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Being indispensable: Capabilities for a human-AI world, the 'FUTURES' framework

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Executive summary

Artificial intelligence has influenced higher education for many years, but the rapid growth of generative AI (GenAI) is accelerating change across teaching, learning and professional services. Early uses of AI focused on automation, such as intelligent tutoring systems or early warning analytics. GenAI, however, is now embedded directly in students' and staff members' everyday work. Seventy-five per cent of young people aged 13-to-18 have already used GenAI, and similar patterns are emerging across universities. These tools can support idea generation, writing, feedback and administrative efficiency, reshaping expectations of how learning happens and work gets done.

The opportunities are significant. GenAI can personalise learning, reduce staff workload and widen access to support. It can enable faster feedback, drive change in assessment approaches and provide greater flexibility in how our students and staff complete tasks. At the same time, there are tangible, concerning risks. The Large Language Models (LLMs) that make tools like ChatGPT work can reflect bias within their training data. Access to the most capable GenAI tools by students who can afford them may deepen inequalities, and the use of GenAI without due critical evaluation of any output can weaken independence, originality and authentic learning. Concerns around environmental impact add an additional layer of complexity.

This report argues that higher education requires a dual response: effective integration of GenAI, and systematic development of the human capabilities that remain essential in an AI-rich world. The FUTURES framework provides a practical model, offering seven domains – ranging from digital fluency and ethical judgement to resilience, wellbeing and social intelligence – that can be embedded across curricula, assessment and institutional strategy.

The report focuses specifically on the role of GenAI in teaching and learning within higher education institutions. While GenAI clearly has significant implications for the research community, from literature synthesis and data analysis to hypothesis generation and collaborative knowledge production, the scope of this report is intentionally circumscribed to pedagogical practice and the wider student experience.

By maintaining this focus on teaching and learning, rather than on research excellence or institutional knowledge production, we are better able to examine in depth the challenges of higher education pedagogy and the student experience. Educational institutions have a responsibility to ensure that GenAI adoption aligns with the well-established principles of authentic learning, critical thinking development and equitable access. The risks and opportunities that emerge in the teaching and learning context differ in nature and severity from those facing the research community, and warrant dedicated, sustained attention. Retaining our teaching and learning focus allows us to provide institutions with actionable guidance rooted in pedagogical values and student outcomes, rather than spreading analysis too thinly across the multiple and sometimes competing demands placed on universities.

For policymakers and university leaders, there are significant implications to consider. Institutions need clear approaches to GenAI-enabled learning, supported by practical governance, AI literacy training and equal access to GenAI tools. Curricula should purposefully integrate human-AI collaboration while ensuring ethical reasoning, critical thinking and wellbeing remain central to any overarching policy or strategy. Sector bodies have a role to provide guidance on assessment design in an AI-enabled environment, and government must invest in capability building to ensure students and staff can prosper in a world where GenAI is seen as a partner or co-worker / assistant. By adopting the FUTURES framework, we believe universities can find a 'middle' path with GenAI, enhancing human potential while navigating the opportunities and risks of AI more broadly.

Introduction

Artificial Intelligence (AI) presents significant opportunities for teaching, learning and the student experience in higher education, alongside undeniably concerning risks.[1] While Generative Artificial Intelligence (GenAI) can be widely used by students and staff to positively impact educational access, personalise learning and reduce administrative burdens and inefficient processes, it also introduces serious challenges. These include concerns about academic integrity, data privacy, bias in GenAI systems and the possibility that educational inequalities could be made worse. In addition, there is understandable concern about the environmental impact of GenAI. This report aims to help institutions and individuals to use GenAI in ways that are responsible, equitable and aligned with sound and fit-for-purpose educational values.

Artificial intelligence has influenced higher education for many years, but the arrival of GenAI has accelerated changes dramatically. Traditional applications focused on automation, such as intelligent tutoring systems, curriculum design support, automated grading and early warning analytics.[2] GenAI, however, is now directly shaping how students learn and how staff work. A recent review summarises the early impact of AI on curriculum, instruction and assessment in higher education.[3]

Evidence from schools and colleges shows that large numbers of young people already rely on GenAI tools for writing support, idea generation and understanding complex concepts. One recent study found that around three-quarters of 13-to-18-year olds had used GenAI, with many reporting benefits for writing, generating ideas and comprehension.[4] Similar patterns are emerging in higher education, where staff and students report growing use of GenAI for study support and academic work.[5] In the UK, the 2024 HEPI / Advance HE *Student Academic Experience Survey* shows the rapid normalisation of GenAI among undergraduates and changing expectations about its role in learning.[6]

These developments intensify existing tensions around equity, access and academic practice. On the one hand, GenAI-driven tools can support students by providing additional explanations, bridging language barriers and supplementing resources in underserved contexts. On the other hand, unequal access to high-quality GenAI systems and varying levels of digital confidence pose important risks that, without mitigation, could widen existing divides among students.[7] Without thoughtful design, guidance and governance, GenAI could reinforce, rather than reduce, inequalities in higher education.

The widespread use of GenAI by students raises questions about the future role of educators and the nature of learning. While GenAI can help automate routine tasks and generate feedback, it cannot replace the special bond between student and tutor that is so important for complete student development. The debate is shifting from whether GenAI should be used in universities to how it can be integrated responsibly into teaching, learning and professional services. Understanding how GenAI can complement human expertise in all activities within a university is now a key strategic issue.

This report argues higher education must follow a human-centred approach to GenAI, rather than considering GenAI as either a threat to traditional practice or a simple solution to many of the workload challenges that face students and colleagues alike. Instead, universities should facilitate an environment for meaningful human-GenAI collaboration. This aligns with the concept of co-intelligence, which frames GenAI as a collaborator that can augment human endeavour in many tasks, depending on the degree of human guidance and oversight.[8] When used critically and reflectively, GenAI use can extend human capability. When used without due attention to reflection and critical thinking, it can impact deep learning, weakening independence and undermining authenticity.

