acelerado desarrollo tecnológico. Lo anterior implica romper con las brechas diferenciales entre los diferentes sectores poblacionales y trascender las fronteras del acceso a la información. Es una forma de estar a la vanguardia desde cualquier sitio, a cualquier hora y en cualquier momento.

Con el fin de poder fomentar la alfabetización GenAI en los profesionales de la educación, hay que crear herramientas didácticas que enfatizan la relevancia de la Inteligencia Artificial Generativa en los niveles de educación medio superior y superior. Una forma estratégica de alfabetizar sobre el tema en cuestión es desarrollar Recursos Educativos Abiertos, o material educativo audiovisual (videos,, infografías, libros, manuales,, etcétera), con, licencias de uso abiertas sobre GenAI, sus características, lineamientos éticos, ventajas, desventajas, usos y más, ya que desde ese enfoque el conocimiento queda al alcance universal de docentes y estudiantes, dejando de ser sólo declarativo, volviéndose aprendizaje instrumental y motivando a

las diferentes generaciones académicas a incursionar en la investigación a nivel superior. Otras formas de alfabetización sobre la GenAI implican difundir los últimos avances tecnológicos a través de ciencia abierta, aunado a que las instituciones proporcionen a los estudiantes la infraestructura necesaria para aplicar los conocimientos aprendidos, adquieran licencias en softwares de última generación e incluyan los fundamentos básicos de la ética sobre el uso de Inteligencia Artificial en los planes de estudio con la

finalidad conjunta de evitar la mala praxis: el plagio, la violación a los derechos de autor o la difusión descontrolada de obras con autoría. Todo lo anterior, mediante equipos de trabajo colaborativos e interdisciplinarios, donde el docente y el estudiante se vuelvan guías retroalimentándose de manera cíclica, pero impactando en todos los sectores de la población, generando aprendizaje que dure para toda la vida, significativo y dirigido a la resolución de problemas sociales.

Relevant literature resources

Baena-Rojas, J. J., Castillo-Martínez, I. M., Méndez-Garduño, J. I., Suárez-Brito, P., & López-Caudana, O. E. (2023). Information communication technologies, Artificial Intelligence, and social robotics: A complex-thinking vector in higher education? *Journal of Social Studies Education Research*, 14(2), 21-50. https://www.researchgate.net/publication/371686749_Information_Communication_Technologies_Artificial_Intelligence_and_Social_Robotics_a_Complex-Thinking_Vector_in_Higher_Education

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All together now

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GenAI literacy encompasses a range of competencies, knowledge, and skills that enable individuals to utilize GenAI in creative, critical, ethical, and safe ways. This form of literacy is not confined to a single area; rather, it extends across all domains of life, including the workplace, educational settings, communication, and entertainment, allowing individuals to fully and efficiently participate in society and change it.

However, the rapid evolution of GenAI and the lack of transparency surrounding many major GenAI tool developers make it challenging to establish a comprehensive list of the skills that are covered by GenAI literacy. In my perspective, a critical element of this literacy is curiosity. With GenAI pervading many aspects of life, it is crucial to be willing to stay informed about the latest developments and understand their impact on our work and learning environments. We should continuously question how each GenAI tool might affect our lives, recognizing that this curiosity demands a collaborative approach, which includes our students as integral contributors, especially given the overwhelming surge of new GenAI technologies that have appeared recently. Although it is understandable for companies and research teams to pursue innovation and maintain proprietary

research, excessive secrecy and a lack of transparency can impede the development of robust GenAI literacy. By sharing discoveries, GenAI limitations and concerns, we as educators can not only advance the field but also establish a foundation for GenAI literacy that is fluid, dynamic, critical, flexible, and open; a GenAI literacy that demands a fair and equitable transformation of our society.

Additionally, an essential aspect of GenAI literacy is a healthy dose of skepticism. This doesn't mean disregarding all AI advancements until a few devices and apps dominate the market. Rather, it involves approaching the study and use of GenAI with caution, rigor, integrity, and honesty. As observed with prior technological breakthroughs, many advocates of GenAI have predominantly highlighted its benefits, without adequately considering aspects that could mitigate these advantages, such as the vested interests of companies driving AI technological advancements, which predominantly come from English-speaking countries, thereby reflecting their specific Weltanschauung(en). Currently, GenAI exhibits biases concerning gender, age, ethnicity, and sexual orientation, among others, and is marked by high costs, uneven language representation, and significant environmental concerns. If we as educa-

tors and learners focus solely on the positive effects of GenAI, we will miss the opportunity to use our influence to advocate for GenAI that is fairer, more environmentally sustainable, and genuinely 'intelligent'.

Relevant literature resources

- Román Mendoza, E. (2023). ChatGPT Retos y oportunidades para el aprendizaje de lenguas. February 22. <https://t.co/2RKmcdCfXA>
- Román Mendoza, E. (2023). Formular preguntas para comprender las respuestas: ChatGPT como agente conversacional en el aprendizaje de español como segunda lengua. MarcoELE, 36, 1-18 <https://marcoele.com/descargas/36/roman-chatgpt.pdf>
- Román Mendoza, E. (2023). Inteligencia artificial y enseñanza de lenguas: Un acercamiento desde la pedagogía crítica. Plenary Talk at the IX Fórum EICAT. October 21.
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Embracing GenAI literacy in education: A roadmap for empowerment

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In the dynamically evolving landscape of technology, 2023 was the advent year of Generative Artificial Intelligence (GenAI), standing as a transformative force in numerous fields, including education. GenAI may be defined as producing previously unseen synthetic content in any form and supporting any task through generative modelling [1]. GenAI literacy, therefore, emerges as a pivotal skill set essential for both teachers and students to prepare the population for teaching and learning in an ever-changing world, where the real challenge will not be a fight between humans and AIs, but between humans with AI skills and those without AI skills.

GenAI literacy means understanding and proficiency in using GAI technologies and their ethical implications. It encompasses a spectrum of skills, from the basic comprehension of how these GenAI-based systems function to the advanced ability to critically assess and creatively deploy such technologies in various domains. GenAI literacy involves not only technical knowledge but also an awareness of the societal, ethical, and philosophical ramifications of these technologies.

Improving general AI literacy (including GenAI) is a real challenge for the current policymakers of society and educational institutions [2].

To foster teachers' GenAI literacy, as well as organising training sessions, the following actions, among others, should be considered:

1. Curriculum integration: Integrating GenAI concepts into existing curricula is essential. This does not necessitate the overhaul of current syllabi but rather the inclusion of GenAI elements in relevant subjects.
2. Professional development workshops: Tailored workshops for educators should be a priority. These workshops should equip teachers with the technical know-how and pedagogical strategies to use GenAI literacy effectively. The emphasis should be on practical, hands-on sessions where educators can interact with GenAI tools and explore their applications in teaching and learning.
3. Collaborative learning communities: Establishing learning communities where educators can share experiences, resources, and best practices is vital.

On the other hand, enhancing GenAI literacy among students should be mandatory to avoid misconceptions when using these tools as the new wisdom realm.

1. Critical thinking and ethical reasoning: Encouraging students to critically evaluate the outputs of GenAI and consider the ethical dimensions of AI use is crucial. Classroom discussions, debates, and reflective essays on AI bias, privacy, and intellectual property can cultivate a more nuanced understanding.
2. Active-based learning: Implementing active-based learning strategies where students actively engage with GenAI tools can foster a more profound understanding.

3. Interdisciplinary approaches: GenAI literacy should not be confined to computer science or STEM fields alone. Incorporating AI-related themes in humanities, arts, and social sciences can demonstrate the cross-disciplinary nature of AI and its wide-ranging impacts.

GenAI literacy is not merely about mastering a set of tools; it is about cultivating an informed and critical perspective towards one of the most influential technologies of our era through considering and developing complex thinking competencies [3]. Improving GenAI literacy will build a solid foundation for the responsible and innovative use of AI in our societies. This will empower future generations to navigate and shape the AI-augmented landscapes of their times.

Relevant literature resources

[1] García-Peñalvo, F. J., & Vázquez-Ingelmo, A. (2023). What do we mean by GenAI? A systematic mapping of the evolution, trends, and techniques involved in GAI. *International Journal of Interactive Multimedia and Artificial Intelligence*, 8(4), 7-16. <https://dx.doi.org/10.9781/ijimai.2023.07.006>

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[3] Ramírez-Montoya, M. S., Castillo-Martínez, I. M., Sanabria-Z, J., & Miranda, J. (2022). Complex thinking in the framework of education 4.0 and open innovation – A systematic literature review. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(1), Article 4. <https://doi.org/10.3390/joitmc8010004>

Reimagining assessment and language education in higher education in an AI-powered era

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The release of Large Language Models (LLMs), such as ChatGPT and its human-like responses, has triggered huge debates about how GAI will transform education and professional literacy practice. To embrace the opportunities and challenges AI brings to education, we need a more proactive approach to nurture and assess our students' AI aptitude, encompassing critical thinking, analytical judgement, and creativity. Being AI literate involves competencies that enable individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool (Long & Magerko, 2020).

Assessment is a core of curriculum design and the driver of learning. It can be a medium to reimagine and transform education in response to the impact of AI on education and workplaces. Reimagining assessment design prompts crucial questions:

How will we assess written proficiency in authentic assessments in an increasingly AI-powered world? We liken assessment performance

to building a house, where subject knowledge serves as the bricks and written proficiency acts as the glue. The house's aesthetic appeal hinges on students' adept use of language resources. The refined language found in AI-generated outputs may diminish disparities in language use across individual ChatGPT-assisted writing. Should written proficiency still be a key criterion for academic classification?

How important is it to expand the development of language proficiency to academic literacy in which critical thinking plays a pivotal role? Critical thinking distinguishes human intelligence and artificial intelligence. LLMs cannot reason creatively, comprehend emotions, or exercise moral judgement. To retain human agency and authorial voice, should we explicitly instruct and assess critical thinking to develop an intellectual partnership between humans and artificial intelligence?

How do we address the ethical use of LLMs to promote social justice in authentic assessment? Should Higher Education invest in

providing students with access to ChatGPT to ensure equal access? Without developing our students' AI literacy, will the unsupervised use of GAI discourage students' creativity and integrity, especially for those heavily taxed by a language burden?

As educators, rather than refuting AI as a disruptive technology, we should think about how we can use AI for good social effects. To achieve this, we must cultivate a constructive technological culture (Ellul, 1990) that promotes:

- the acquisition of technological knowledge of using AI for learning and assessment
- the adaptation of students and professionals to the AI-powered technological environment to make them comfortable in it

Relevant literature resources

Ellul, J. (1990). *The technological bluff*. W.B. Eerdmans.

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Long, D., & Magerko, B. (2020). What is AI literacy? Competencies and design considerations. *Proceedings of the 2020 CHI conference on human factors in computing systems*.

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- the creation of a psychological mood that is favourable to the technique, and openness to everything about it.

