The future of learning

Skills, technology and innovation in a changing world

The Open University

Contents

This report is aimed at policymakers, employers, sector leaders and specialist education media who are shaping the future of education and work. It sets out how flexible, technology-enabled and skills-based learning is evolving within higher education, and how institutions must respond to a rapidly changing societal and technological landscape.

01 Introduction

The future of learning is not tomorrow – it is already here.

Across societies and economies, the ways we learn, acquire knowledge and build capability are being reshaped by powerful global forces. Artificial Intelligence (AI) is altering job roles at an unprecedented pace, with up to 40% of global employment predicted to be affected by AI[1], displacing jobs but also projected to create approximately 2.6 million new roles[2]. **Up to 39% of existing skill sets could change by 2030 as technology evolves[3]**. At the same time, the urgent need to respond to the climate crisis is accelerating demand for green expertise, and roles requiring sustainability and environmental competencies are growing substantially faster than the broader labour market[4]. **These transitions are not isolated: digital, green and human capabilities are increasingly intertwined**, redefining what it means to be prepared for work and participation in society.

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In this era of rapid change, emerging digital and green skills are no longer optional. The World Economic Forum (2025) has estimated that around **half of all employees would need reskilling** due to technology adoption, underscoring how learning must be continuous and adaptable. **Lifelong learning** – embracing both new technologies like AI and the transition to a net-zero economy – is becoming the **cornerstone of individual resilience and collective progress**. In an economy where over nine in ten jobs now call for digital skills[5], the ability to navigate digital tools and technologies has become central to participation in the labour market – not just for employment, but for resilience, wellbeing, and meaningful participation in a rapidly changing world. So how do you prepare yourself to thrive in an environment where work, technology, and education are evolving in real time?

[1] International Monetary Fund (2024); OECD (2026).
[2] National Foundation for Educational Research (2022).
[3] World Economic Forum (2025); UK Government (2025). AI skills for the UK workforce.
[4] LinkedIn (2025).
[5] National Skills Coalition (2023).

02 Why it matters now

Technology change is accelerating the shift toward modular learning with small adaptable learning units because skills are continually reshaped, roles evolve continuously, and people need education that can be updated, recombined, and accessed on demand. The real measure of whether this transition succeeds is inclusion, if modular learning only benefits those already advantaged, it reinforces inequality rather than reducing it. Ensuring everyone can access, navigate and benefit from flexible learning pathways is what turns modularity from a technical upgrade into a genuine social advancement.

2.1 Technology and innovation are reshaping learning

Generative AI tools like ChatGPT, Google Gemini, Microsoft Copilot, and Mistral are widely used by 88% of UK students to assist with research, writing, notetaking, and revision[6]. Likewise, **eXtended Reality** (XR) technologies are gaining ground, with nearly 34% of individuals aged 16–24 in the U.S. using virtual reality (VR) devices[7]. These technologies enable more flexible, curiosity-driven, and interactive/engaging forms of learning. They challenge traditional educational models built around fixed curricula, linear progression, and narrowly defined career pathways.

Despite these advancements, the integration of technology and AI specifically into education has not been without concerns. Many students worry about the rapid pace of AI development and their preparedness for an evolving job market that increasingly values technological competency[8]. Additionally, **ethical concerns and anxiety surrounding AI are prominent**. Misinformation, challenges in distinguishing real from fake content, and a lack of familiarity with AI's workings create a feeling of mistrust, while recent examples of harmful and misogynistic AI outputs highlight emerging legal and societal risks.

There are also **fears of overreliance on AI tools**, with some learners reporting that heavy use has negatively impacted their critical thinking and originality, and associated worries around sovereignty and preserving human agency[9]. These tensions underline the need for educational approaches that do not merely introduce technology, but actively cultivate learners' capacity to question, evaluate, and govern its use.