To respond effectively, universities could benefit from a clear framework for developing capabilities that reflect the irreplaceable skills and values only humans possess. Existing frameworks tend to focus on technical skills or offer only high-level descriptions of digital literacy, with limited information or guidance on progression in relation to the key human skills we need to continue to value. The FUTURES framework introduced in this report brings together seven domains of what the authors consider indispensable human capability – from digital confidence and ethical judgement to wellbeing, resilience, social intelligence and professional engagement – and provides a practical structure for embedding these skills across curricula, assessment and institutional strategy.

1. Generative AI (GenAI) in higher education

GenAI is influencing teaching, learning and operational activity across higher education at a remarkable pace. Recent reviews highlight widespread experimentation with GenAI tools across universities worldwide, with growing interest in how they can support learning, teaching and student success.[9] Evidence suggests that GenAI offers both opportunities and challenges for sustainable development across the sector, prompting global conversations about how best to integrate these tools into institutional strategy.[10] Studies also show that staff and students are adapting rapidly to new tools, often well ahead of institutional policy and guidance.[11]

Effects on learning and teaching

A growing body of research has shown how GenAI can affect student learning outcomes. Some recent studies report benefits, including improvements in drafting, idea development and feedback opportunities.[12] However, there is variation across disciplines and contexts. In addition, effective use depends on the extent to which students are supported to engage critically with GenAI. Case studies show that careful integration can enhance student confidence, motivation and autonomy when learning design is focused on understanding rather than automation.[13] Other researchers emphasise the importance of balancing innovation with authenticity, noting that GenAI raises important questions about what should be assessed and how learning is demonstrated.[14]

Emerging research on teacher knowledge and professional judgement indicates that staff need opportunities to reflect on how AI affects their teaching.[15] This reinforces the view that to make effective use of GenAI requires not only a technical shift but a professional and cultural one.

Administrative tasks and professional services

GenAI is also beginning to reshape administrative practice. New tools offer support for lesson planning, drafting communications, summarising documents and responding to student queries.[16] Pilot projects across further and higher education in the UK have shown significant time savings for staff, with reports of reduced workload pressures and greater capacity to focus on student-facing activities.[17] Independent studies across public higher education institutions similarly highlight promising efficiencies linked to GenAI adoption.[18]

GenAI is also being strategically utilised across professional services areas including admissions, student support and libraries, where AI assistants are substantively enhancing service provision for students. For example, admissions might use GenAI-enabled systems to automate enquiry responses, provide personalised information about courses or streamline the application process. In turn, this might enable admissions teams to devote more time to advising prospective students on programme fit and supporting applications from under-represented groups, ultimately having knock-on effects on pedagogy. Likewise, in student support settings, AI assistants are now often responding to routine queries about module registration and pastoral concerns, opening up opportunities for more educational time with a tutor. Library services too are beginning to engage with using AI systems to assist students in literature synthesis, help clarify complex academic concepts and guide students through information retrieval processes. While this might have an impact on teaching and learning, these professional service-led initiatives fall in large part outside the scope of this policy paper.[19] Ongoing research also suggests that staff wellbeing may improve when AI reduces repetitive administrative tasks, helping teams to focus on more meaningful work.[20]

Risks and challenges

Despite the identified benefits, several concerns remain. Students who have access to paid-for GenAI tools could gain advantages over poorer students, raising questions about fairness and widening participation.[21] Others warn that GenAI may increase existing inequalities unless universities ensure equitable access and clear guidance.[22] Without careful oversight, GenAI could make worse divisions within higher education rather than reduce them.[23]

Sustainability considerations

GenAI raises questions about environmental sustainability. Some analyses highlight the considerable energy demands associated with digital technologies and online activity, including AI-driven services.[24] Some articles seek to explain the environmental impact of generative AI models and the factors influencing model energy consumption.[25] Higher education research has begun to examine how GenAI aligns with sustainable development goals, identifying both opportunities and risks.[26] Broader commentary on the future of AI and higher education further emphasise the need for critical reflection on the environmental and social consequences of widespread adoption.[27]

Alongside these concerns, sector wide discussions consider the potential for AI to contribute positively to environmental goals. A recent collection of essays by HEPI, examining AI and the future of higher education, explore how institutions may balance innovation with sustainability.[28] Scientific studies comparing carbon emissions associated with different forms of content generation suggest that GenAI may have lower emissions in certain contexts, though findings remain contested.[29] Other analyses explore how GenAI intersects with energy transitions, ecological footprints and emissions trajectories.[30] International policy organisations also assess how GenAI might accelerate progress towards climate and growth objectives.[31]

2. Building essential competencies

As GenAI becomes increasingly embedded across education and society, students require a set of capabilities that enable them to learn, work and participate confidently in an AI-rich world. International organisations are developing new competency frameworks to guide this work, including recent UNESCO initiatives that outline the knowledge, skills and attitudes students and teachers need in relation to AI.[32] These developments reflect a growing effort to define the capabilities required for responsible engagement with rapidly evolving technologies, and to support coherent approaches across education systems. Professional bodies are also contributing, with digital skills frameworks mapping the competences needed for working in digitally intensive environments.[33]

Existing competency frameworks

Several new AI-specific frameworks have been introduced to help education systems clarify expectations for learners. UNESCO has published an AI competency framework for students that sets out progression across understanding, use and critical evaluation of AI.[34] A complementary AI competency framework for teachers outlines expectations for professional practice, pedagogical use and responsible integration of AI technologies.[35] National level frameworks also aim to define core capabilities, with recent work proposing structured approaches to AI literacy, safety and ethical judgement in schools and colleges.[36]

Alongside these frameworks, some sector and industry groups have identified broader human capabilities that will become increasingly important as AI systems expand in scale and influence. Some have highlighted specific human skills gaps that could limit the effective adoption of AI across organisations.[37] Governments and international bodies have echoed these concerns, with the OECD publishing new indicators to help institutions and policymakers understand the capabilities needed for participation in an AI-enabled economy.[38] Parliamentary groups and policy organisations in the UK have similarly argued for a stronger national strategy for skills development in the age of AI.[39]

Among the existing suite of frameworks, the Jisc AI maturity toolkit serves a critical institutional function in supporting universities in assessing their current readiness and capacity for AI adoption.[40] This framework is critical in supporting organisational infrastructure, providing advice and guidance on key aspects such as governance arrangements, technical systems, data management infrastructure and institutional capability development across the AI lifecycle.

