

# AI Training for Design and Technology Educators: Supporting New and Existing Teachers Through ITT And CPD

## *Lightning Talk Short Paper*

Trudi Barrow, CLEAPSS

[Trudi.barrow@cleapss.org.uk](mailto:Trudi.barrow@cleapss.org.uk)

Artificial Intelligence (AI) is rapidly transforming education, including Design and Technology (D&T), offering opportunities to enhance curriculum delivery and reduce teacher workload, alongside the integrated use of AI within the design process itself. However, the effective and ethical integration of AI into school and college curricula, depends on teachers' confidence, understanding and clear leadership. This paper discusses the importance of AI training for both new and existing D&T teachers through Initial Teacher Training (ITT) and Continuing Professional Development (CPD) and the key opportunities and barriers to this. Drawing on sector insights and educator experiences, it examines how understanding AI's capabilities and limitations, and fostering critical professional judgement are essential for safe and effective implementation. It argues that targeted AI training empowers teachers to harness AI as a creative and supportive tool while maintaining the human-centred ethos of D&T education.

*Keywords: Artificial Intelligence, Design and Technology, Teacher Training, CPD, Professional Practice*

## **INTRODUCTION**

Artificial Intelligence (AI) is reshaping the landscape of Design and Technology (D&T) education in the UK. Across education, from lesson planning support to ideation tools, AI offers the potential to significantly and positively impact teaching and learning, inclusive learning and reduce teacher workload. However, without sufficient training and support, teachers may struggle to navigate the complexities of integrating AI effectively and ethically. AI is already being used effectively and with great effect in design and technology in some settings, however the national picture is inconsistent and there are many settings and educators who are fearful of the negative 'stories' they have heard, and/or are troubled by the impact AI may have on the practical nature of the subject. It is therefore essential that the grassroots experimentation with AI tools that has been taking place over the last few years is supported and standardised through DfE, JCQ and AO policy and research is undertaken to the efficacy of subject specific AI tools alongside holistic educational impact research.

AI training, embedded through Initial Teacher Training (ITT) and Continuing Professional Development (CPD), can empower both new and experienced D&T educators to feel confident with implementing tools and opportunities for learners that enrich design and technology experiences and pedagogies whilst also being cognisant of compliance with safeguarding, IP, GDPR, bias and malpractice.

There are currently several key workstreams and publications that are in support of AI implementation at an organisational level, across subjects. This paper calls for further work to be undertaken to specifically cater for the nuanced pedagogies and approaches of design and technology.

## **LITERATURE REVIEW**

AI has long been recognised as a transformative force across disciplines, with Alan Turing's 1947 reflections laying the groundwork for imagining machines that learn from experience. In education, AI applications span from rule-based systems like spellcheckers to more advanced generative AI tools such as ChatGPT, Gemini, and Copilot.

Recent studies, including those by the Education Endowment Foundation, highlight AI's potential to reduce teacher workload by up to a third, particularly through administrative support and content generation. However, UNESCO stresses that AI adoption must be guided by human-centred principles of inclusion and equity. This aligns with the Department for Education's (DfE) guidance, which requires educators to critically evaluate AI

outputs, ensuring accuracy, fairness, and compliance with data protection and intellectual property laws. At the time of publishing this paper, most of the larger educational institutions and bodies have put in place an AI policy, although they vary widely. Almost all have stressed the need for teachers to critically evaluate AI outputs and remain aware of their responsibilities in terms of data protection and intellectual property. However, these policy frameworks often require translation into practical guidance that is meaningful for educators at different stages of their careers.

In the context of D&T, AI offers opportunities to support design ideation, research, and rapid prototyping, yet it also presents risks of bias and over-reliance on technology. The emerging field of generative AI, capable of producing text, images, and even CAD designs, opens up new pedagogical possibilities while demanding careful integration to maintain the subject's human-centred ethos.

## **METHODOLOGY**

This paper draws on a combination of sector insights, practitioner experiences, and analysis of current UK policy frameworks and initiatives. Information was collated through:

- (i) a review of AI policies from a range of educational institutions, awarding organisations (AOs), and governmental bodies including the DfE;
- (ii) discussions with D&T educators participating in AI-focused CPD sessions;
- (iii) feedback gathered from teacher educators involved in ITT programmes.

Key themes emerging from this review informed the design of a conceptual framework outlining essential components of AI training in D&T, including:

- Demystifying AI's core concepts, capabilities, and limitations.
- Developing critical evaluation skills for AI-generated content.
- Embedding ethical, safeguarding, and legal considerations, including GDPR and intellectual property rights.
- Fostering confidence to innovate while maintaining the subject's human-centred learning ethos.