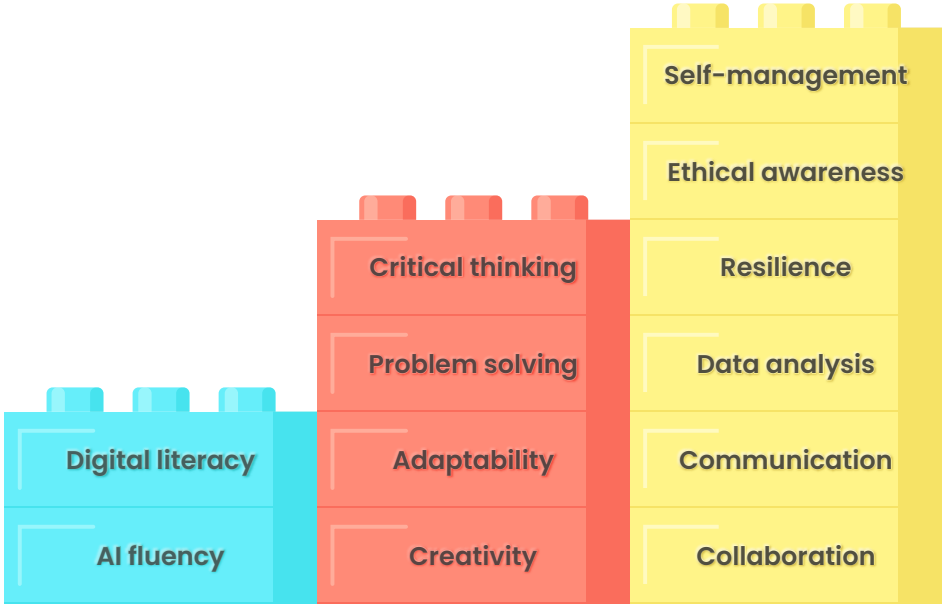
[6] Chatterji et al. (2025); Freeman (2025).
[7] Kukulska-Hulme et al. (2024); Pangarkar (2026).
[8] Rienties et al. (2024); Kosmyna et al. (2025).
[9] BBC (2026); Kosmyna et al. (2025).

2.2 From qualifications to capabilities: Modular and skills-based learning

In parallel, there is a **growing shift towards so-called modular and skills-based learning**[10]. Careers are becoming less defined by static qualifications and more by the **ability to apply diverse and transferable skills across contexts**. Learning increasingly resembles a system of building blocks: small, adaptable units that can be combined, reconfigured, and repurposed over time.

This modular approach not only supports career mobility but also **builds resilience**, allowing learners to respond to economic, technological, and social change. Crucially, **this flexibility lowers barriers to participation**, offering diverse groups of learners (e.g., young people, working adults, career changers) greater control over when, where, and how learning takes place. Online and blended environments enable learners to balance study with work, family, and personal commitments, ensuring that access to education is not constrained by geography or rigid schedules[11]. This shift reflects a broader reorientation towards lifelong learning, where upskilling and reskilling are normalised rather than exceptional.

Modular and skills-based pathways are not a replacement for traditional qualifications, but an evolution, offering greater flexibility within and alongside degrees to reflect how people learn and work today, while maintaining the depth and academic rigour of full qualifications.



[10] UK Government (2025). Post-16 education and skills white paper.
[11] Ferguson and Whitelock (2024); JISC (2025).

2.3 Inclusion, wellbeing and the risk of disengagement

Importantly, adaptive technologies, Generative AI and immersive digital environments have the potential to contribute to greater **inclusion and equity**, particularly in contexts where learners face diverse challenges and competing priorities. At The Open University these tools are being used to support tailored learning experiences that align with individual needs, preferences, and capabilities. By embedding **accessibility as a core design principle**, such technologies can help to create more inclusive opportunities for learners who have disclosed a disability, or who are balancing complex study, work, and caring commitments, by offering **alternative and flexible pathways** to participation.

Sector-wide evidence reinforces the significance of these approaches. Nearly one-third of students report considering leaving their courses[12], with the most cited contributing factors being **mental or emotional health** (28%) and financial difficulty (11%). In addition, 76% of students reported that rising **cost-of-living pressures** had a notable impact on their studies, highlighting the interdependence of educational design, wellbeing, and inclusion.

[12] Neves et al. (2025).