The FUTURES framework seeks to complement, rather than replace, the Jisc toolkit by building on the infrastructure recommendations and using these strong foundations to address the development of individual and collective human capabilities that determine whether AI adoption actually translates into successful and ethically grounded educational teaching and learning practice. While the Jisc framework examines institutional maturity, FUTURES addresses the question of an 'individual's capability'.

Institutions implementing AI strategies will benefit significantly from deploying these two frameworks in tandem, as they address complementary imperatives. The Jisc toolkit establishes whether an institution has the governance, infrastructure and policy coherence to support safe AI deployment. The FUTURES framework ensures that, alongside technical and structural readiness, there is a clear, progressive and discipline-integrated pathway for developing the human capabilities, from digital fluency and ethical reasoning to resilience, social intelligence and professional engagement, that collectively transform technological infrastructure into meaningful educational practice.

Together, they bridge the critical gap between strategic maturity at the institutional level and authentic capability development at the level of teaching, learning, curriculum design and student experience.

Sector principles and student perspectives

Universities and sector groups are beginning to respond to these developments. Previously, the Russell Group has published principles to guide the responsible use of generative AI in education, emphasising transparency, fairness and the importance of developing student capability.[41] Further research by HEPI in 2025 on student perspectives of generative AI reinforces this need for clarity: students report interest in using AI for learning but want guidance on fairness, assessment expectations and support to understand how they can build confidence in their own skills.[42] These findings suggest that while existing frameworks can provide valuable foundations, models that speak directly to higher education contexts and that can be embedded meaningfully within curricula and assessment are needed.

Limitations of current frameworks

Current frameworks often share common elements – such as digital literacy, ethical awareness, critical thinking, data skills and adaptability – yet they tend to offer either very broad descriptions or highly technical competencies that do not translate easily into academic practice. Most provide limited guidance on how students can progress from foundational to advanced capability, how evidence of development can be captured or how educators can embed capabilities within course design. As a result, institutions may struggle to operationalise these frameworks in a consistent and holistic way that supports student learning and assessment.

Development of the FUTURES framework

The FUTURES framework emerged from an urgent, practical need grounded in real institutional experience. Rather than beginning as a theoretical exercise, it was developed to make sense of the complex, rapidly evolving impact that generative AI is having on teaching, learning and student skills development across higher education.

This need was first articulated through a series of intensive staff development workshops delivered at the University of Westminster, during a critical period when institutional awareness of GenAI's implications was accelerating but institutional responses remained uncertain. These workshops, conducted across disciplines, revealed a gap between emerging technological capability and institutional readiness. Academic colleagues reported varying degrees of enthusiasm about GenAI's pedagogical potential, but many expressed uncertainty about how to integrate it responsibly. Common anxieties emerged about assessment design in an AI-enabled environment, particularly regarding academic integrity.

This qualitative view was supplemented by systematic data. Parallel colleague and student surveys on the actual use of generative AI provided quantitative and qualitative evidence of current practice and emerging concerns. Students reported actively using GenAI for learning but acknowledged confusion about institutional expectations regarding disclosure, attribution and authenticity. Colleagues expressed that while existing institutional (and other) frameworks and guidance offered valuable high-level direction, they provided limited practical help for designing courses, assessments and learning activities in real disciplinary contexts.

These workshops and survey findings led to the development of the FUTURES framework, recognising that higher education must develop and articulate a practical, human-centred approach to GenAI engagement that positions it as an integral component of the taught curriculum, not as a compliance problem to be managed nor as a technical innovation to be implemented. The framework is intended to stimulate rigorous institutional conversations about how universities can meaningfully prepare students to work alongside AI while preserving and strengthening the irreplaceable human capabilities that distinguish authentic higher learning.

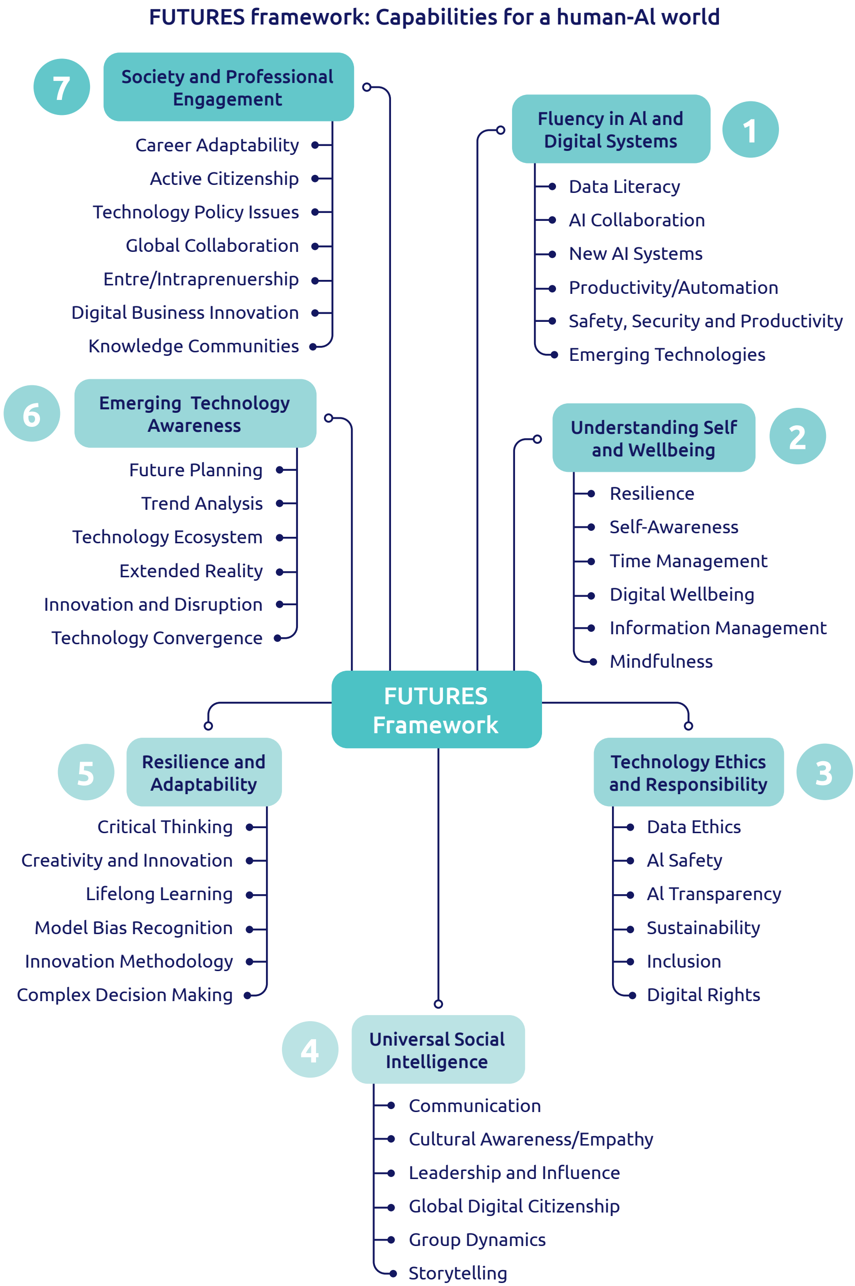
By drawing on already published literature and existing national and international sector frameworks (including UNESCO's AI competency frameworks for students and teachers, OECD indicators on AI capability and other established competency models) we developed FUTURES to address a critical gap that conventional frameworks did not adequately bridge. These existing frameworks, while authoritative, typically operate at either a highly strategic, aspirational level or focus narrowly on technical competencies.

