Don’t let the bots do the thinking - reclaiming creativity and creative skills in an AI world

Reece Sohdi, School of Education, University of Sunderland, United Kingdom

Keywords: creativity, artificial intelligence, teacher pedagogy, agency, AI literacy

Introduction

In today’s educational landscape, artificial intelligence (AI) is no longer a speculative future but has the potential to becoming deeply embedded in teaching and learning linked to creativity. Generative AI tools can write essays, produce images and music, and suggest creative ideas at the click of a button. While these capabilities offer powerful opportunities for inspiration and efficiency, they also pose a significant risk: if machines begin to shoulder the imaginative and intellectual load, we may undermine the development of students’ own creative capacities.

This perspective argues that, more than ever, education must re-centre human creativity. Drawing on policy frameworks such as the Initial Teacher Training Core Content Framework (ITTECF), alongside recent empirical and conceptual research on AI and creativity, this article makes a case for nurturing creative agency, critical thinking and imaginative exploration as core pedagogical priorities. Although AI can support creativity, without deliberate design it can also weaken learner autonomy, dilute originality and devalue domain-specific expertise.

Creative promise and peril in the age of AI

AI’s integration into classrooms offers strong potential for amplifying creative processes rather than simply replacing them. Research suggests that when students actively engage with generative AI – for example, generating and then critiquing ideas – they experience growth in creative thinking, particularly when supported to reflect and adapt (Xiao et al., 2025). These tools can act as scaffolds, supporting ideation while leaving space for interpretation and refinement.

A systematic review using a PRISMA methodology found that AI in education can function as a facilitator, a co-creator or generator depending on the task (Urmeneta & Romero, 2025). This review also highlighted tension that such roles are not static and depending on how AI is deployed, can support either "little-c" creativity (everyday innovation and problem-solving) or “Big-C” creativity (more transformative, domain-shifting contributions) however support may come at the cost of reduced human agency.

AI's impact on creativity is also uneven. While it broadens access to creative tools, it may reduce the value of domain-specific expertise (Mahajan, 2025). Studies in creative writing and music suggest that AI benefits those with general cognitive adaptability but narrows the advantage of specialist knowledge (Mei et al., 2025; Doshi and Hauser, 2024). At the same time, over-reliance on AI risks homogenisation, with creative outputs becoming increasingly similar (Doshi and Hauser, 2024).

Finally, AI raises ethical questions around authorship, ownership and transparency. Without critical engagement, students may struggle to distinguish between their own ideas and machine-generated content, undermining the developmental processes that support meaningful creativity.

Why creativity matters now more than ever

Creativity is not an optional "add-on" to education, nor is it confined to the arts. It is a way of thinking that involves generating ideas that are both novel and meaningful – often described as "useful newness" (Green et al., 2023; Weir, 2024). Through play, experimentation and reflection, students develop capacities that AI cannot replicate: empathy, judgement, interpretation and self-awareness.

These capacities align with the "4Cs" of 21st-century learning: *creativity, critical thinking*, *collaboration* and *communication* (Joynes, Rossignoli and Fenyiwa Amonoo-Kuofi, 2019; Thornhill et al, 2023). While AI can support procedural tasks, it cannot replace the human processes of evaluating, questioning and meaning-making. In the UK context, the ITTECF (DfE, 2024) emphasises adaptive teaching, scaffolding and independent enquiry. Teachers are expected to create learning experiences that push students to think deeply, reflect, and take intellectual risks. It reinforces the teacher's need for reflective practices, encouraging teachers to promote students' resilience, agency and metacognitive growth (DfE, 2024).

At a policy level, these discussions sit alongside the ongoing Curriculum and Assessment Review (DfE, 2025), where renewed attention is being given to the role of the creative arts within a balanced curriculum. There is growing concern that performative accountability measures and knowledge-heavy curricula may marginalise creative subjects, despite their role in fostering problem-solving, wellbeing and interdisciplinary thinking. In an AI-rich world, this marginalisation becomes more problematic, as the erosion of creative subjects risks limiting the very human capacities that differentiate learners from machines. Creativity must therefore be positioned not as enrichment, but as central to educational purpose.