Throughout the history of EdTech, there was frequently insufficient consideration for how educators implemented, and students interacted with such resources (Rudolph et al., 2023, p. 2). Consequently, radical innovation in Higher Education in the wake of EdTech is often exaggerated. To facilitate a cultural shift, rigorous research is essential. Our research journey starts with our recently funded project that explores how GAI shapes the process and product of disciplinary writing and the changed/additional literacy skills needed to retain writer agency.

Note: The position paper was adapted from its original version published in Medium.

Empowering Sociology students to harness the sociological imagination in a digital world: A case study of ChatGPT in the classroom

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How do you define GenAI literacy?

AI literacy means having cognitive agency in the output brought about by constructivist methods of learning.

And, what can be done to foster the GenAI literacy of education professionals and/or students?

It must be brought about by true engagement with how the tool works and where limits exist.

My position statement

With increased online communication and productivity, our students' learning journey has become more individualized with the use of VLE platforms. Whilst this offers a wealth of advantages in terms of flexibility and asynchronous learning activity, we fear that the messy art of discussion and dialogue for learning has been negatively impacted. We have leveraged the power of digital pedagogy, but without meaningful student engagement, we are concerned that students' metacognition skills are often overlooked and neglected. More importantly,

drawing on the Horizon Education 2023 report, we worry that this also impacts learners' sense of belonging, group identity and connectedness to their course of study. Finally, these new frontiers of learning not only necessitate strong academic integrity but also force a new conversation with our learners about what this means.

Our experience with teaching sociology is that new entrants need scaffolding and support due to their exposure to unfamiliar terminology, vast topics, and complex concepts. As educators, we have recognized the need to create OERs for second-level sociology students, with the idea of 'sociological imagination' forming a threshold concept that also serves as a springboard to empower students inside and outside the classroom. The project's core aim is to engage students and educators in co-creating accessible and interactive learning objects – helping both students and educators in coding and decoding, imagining, and re-imagining current practices in sociology.

There are many skills that a student requires to succeed in higher-level education. Despite our best efforts to be self-reflexive practitioners, we wonder if there are some assumptions that we make about the contents of our students' toolbox, such as the ability to locate and find valid information or the confidence to argue one's position on a new piece of knowledge. These nuts and bolts of social constructivist ideas of knowledge acquisition risk getting overlooked in our classrooms if our practice does not create space for true student engagement.

The quick, accessible access to AI in the classroom allows us to develop learning tools and then engage with their value with a critical eye. We learn to assess the information created for validity, reliability, and clear communication.

The use of the tool promotes active discussion about academic integrity and the robustness of arguments. We can play with the ideas generated and think about how we can mold and shape them into the learning objects we require. I aim through this work to promote active agency in AI literacy so that learners are not consumers of information but active composers of new and exciting learning resources.

Relevant literature resources

Ashwin, P. (2015). *Reflective teaching in higher education* (Reflective Teaching Series). Bloomsbury.

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Fostering GenAI literacy to sustain curiosity, criticality and joy

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What do we mean by GenAI literacy? For me, it would be about feeling comfortable and capable when using generative Artificial Intelligence (AI) tools. If our students and educational professionals are confident that they will be able to use the various, evolving AI tools effectively, critically, and positively in their context, imagine what they will be able to create.

If we can inspire creativity and playfulness by sharing relevant examples, by structuring workshops for staff and/or students with care and creating spaces where asking questions, testing boundaries and embracing the unknown are encouraged and celebrated, think how we could spark ideas and unlock knowledge together.

Are the needs of our students so different from those of our educational professionals? Can we collaborate and discover the affordances and limitations of GenAI together? Some educational professionals are already using AI to help them plan sessions or reports, to summarise or review a theme, or to save time. Similarly, students are using AI to structure their approach to an assignment, to assist them with accessing a dense topic and to

save time. What could we learn from each other? The prospect of exploring GenAI as part of teaching and learning, not to mention assessment, across a whole course or programme of study, allowing experimentation and learning from each other's discoveries and mistakes, in a supportive rather than suspicious environment, is an exciting one.

We can design and facilitate activities that move us beyond answering an assignment brief, that allay staff and student fears and discourage the idea of GenAI as a shortcut to THE answer or simply a tool for cheating. We can progress past familiarisation and discussion about the risks, benefits, and application of GenAI. Informed debate about the various concerns we might have and the limitations on advancing knowledge in our subject areas can lead us to thinking more optimistically about the place of GenAI in staff and student career development and future employment.

We can welcome ongoing conversations about possibilities, share what's working, and encourage policy that is constructive and compassionate.

Of course, in exploring the potential of GenAI, we must remain alert to bias, reliability, and ethics, but we can do this while taking advantage of the opportunities to try on different points of view, to have fun, to be curious, wondering What if...? with a smile.

A data feminism approach for ethical development of AI-enabled OER

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How do you define GenAI literacy? And, what can be done to foster the GenAI literacy of education professionals and/or students?

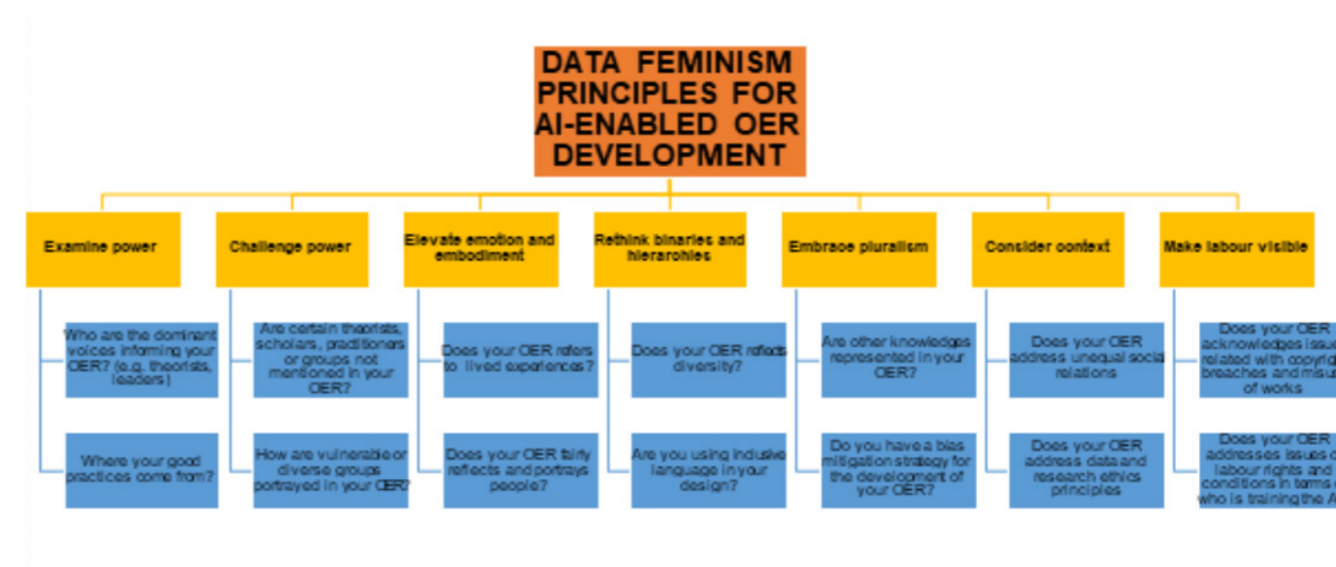
Couldry & Hepp (2018) argue that our reality is to a growing extent being built through data-based processes and automated decision processes and algorithms fostering a datafication model, which is transforming societies and, therefore, education. Critical data and AI literacies refers to the ability to critically analyse, interpret, and evaluate data, enabling people to navigate the data-driven world with discernment and agency, thus developing people's abilities to recognise and challenge power dynamics in the context of datafication and AI, considering that there are many components of critical and AI data literacy, including data ethics and social justice.

AI literacy comprises data, algorithms, and human impact literacy, through a set of skills that enable individuals to critically assess and understand the principles of AI technologies including big data, machine learning processes and algorithms, to be able to effectively use AI in different dimensions, while identifying the

potential harms and risks these technologies convey in terms of the environment and human rights (Atenas et al., 2023).

Thus, we consider that open education practices need to consider the role of critical data and AI literacy; as argued by Brand and Sander (2020, p. 2), educators need to develop the ability to critically engage with datafication by reflecting on the societal implications of data processing and implementing this understanding in practice.

In terms of advancing Open Education principles in the datafied society, the model proposed below aims to provide guidance and recommendations for reflecting on how to develop (or not) AI-enabled OER, through a critical understanding of structural data justice under the lens of data feminism, promoting ideas and opportunities to challenge data-led power dynamics (Heeks & Swain, 2018; Dencik & Sanchez-Monedero, 2022; D'Ignazio & Klein, 2020).



A data feminist approach to guide AI-enabled OER development – Designed by Javiera Atenas, 2024

Relevant literature resources

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A Bergsonian exploration of AI use by students in HE

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order whatsoever. Sheridan et al. (2011) say that time and narrative are: inextricably woven together, in that narrative almost always involves time and requires a temporal component to be meaningful (p. 554).

Understanding how people move through time, make use of time, or relate to time, helps to see how they make sense of their past and navigate their future. This

At a time when Higher Education institutions (HEIs) are grappling with students' AI use in their education, I have found that students' perceptions of time seem to be particularly meaningful for understanding their use of AI and how it shapes their educational experience. I argue that students' use of AI requires us, as educators, to explore time to understand 'the interplay of the temporal and cultural dimensions of social life' (Neale & Flowerdew, 2010, p. 189). In my own practice, HE students have reported how they use AI writing tools, not just around busy assessment periods but every day, in class, and outside of the classroom, even when sitting in a lecture or seminars. Bergson's (2007) notion

of time, as duration, sheds light on the way the everyday experiences of HE students are experienced in education. In contrast to conventional linear time, as in 'clock-time', Bergson's *duree reelle* ('real duration') (2007, p. 32) refers to lived experiences as they happen 'in flow'. Universities tend to construct students' use of AI as mainly relevant to the assessment periods of courses; these worries are compounded by the AI plug-in tool in the now widely used Turnitin software. Against this backdrop, advice around AI use should be designed to encourage students to understand how to disclose the use of, or minimise the use of, AI in the production of their assessments. By doing this, the use of AI in HE education can be dissected into neat sections of students' experiences but as Bergson (2007) argues, real time is indivisible (p. 20). Most undergraduate students who have discussed their use of AI with me, reported a deep sense of impatience, with sessions 'dragging on' and seemingly 'slow paced'. Alternatively, students use AI tools to get quick answers, and fast-forward their learning; this approach is intensified in the HE classroom by the

accessibility of digital devices, either loaned or owned, and the widespread availability of the eduroam internet connection, all of which are typical in classrooms in HE. Whilst HE educational experiences are subject to clearly marked boundaries, facilitated by clock time (such as when to enrol, when to attend classes and exams and when to write assessments) real time is a constant uninterrupted flow of inner life (Bergson, 2007). Sheridan et al. (2011) say that time and narrative are: inextricably woven together, in that narrative almost always involves time and requires a temporal component to be meaningful (p. 554). Understanding how people move through time, make use of time, or relate to time, helps to see how they make sense of their past and navigate their future. This

Whilst school experiences are subject to clearly marked boundaries, facilitated by clock time (such as when to eat and when not eat, or when to play and not to play, or when to talk and when not to talk), real time is a constant uninterrupted flow of inner life (Bergson, 2007). For other research participants, such as the 'gifted and talented' students selected for more special treatment, time at school appeared to 'fly by'. Whilst the constancy of tests and frequent examination dragged for some students in our study, for others school life was 'fast-forwarded', exams approached too quickly, and time seemingly 'slipped

away'. How can these experiences of time as 'dragging on', 'flying by', or 'slipping away' be better understood? In this contribution we turn to the philosophy of Bergson to help make sense of these different experiences of time at school.