Introducing the FUTURES framework

This report seeks to address the challenges outlined above by introducing the FUTURES framework: a practical model for developing seven domains of indispensable human capability in the AI-enabled world we live in. FUTURES is a skills structure that could be embedded across disciplines, enabling universities to support student development in ways that are readily understandable, progressive and aligned with institutional priorities. The framework aims to bridge the gap between high-level competency models and the day-to-day realities of teaching and learning in higher education, offering a way for higher education institutions to meaningfully strengthen human capability alongside technological change.

The framework is intended to be of value across all disciplines, including humanities subjects where GenAI's implications are often underestimated or dismissed. In Literature and History, it may be used to encourage critical engagement with AI-generated content, examining how algorithmic systems represent narrative, agency and historical interpretation. In Philosophy, FUTURES supports ethical reflection on questions of AI transparency, bias and the values embedded in machine learning systems. In the creative arts, the framework fosters both digital fluency and intentional artistic decision-making about when and how AI tools can meaningfully contribute to creative work, and when human creativity must remain central. Across all disciplines, FUTURES positions students not as passive technology consumers but as reflective, ethically-grounded practitioners capable of leveraging AI while maintaining disciplinary integrity and intellectual authenticity.

Figure 1 Diagrammatic representation of the FUTURES framework



3. The FUTURES framework

Fluency in AI and digital systems

Fluency in AI and digital systems should now be a foundational requirement for all students. This domain covers data literacy, numeracy and the ability to confidently interact with digital dashboards, spreadsheets and databases.

Students must be able to interpret both basic and complex datasets, apply statistical reasoning and visualise data in ways relevant to their discipline. More advanced proficiency involves managing digital workflows and automation, critically interrogating datasets and leading peer data analysis, all of which foster informed decision-making.

In addition to technical fluency, students must be able to collaborate with AI, have the confidence to explore digital tools and understand that AI outputs require checking and verification.

Increasingly, students will need to be able to design workflows that combine the strengths of humans and AI to make processes more efficient, understand best security practices and keep pace with new technologies as they emerge and mature. Digital safety, privacy and awareness of emerging risks will also be essential in a digitally dependent world.

Understanding self and wellbeing

This domain is about resilience, stress management and self-awareness. Students need to be able to identify stress factors, apply coping strategies and adopt habits that support wellbeing, even in high-pressure contexts. This will likely include the ability to carefully filter information and manage cognitive load in digitally overloaded environments.

Teaching must encourage structured reflection, using models such as Gibbs' Reflective Cycle (1988). Peer mentoring and wellbeing advocacy can help embed a culture of resilience and collective care within university communities, as well as help students to develop wellbeing plans.

Reflective practice and self-awareness can underpin continuous improvement. Setting goals, monitoring progress and acting on feedback will help students to optimise performance and develop valuable self-understanding. Effective time and attention management, digital boundary-setting and mindful technology practices can all contribute to effective and fulfilling learning, working and living.

Table 1 Fluency in AI and digital systems

Skill	Foundation	Developing	Proficient	Exemplary	Evidence / examples
Data literacy and numeracy	Can find and read basic digital data sources (e.g. spreadsheets, dashboards) with guidance.	Interprets simple datasets, applies basic numeracy and recognises common patterns or interpretation errors.	Analyses and visualises data independently; applies statistical reasoning to informed decisions.	Critically interrogates complex datasets; integrates data sources; teaches peer data analysis techniques through peer learning or tutorials.	Annotated dataset analysis; data visualisations in outputs; use of open data in research / project.
AI collaboration and management	Experiments with AI tools using basic prompts; understands AI outputs require checking and verification.	Uses AI tools purposefully (e.g. drafting, summarising) and iterates to improve outputs.	Designs effective workflows that combine human and AI strengths; evaluates outputs critically.	Manages complex, multi tool AI processes; demonstrates sophisticated understanding of responsible AI use; creates guidance documents or tutorials for peers.	Portfolio of AI assisted outputs; reflective log on AI use; projects showing human-AI collaboration.
Next generation AI systems	Aware of different AI capabilities (text, image, audio); uses basic multimodal interactions.	Experiments with advanced AI features; understands AI agent concepts and limitations.	Integrates multiple AI modalities effectively; designs AI agent workflows for complex tasks.	Experiments with cutting-edge AI systems; creates sophisticated multimodal AI workflows; shares knowledge with peers through documentation or presentations.	Documentation of multimodal AI projects; AI agent workflow designs; advanced AI tool certifications.
Digital productivity and workflow automation	Uses standard digital tools (e.g. documents, slides) with support.	Manages files and workflows efficiently; experiments with simple automations (e.g. templates, macros).	Designs and maintains digital workflows with automation (e.g. power automate, AI agents).	Builds robust scalable workflows; shares automations with peers; demonstrates measurable productivity improvements.	Screenshots of workflow automation; evidence of productivity gain; accreditation in Microsoft / Google or other recognised AI systems.
Emerging technology literacy	Aware of emerging technologies (e.g. blockchain, IoT*, quantum computing); understands basic concepts.	Explores emerging technology applications; connects concepts to current practice with support.	Applies emerging technology concepts to solve problems; evaluates potential impacts.	Demonstrates deep understanding of emerging technologies; evaluated applications in their field; teaches peers about emerging technology relevance and implications.	Emerging technology project portfolio; technology trend analysis reports; innovation lab participation.

