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Navigating the Terrain:
Emerging Frontiers in Learning Spaces, Pedagogies, and Technologies

Generative AI: Beyond the binaries with metaphors

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The integration of Generative AI (GenAI) technology in higher education demands active and creative pedagogical responses. In this paper we report on an emerging creative educational design approach which introduces activities for working with GenAI in imaginative ways. Through multidisciplinary research, we are iteratively designing activities to engage educators and students in creative and critical inquiry of GenAI with metaphors. First, we introduce the background and rationale for using metaphor to explore GenAI in education. Our approach to generative AI draws on postdigital ideas that consider technology as entwined in our lives, rather than as separate tools. Put simply, GenAI is neither inherently good nor bad for education. Research on metaphor as a powerful learning tool of analogy is reviewed. A detailed account of workshop learning activities is then provided, including their design, implementation, and preliminary findings. The aim is to broaden approaches to using and integrating such technologies, and to serve as an alternative model for other educators to adapt for their own practices. Finally, we discuss future, creative possibilities with GenAI and metaphor.

Keywords: Higher Education, GenAI, metaphor, creative inquiry, postdigital, qualitative

Introduction

This paper reports an emerging critical study on Generative AI (GenAI) in higher education. Educators are asked to develop critical AI capabilities and to rethink pedagogies in light of GenAI (Carvalho et al., 2022; (Markauskaite et al., 2022). Educational researchers call for generative AI "to serve as an active partner in sustained social, creative and intellectual pursuits" (Dawson et al., 2023, p. 1051). Others indicate that more sensemaking is needed about the generative AI phenomenon (Lodge et al., 2023) and the balance of how human and AI technologies best combine in new learning and knowledge practices (Siemens et al., 2022).

Discussion about technologies such as ChatGPT often centre around the pressing need for institutions to respond, and a belief that AI has the power to change teaching and learning dynamics (Bearman et al., 2023). The promise is that Gen AI could offer enhanced learning experiences and teaching efficiencies (Lodge et al., 2023). Many are optimistic that GenAI can be used to update and enhance traditional assessment and teaching practices (Jensen et al., 2024). Yet institutions swing between enthusiastic GenAI adoption and strict policies. GenAI raises issues, such as ethical and privacy concerns and data bias (Lodge et al., 2023). While educators are understandably concerned about GenAI's effects on learning, students and academic integrity, more exploratory and productive uses of GenAI are also needed (Jensen et al., 2024), where teachers might engage with GenAI in more creative and nuanced ways (Gupta, 2024).

Metaphors in a postdigital world

Our approach draws on postdigital ideas that considers technology as enmeshed in our lives; the digital and material are inseparable (Gourlay, 2019), and GenAI is more than a tool. Hence, we propose alternative learning activities to explore emerging technologies as a practice that involves human creativity, problem solving, critical and collaborative thinking (Carvalho et al., 2022). Through metaphor we aim to provoke critical reflection and collaboration and move away from instrumental approaches to educational technologies (Gupta, 2024). We do not teach participants how to prompt or direct them on how to use technology. Rather we use metaphors to facilitate creative and critical inquiry, without framing GenAI in a binary of good or bad for education.

Metaphors are key to making sense of new experience and knowledge. Metaphorical thinking enables us to understand abstract concepts, linking new to past experiences by analogy (Lakoff & Johnson, 2003). In the learning process, "abstract notions are encoded in words and phrases that constitute metaphors based in concrete, embodied experience of a material world" (Gee, 2003, p. 76). While most know metaphors as a poetic technique, metaphors play a far more fundamental role in our thinking:

> Our concepts structure what we perceive, how we get around in the world, and how we relate to other people. Our conceptual system thus plays a central role in defining our everyday realities... the way we think, what we experience, and what we do every day is very much a matter of metaphor. But our conceptual system is not something we are normally aware of (Lakoff & Johnson, 2003, p.3).

Context

The three authors designed, developed and facilitated the activities below to test the idea of learning and teaching with GenAI metaphors, informed by the literature discussed above and guided by connected learning principles (Bryant, 2022). The workshop participants were fifteen colleagues from a multidisciplinary team, including business academics, educational developers, learning designers, project officers, and media producers, who self-selected to join the workshop. Our research was approved and conducted in accordance with the university's Human Research Ethics Committee protocols —Project number: [2019/892].

Workshop Design and Implementation

The aim is for participants to gain hands-on experience, while sparking critical analysis and conversation through a social and creative process. The workshop follows a structured methodology, often found in design thinking learning sequences that are aimed at capability building that is participatory, and encourages developing an open, creative and ethical mindset (Beligatamulla et al., 2019).

The rest of this section details our deployment of the workshop, along with suggested variations for those wanting to run such a workshop themselves. It runs through the process of unpacking metaphor for collective sensemaking in a workshop, including facilitator prompts, and the flow of activities participants are guided through. Activities are designed for social interactive experiences, including group work, with digital and material resources.

Orientation: Why metaphors?

Participants may not have encountered creative approaches to technology before. Where appropriate, facilitators can briefly discuss creativity as a key future skill, emphasising its value to learning and teaching in different academic disciplines. For example, blackout poetry—where text is selectively redacted to reveal new meanings—offers a versatile, creative way to engage with diverse subjects by obscuring some words and emphasising others (Vallis et al., 2022).

The facilitators then explicitly connected learning with metaphors. To introduce metaphors, we presented a simple slide with a definition, with text from *Metaphors We Live By* (Lakoff & Johnson, 2003). As a warm-up, participants brainstormed and contributed common metaphors about teachers via a QR code to Mentimeter and their ideas were visualised in a word cloud for further discussion. Then we showed an example of metaphors about ChatGPT or other GenAI tools such as Pacitti and Lodge (2024, July 4).