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3.0 From principle to practice: What this looks like in action

At The Open University, recognised for its commitment to learning innovation, the integration of emerging technologies into teaching and learning is understood not as an end in itself, but as a means of enhancing flexibility, inclusion and learner agency. **Learning innovation is treated as a key indicator of student success**, complementing traditional metrics such as satisfaction, progress, and outcomes. This approach reflects a commitment to equipping learners not only to navigate AI-driven disruption (and the resulting employment upheaval) but also to adapt and thrive throughout their lives, as active contributors to a rapidly evolving global workforce.

3.1 Personalised learning at scale

Personalised learning is a promising and potentially transformative teaching approach that moves beyond one-size-fits-all models, and can support scaling up learning opportunities globally[13]. It enables learning that is flexible, digitally enhanced, and responsive to diverse learners' needs, pace, goals, prior knowledge and life circumstances.

Over the past decade, The Open University has been at the forefront of these developments. **Predictive learning analytics tools** provide dynamic dashboards to thousands of educators, flagging students at-risk of failing and enabling teachers to proactively intervene and support them[14]. When accessed directly by students, our personalised student-facing learning analytics dashboards, enhanced with recommendations of what to study next in order to succeed, have been shown to enhance students' awareness of their studying habits, motivate engagement, and support more equitable outcomes[15]. More recently, The Open University has introduced AI-powered digital assistants that have been pedagogically designed and co-created with over 300 learners, considering their learning needs and requirements[16], and are gradually being made available to all Open University learners. This empowers our learners not just to keep pace with, but to lead, the fast-moving developments in AI and the changing world of work.

The Open University's approach is grounded in a belief that personalisation must extend beyond efficiency and performance, recognising that **empathy is foundational to educational relationships**, and care should be both an educational goal and a condition for effective learning[17]. This is particularly important because empathy increasingly functions as a future-facing capability: while learners are expected to adapt to AI-mediated systems, they must simultaneously cultivate the distinctly human qualities that machines cannot replicate[18].

[13] EADTU (2025).
[14] Herodotou et al. (2023).
[15] Herodotou et al. (2025).
[16] Rienties et al. (2025).
[17] Chandler et al. (2025).
[18] Rets (2025).

3.2 Critical thinking and human agency

Critical thinking and human agency must form the cornerstone of the future of learning if learners are to interpret, challenge, and sometimes resist algorithmic guidance and personalisation. The Open University's longstanding tradition in community citizen science and inquiry provides one model for supporting these capabilities, through the general public engaging with real research and scientists, scaffolded by platforms such as nQuire[19]. Evidence shows **citizen science to be an effective method for developing knowledge, skills and agency,** particularly among young people.

In addition, and in response to AI development, The Open University has developed a **Critical AI Literacy Skills Framework[20]**, supporting learners and educators in understanding how AI can be used responsibly while maintaining human judgement and autonomy.

[19] nquire.co.uk; Herodotou et al. (2021); Herodotou et al. (2022).
[20] The Open University. (2025). 30% of the students disclosed disabilities and 67% of students balance paid work alongside their studies.

3.3 Immersive and experiential learning

Using XR/AR/VR to provide hands-on, practice-based experiences can bridge the gap between theory and its competent application[21]: Meta-analyses show that learning gains through XR are real whereby successful utilisation depends on informed strategy[22]. The £5.8m Office for Students funded **XR studios** at The Open University enables learner-facing AR/VR/XR production across disciplines, including language learning, Industry 5.0 training, and healthcare simulations. These initiatives demonstrate how **immersive learning can support skills development, confidence and employability at scale.**

[21] Lin, & Yu. (2023); Coban et al. (2022); Kaplan et al. (2021).
[22] Kaplan et al. (2021).

3.4 Supporting sustainability and responsible innovation

Digital education carries social and environmental responsibilities. It should model sustainable practices, acknowledge the environmental footprint of technology, and prepare learners for emerging green careers that combine digital capability with environmental understanding[23]. The Open University's climate education-focused online courses are supporting educators in designing learning opportunities that raise global awareness and increase empathetic understanding by connecting people across cultures and contexts, enabling learners to engage critically with global challenges such as climate injustice and structural inequality. In this capacity, digital and AI-enabled education can contribute not only to economic participation, but also to the development of more informed, compassionate, and socially responsible citizenship.