Skill	Foundation	Developing	Proficient	Exemplary	Evidence / examples
Digital safety, security and privacy	Understands personal login and password basics; follows institutional policies.	Identifies risks, (e.g. phishing, data misuse); applies security settings in daily work.	Implements best practices for digital security (multi-factor authentication, encryption); mentors peers.	Models exemplary security practices; anticipates emerging risks; promotes digital security culture among peers; creates security awareness resources.	Cyber security training certificate; reflective case study on security incident; portfolio artefact on data privacy.

*Internet of Things

Technology ethics and responsibility

Ethical and responsible use of technology is so important in an AI-driven world. Students have to be able to evaluate GenAI systems for bias, safety and auditability. An understanding and appreciation of the significance of privacy issues, appropriate governance and a commitment to environmental and social sustainability are key in this FUTURES domain. Students will need to leave university with experience of ethical decision-making frameworks and an understanding of relevant professional ethical codes. Authentic case studies and real-world scenarios can help bring abstract ethical concepts to life, supporting students to build their understanding and capability to propose practical solutions for the challenging problems related to AI use.

Students should be able to advocate for systems that are not only effective but just and responsible, and they need experience of the creation of workflows that can be readily explained and audited. They need environmental awareness, recognising carbon footprint and sustainability issues due to the use of digital systems, as well as a clear understanding of what inclusive and equitable technology deployment for people with different abilities and backgrounds actually means in practice. An appreciation of digital rights is also essential for responsible involvement in a technology-enabled society.

Understanding others and social intelligence

Understanding others and social intelligence is about communication, storytelling and cross-cultural collaboration, including through the use of digital tools. Success in this domain requires the ability to present compelling narratives and present ideas clearly in multiple formats, adapting messages for diverse audiences. Students must learn to work effectively in multicultural and multidisciplinary teams, face-to-face, virtually and in hybrid modes, finding ways to avoid miscommunication that may arise as a consequence of cultural differences and acting as responsible global citizens.

Table 2 Understanding self and wellbeing

Skill	Foundation	Developing	Proficient	Exemplary	Evidence / examples
Resilience and stress management	Identifies stress; uses basic coping strategies.	Applies resilience techniques in study / work.	Maintains wellbeing in high demand contexts.	Models resilience; supports peers' wellbeing through peer mentoring or wellbeing advocacy.	Weekly structured reflection using Gibbs' Cycle; wellbeing plan with measurable outcomes; peer testimonial evidence.
Self-awareness and reflective practice	Recognises strengths and weaknesses with guidance.	Reflects on practice; sets basic goals.	Applies reflection to improve performance.	Embeds reflection consistently; mentors peers in reflective practice; demonstrates sophisticated self-awareness.	Monthly reflective portfolio with specific improvement actions; personal development plan with quarterly reviews.
Time and attention management	Plans short tasks with guidance.	Manages priorities with some independence.	Balances multiple projects; minimises distractions.	Optimises attention and time use; mentors peers; demonstrates exceptional project delivery and time management across competing demands.	Digital calendar evidence showing priority management; productivity tracking with metrics; project delivery record with time analysis.
Digital wellbeing and boundary setting	Recognises digital overload.	Manages screen time with support.	Maintains digital balance independently.	Advocates for digital wellbeing among peers; models healthy digital habits; contributes to student wellbeing initiatives or campaigns.	Digital usage tracking with reflection; wellbeing toolkit development; sustainable digital habits documentation.
Information overload management	Recognises information overload; uses basic filtering.	Applies information management strategies; curates sources.	Designs systems for information processing; maintains focus amid complexity.	Masters information synthesis at advanced level; creates and shares effective filtering strategies with peers; produces high-quality resources.	Information management system documentation; source curation portfolio; focus and productivity metrics.
Mindful digital practices	Aware of need for breaks from technology; basic digital hygiene practices.	Implements regular digital breaks; uses mindfulness apps and techniques.	Integrates mindful technology use into daily routines; balances digital and offline activities.	Models exceptional mindful technology use; leads peer digital wellness practices; creates resources or workshops for student wellbeing.	Digital mindfulness journal; mindfulness practice log; offline activity portfolio; digital wellness workshop delivery.

Table 3 Technology ethics and responsibility

Skill	Foundation	Developing	Proficient	Exemplary	Evidence / examples
Data ethics and governance	Aware of privacy policies; complies with basic rules.	Identifies ethical issues in data use; applies guidance with support.	Applies frameworks to ethical decision making in data contexts.	Demonstrates sophisticated ethical reasoning; contributes to student-led ethics discussions; mentors peers in ethical data practice.	Ethics reflection with specific frameworks; data handling case study analysis; completion of professional ethics training with certification.
AI safety and auditing	Recognise risks of bias and error in AI.	Tests AI outputs for accuracy; flags concerns.	Designs checks and audits; manages AI risks in applied contexts.	Conducts comprehensive AI bias evaluations; creates audit frameworks for student projects; shares AI safety knowledge with peers.	AI bias evaluation project with documented methodology; audit report creation; reflective log on AI safety with specific incidents.
AI transparency and explainability	Understands that AI decisions should be explainable; asks basic questions about AI reasoning.	Seeks explanations for AI outputs; identifies when AI reasoning is unclear.	Advocates for transparent AI systems; designs explainable AI workflows.	Champions AI transparency in academic projects; designs highly explainable AI workflows; educates peers on transparency principles & practice.	Explainable AI project documentation; transparency audit reports; policy influence evidence.
Environmental and social responsibility	Aware of sustainability goals.	Applies sustainable practices in own work.	Advocates for responsible choices; balances sustainability with choices.	Leads student sustainability initiatives; demonstrates measurable impact; influences peers via example and advocacy.	Carbon footprint analysis of digital practices; sustainability project with measurable impact; evidence of community involvement and action.
Inclusive and equitable use of technology	Recognises access ability needs; awareness of tools to enhance accessibility.	Applies inclusive practices; adapts content with support.	Designs accessible resources; advocates for equity.	Champions inclusion in student projects; creates exemplary accessible resources; contributes to institutional accessibility improvements via student voice.	Accessible learning object creation; evidence of inclusive practice with peer review; accessibility audit participation.
Digital rights and freedoms	Aware of basic digital rights; understands privacy fundamentals.	Applies digital rights knowledge in personal contexts; recognises violations.	Advocates for digital rights; contributes to discussions on rights- respecting approaches.	Champions digital rights in student communities; participates actively in digital rights advocacy; creates resources on digital freedoms for peers.	Digital rights portfolio; policy advocacy evidence; rights violation response documentation.