Bergson's (2007) method is to focus on intuition, by grasping internal duration, a succession of involvements or activities which is not juxtaposition but 'a growth from within'. Although the intellect breaks down duration into separated moments or positions of 'time', compartmentalising them into a sequence or order, real duration is the uninterrupted prolongation of the past into a present which is already blending into the future (Bergson, 2007, p. 20). Although school life is subject to routine and clock-like measurement and monitoring processes, like the school bell system, that demarcates the beginning and end of subject lessons throughout the day, whereas real *duree* constitutes an experience of school life which situates real life as it is experienced in the moment.

Real time is 'indivisible' (Bergson, 2007, p. 20).

Strategies for GenAI integration

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How do you define GenAI literacy?

GenAI literacy refers to the understanding and skills related to GAI. While the term GenAI literacy is loosely used in some papers, no final definition exists yet. However, it's generally agreed that GenAI literacy includes a set of essential abilities that enable individuals to use those tools ethically and efficiently to work, learn, and thrive within higher education settings.

What can be done to foster the GenAI literacy of education professionals and/or students?

I believe that to be able to foster GenAI literacy, GenAI education should be accessible to all students, irrespective of their background or field of study. This inclusive approach to learning will guarantee that everyone has the opportunity to gain experience and benefit from GenAI. By implementing policies and strategies at a curriculum level, we can prepare both educators and students with the necessary skills and knowledge to navigate the evolving GenAI landscape. This will not only improve technological proficiency but will also allow us to adapt to future opportunities and challenges in the digital era.

Promoting GenAI literacy among educators and students is a complex task that

necessitates a holistic strategy. A key initial step involves incorporating GenAI principles into educational curricula at various stages, from providing a fundamental understanding in primary education to exploring more intricate applications in higher education.

It is very important to understand that Ethics education is a fundamental component of GenAI literacy. It is crucial to incorporate discussions on GenAI's ethical usage into the learning process. Students and staff should be aware of potential misuse and the significance of privacy and security in using GenAI for research.

It is also essential to ensure the availability of necessary resources, such as GenAI tools and literature, for both teachers and students. It is necessary to have access to materials to investigate and learn about GenAI.

I believe that the important areas to address whilst developing a digital GenAI strategy are:

1. **Curriculum Integration:** Incorporate GenAI concepts into the curriculum at various levels of education. This could range from a basic understanding in primary education to more complex applications in higher education.

2. **Professional Development:** Provide training programs for educators to understand GenAI, and its uses, and ethical implications. This will enable them to effectively teach and guide students.

3. **Hands-on Experience:** Encourage practical applications of GenAI through projects and assignments. This will help students understand the technology's capabilities and limitations.

4. **Ethics Education:** Include discussions on the ethical use of GenAI. Understanding potential misuse and the importance of privacy and security is crucial.

5. **Resource Availability:** Ensure access to the necessary resources, such as GenAI tools and literature, for both educators and students.

6. **Collaboration:** Foster collaborations between educational institutions, tech companies, and policymakers to stay updated on GenAI advancements and regulations.

7. **Inclusive Learning:** Make GenAI education accessible to all students, regardless of their background or field of study.

By implementing these strategies, we can equip both educators and students with the necessary skills and knowledge to navigate the evolving landscape of GenAI. This will not only enhance their technological proficiency but also prepare them for future opportunities and challenges in this digital age.

GenAI literacy 101: Don't believe the hype

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Most of us probably felt we had already consumed a lifetime's supply of technology hype even before we started hearing about GAI. Powered by OpenAI's ChatGPT, the new hype wave was so potent it demolished previously sturdy scepticism barriers across higher education and beyond. We 'learned' that if AI was currently quite fallible, it was soon-to-be infallible. It would be a step change in technology and society of an order of magnitude so much greater than anything we had seen before, that we couldn't even begin to understand how it might someday harm us, or how we should regulate it at this time. But also, it might become so intelligent that it will realise that humans should be eliminated for the greater good of -well, not humanity! It will certainly eliminate the need for human workers, except of course from the sorts of jobs many humans would actually quite like to be freed from.

And it seemed that education would be ground zero for all this exciting change. AI would write better assignments than students could themselves, so academics would need to employ AI-detecting AIs to catch them, and also marking-AIs to mark the remaining assignments that had gone undetected.

What forms of literacy are therefore needed by our colleagues and students? Styling themselves as seeing through the hype, the 'sensible people' of higher education have proposed that while these AI futures are hoped to be fiction, we must nonetheless engage meaningfully with AI, as it will inexorably become integrated into all that we do; learning and assessment activities should therefore make use of AI in order for students to become more familiar with generating and evaluating outputs.

This position appears to have cut through the hype clutter, but perhaps there is still more to unpack. The term 'artificial intelligence' itself recalls a core trope within science fiction that asks us to consider the existence of beings that can think for themselves, and therefore the dilemma of whether such entities are alive and entitled to human rights; a situation entirely unlike the large language models we are presented with today, which cannot actually 'think', 'learn', 'know' or 'hallucinate' although we are encouraged to imagine so. Also, as it has become impossible to raise interest (or funding) in new technology unless it is 'AI', the term is also being used to describe a much wider range of tools and services than just LLMs.

It suits Silicon Valley to pretend that there has been no history prior to the current shock of the new. But contrary to the idea that these technologies are unfathomable, they must be seen in the context of the intensifying datafication and automation that was always already in progress. AI, generally speaking, refers to applications which make use of data in order to automate tasks. Therefore, the work which has been done in the area of critical data literacy is of paramount importance to the development of AI literacy.

Critical AI literacy

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How do you define GenAI literacy? And, what can be done to foster the GenAI literacy of education professionals and students?

Let's focus on critical AI literacy, with an emphasis on critical. As I said in Bali (2023), critical refers to questioning and skepticism about hyperbolic claims, and also refers to emphasizing social justice when critiquing GAI or any technology. We need to critique GAI's potential (see the AI Hype Wall of Shame), critique injustice or ethical issues in its processes or outputs, and critique its potential impact, while also being aware of the ways it can empower young people and professionals.

To have Critical AI Literacy in my view entails covering different dimensions as I have been presenting in multiple presentations. Figure 1 below includes all the dimensions, which I



describe in more detail underneath.

1. Understanding how it works. I usually use the QuickDraw game to explain how machine learning works. It uses pattern recognition, but the quick game helps explain the concept. One can also use metaphors (see Gupta et al, forthcoming) to explore different ways of understanding how it works, as well as misconceptions. It is useful to know the nuances of the differences between different models and types of GAI. You can also use free tutorials such as this one.
2. Having an awareness of the biases the models themselves perpetuate and the inequalities the platforms may exacerbate. Bias: Whose knowledge is dominant in AI models? Inequalities: are some people disadvantaged by insufficient access to these platforms or a lack of digital literacies to use them well? (See Safiya Noble's work, Joy Buolamwini's work).
3. Having an awareness of ethical issues. Aside from biases and inequalities, there is harm that has been and is caused in the process of creating some of these models, both in terms of harm to human labor (Kenyan workers, see Time magazine

article) and damage to the environment (climate, water). There is also potentially harm in terms of future employment, and issues of copyright violation - those whose content has been used to train AI models without their consent, and the kind of information GenAI produces without citing sources. (See Leon Furze's work; Ben Williamson's work).

4. Prompt Engineering. Know how to write prompts (sometimes in sequence) in order to get better quality results from GenAI. Many free courses and videos exist on this, and will be updated as platforms improve and new ones are developed.

5. When, why, where it helps to use it. This requires an awareness of the tendency to hallucinate (see the Hannigan et al.'s Botshit article & Shah and Bender's article on information access), and an awareness of one's own level of expertise to verify the quality and truthfulness of the output (Aleksandr Tiulkanov, 2023 in the UNESCO Quickstart document). It also requires an awareness of the kind of task that can be done well with AI, and the kind of task that requires special, nuanced human attention and care.

Relevant literature resources

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Prompting engineering or AI literacy?: Developing a critical AI literacy on HE lecturers

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How do you define GenAI literacy?

GenAI literacy is defined here as the critical awareness of the potentiality (understood in the Aristotelian sense of what is latent but has capacity for growth and fulfilment), limitations, and social and ethical challenges that the use of GAI models brings to society. In the context of secondary education, AI literacy can be described as an umbrella term that comprises a higher set of competences and skills, such as:

- critical and creative thinking,
 - problem formulation,
 - reading, writing, and researching,
- as well as digital capacities such as
- information literacy,
 - data literacy,
 - digital proficiency and productivity
 - that are required to learn, teach and work in the era of AI.

And, what can be done to foster the GenAI literacy of education professionals and/or students?

Education professionals must be AI literate first to help students develop their AI literacy skills. It is, therefore, paramount that development programmes aimed at enhancing the teaching practice of lecturers and professional staff supporting learning (programmes such as PGCAP and the PGCHE in the UK) develop a critical awareness of the following key areas:

- The regulatory frameworks, national and transnational, that protect citizens against the misuse of AI; this also includes an awareness of the implications of data protection legislation for the new AI regulation.
- The moral and philosophical guidelines to promote an ethical use of AI in education; this also involves bringing the principles of compassion and ágape to AI ethics, as those principles are currently missing in the debate around AI literacy in Higher Education.

- The reconceptualization of copyright, authorship and plagiarism for an intellectual product or work that has received contributions from a GenAI model.
- The definition of a new 'AI pedagogy', or the reconceptualization of the existing pedagogies, to use GAI to enhance learning. The term AI pedagogy can be understood as fostering critical conversations between educators and students to clarify new roles, pedagogical approaches and paradigms of assessment and collaboration that can facilitate bringing the GenAI models to the classroom, whether this classroom is on campus or virtual.

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How to be AI literate in an ever-changing landscape?

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The landscape of Gen AI in higher education has been in a continuous state of change since the release of ChatGPT in November 2022. AI is becoming more and more deeply embedded in the tools we already use such as Microsoft products, Google, Meta etc. At the same time, new tools and functions are constantly emerging.

How can educators support students in developing AI literacy while the field is in this state of flux?