A critical lens on AI and creativity

One major risk of AI in creative education is the erosion of student agency. When AI assumes responsibility for ideation or product generation, students may lose ownership over their creative process. Higher levels of AI support are associated with reduced creative autonomy (Urmeneta and

Romero, 2025) which has implications for motivation, persistence and risk-taking. This connects closely to Sohdi's (2026) concept of the 'shallow learner', where students may outsource thinking to AI and engage only superficially with knowledge. When AI provides fluent, immediate responses, learners may confuse coherence with understanding, leading to knowledge substitution rather than knowledge construction.

AI may also reshape what is valued in creativity, privileging adaptability over deep expertise (Shen, Wu and Huang, 2025). While this may broaden participation, it raises questions about whether educational systems will continue to value disciplinary knowledge and craft. There is also a risk of creative convergence. If students rely on similar tools and prompts, their outputs may become increasingly uniform. This homogenisation undermines diversity of thought, which is central to innovation.

Ethically, AI challenges notions of authorship, ownership and accountability. Romero et al. (2024) argue for a model of "hybrid intelligence" in which human and machine intelligence work together while preserving agency and ethical judgement. Central to this is AI literacy: the ability to understand, critique and evaluate AI outputs. Without this, students may accept outputs uncritically or fail to recognise bias and limitation.

Pedagogical implications for the 21st-century classroom

To reclaim creativity in an AI world, teachers must design learning that keeps students at the centre of the process. This involves prioritising exploration, reflection and iteration. For example, students might use AI to generate initial ideas but then critique, adapt and justify their decisions, ensuring that they remain active creators rather than passive recipients.

Project-based learning (PBL) offers one approach to supporting this. By engaging students in extended, real-world tasks, PBL promotes inquiry, collaboration and reflection (Rehman et al., 2024). In a design project, students might use AI to generate prototype ideas and then evaluate and refine them through iterative processes. However, PBL is not without limitations. It requires careful structuring, strong teacher guidance and secure underpinning knowledge. Without sufficient disciplinary understanding, students may engage only superficially with projects, particularly when AI is available to generate quick responses. Barrow's (2023) work in design and technology highlights that AI can enhance design processes, but only when students have the knowledge to critique and refine outputs. AI-enhanced PBL should therefore complement, rather than replace, knowledge-rich teaching.

Assessment must also adapt. Traditional assessments focused on final products risk encouraging students to outsource thinking to AI (Matheis and John, 2024). Instead, assessment should focus on process, including planning, reflection and revision. Approaches such as creative journals or annotated drafts can support this, requiring students to demonstrate how ideas develop over time.

Crucially some of the most important work for teachers will be cultivating students' AI literacy. This goes beyond technical know-how but involves cultivating a reflective, ethical, and critical disposition toward AI. As a result, teacher professional development is equally vital. Training programmes must not only introduce AI tools but also support reflective practice, values discussion and co-design. When teachers understand AI's affordances and limitations, they are better positioned to design tasks that preserve creativity, agency and meaning (Song, et al, 2025).

Finally, systemic support is needed. Curriculum and assessment systems must recognise creativity as a core competence, while policies must address issues such as authorship, bias and transparency. Encouraging "hybrid intelligence" approaches (Romero et al., 2024) can support a balance between technological innovation and human creativity.

Conclusion

In an era where AI is increasingly capable of performing tasks once reserved for human intellect, education must resist the temptation to hand over the reins. If machines do our thinking for us, what becomes of the very human capacities that make learning rich such as imagination, judgment, experimentation, and risk?

Creativity is not a luxury; in a world of potent algorithms, it is a vital form of human agency. By embracing pedagogies that centre exploration, reflection and co-creation; by assessing process as well as product; and by cultivating AI literacy, teachers can reclaim the space for human thinking and creative flourishing.

Importantly, teachers who model curiosity, scaffold student thinking, and provoke ethical inquiry are uniquely positioned to lead in this moment. With intentional design and critical awareness, we can ensure that even in a world filled with generative bots, students remain the authors of their own ideas.