Table 4 Understanding others and social intelligence

Skill	Foundation	Developing	Proficient	Exemplary	Evidence / examples
Communication and storytelling	Communicates basic ideas clearly in one mode.	Adapts message for different audiences; uses multiple modes.	Crafts compelling narratives; integrates digital media effectively.	Inspires and influences through storytelling; mentors peers in effective communication; produces exceptional multimedia narratives.	Recorded presentation across different platforms; storytelling project portfolio; digital media creation evidence.
Cross-cultural digital communication	Shows awareness of cultural difference in digital contexts; adapts basic communication.	Demonstrates cultural sensitivity in online interactions; uses appropriate for different cultures / contexts.	Facilitates cross-cultural digital collaboration; bridges cultural communication gaps.	Excels in global digital collaboration; leads cross-cultural student projects; shares intercultural communication expertise with peers.	Cross-cultural project documentation; international collaboration evidence; cultural competence reflection.
Collaboration and group dynamics	Contributes to group tasks with guidance.	Works effectively in teams; coordinates tasks; able to co-work with AI.	Facilitates collaboration; integrates AI tools into group work responsibly.	Successfully organises diverse teams (human + AI); demonstrates advanced teamwork facilitation; mentors peers in effective collaboration.	Evidence of group project leadership; peer feedback on collaboration; human-AI team facilitation log.
Empathy and cultural awareness	Shows respect for peers; aware of cultural differences.	Demonstrates empathy in diverse groups; adapts behaviour accordingly.	Applies intercultural skills; fosters inclusion in global teams.	Leads student initiatives promoting empathy and global awareness; demonstrates exceptional intercultural competence; fosters inclusive learning environments.	Reflective essay on cultural learning; intercultural competence portfolio; peer evaluation of inclusive practices.
Global digital citizenship	Understands basic concepts of digital citizenship; follows community guidelines.	Participates respectfully in global digital communities; understands different digital governance models.	Advocates for responsible digital citizenship; navigates complex global digital environments.	Models exemplary digital citizenship; leads student engagement with global digital issues; contributes to digital citizenship education for peers.	Global digital community participation evidence; digital governance analysis; citizenship advocacy portfolio.
Leadership and influence in unfamiliar contexts	Takes small leadership roles when directed.	Leads simple projects; can operate when there is a small degree of uncertainty.	Guides teams in complex contexts; balances competing demands.	Demonstrates exceptional leadership across uncertain contexts; inspires peers; successfully leads complex multi stakeholder student projects.	Leadership reflection; peer testimonials; evidence from project outcomes.

Empathy, cultural awareness and being able to lead when necessary in different contexts define good social intelligence. Awareness of group dynamics and how to manage them, contributions to projects and the promotion of inclusive practices are important not just for career development but for community engagement. Activities such as peer evaluation and student-led initiatives help to create a learning environment that is typified by mutual respect, creativity and global understanding.

Resilience and adaptability

To support resilience and adaptability, students need to be able to critically evaluate the credibility of information, distinguish opinions from facts and offer original insights to academic discussions. Approaches such as annotated bibliographies, critical reasoning workshops and reflective writing help students develop these skills. This would typically include cultivating creativity and innovation, developing awareness of AI decision making and bias and developing the ability to analyse complex problems and make evidence-based decisions in circumstances of uncertainty.

Adaptability also involves responding constructively to feedback, actively seeking new learning opportunities and integrating fresh knowledge into practice. Students can build resilience through continuous professional development that will help them to anticipate change and deal with new and sometimes unexpected situations as they arise. Experience of innovation methodologies, such as design thinking and problem definition, will help students gain confidence in making and justifying evidence-based decisions.

Emerging technology awareness

While fluency in AI and digital systems is focused on making effective use of technology, emerging technology awareness emphasises the anticipation of future technology advances and being able to understand their implications for work and society. It requires the development of a broad awareness of currently emerging technologies, including AI, but also others, such as blockchain, quantum computing and extended reality (augmented reality (AR) / virtual reality (VR) / mixed reality (MR)). Students need to know the best ways to analyse technology trends and anticipate the next 'big' development through structured scenario planning. In addition, they must develop an understanding of how different technologies working together can lead to practical advances in the way things get done. Students should be able to recognise and respond to the impact of new technologies, whether used individually or in combination. Authentic projects that integrate technology into the subject context can provide valuable practice in forward thinking.

Engaging with immersive technologies, alongside innovation management, prepares students for the integration of cutting-edge technology solutions in their disciplines, whether in science, arts, humanities, business or civic engagement. University curricula that provide opportunities for student participation in, for example, innovation labs or technology trend analyses, will help students to become lifelong learners who will be able adapt readily to technology advances.