Both staff and students need AI literacy. Rather than providing details for specific tools, the Gen AI Working Group at Aberystwyth University believes it is more effective to consider key underlying principles. In this way, the guidance will remain applicable as the tools to evolve.

The first principle is to empower users to make an informed choice. This entails understanding how the tools work, their strengths and weaknesses, data protection issues (e.g., not putting personal information into a chatbot), reliability of the platform, and equity.

The second is to critique the output. Gen AI often produces falsehoods intermixed with truth. Is the output factually true? Is it biased? What information is missing? Is it overly generic for the intended purpose? Including fact-checking, does using AI save time or not? A key message for students is to put the learning process first. Instead of relying on AI as a replacement for learning, we encourage students to critique and improve on the output.

The third is to use AI ethically. Considering academic integrity, we recommend that students check with their tutors to find out what is acceptable and then be transparent about AI use in their coursework.

In 2023, the Working Group including representation from the Student Union collaborated with colleagues to create guidance and training for both staff and students, with further developments planned for 2024.

Relevant literature resources

Weekly Resource Roundup – includes a section on recent resources on Gen AI: <https://wordpress.aber.ac.uk/e-learning/category/weekly-resource-roundup/>

GAI Working Group with guidance for staff: <https://www.aber.ac.uk/en/lteu/teaching/teaching-cpd-workshops/#generative-ai>

Utilising AI in the Library: A Student's Guide: AI and your studies with guidance for students: <https://libguides.aber.ac.uk/c.php?g=709832&p=5153214>

Faculty development: A poem

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ALL THE SELVES BROUGHT TO THE ROLE

What is your biggest hurdle right now? Coach.
Here are some ways to approach this. Mentor.

These are models for overcoming hurdles.
Teacher.

Let's identify the most effective one for you.
Facilitator.

You jumped that hurdle, well. Next time con-
sider... Marker.

136.000 emails. 25 Moodle updates. 7
spreadsheets. Administrator.

*The plight of academic development. An inside
perspective. Scholar.*

*Evidence of effective facilitation, we asked
faculty. Researcher.*

I need a rant. She sighed and took a long sip of
her coffee. Friend.

Do you think this email is okay to go out? Col-
league.

They have two publications more than me!
Competition.

Do you want to write a paper together? Col-
laborator.

The buzz from the meeting slowed. We have a
plan. Ideas generator.

Thank you so much! That was really useful.
Solution finder.

Would you like to join this working group?
Problem solver.

Could I use your toolkit in my teaching? Crea-
tor.

Oops. Risk taker.

This never occurred to me! Amazing! Pioneer.

We have a problem. Challenger.

What can we do? Questioner.

Well not all the selves but a good chunk of them!

Relevant literature resources

<https://acdevadventures.blog/2024/01/20/faculty-development-a-poem/>

The five aspects of GenAI literacies

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How do you define GenAI literacy?

I would say GenAI literacies, using the plural, because there are many different types of GenAI. Mapping from the Stanford University shows that there are nearly 16,000 text generating models that have been developed and each of these models has specific functionalities. However, there are some five common aspects that should be considered. The first one is related to 'how' these models work; they are based on content (text, code, image, video etc.) that already exists and this content is known worldwide as 'bigdata', which can only be extracted through advanced statistical data extraction techniques. Data is today's main economic asset. Furthermore, to ensure the accuracy of these models, underpaid human labor has been used, especially from countries in the Global South – it would be the second aspect.

The third aspect is, considering these models based on past data, the data probably includes biases (race, gender, ethnic identity, income etc.), so GenAI literacies should avoid unconsciously absorbing the automated biases from GenAI, that is, people need to develop

critical thinking to read or evaluate the results of a GenAI tool.

The fourth aspect is usually seen as harmless, but it is not. There has been a growing human connotation to the machine, the anthropomorphization of AI, since it makes no sense because AI is not human. Human-related terms such as 'think', 'talk', 'write' or 'hallucinate' cause a misunderstanding because they help reinforce the idea that AI can be a 'partner' or improve human relations when it is just a machine with the capacity to correlate what has already been created by humans and provide predictions.

And, the fifth point is related to environmental, political and economic impacts on society. The development of GenAI requires large volumes of investment, something that is currently restricted to a few giant US and Chinese companies. GenAI training also uses large volumes of water and energy and emits carbon dioxide into the atmosphere. Therefore, GenAI literacies mean realising that AI is not creating new ideas, but rather transforming previous ideas created by humans into data. GenAI literacies also mean taking into account

the following questions: ‘how does the machine work?’, ‘who is behind the machine?’, ‘what are the ethical, social, political, economic and environmental impacts of the machine?’ and, no less important, ‘what human skills are we replacing with machines and what will the consequences of this be for our own human development in the future?’

And, what can be done to foster the GenAI literacy of education professionals and students?

Firstly, it is essential to train public education managers on how to better understand the new context of the digital society, in how the data-driven economy is now a fundamental asset. As it is usually the education managers who

decide the type of professional development the educators or institution’s teachers should receive, they must be aware of the problem. What has been happening today, unfortunately, are asymmetrical agreements between governments and educational systems with technology companies to simply teach educators how to use private and proprietary tools instead of providing in-depth training on the contemporary digital context and its impacts.

intelligence-and-education

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Relevant literature resources

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The GenAI Gestalt

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How do you define GenAI literacy?

I would define GenAI literacy as an understanding of the theory and operation of GAI models including large learning models (LLM) and generative pre-trained transistors. On the theoretical side I would include the way that models are constructed and trained on specific materials that form the basis for the mining and reorganisation of different content parameters. Understanding how algorithms work is essential for appreciating how issues of bias might arise, or how errors could emerge in outputs. I'd add to this an appreciation of the wider socio-technical context for using GenAI. This includes the very high resource cost and environmental impact of AI technologies, which are typically hidden from the user. Similarly, the humans who train and moderate GenAI are typically unacknowledged, and many of them are exposed to objectionable content and are economically exploited. The operational side of GenAI doesn't require any knowledge of these dimensions, but they are essential for a meaningful ethics of GenAI. (There are also ethical issues around respect for creation, copyright, and attribution.) Operationally, much GenAI literacy at present can be reduced to prompt engineering, but it should be noted that this should be accompanied by an awareness

of the tasks that GenAI is suited to and where the results it offers require interrogation and testing before they can be trusted.

And, what can be done to foster the GenAI literacy of education professionals and students?

I believe greater transparency and openness in GenAI systems would improve GenAI literacy. At present, it can seem like a 'magical' process, but this can be disenchanting by explaining how neural networks operate and through greater philosophical nuance on the idea of 'intelligence' and how it is constituted. The ease of use and facilitation of creativity are sufficient to drive interest in these technologies and so many will develop effective skills in their operation. However, this should be complemented by the wider socio-technical aspects mentioned above.

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Creative GenAI literacy for learning

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CANADA

A poem on GenAI Literacy created with the help of ChatGPT 3.5, based on the two question prompts provided:

What do we mean by GenAI literacy? And, what can be done to foster the GenAI literacy of education professionals and/or students?

In halls of higher learning, minds ignite,
Fostering wisdom, guiding light.
GAI, a beacon to explore,
Faculty and students, open the door.
Together we delve, with eager hearts,
Unraveling mysteries, where knowledge starts.
In classrooms vibrant, innovation thrives,
Where GenAI empowers, our intellects thrive.
With curiosity as our constant guide,
We journey forth, side by side.
Empowering minds, igniting the flame,
In the pursuit of learning, we stake our claim.
So let us embrace this digital dawn,
Where possibilities sparkle, and limits are gone.
For in the realm of GenAI's embrace,
We craft the future, with wisdom and grace.

The concept of self by an AI

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How do you define GenAI literacy?

We consider that Gen AI Literacy can be understood as the ability to use the new AI generative technology with competence and knowledge of its benefits and improvements in daily life activities.

And, what can be done to foster the GenAI literacy of education professionals and/or students?

We think that one of the best options is to foster curiosity, and by that, an interest in GenAI literacy by offering crash courses at universities and research institutes given by professionals with very specific and defined goals. The key element for these courses has to be publicity. We think that the publicity for each course should be the main benefit to teach and foster further interest in how to seize all the improvements in daily educational activities that generative artificial intelligence has to offer in this field. An example could be an advertisement that says something like: Have to make a presentation for your class? Learn how

to do it in less than 60 seconds. We emphasize that the focus has to be on the main benefit of each tool to attract a bigger audience because we have observed that in many cases people get overwhelmed with the sole mention of artificial intelligence, let alone with the generative addition.

Against defining AI literacy

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Definitions are nice; they're clear and unambiguous. Foundational. Comforting too, in a way – we can refer back to them to help resolve misunderstandings and disagreements. They help build and maintain shared understanding. But chasing definitions isn't productive in every case, and there are good reasons to think that AI literacy is one of them.

When something is determinate and measurable – a triangle, say – definitions are absolutely a great way to ensure we're all on the same page. But how much ink has been spilt, and for how long, trying to define more slippery concepts which are neither determinate nor easily measurable, without anything resembling consensus. We still need a shared understanding of these concepts, but where consensus is elusive – and especially where the phenomena in question change over time – a definition is unlikely to be the most effective approach. In the context of education, concepts like learning and inclusion fall squarely into this category.

AI literacy (or literacies plural, as there may very well be more than one), for all its mathematical and computational associations, is more like the latter than the former. As is the case for all literacies, it is a set of connected practices, attitudes and

values that are broadly connected but open to dispute and, importantly, are constantly changing. There is a level at which we can specify AI literacy which might plausibly endure – in terms of things like criticality and an understanding of fundamental concepts – but are we really advancing our shared understanding by specifying one term of art through multiple others?

AI is a catch-all term that indicates a loosely aligned but highly diverse field. A shed containing a wide variety of tools, some of which are radically different to others but all of which bear some similarity to at least one other item in the same shed. AI literacy, then, is better characterised as knowing where the shed is, what kinds of tools are currently inside, and how they might be used, rather than trying to pin down exactly what characteristic(s) of the tools unify them. It may be that there is simply no such characteristic(s); they resemble each other in the ways that an extended family do, through overlapping similarities that unify them only loosely.

Even a broad characteristic, rather than definition, of AI literacy carries loaded assumptions. Artificial intelligence implies a dichotomy with natural intelligence; is it at all plausible that the relationship between

cognitive (pseudo-cognitive, psychological, mental, personal, sub-personal... choose your poison) activities of humans, animals and machines is so straightforward?

Let's say we do arrive at a definition of AI that seems more than adequate for the time being – suitably precise, somewhat flexible, widely assented to. How long before it needs wholesale revision? AI has changed radically in recent decades, not simply in its sophistication but in its approach. And what about all the cognate concepts that would also need agreement on? AI skills, competences, capabilities etc? What are their definitions, and how are they all related? Intractable questions that are not devoid of interest. In the meantime AI marches on, widening the range of possibilities available to the world at large – and wealthy corporations and individuals in particular – for better and worse.