[23]UNESCO (2023); Linkedin (2025).

4.0 Conclusion / Call to action

This report shows that open, flexible and digitally enabled education is no longer a future aspiration but a present necessity. As AI, sustainability imperatives and widening social pressures reshape learning, work and participation in society, education systems must evolve beyond content delivery towards models that actively cultivate critical thinking, human agency, empathy and ethical judgement. But evolution alone is not enough. The next decade will require institutions willing to lead - not simply adapt.

The call to action is therefore immediate and shared: policymakers must continue to align and strengthen regulatory and funding frameworks to embrace and incentivise these changes, such as support for modular lifelong learning; employers must move beyond traditional credentialism and recognise diverse, skills-based pathways; educational leaders must invest in ethical digital infrastructures and learner-centred design; and learners must be empowered as active partners in shaping their journeys.

The Open University's commitment is clear: to play a central role in shaping the UK's lifelong learning landscape, demonstrating that inclusion and innovation are not competing priorities but mutually reinforcing ones. By embedding ethical AI, accessibility-by-design and flexible provision at scale, the OU offers not only a model of response, but a blueprint for what future-facing higher education can become.

The future of education is not simply open in principle - it must be open in practice, at scale, and for all.

Explore the themes further

OpenLearn free courses

AI matters

This free course explores how artificial intelligence is shaping education, work and everyday life. You'll examine the opportunities and risks associated with AI, develop critical understanding of its societal impact, and build the confidence to engage with emerging technologies in informed and responsible ways.

Digital skills: succeeding in a digital world

This practical course helps you develop essential digital skills for study, employment and daily life. You'll explore how to navigate digital environments confidently, use online tools effectively and strengthen the adaptability needed to thrive in an increasingly connected world.

Learning how to learn

This course focuses on developing effective learning strategies for flexible and independent study. You'll explore motivation, reflection and self-management techniques that support success in lifelong and modular learning pathways.

Developing career resilience

This course focuses on building resilience and adaptability in a changing world of work. You'll explore strategies for managing uncertainty, responding positively to change and developing the mindset needed to sustain long-term, skills-based career growth.

Climate change and renewable energy

This course examines the science of climate change and the role of renewable energy in building sustainable futures. You'll explore environmental challenges, energy transitions and the societal choices shaping responses to the climate crisis.

Working with employers

The Open University works with organisations across sectors to support workforce upskilling and reskilling through flexible learning and sector-relevant programmes.

Explore the themes further

Professional and advanced routes

Generative AI in education

This short course outlines current thinking on how to utilise this technology effectively in teaching and learning. You'll explore key themes that help you make the most of what GenAI offers, while understanding and mitigating its challenges and limitations.

Teaching with eXtended reality (XR)

In this innovative course, you'll learn how to use cutting-edge technologies, including Virtual Reality (VR), Augmented Reality (AR), 3D modelling and generative AI, to create immersive, interactive learning experiences.

Blended learning innovations for teachers and trainers

This practical course explores innovative approaches to blended learning, helping you combine face-to-face and online methods in purposeful, engaging ways. You'll examine effective design strategies, digital tools and evidence-based practice to create flexible learning experiences that meet diverse learner needs.

Teaching climate action: empower students to tackle the climate crisis

This forward-looking course supports educators to integrate climate action into teaching in meaningful and empowering ways. You'll explore how to engage students with the realities of the climate crisis, develop critical thinking and inspire informed, solution-focused action across different subject areas.

Community of practice in online teaching

As part of the Masters in Online Teaching programme, the IET curriculum team has developed a Community of Practice model that fosters dialogue, collaboration and global peer learning. Regular online events enable geographically dispersed students to connect with each other and with OU academics, strengthening professional networks and shared practice.

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The Open University

Authors: Tim Coughlan, Maria Di Gennaro, Christothea Herodotou, Leigh-Anne Perryman, Irina Rets, Bart Rienties, Felipe Tessarolo, Fridolin Wild

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