Table 5 Resilience and adaptability

Skill	Foundation	Developing	Proficient	Exemplary	Evidence / examples
Critical thinking and sense making	Recognises facts versus opinions; asks simple questions for information.	Analyses sources for credibility; identifies assumptions and biases.	Brings together multiple perspectives; evaluates arguments in context.	Generates insights; demonstrates sophisticated critical reasoning; contributes original analysis to academic discussions; teaches peers critical thinking approaches.	Critical accounts of complex issues; annotated bibliography with critical analysis; reflective writing on reasoning process.
Creativity and innovation	Contributes ideas when prompted; adapts existing solutions.	Generates original ideas to address problems; uses brainstorming techniques.	Develops and tests innovative approaches; integrates diverse methods.	Leads student creative initiatives; produces exceptional innovative work; fosters innovation culture among peers; wins innovation competitions.	Portfolio of creative outputs across different media; design of prototype solutions; innovation challenge participation.
Adaptability and lifelong learning	Responds to feedback; shows willingness to learn new skills.	Alters approaches as contexts shift; looks for new learning opportunities.	Actively upskills; integrates new knowledge and understanding into practice.	Demonstrates exceptional resilience; models continuous learning; anticipates change proactively; mentors peers in learning strategies.	Record of continuing professional development with reflection; collection of micro credentials; evidence of learning journey with specific adaptations.
Algorithm awareness and bias recognition	Recognises that algorithms can be biased; understands basic algorithm decision-making.	Identifies potential algorithmics bias in daily digital interactions; questions automated decisions.	Critically evaluates algorithmic systems; designs bias-aware digital practices.	Demonstrates mastery of algorithmic bias analysis and mitigation; leads successful bias-aware digital projects; teaches algorithmic literacy and bias-awareness to peers.	Algorithmic bias analysis project; bias recognition toolkit creation; algorithmic literacy certification.
Innovation methodology	Aware of basic innovation approaches; participates in structured innovation activities.	Applies design thinking or lean startup principles with guidance; contributes to innovation projects.	Leads innova-tion processes; integrates multiple meth-odologies; facilitates cre-ative problem solving.	Demonstrates mastery of multiple innovation methodologies; leads successful student innovation projects; teaches innovation approaches to peers.	Innovation project portfolio using specific methodologies; facilitation evidence innovation training certification.
Problem definition and complex decision-making	Identifies simple problems; applies known solutions.	Frames com-plex problems in an under-standable way; weighs up alternative solutions.	Can breakdown complex open-ended problems; uses evidence to decide.	Tackles systemic challenges well; makes sound decisions under uncertainty; demonstrates strategic problem solving in major projects.	Case study analysis with problem framing documentation; problem solving portfolio; strategic decision-making evidence under uncertainty.

Table 6 Emerging technology awareness

Skill	Foundation	Developing	Proficient	Exemplary	Evidence / examples
Future scenario planning	Aware that technology changes rapidly; recognises some emerging trends.	Explores future technology scenarios with guidance; connects trends to current practice.	Develops and evaluates technology scenarios; anticipates implications for practice.	Develops detailed technology scenarios for their field; presents future implications to academic audiences; contributes to student led innovation and foresight projects.	Technology scenario analysis portfolio; future planning project documentation; strategic planning participation evidence.
Technology trend analysis	Identifies current technology trends; understands basic technology evolution patterns.	Analyses trend implications with support; tracks technology developments with support.	Independent technology trend analysis; synthesises multiple information sources.	Produces comprehensive technology trend analysis; shares insights with academic communities; applies trend analysis to advise peer projects on technology choices.	Technology trend reports with analysis; trend tracking system documentation; foresight methodology application.
Digital ecosystem mapping	Understands basic technology relationships; maps simple digital workflows.	Analyses tech-nology inter-connections; identifies key ecosystem players with guidance.	Maps complex digital ecosystems; understands technology convergence and dependencies.	Create sophisticated ecosystem analysis; demonstrates advanced understanding of technology integration; produces high-quality ecosystem mapping for projects.	Digital ecosystem analysis projects; technology integration planning; convergence analysis documentation.
Extended reality	Aware of AR / VR / MR* technologies; has basic interaction experience.	Uses AR / VR / MR tools for learning or work tasks; understands application potential.	Designs AR / VR / MR experiences; integrates immersive technologies into workflows.	Creates innovative immersive technology projects; demonstrates advanced XR skills**; shares immersive technology knowledge with peers through demonstration or tutorials.	Immersive technology project portfolio; AR / VR / MR content creation; immersive experience design documentation.
Innovation and disruption management	Recognises that technology can disrupt existing practices; adapts to changes reactively.	Identifies potential disruptions; prepares for technology driven changes with support.	Proactively manages technology disruption; leads change initiatives in response to innovation.	Anticipates and adapts to disruption effectively; leads student change initiatives; demonstrates exceptional resilience and innovation management in projects.	Disruption analysis case studies; change leadership evidence; innovation management project portfolio.
Technology convergence understand-ing	Aware that different technologies can work together; understands basic integration concepts.	Explores technology combinations; identifies convergence opportunities with guidance.	Analyses technology convergence patterns; designs integrated technology solutions	Demonstrates sophisticated understanding of technology convergence; designs innovative integrated solutions; shares convergence insights with academic community.	Technology convergence analysis projects; integrated solution design; cross-platform innovation evidence.

**AR = augmented reality, VR = virtual reality, MR = mixed reality*
***XR = extended reality*

Society and professional engagement

Civic and professional engagement is about lifelong career adaptability, active community participation, engagement with policy in relation to the safe and ethical use of new technologies, global collaboration and entrepreneurship. Students need to learn how to develop career strategies that take full account of new and emerging technologies and respond flexibly to changing opportunities. Engagement with civic initiatives and digital citizenship projects help students gain an understanding of how societal outcomes can be influenced fairly and safely through promoting a responsible digital culture.

Professional engagement is enriched through knowledge sharing in open communities, involvement in remote global teams, design of digital business models and launching sustainable innovations. Opportunities to contribute to professional networks, lead community initiatives and create open educational resources develop competencies for making significant contributions beyond the institution, shaping not only their careers but also their discipline and society at large.

Table 7 Society and professional engagement

Skill	Foundation	Developing	Proficient	Exemplary	Evidence / examples
Lifelong career adaptability	Shows awareness of career pathways.	Explores career options; develops preliminary plans.	Adapts career direction in response to opportunities.	Develops sophisticated careers strategy with technology integration; demonstrates career readiness; mentors peers in career planning.	Career plans; professional development log; mentoring evidence.
Active citizenship with civic participation	Aware of community and civic issues.	Participates in community activity.	Leads or contributes to civic initiatives.	Actively influences student civic engagement; leads community initiatives; demonstrates measurable civic impact.	Digital civic engagement portfolio; community project evidence; civic leadership documentation.
Technology policy engagement	Aware of technology policy issues; understands basic regulatory concepts.	Participates in technology policy discussions; contributes to consultations with support.	Advocates for technology policy positions; influences local technology governance.	Participates actively in technology policy consultations; leads student engagement with policy issues; contributes to student union technology policy or university consultations.	Policy consultation participation; technology advocacy portfolio; governance contribution evidence.