Activity 1: Generating metaphors

Here the aim is to create a 'gallery of metaphors' to visualise and articulate ideas. Facilitators can segue into this activity by noting that metaphors reflect and shape our ideas about technology too (data mining, prompt engineering, to name a few examples).

Participants individually brainstorm as many metaphors as they can (quantity over quality). Facilitator prompts with this question: 'ChatGPT is...?'. We facilitated this with pens, paper, stickies and whiteboards to anchor the activity as a material experience. Online whiteboards or collaborative documents could also be used.

Participants then form small groups. Metaphors are shared on a group whiteboard. Group members are invited to build on these ideas and add more or notes. Facilitator prompts include: Which metaphors resonate with your experiences of ChatGPT? Any common metaphors? Seeing these, does it give you other ideas or insights? How could they be further developed?

Where time permits, groups extend the generation of metaphors using various GenAI modalities. Groups could choose another abstract concept to metaphorically represent (e.g. a discipline-specific term). Facilitators frame this activity as play rather than achieving a technical skill. Each small group then:
- rotates around different stations to brainstorm metaphors with different modalities,
- experiments with the different AI tools to generate metaphorical representations of their concept in each modality (text, image, audio, video)
- shares AI outputs to the gallery where possible.

Activity 2: Articulating ideas about GenAI

The aim of this activity is to surface ideas and identify the most resonant metaphors for further examination. Participants visit the metaphor galleries, placing stickers or further notes on ideas that resonate. Facilitator prompts include: Which item do you like, dislike, or are curious about? Why these items? Where time permits this could also be extended by conversing on the topic with an AI chatbot.

Ideally, there is time for a break before the next activity, which is cognitively challenging. This also allows time for facilitators to document and reflect on the metaphor galleries during the break.

Activity 3: Analysing metaphors

This is a group activity where ideas are synthesised around emergent themes. Each group is asked to explain their metaphors, and where relevant, talk about the effects of using multiple AI modalities. Together, all evaluate the metaphors, noticing commonalities, differences and surprises. Facilitators ask which ideas belong together and group accordingly. Facilitator prompts include: What did you notice? What are the strengths, limitations and perspectives offered by each metaphor? Does the AI modality have a different effect?

Reflection

Finally, participants are invited to individually reflect on their workshop experiences and implications for practice. In our context, we asked participants to reflect on the activities and implications for education that align with the principles and our teamwork of the Connected Learning at Scale (CLaS) project. Facilitator prompts include: What might we do differently? Could metaphors help make sense of GenAI in teaching or other professional learning situations? In further developing your own understanding? In conversations with colleagues? With students? We also asked participants to share their reflections if they felt comfortable.

Discussion and Future Directions

Feedback on the workshop activities was positive. Participants reported that the collaborative nature of the workshop also fostered a sense of community and shared learning among this diverse, multidisciplinary group. While we have not evaluated whether the workshop contributed to participants adopting new approaches, participants have expressed an interested in building on the conversation in an upcoming workshop which uses object-based learning to further explore AI practices in higher education.

The whiteboard discussions were compelling. Participants characterised AI as both a promise and a threat, with an unknown future. Metaphors like "personal assistant," "research associate," and "smart buddy," pointed to GenAI's capacity to augment human capabilities. The dark side of GenAI was also prominent in discussions, with metaphors such as "sinister robot" and "plagiarism machine." The future of AI could be a journey of both hope and fear, like a "storm (in the hope bubble) – eventually a rainbow." GenAI was also seen as a "bread starter", an ingredient in baking, that needs nurturing and care to develop. There was also pragmatic yet cautious acceptance of the technology as a "necessary evil". The workshop provoked the kind of critical, ethical and creative thinking about GenAI and its potential applications in education that we had hoped. This was particularly evident in the final reflective session of the workshop where participants described how the activities helped foreground important aspects such as positionality and cross-cultural dimensions associated with AI.

However, we acknowledge that the workshop implementation outlined in this paper had constraints. The workshop was 90 minutes and would benefit from more time for creative hands-on play with GenAI. Our participants were colleagues with whom we work closely, who are educational innovators, more likely to accept and experiment with new ideas such as this one. While the workshop provides a replicable model for critical reflection about GenAI for both educators and students, these ideas need more development in different contexts, and we are cautious about making exaggerated claims about our work to date. Our plans are to offer such activities more widely, incorporating feedback to iteratively refine future sessions, and to further research this topic.

A wide range of pedagogical strategies for integrating technologies and new practices into educational spaces is needed. We hope to place our work among the multitude of possible approaches to GenAI in education, particularly to imagine different futures. For example, participants might be asked to "respond creatively to provocations with, against and around generative AI" with a choice of multimodal GenAI and or physical materials such as pens and papers (Drumm et al., 2024).

It seems likely GenAI will be a game-changer in our society and education (Siemens et al., 2022); one that will continue to provoke much fear and awe into the future. Both theory and the ongoing debates about generative AI suggest that multidisciplinary methods may inform our thinking and practice. At the very least, the integration of Generative AI (GenAI) technologies in higher education demands different pedagogical responses that are active, creative and critical. Creative inquiry is one such approach (Vallis et al., 2023).

We offer this approach for future development as an alternative for learning with emerging technologies in education, providing a flexible educational design that may be adapted for different contexts or audiences. To use a common metaphor, we report on our small beginning as 'food for thought' that facilitates perspectives beyond binary views of educational technology.

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