Findings from the analysis reveal that while some schools and colleges have begun integrating AI into D&T teaching, implementation is highly variable across institutions. Teachers with prior exposure to generative AI tools demonstrate increased confidence in experimenting with lesson planning, project-based learning, and design ideation and rendering of sketches or CAD models.

Early adopters report that AI has streamlined certain subject specific tasks, such as mood boarding or visualisation of themes, generating design briefs or user scenarios, or creating rapid renders of sketches or models, allowing more time to focus on facilitating student creativity and practical skills development.

However, significant challenges remain. Many educators expressed concerns about the potential for AI to replicate or amplify existing biases in data, leading to misleading outputs or unfair assumptions embedded in AI-generated content. Some teachers also worry that over-reliance on AI might erode the critical, hands-on nature of D&T, where problem-solving and iterative design are core skills.

## **RESULTS**

Barriers to effective AI integration include:

- Minimal subject-specific exemplars and guidance tailored to D&T educators, leading to uncertainty about appropriate use cases and best practices.
- Inconsistent CPD opportunities across regions and settings, creating disparities in teachers' confidence and competence in using AI.
- Limited integration of AI literacy within ITT programmes, leaving new teachers underprepared to manage AI tools effectively and ethically.
- Ongoing concerns about safeguarding, data protection, and intellectual property rights when using AI with student data or creative work.

Moreover, the analysis highlights those existing financial disparities and the digital divide significantly affect how schools can engage with AI in D&T. Independent schools and well-resourced academies often have greater capacity to invest in new technologies, dedicated IT support, and bespoke staff training. This positions them at

the forefront of experimentation with generative AI, piloting tools and integrating AI into design processes more readily.

In contrast, schools in areas of high deprivation frequently face challenges in accessing the necessary hardware, software, and technical support to implement AI effectively. These schools may already be managing outdated equipment, limited broadband access, and budget constraints that hinder technology integration. Staffing and recruitment challenges compound this divide, with some schools struggling to attract and retain teachers who feel confident using AI tools. This disparity risks exacerbating existing inequalities in educational provision and innovation, leaving some students at a disadvantage in developing crucial AI literacy skills.

Conversely, there is evidence of positive practice where educators have shared successful approaches in CPD sessions, such as using AI to generate multiple design prompts for classroom discussion or simplifying complex manufacturing concepts through AI-generated visuals. These collaborative learning opportunities have helped build communities of practice around safe and creative AI use in D&T.

## DISCUSSION

The findings of this paper underscore the vital importance of AI training for both new and existing D&T teachers. To effectively harness the opportunities AI brings to the subject while managing its inherent risks, teachers need comprehensive, subject-specific training embedded in both Initial Teacher Training (ITT) and Continuing Professional Development (CPD) programmes.

While early adopters are already exploring AI's potential, many educators remain cautious. Concerns around data bias, safeguarding, and the potential erosion of hands-on learning experiences are legitimate, particularly given D&T's inherently practical and creative nature. This highlights the need for balanced training that empowers teachers to use AI as a tool to enhance rather than replace critical thinking, creativity, and iterative design.

A key challenge identified in this study is the inconsistent availability of AI resources and training across schools and regions. This digital divide threatens to exacerbate existing educational inequalities, making it essential for policymakers and education leaders to ensure equitable access to AI training and resources.

To address these challenges, the Department for Education (DfE) has developed CPD training materials to support AI implementation across school and college settings, with publication planned for Summer 2025. These materials, co-authored by the author of this paper, will provide comprehensive guidance to help educators integrate AI responsibly and creatively, ensuring that all teachers, regardless of setting, can benefit from the opportunities AI offers.

In parallel, CLEAPSS is undertaking the development of subject-specific guidance for the safe and effective use of AI in D&T. This guidance, due to be published shortly, will support teachers in navigating the unique pedagogical considerations of the subject, including safeguarding, intellectual property, and the creative use of AI in design projects. Recognising the diverse nature of D&T pedagogy, CLEAPSS and NSEAD are developing a cross-subject AI specialist group. This group will bring together educators from across creative and practical disciplines to share insights, exemplars, and innovative practices, fostering a collaborative approach to AI integration that values creativity and hands-on learning.

Collectively, these initiatives demonstrate the sector's commitment to ensuring AI is implemented safely, ethically, and effectively within D&T education. By investing in targeted training, developing practical resources, and fostering collaborative communities of practice, the D&T community can embrace AI as a powerful tool that enhances, rather than undermines, the subject's human-centred and creative ethos.

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