Sometimes meaning lies primarily in use, and AI literacy is a strong candidate for being one of those times. In building a shared understanding of these sophisticated, powerful and sometimes alarming tools there's space for a definition but we'll achieve a lot more – and a lot faster – through using them and talking about what we find out in the process.

Educating for optimal using GenAI in society

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What is GenAI literacy?

GenAI literacy is the ability to use GenAI tools in a responsible way. This requires knowledge of the ethical issues and about the capabilities and limitations of these tools.

What can be done to foster the GenAI literacy of education professionals and students?

The required knowledge and skills should be taught at the earliest possible stage of basic education, preferably as early as K-12. These topics could best be integrated in courses like digital or informational literacy. Suggestions are to create critical thinking exercises about the impact of GenAI on society and ethical issues, and also to enhance skills in using these tools, and create projects where students use them to research, create content (and share them under an open license), or solve problems.

Relevant literature resources

Miao, F., & Holmes, W. (2023). Guidance for GAI in education and research. UNESCO, Paris. <https://unesdoc.unesco.org/ark:/48223/pf0000386693>

UNESCO (2023, December 04). AI competency frameworks for school students and teachers. UNESCO. <https://www.unesco.org/en/digital-education/ai-future-learning/competency-frameworks>

Position statement around GenAI literacy

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How do I define GenAI literacy?

It is roughly the same as what comprises the concept of driving literacy – basic knowledge of how a combustion engine and drive shaft work. First aid is vital. Lots of practice is needed for acting in real-life situations; I mean, not just prompting heuristics, but also some basics about how language models work. One need to be able, if not to create models from scratch, at least to adjust or select appropriate ones. A clear understanding is needed of hazards, limits, and responsibilities.

As for me, what can be done to foster the GenAI literacy of education professionals and students?

Something like driver training, which is certified and cannot be below a certain level. But that will happen when everyone has to drive to get from home to work.

Relevant literature resources

Perplexity.io. <http://perplexity.io/>

Fortunately, it's possible to ignore GenAI for now. I do this. I have only tried the free version of perplexity.io and was not happy. It doesn't give the necessary texture and detail, and the answers are often blurred. You say it needs fine-tuning, but in this case it's easier to write the text yourself.

Never mind the quality feel the width: The case for real writing

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UK

How do you define GenAI literacy and what are the issues in your context?

GenAI literacy is emergent and evolving. True GenAI literacy will be nuanced and sophisticated – allowing us to (still) write to learn rather than ‘write up’ the right answer. The issue is that GenAI seems to reinforce the notion that writing is all about the end product – rather than writing as an emergent process – messy, embodied, and enculturated. We argue that writing should not be primarily conceptualised as an assessment tool, but as a learning and processing one: developing engagement – understanding – metacognition. It creates space for us to think – to get it wrong – to experiment – to accept or reject our own tentative thoughts. Writing in exploratory ways allows us to work through ideas in the writing itself, over time. Good writing moments create space for unknowing, uncertainty and becoming; for the ineffable and troublesome. Conversely GenAI suggests that the world, education and ‘the answers’ are instantly knowable – a click away; and to engage in the slow processes we have outlined would brand you a fool.

And, what can be done to foster the GenAI literacy of education professionals and/or students?

Just as we challenge the unequal power relations of HE and the privileged forms and processes that subjugate learners, so we challenge GenAI for potentially disempowering students by hiding the power of ‘real writing’. Typically in academia writing is seen as an integral part of the assessment of learning. Essays and Reports and other written forms are set for students to undertake to show what they know. Ironically, given how important academic writing is, most university staff are not taught how to develop it in themselves or their students. Somehow the complex thing that is academic writing is presented to students as unproblematic: it is neither introduced, nor scaffolded nor developed as part of a raft of thinking processes. The pressure involved in being assessed in this most esteemed of academic forms, rather nurturing creativity and a playing with ideas, pushes students to painful, unconfident, one-draft writing – or to GenAI.

What we are concerned about is generating active learning literacy in staff and students. Thus, whilst GenAI can be used to ‘project plan’, manage time effectively, and offer alternative perspectives and viewpoints; first we would get students to experience in embodied ways the power of ‘real writing’: writing as thinking through ideas, writing before they know the answers, whilst still wrestling with the questions, as part of living with uncertainty. Where GenAI can be harnessed for exploration – for dialogue and discussion – for thinking through and testing out ideas... then a GenAI literacy might emerge; one that can work alongside ‘real writing’ and where students engage with agency, ownership and even joy.

Relevant literature resources

Abegglen, S., Burns, T. & Sinfield, S. (2022). Supporting student writing and other modes of learning and assessment. A staff guide. PRISM. <https://prism.ucalgary.ca/items/0c06ff1e-a2d3-4225-b2b3-3ff9b98910bb>

Abegglen, S., Burns, T. & Sinfield, S. (2023). Developing student writing: Writing to learn (a free online course for staff). OneHE. <https://onehe.org/courses/developing-student-writing-write-to-learn/>

GenAI literacy: Mastering an unspoken code

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A metaphoric parallelism sparked in our minds in the attempt to define the term ‘GenAI literacy’. Becoming GenAI literate is like being able to understand and speak a complicated and secret language, but also taking into account how and when to speak it. According to Long & Magerko (2020), AI literacy is a set of competencies that enables individuals to critically evaluate AI technologies, communicate and collaborate effectively with AI, and use AI as a tool online, at home, and in the workplace. This necessary skillset is important to understand the limitations and risks of GenAI, leverage its opportunities and, finally, form and respect guidelines about its proper use.

However, the main question is how can we as educators obtain these skills and also guide our students to become GenAI literate? Discussing this topic with the ‘main suspect’, i.e. the GenAI tool ChatGPT-3.5, we were particularly intrigued by its answers and decided to further reflect on them. As both educators and lifetime learners, we believe that all educational institutions should above all embrace experimentation as a method

of familiarising themselves with GenAI. It is worth mentioning that making mistakes when experimenting is ‘part of the game’, as Thomas & Seely Brown (2011) implicitly claim. For that reason, various universities worldwide are gradually trying out integrating GenAI-relevant modules or courses, in which educators and students explore GenAI’s potential (i.e., how they can receive more efficient outcomes from GenAI, for which tasks it may be useful etc.). Moreover, collaboration is also crucial, which indeed is the basis behind the composition of the open crowdsourced collections by the #creativeHE community.

In these, GenAI practitioners from diverse backgrounds have shared their experiences with GenAI in hands-on projects. This attempt, which is based on an active form of learning (PBL), highlights the importance of taking initiatives as a GenAI user (Chen et al., 2023). However, after the experimentation is finished, an important amount of time should be invested in a critical reflection on the use of GenAI. Inclusive and open discussions will enable us all to consider the ethical implications of the use of GenAI, so that we

all be careful but not biased and, above all, mindful and responsible when we interact with it.

Relevant literature resources

ChatGPT (2024, January 31). Enhancing GenAI literacy education. <https://chat.openai.com/share/e16264dc-3eee-41ae-9721-6cd52c11c0dc>

Chen, B., Zhu, X., & Diaz del Castillo H., F. (2023). Integrating GAI in knowledge building. *Computers and Education: Artificial Intelligence*, 5, 100184. <https://doi.org/10.1016/j.caeai.2023.100184>

Long, D., & Magerko, B. (2020). What is AI literacy? competencies and design considerations. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. <https://doi.org/10.1145/3313831.3376727>

Nerantzi, C., Abegglen, S., Karatsiori, M., & Martínez-Arboleda, A. (Eds.). (2023). 101 creative ideas to use AI in education, A crowdsourced collection. Zenodo. <https://doi.org/10.5281/zenodo.8072950>

Thomas, D. & Seely Brown, J. (2011). A new culture of learning. Cultivating the imagination for a world of constant change. CreateSpace Independent Publishing Platform.

The (engineering) profession must consider human factors

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How do you define GenAI literacy?

GenAI literacy for professions, such as engineering, must include human factors. GenAI engineering tools will likely be able to turn text specifications into production-ready designs, replacing much of the existing work of human engineers [1]. Yet focusing only on the technical capabilities and limitations of these tools would overlook an important change in how engineering is conducted, with long-term consequences for us all. Engineering is ultimately a human endeavour that entangles considerations of time, money, people and context together with technical solutions. Most of the entanglements act to increase risk. For example, time pressure, limited budgets, mismatched incentives, and conflicting requirements all influence the choice of technical solution. When the technical solution is well known, discussions are better informed and long-term risks tend to be better managed. More usually a novel solution is needed for competitive reasons, so the long term risks tend to be imperfectly understood and hard to weigh against the more concrete short-term benefits. When the risks

are incorrectly discounted, the tragedy may not strike for decades. How do we, as a society, reduce the risk? First, we can hold humans and organisations legally accountable with the threat of real consequences to liberty and finances. That's the ambulance at the bottom of the hill. Second, there's the fence at the top of the hill: the human interactions through professional societies that instil ethics and a code of conduct intended to address these issues [2]. While we may not necessarily fully understand the complete social dynamics of professional practice, it is known that the maintenance of social norms that benefit society overall is precarious [3]. Therefore, the introduction of a new type of engineer providing technical solutions that does not have a social feedback loop (GenAI engineering tools) is a cause for concern because it may disrupt the delicate balance that currently (mostly) works. Furthermore, engineers tend to live on beyond the production of the artefact, and act as an additional source of risk mitigation. It's unlikely that a GenAI tool would continue to mull over their choices and call the mayor to arrange remedial work on a completed building [4] – unless there

was somehow a way to build (and fund) the operation of a long-running good conscience feature.

And, what can be done to foster the GenAI literacy of education professionals and students?

Educators urgently need to develop future-facing GenAI literacy for the professional practice of engineering. If left to industry, know-how will be unevenly developed and closely-guarded, and any humanities workers hired will likely be ignored [5]. A truly interdisciplinary curriculum with humanities content will help engineers

better understand the socio-technological systems they work within [6]. Engineering students will need to learn how to instruct GenAI engineering tools, and then validate and explain the outputs. Developing skills in validating theoretical outputs against real-world tests will require significant additional experience of digitised practical work [7]. With tasks split between GenAI and humans, perhaps we can take inspiration from the aviation industry's crew resource management [8] to find ways to explicitly retain or even improve our current legal and social checks and balances. The long-term well-being of our society depends on it.