References

Barrow, T. (2023) *Generative AI: Revolutionising UK Design Education*. Available at: https://sites.google.com/view/cleapss-futureminds/summer-2023/generative-ai-revolution?authuser=0

DfE. (2024) *Initial Teacher Training and Early Career Framework*. Available at: https://assets.publishing.service.gov.uk/media/661d24ac08c3be25cfbd3e61/Initial_Teacher_Training_and_Early_Career_Framework.pdf

Doshi, A.R. & Hauser, O.P. (2024) Generative AI enhances individual creativity but reduces the collective diversity of novel content, *Science Advances*. 10(28). https://doi.org/10.1126/sciadv.adn5290

Green, A.E., Beaty, R.E., Kenett, Y.N. & Kaufman, J.C. (2023) The Process Definition of Creativity, *Creativity Research Journal*, 36(3), pp. 544–572. https://doi.org/10.1080/10400419.2023.2254573

Joynes, C., Rossignoli, S., & Fenyiwa Amonoo-Kuofi, E. (2019) *21st Century Skills: evidence of issues in definition, demand and delivery for development contexts*. Available at: https://assets.publishing.service.gov.uk/media/5d71187ce5274a097c07b985/21st_century.pdf

Mahajan, S. (2025) The democratization dilemma: When everyone is an expert, who do we trust?, *Humanit Soc Sci Commun.* 12. https://doi.org/10.1057/s41599-025-04734-x

Matheis, P. & John, J. J. (2024) *Reframing Assessments: Designing Authentic Assessments in the Age of Generative AI*. In S. Mahmud (eds.), *Academic Integrity in the Age of Artificial Intelligence*. IGI Global Scientific Publishing. pp.139-161

Mei, P. et al. (2025) If ChatGPT can do it, where is my creativity? generative AI boosts performance but diminishes experience in creative writing, *Computers in Human Behavior: Artificial Humans*. 4. https://doi.org/10.1016/j.chbah.2025.100140

Rehman, N. et al. (2024) Project-based learning as a catalyst for 21st-Century skills and student engagement in the math classroom, *Heylion*. 10(23). https://doi.org/10.1016/j.heliyon.2024.e39988

Romero, M. *et al.* (2024). *Manifesto in Defence of Human-Centred Education in the Age of Artificial Intelligence*. In: Urmeneta, A. & Romero, M. (eds) *Creative Applications of Artificial Intelligence in Education*. Palgrave Macmillan.

Shen, G., Wu, W. & Huang, W. (2025) Tackling the AI-Creativity paradox: How educational innovation and knowledge unlocks positive-sum dynamics?, *Journal of Innovation & Knowledge*. 10(6). https://doi.org/10.1016/j.jik.2025.100816

Sohdi, R. (2026) Surface certainty, knowledge substitution and the rise of the 'shallow learner'. BERA Blog. Available at: https://www.bera.ac.uk/blog/surface-certainty-knowledge-substitution-and-the-rise-of-the-shallow-learner

Song, Z. et al. (2025) A case study of teachers' generative artificial intelligence integration processes and factors influencing them, *Teaching and Teacher Education*. 165. https://doi.org/10.1016/j.tate.2025.105157

Thornhill-Miller, B. et al. (2023). Creativity, Critical Thinking, Communication, and Collaboration: Assessment, Certification, and Promotion of 21st Century Skills for the Future of Work and Education, *Journal of Intelligence*. 11(3) https://doi.org/10.3390/jintelligence11030054

Urmeneta, A. & Romero, M. (2025) AI as a creative partner: a PRISMA review of AI's role in supporting creativity in education, *Front Educ*. 10. https://doi.org/10.3389/feduc.2025.1602151

Weir, K. (2024) The science behind creativity, *Monitor on Psychology*. 53(3)

Xiao, R. et al. (2025) Learning to Use AI for Learning: How Can We Effectively Teach and Measure Prompting Literacy for K-12 Students? https://doi.org/10.48550/arXiv.2508.13962