Relevant literature resources

- [1] <https://www.engineering.com/story/toyotas-new-genai-tool-is-transforming-vehicle-design>
- [2] <https://www.ieee.org/about/corporate/governance/p7-8.html>
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AI literacies/future skills for a world shaped through AI

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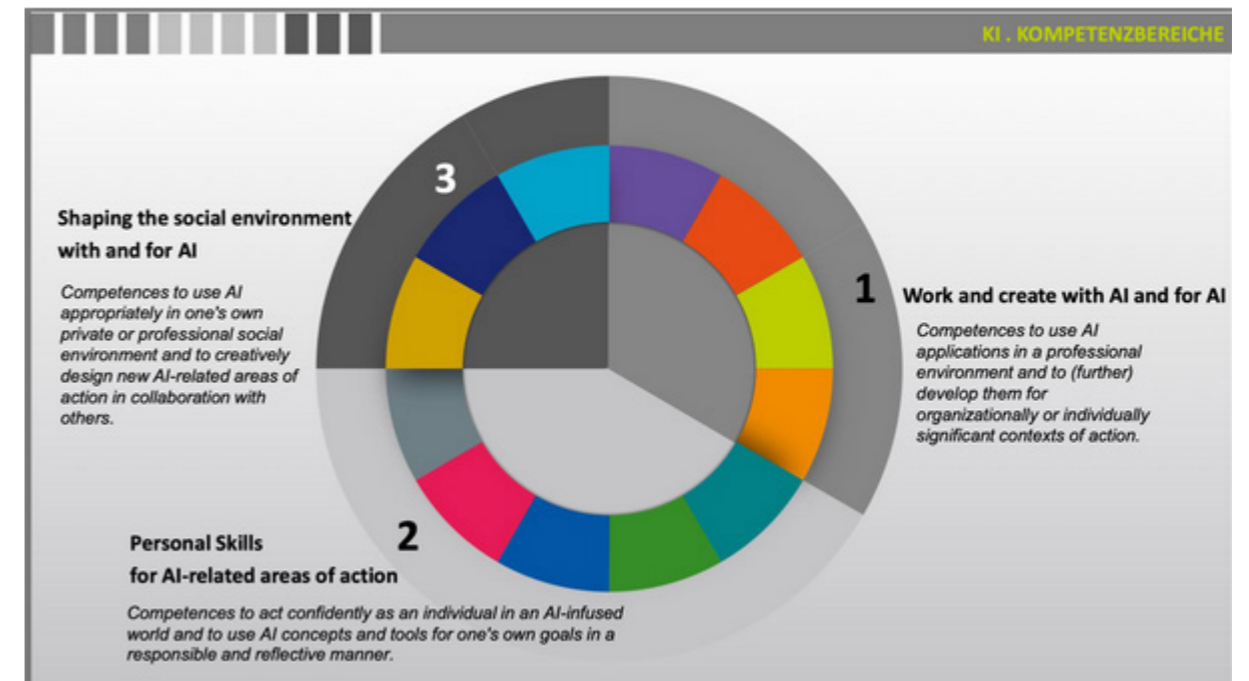
What is education for an AI world really about? Education is an individual human process. It consists of forming a relationship with oneself, with the objects of the world and with society. Education is the acquisition of the world. Its institutional counterpart is learning -in school, for example. As a system, education has a technological deficit. This means that it cannot be optimised in the same purposeful, rational way as, say, a production process. Its purpose is to promote people's ability to participate in society or, where this has been lost, to restore it. Education is therefore the stage on which human agency is promoted in the age of AI. A concept of education understood in this way places self-responsible action, i.e., the ability to act, at the centre (see also the next section on the 'Future competence concept'). But what should the contours of such an education look like in concrete terms?

Here are a few examples of which competences are important today: First of all, of course, there is the very simple 'instrumental digital competence for AI programmes and applications', which makes it possible to use and develop AI tools –but also to know the

limits of AI applications. But it is not only the use of AI tools that is important. It is also becoming increasingly important to be able to keep up with the ever more rapidly evolving possibilities –a competence we call learning competence.

On the one hand, 'learning literacy' means the openness, ability, and willingness to keep learning about AI –but on the other hand, it also means being able to use AI tools and applications to keep learning. In the AI Future Skill Study, respondents repeatedly mentioned 'critical thinking' as an important future skill in relation to AI. What does this mean? Critical thinking is the ability and willingness to reflect on the underlying behaviours, mindsets, and value systems in AI-influenced domains of activity and to evaluate how they influence actions and decisions.

A fourth example relates to the ability to shape future working and living conditions with AI. In the NextSkills study, we refer to this competence as 'initiative competence'. It is about being able to contribute openly, courageously, and creatively to initiating and shaping common AI-related spheres of activity



(both professional and private) in one's own environment.

The concept of 'competence' includes skills and/or literacy as one component, but goes beyond this. It refers to a person's ability to respond to a complex challenge by combining different internal resources such as knowledge, skills, values, and attitudes in order to act unprepared in complex situations (see Figure 1). Action competencies represent value-based 'dispositions', i.e., the ability to act appropriately in complex problem situations, provided that one's value context encourages action. For example, the ability to communicate effectively involves an individual's language skills, writing or speaking skills, and attitude towards the person with whom he or she is communicating.

The skills for the future are therefore the so-called 'action skills' that have been identified as important for the future. They not only describe a person's ability to do something, but also represent so-called dispositions for action (see Figure 1). These are formed from a person's motivation to act, the associated inner impulses, intentions and values, and ultimately lead to action. There is a difference between someone who knows a lot about a topic but has not yet developed any skills in this area, and someone who has skills in relation to a task but no inner compass that enables them to determine what it is appropriate to do and triggers an inner impulse to act. For example, the ability to 'use AI creatively to advance one's own professional context' is not simply a skill that can be called upon, but rather the ability to be able and willing to apply AI concepts appropriately in the right situation. And in this – in the appropriateness – lies a

value-based balancing process. Future skills therefore require knowledge, are based on skills and experience and, thirdly, require a good deal of personal positioning, which consists of values and motivations. All three components together then lead to competence development.

AICOMP – A competency model for an AI-infused living environment,

AIComp aims to help individuals to develop freely and actively in a rapidly changing world. AIComp refers to an understanding of human capital in the broad sense of Bourdieu (1983) and includes social aspects as well as economic and cultural capital. It also identifies behavioural competences, following the underlying concept of 'action competence'. AIComp aims to identify future competences that are important for a wide range of individuals. Competences that are only useful in a specific occupation are not considered.

Competences are given meaning by the fact that they relate to something. Communication, for example, initially consists only of the production of sounds, which often represent speech, but which in themselves do not constitute communication skills. Only the act of speaking, i.e., relating to a situation or another person through language, requires a form of expression that we can then perceive or describe as appropriate or capable. Communicative competence, therefore, is not initially meaningful in terms of pure action. A person's ability to communicate skilfully in relation to something or someone only acquires meaning through the context of their action. To stay with the example, the focus is not always on another person, such as an interlocutor. Communication can also be about relating to

oneself and one's own position, or to a specific object – such as the topic.

Future skills can therefore relate to three aspects: (1) to individual developmental aspects of the acting subject (e.g. the ability to self-reflect on something experienced in the past, or ethical competence), (2) to dealing with an object, a subject or a task (e.g. design thinking skills), or (3) to the social environment or organisation in which the individual is acting (e.g. cooperation or communication skills). These three dimensions also apply to AICOMP, the Future Skills Model for AI. The competencies we have identified as relevant for future skills in an AI-influenced world can therefore be categorised into one of these three dimensions:

- Dimension 1: Developing personal capabilities for AI-related domains of action. These are skills that enable individuals to act confidently in an AI-influenced world and to use AI concepts and tools responsibly and reflectively for their own purposes.
- Dimension 2: Working and designing with and for AI. This is about skills to (further) develop work tasks and organisational processes.
- Dimension 3: Shaping one's own social environment with and for AI. This is about competences to use AI appropriately in one's own private or professional social environment and to creatively design new AI-related fields of activity in cooperation with others.

Unleashing the power of General Artificial Intelligence (GenAI) in higher education

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In the realm of higher education, General Artificial Intelligence (GenAI) emerges not just as a game-changer but as the superhero cape we've all been waiting for! Picture this: educators, armed with GenAI knowledge, are no longer just teaching, they're innovating, they're transforming! Through specialized training programs and workshops, they're diving headfirst into the AI universe, exploring its nooks and crannies, and learning to wield its powers like digital wizards! With collaborations aplenty with tech gurus and educational pundits, they're not just learning solo but creating a digital tribe, sharing insights, and sparking ideas that could light up the entire educational galaxy!

Now, let's zoom in on accessibility – because who said learning can't be fun and accessible for everyone? Prompt the online platforms, webinars, and interactive modules, tailor-made to fit every educator's style and students' needs. We're talking multilingual content and bridging internet gaps in widespread corners, ensuring that no educator is left behind in this electrifying AI adventure! Let's sprinkle some AI literacy into existing training programs, ensuring educators stay on the pulse of AI

evolution like tech-savvy warriors, always ready to tackle the next digital challenge!

But wait, the fun doesn't stop there! Enter stage left: the student superheroes! GenAI isn't just transforming the way they learn; it's shaping the heroes of tomorrow's workforce! Through a whirlwind of coding clubs, robotics battles, and AI-powered projects, students are not just absorbing knowledge; they're diving headfirst into the digital realm, unleashing their creativity, and becoming the architects of their own AI-powered futures! And let's not forget our trusted allies – partnerships with industry pros are providing students with real-world insights and mentorship, guiding them through the twists and turns of this exhilarating AI rollercoaster!

But hold onto your hats because we're not done yet! Transitioning to GenAI literacy among students in Africa is like embarking on an epic quest, full of twists, turns, and adrenaline-pumping challenges! It's about weaving AI seamlessly into curricula, flipping the switch on accessibility with online platforms that make learning feel more like a digital playground than a stuffy classroom, and ensuring every

student – urban or rural – has a front-row seat for the AI revolution!

Now, let's talk inclusivity – because in this superhero tale, everyone gets to be the hero! Whether you're from bustling cities or remote villages, GenAI education is the ultimate equalizer, breaking down barriers and empowering students from all walks of life to unleash their inner tech prodigy! But wait, there's more! Ethical considerations are the secret sauce, ensuring our budding AI superheroes not only have the smarts but the heart to wield their powers responsibly, fighting against biases and championing digital justice for all!

So, what's the bottom line in this electrifying GenAI saga? It's about more than just teaching – it's about empowering a generation to embrace the digital frontier, to innovate fearlessly, and to shape a future where the possibilities are as limitless as the stars in the African sky! With collaboration, creativity, and a sprinkle of AI magic, the stage is set for an educational revolution that's out of this world!

What is GAI?

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How do I define GenAI literacy?

GAI is capable of creating new content such as texts, images, and other forms of data. It functions by learning patterns and information from pre-existing datasets (Gong et al., 2023). GenAI literacy contains several aspects. Primarily, it refers to the understanding and knowledge of what GenAI is and how GenAI works, encompassing fundamental principles of generative models, training of AI systems, and other related elements. Furthermore, it necessitates individual proficiency in utilizing GenAI to solve real-world problems, while also achieving mastery in specialized applications tailored to various objectives. In addition, GenAI literacy extends to practical skills in using tools and platforms that facilitate the creation of AI models. Lastly, it refers to individuals' cognitive abilities at a more advanced level, containing critical thinking, computational thinking, and comprehension of the ethical and societal implications of AI (Zhang et al., 2022). Individuals with GenAI literacy have the ability to critically evaluate the outputs and value transparency and accountability in AI systems.

What can be done to foster the GenAI literacy of education professionals and students?

The cultivation of GenAI literacy requires a

combination of educational resources and collaborative efforts.

A significant portion of the knowledge acquired by students in a conventional classroom setting is based on professionals' prior experiences. However, it is essential for education to adapt and progress in accordance with the changing times. Given the substantial influence of generative technology on diverse sectors such as finance, healthcare, and high tech, it has become imperative to integrate AI principles into existing curricula in different majors. This enables students to comprehend the capabilities of GAI tools across various domains. Through the utilization of these technologies, individuals can effectively augment their professional competencies and expand their prospects.

Professionals should proactively engage in the design of, and participation in, development programs to augment their comprehension of GenAI. AI companies or organizations are encouraged to arrange workshops, seminars, and webinars to offer practical experience and knowledge. Moreover, facilitating convenient access to GenAI tools and platforms allows students to engage in hands-on experimentation with, and development of AI models. It promotes educators to creatively

apply AI in teaching methods and improve the overall quality of education as well.

Last but not least, the crucial focus lies on the ethical considerations and conscientious exploitation of GenAI. It is vital for all individuals to actively participate in conversations regarding the societal consequences of artificial intelligence and promote the cultivation of critical thinking

when it comes to AI-related matters.

Having a thorough comprehension of AI as a sociotechnical system with socio-political effects is necessary for educating future-oriented citizens (Relmasira et al., 2023).

Relevant literature resources

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Nurturing GenAI literacy within Bloom's framework

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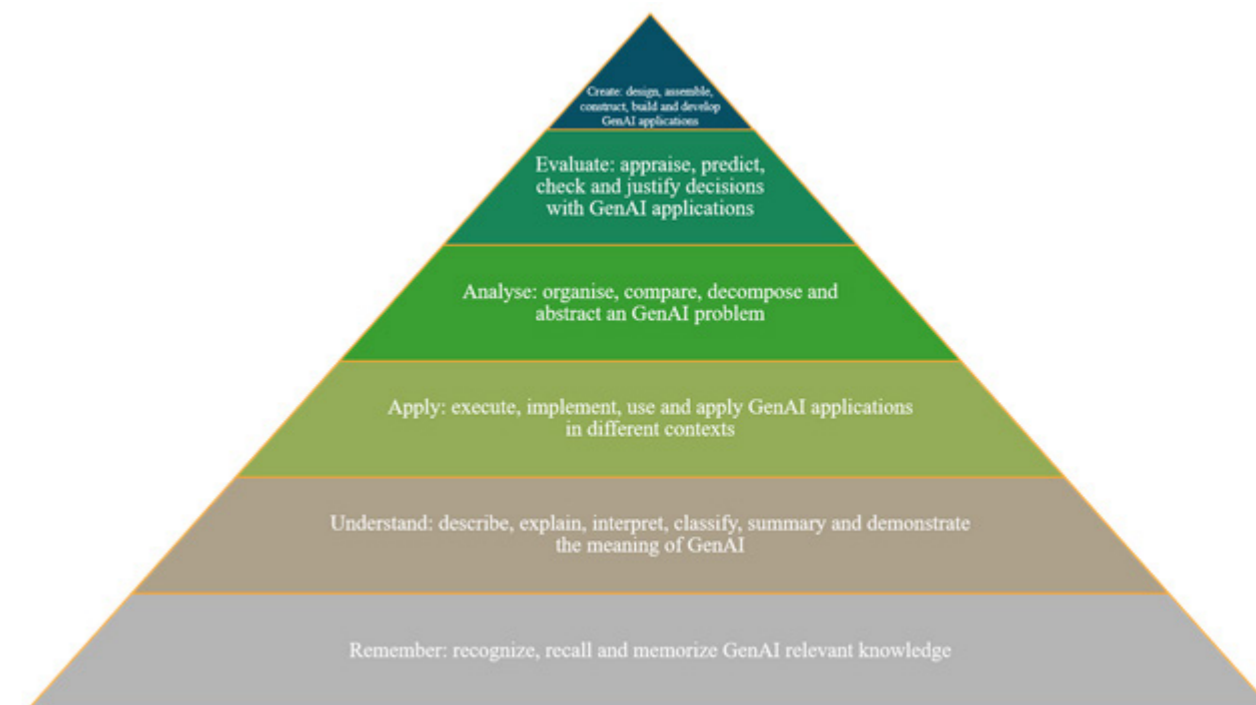
UK/CHINA

Different from the programmed response of Regular Artificial Intelligence (AI), Generative Artificial Intelligence (GenAI) can produce unpredictable results and unique digital products like texts and images through requests (Cope & Kalantzis, 2023). GenAI is increasingly prevalent in higher education due to its user-friendly nature. Notable GenAI applications include ChatGPT and Midjourney, enabling students to access relevant information efficiently. However, the challenge lies in effectively utilizing and evaluating the information obtained, necessitating a focus on GenAI literacy. Despite widespread acknowledgement of the need to enhance GenAI literacy in the information age, scant literature specifies its components and methods for improvement.

The conceptualization of AI literacy could extend to GenAI literacy as a specialized subset. Based on a comprehensive review of the AI literacy literature conducted by Ng et al. (2021) covering 2016 to 2021, GenAI literacy could encompass key dimensions: knowing and understanding GenAI, using and applying GenAI, and evaluating and creating GenAI and GenAI ethics. Based on Bloom's (1956)

framework, Krathwohl's (2002) revision and Ng et al.'s (2021) model for AI literacy learning, GenAI literacy learning should be (illustrated in the figure).

Cultivating GenAI literacy among education professionals and students necessitates practical exploration for optimal diversification. Drawing from experiences in fostering AI literacy by Su et al. (2023), integrating GenAI education into the curriculum providing professional development for teachers, creating a resource pool for GenAI literacy, and establishing GenAI literacy evaluation mechanisms emerge as impactful future directions.



A diagram of a pyramid. Description automatically generated

Relevant literature resources

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Cope, B., & Kalantzis, M. (2023). GAI comes to school (GPT and all that fuss): What now? *Educational Philosophy and Theory*, 13-17.

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Su, J., Ng, D. T. K., & Chu, S. K. W. (2023). Artificial intelligence (AI) literacy in early childhood education: The challenges and opportunities. *Computers and Education: Artificial Intelligence*, 4, 100124.

Exploring GenAI literacy in higher education: Insights, concerns, and recommendations

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In 2023, UNESCO defined GAI (GenAI) as an AI technology that autonomously produces content when prompted within natural-language conversational interfaces, distinguishing itself from conventional methods that merely curate existing webpages by creating fresh content derived from existing sources. I conducted a study among 97 participants from various higher education institutions, which sheds light on the current landscape of GenAI literacy among educators and students. Through an online survey, participants were asked to assess their awareness, familiarity with, and perceptions regarding the use of GenAI in higher education.

The findings revealed a diverse spectrum of familiarity with AI technologies among the participants. While 31% indicated a level of familiarity, a significant portion fell into categories ranging from somewhat familiar to completely unfamiliar. This distribution underscores the need for targeted efforts to enhance GenAI literacy across the educational community. When asked about the areas they

believe will be most affected by the integration of GenAI, participants highlighted several key areas. Personalized learning and student support emerged as a top concern, indicating a recognition of GenAI's potential to tailor educational experiences to individual needs. Adaptive learning technologies, research and innovation, online education, and distance learning platforms, as well as administrative processes and decision-making, were also identified as areas poised for significant transformation through AI integration.

Despite the optimism surrounding the potential benefits of AI in education, participants expressed notable concerns. Foremost among these were ethical implications and privacy concerns. The use of GenAI raises complex ethical questions regarding data privacy, algorithmic bias, and the equitable distribution of educational resources. Additionally, participants expressed apprehension about the technological infrastructure and resource requirements necessary to support widespread GenAI implementation. Furthermore, there

was a recognition of the potential impact on faculty and staff roles, raising questions about the changing dynamics within educational institutions.

Considering these findings, several recommendations emerge to address the challenges and opportunities associated with GenAI literacy in education. First and foremost, there is a clear need to prioritize ethical considerations and ensure that discussions around AI integration include robust frameworks for addressing privacy concerns and promoting ethical practices. This includes providing training and support to all categories of students to navigate the ethical complexities inherent in GenAI technologies. Additionally, efforts should be made to enhance the feasibility of AI integration by addressing technological infrastructure needs and resource constraints. This may involve investing in IT infrastructure, providing access to relevant tools and platforms, and fostering collaborations with industry partners to leverage existing expertise and resources. Furthermore, ongoing training and professional development opportunities should be provided to educators and students to enhance their GenAI literacy. This includes not only technical training on GenAI tools and techniques but also education on ethics and privacy concerns

related to AI use in educational settings. The study underscores the importance of fostering GenAI literacy among education professionals and students to effectively harness the potential of GenAI in education while mitigating associated risks. By addressing concerns, providing training and support, and promoting ethical practices, we can ensure that AI integration in education is both responsible and beneficial for all stakeholders involved.

GAI literacy – a critical competency (not a soft skill) in higher education towards lifelong learning

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How do you define GenAI literacy?

GAI literacy is the ability to synergistically engage with different GAI solutions, leveraging its capabilities to enhance knowledge, creativity, cognitive ability and problem-solving skills. It involves both a positive attitude toward technology and a critical mindset, emphasising ethical and effective use. GenAI literacy is a critical component of the lifelong learning journey of any student, researcher, supervisor or educator.

What can be done to foster the GenAI literacy of education professionals and students?

We have seen how COVID made us re-evaluate our roles as educators, as we could not function conventionally but needed technology to continue operating. Now these technologies are also redefining our role as educators, research supervisors as well as students. We cannot merely transfer and receive knowledge; our focus should be on scrutinising information towards knowledge creation and acquisition. GAI assistance may be

compared to either a crutch or a physiotherapy solution to a sports injury problem. If we only use it as a (temporary) crutch to generate answers, we will not gain much in the long term, however, learning skills of tool selection, prompt engineering and scrutinising the output of these tools while still adding significant creative value will yield positive results.

Practical ways to foster GenAI literacy include:

1. Being willing as educators to acknowledge our shortcomings and vulnerability in the face of rapid technological advancement.
2. Then being willing to experiment with different ways to enhance our own teaching, learning and assessment practices using GAI techniques and tools.
3. Fostering a ‘community of practice’ environment where students and educators or supervisors and researchers can share ideas and experiences related to GAI use.
4. Setting clear guidelines (rather than only restrictive policies) to assist students and

educators/supervisors in navigating the ethical issues related to GAI use.

5. Finding ways to navigate cost-effective, or ideally free solutions in an environment of increased commercialisation of AI solutions.
6. We should acknowledge GAI as an important competency for the future of work, intra/entrepreneurship as well as research – and abandon the notion that it is a ‘soft skill’ (Pontefract, 2023).

Relevant literature resources

Pontefract, D. (2023, March 27). It’s about time we abandoned the term ‘soft skills’. Forbes. <https://www.forbes.com/sites/danpontefract/2023/03/27/its-about-time-we-abandoned-the-term-soft-skills/>

Reconsidering the role of educational portfolios to foster GenAI literacy

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CANADA

How do you define GenAI literacy?

GenAI literacy entails that students are knowledgeable about, understand, and can demonstrate how to ethically use General Artificial Intelligence for personal and professional purposes.

What can be done to foster the GenAI literacy of education professionals and students?

Educators can foster GenAI literacy in students by adopting the extensive use of educational portfolios. Barrett (2007) states that an educational portfolio contains work that a learner has collected, reflected upon, selected, and presented to show growth and change over time, work that represents an individual's or an organization's human capital (p. 438). Merriam and Bierema (2014) recommend allocating class time for portfolio sharing in small groups, a practice that has proven valuable as learners compare notes on their learning journeys.

Today, educational portfolios can be enhanced to include artifacts created with the use of GenAI tools. These portfolios can be dedicated solely to GenAI showcasing artifacts created with the use of GenAI tools. These can include

practical examples such as projects, prompts, and code snippets showcasing the application of GenAI concepts. They can also include essays exploring topics related to GenAI, and GenAI ethics. Including an examination of job listings that shows what tasks only humans can do and where GenAI can help people work better can be useful in portfolios. Doing this analysis regularly during students' studies lets them see how jobs are changing, figure out which skills they need to be really good at, and find out where they can improve their AI-related skills. This helps in building overall GenAI literacy. Educators should encourage students to share their portfolios and thus best practices in terms of ethical and creative ways of using GenAI with peers and allocate time for portfolio sharing in small groups and class discussions.

Relevant literature resources

Barrett, H. (2007). Researching electronic portfolios and learner engagement: The REFLECT initiative. *Journal of Adolescent & Adult Literacy*, 50(6), 436-449. <https://doi.org/10.1598/jaal.50.6.2>

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Skills to use generative artificial intelligence in biosciences / Competencias para usar inteligencia artificial generativa en biociencias

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How do you define GenAI literacy?,

La alfabetización en inteligencia artificial generativa (IAGen) tiene como objetivo entrenar a los usuarios con las capacidades básicas y suficientes para utilizar las herramientas digitales que incorporen esta tecnología para procesar información en cualquier formato para consumir, producir y analizar información y resolver problemas de manera adecuada, pertinente y responsable.

What can be done to foster the GenAI literacy of education professionals and students?,

La alfabetización sobre el uso de herramientas electrónicas, hoy más que nunca, es necesaria, urgente y primordial. Los esfuerzos por alcanzar la alfabetización informática, informacional y digital se han rezagado: las tecnologías informáticas avanzan de manera exponencial y a pasos acelerados, pero los programas de estudio, los temarios y los

materiales tardan en aparecer y, lo que es peor, la actualización para los profesores es lenta e incipiente, en especial en América Latina y en el idioma español. La pandemia demostró los peligros de la infodemia, la post verdad y las noticias falsas, y la importancia de la educación y el desarrollo de las habilidades digitales de calidad para contrarrestarlas. Durante el 2023, con la explosión de herramientas que ha provocado la inteligencia artificial regenerativa, se ha vuelto más urgente e impostergable la necesidad de desarrollar competencias en la sociedad, y en especial entre los estudiantes y profesores, para conocer la tecnología, reconocer las herramientas en línea de calidad, usar la información con responsabilidad, identificar las fuentes fiables, explorar sus aplicaciones y citar datos e información que sustenten los hechos. Para esto es indispensable desarrollar el pensamiento crítico, fomentar el

conocimiento científico, promover la curiosidad e investigación y centrar la enseñanza en habilidades y no en contenidos.

Para lograr este objetivo nosotros proponemos generar materiales y contenidos que se puedan usar en los cursos de las licenciaturas de Biología y Medicina y de posgrado en Medicina de la UNAM utilizando las herramientas digitales de la web que sean abiertas, amigables, de calidad y con distintas tecnologías como la inteligencia artificial generativa, minería de datos y análisis de redes, entre otras. Estos contenidos y materiales que hemos generado están en línea,

abiertos, y disponibles para consultar. Además, estamos abiertos a que cualquier persona colabore o aprenda con nosotros de estas tecnologías.

Es indispensable enfatizar la cultura tecnológica entre los profesores y estudiantes, promover el uso de la Web en un ecosistema integral que abarque el pensamiento crítico, la investigación, la lectura de documentos de calidad y la escritura reflexiva, de tal manera que deje de ser una asignatura aislada y forme parte de un plan robusto, completo y actualizado para formar mejores ciudadanos, más informados y mejor capacitados.

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AI thoughts

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MEDIA COLLEGE, AMSTERDAM AND WE SHARE CULTURE

NETHERLANDS

How do you define GenAI literacy?

With any new technology, I firmly believe it's important for teachers and students to feel comfortable enough to experiment with it. This means having a basic understanding of the technology, its mechanics and dynamics. Every new technology also brings new ethical considerations. For GenAI specifically these are: cultural biases, inequality due to lack of access, environmental issues, copyright issues, the rise and spread of dis- and misinformation and the potential loss in human creativity and skills. These are key considerations for any educator wanting to include GenAI in their classes.

What can be done to foster the GenAI literacy of education professionals and students?

Provide equal access within the walls of educational institutions in order for students and teachers to learn and experiment with GenAI.

Prompting engineering or AI literacy?: Developing a critical AI literacy on HE lecturers

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How do you define GenAI literacy?

GenAI literacy is defined here as the critical awareness of the potentiality (understood in the Aristotelian sense of what is latent but has capacity for growth and fulfilment), limitations, and social and ethical challenges that the use of GAI models brings to society. In the context of secondary education, AI literacy can be described as an umbrella term that comprises a higher set of competences and skills, such as:

- critical and creative thinking,
 - problem formulation,
 - reading, writing, and researching,
- as well as digital capacities such as
- information literacy,
 - data literacy,
 - digital proficiency and productivity
 - that are required to learn, teach and work in the era of AI.

What can be done to foster the GenAI literacy of education professionals and students?

Education professionals must be AI literate first to help students develop their AI literacy skills. It is, therefore, paramount that development programmes aimed at enhancing the teaching practice of lecturers and professional staff supporting learning (programmes such as PGCAP and the PGCHE in the UK) develop a critical awareness of the following key areas:

- The regulatory frameworks, national and transnational, that protect citizens against the misuse of AI; this also includes an awareness of the implications of data protection legislation for the new AI regulation.
- The moral and philosophical guidelines to promote an ethical use of AI in education; this also involves bringing the principles of compassion and ágape to AI ethics, as those principles are currently missing in the debate around AI literacy in Higher Education.

- the reconceptualization of copyright, authorship and plagiarism for an intellectual product or work that has received contributions from a GenAI model.
- The definition of a new ‘AI pedagogy’, or the reconceptualization of the existing pedagogies, to use GAI to enhance learning. The term AI pedagogy can be understood as fostering critical conversations between educators and students to clarify new roles, pedagogical approaches and paradigms of assessment and collaboration that can facilitate bringing the GenAI models to the classroom, whether this classroom is on campus or virtual.

Relevant literature resources

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Critical stance on AI in education

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I am a critical pedagogue raised and educated in Venezuela, and interested in matters of social justice. There, being a critical pedagogue means something very different than in Northern Europe, given the nature of the daily struggles people face. The way we interpret and comprehend these struggles shapes our worldview and the claims we make. Knowledge emerges from the ongoing process of making sense of these struggles. Whilst millions in Venezuela and worldwide grapple with abject poverty and are compelled to find food and shelter for their family, the Global North is preoccupied with a paradoxical concern: a luxurious technology that exacerbates social injustices. This is a technology that will continue to deplete our planet and widen the already uneven distribution of the environmental crisis' burden, hitting particularly hard those who make their lives in the Global South (bear in mind that there are Global Souths in the Global North).

Inspired by the works of Paulo Freire and bell hooks, amongst others, I firmly believe in the role of education as a site of social transformation in the yellow brick road towards social justice. This perspective views education as a vehicle for human emancipation and self-realisation through social critique and political action. Education should be a level playing

field. In this context I wonder how AI technologies can align with and support these human centred goals and level the playing field given the existing issues of algorithmic injustices (Eubanks, 2017; Benjamin, 2019; O'Neil, 2019; Buolamwini, 2018). Decisions taken by AI systems are proven to result in uneven and thus an unfair distribution of information, resources, social welfare, and opportunities.

Education is a complex social phenomenon. Artificial Intelligence is a sophisticated form of statistical processing. These tools, at present, address one task at the time, e.g., giving feedback, tracking engagement, or giving you an input to a particular question (as in the case of ChatGPT). For this they process vast quantities of data to predict, with the highest accuracy, which should be the next word. How can a technology that is made by fallible humans and based on maths, data, and computer programming, respond to complex educational issues? This paradox warrants attention from educators, policymakers, and governments, as it unveils a reductionist and problematic stance, not a dialectical relationship. We educators know that humans' complexity, teaching, and learning is a materialisation of that complexity, which cannot be captured reliably in data form. Therefore, it oversimplifies and thus harms the human dimension of education, which is the

most important one! Transforming education does not solely hinge on technology but more so on teachers' willingness to cultivate a generative social relationship with students.

A collaborative relationship, rooted in, and driven by shared goals, has the potential to yield social goods, contributing to the overall wellbeing of both teacher and pupil. The emotional dynamics inherent in these relationships are an integral component of human intelligence, as highlighted by Nussbaum (2001). According to her, nurturing emotional wellbeing is crucial, as it forms an inseparable part of our political reasoning capacity. I believe that the educational context is a relational network of bonds and resources, with AI serving as one such resource - a tool employed for a particular task. Still, it is not a substitute for human relations as is often portrayed in the Silicon Valley techno solutionist narrative. As Freire argued, teachers are transformative intellectuals who, through teaching, transform themselves and their pupils, and in doing so, contribute to social transformation. I believe that those advocating frantically that AI will overhaul educa-

tion are blind to the crucial structure-agency problem that has haunted sociologists for a long time (c.f. Bhaskar & Hartwig, 2016; Archer 1995). By ignoring the dialectical relation between agency, structure, and culture, education is doomed to reproduce society in terms of efficiency and automation instead of changing it. In that reproduction, of course, those at the margins will continue to be expelled from the benefits of education, however marginal those benefits might be.

On the other hand, given the behaviouristic underlying approach to AI personalised teaching tools, I wonder how they can contribute to a more constructivist, human-centred, and care-inspired pedagogy. Moreover, knowing that agency is essential to achieving wellbeing and the freedom to choose the life we want to live (although always constrained by social circumstances), I wonder how AI will impact the development of agency and, thus, freedom. Moreover, considering the resource-intensive nature of AI, the question of wellbeing takes on added significance, given that our wellbeing is intricately linked to the wellbeing of the planet.

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