Skill	Foundation	Developing	Proficient	Exemplary	Evidence / examples
Global collaboration and remote work	Participates in basic remote collaboration; uses standard collaboration tools.	Manages distributed work effectively; facilitates online collaboration with some independence.	Leads global virtual teams; designs effective distributed working practices.	Excels at leading global virtual teams; demonstrates professional level remote work skills; mentors peers in distributed collaboration best practices.	Global project leadership evidence; remote work optimisation; documentation virtual team facilitation portfolio.
Entrepreneurship and intrapreneurship	Identifies opportunities with guidance.	Develops ideas into small projects.	Builds sustainable ventures or innovations.	Leads successful student enterprise; launches viable startup or innovation; demonstrates entrepreneurial impact within the university or wider community.	Innovation project implementation; entrepreneurship impact documentation.
Digital business model innovation	Understands basic digital business concepts; recognises digital transformation patterns.	Explores digital business models; contributes to digital transformation initiatives.	Designs digital business solutions; leads digital innovation projects.	Designs innovative digital business models for capstone projects; leads student entrepreneurship initiatives; applies digital innovation in startup or consultancy contexts.	Digital business model analysis; digital transformation project leadership; innovation strategy documentation.
Contribution to knowledge communities	Shares work with peers when prompted.	Engages with professional networks; shares resources.	Contributes actively to open knowledge communities.	Makes significant contributions to student and academic knowledge communities; creates widely used open resources; actively shapes peer learning networks.	Digital knowledge sharing portfolio; open educational resource creation; professional community leadership evidence.

4. Implications for educational practice

Higher education institutions now face the difficult task of integrating AI in ways that better support student learning, without compromising the unique skills that only humans possess. As stated earlier in this report, recent international work illustrates the pace and scale of AI adoption across universities and emphasises the need for strategies that support both innovation and responsibility.

Curriculum design

The reality that most students are using GenAI in their studies right now and will continue to encounter it in their future careers leads to the view that curriculum design approaches need a significant overhaul. Universities must resist the temptation to provide AI literacy support alongside the taught curriculum and recognise that students need to be guided to develop essential capabilities within their subject context. Activities that require students to compare GenAI-generated and human-generated work can support digital fluency, while structured reflection tasks can help students develop self-awareness, ethical judgement and the capability to use GenAI critically and appropriately.

Clear communication of learning outcomes is essential. Students need to understand when AI use is appropriate, how it should be acknowledged or reported, and what constitutes independent work. This transparency supports fairness, reduces uncertainty and increases confidence in assessment processes.

Assessment and academic integrity

Assessment practices must be changed in nature because of the widespread availability of GenAI. Prohibiting GenAI use outright in assessment will not work and may undermine the educational value of the process. Instead, assessments can actively encourage GenAI use or even require students to use it. In doing so, students would demonstrate their reasoning for its use, critique the GenAI outputs and / or explain how GenAI contributed to their work. These approaches can serve to reinforce the principle of academic honesty and integrity while strengthening essential human capabilities such as critical thinking and ethical awareness.

Authenticity should also remain central to assessment design. Tasks need to emphasise interpretation, application and judgement – areas where human skills and insight are essential and where GenAI still has limitations. A balanced approach ensures that assessment can prioritise meaningful learning.

Staff development

Staff will often need confidence and capability development in relation to using GenAI in their work. Professional development opportunities where staff can experiment with AI, reflect on its implications for their teaching and consider how it can complement rather than replace their pedagogical expertise are essential. Many will also need support to articulate clear expectations for students and to ensure consistent approaches within and across programmes.

Institutional guidance and communities of practice can help staff to share ideas, redesign assessments and develop confidence to have the right conversations with their students. These must be conversations that emphasise the co-working nature of GenAI and how students can use GenAI tools to best support their independent learning. This sort of approach aligns with sector guidance and reinforces a human-centred vision of learning in an AI-rich environment.

Institutional strategy and governance

GenAI has implications for institutional culture, infrastructure and governance. Universities need coherent strategies that align AI adoption with educational values, workable data governance, academic integrity and equity. This includes ensuring all students have access to appropriate GenAI tools, supporting responsible experimentation and providing guidance on sustainability and environmental impact.

The FUTURES framework offers a structure for articulating institutional ambitions around capability development. By embedding FUTURES across programmes, higher education institutions can link the curriculum, assessment and staff development with broader strategic objectives, ensuring that GenAI use enhances – rather than fragments – educational practice.

Summary

GenAI presents significant opportunities to enhance teaching and learning, widen access to support and improve staff and student working practices. However, these opportunities can only be realised when institutions proactively support the development of essential human capabilities alongside technological adoption.

However, these benefits are accompanied by a complex set of genuine and interconnected risks. These include deepening educational inequality, embedded data bias in GenAI systems, fundamental changes to the meaning and assessment of academic integrity and unquantified environmental impact. All of these require vigilant, systematic and ongoing institutional management. These risks are not peripheral concerns or matters for future attention; they are central to the ethical deployment of GenAI in learning environments right now.

It is therefore vital that universities undertake a rigorous, evidence-informed critical evaluation of both the significant benefits and the substantive limitations of GenAI, ensuring that irreplaceable human values, rigorous ethical standards and meaningful academic rigour remain at the centre of institutional practice. Higher education institutions must be willing to explore and utilise GenAI's capacity to personalise learning and reduce administrative burden, while simultaneously questioning the issues of equity, the integrity of knowledge production and the environmental footprint of systems that consume significant computational resources. This policy paper does not argue against GenAI integration, but rather makes a case for integration contextualised within careful, ongoing assessments of the impact on student learning outcomes, on staff and student wellbeing and on institutional values. Only through sustained critical reflection can universities ensure that the adoption of GenAI advances their core educational mission.

By embedding the FUTURES framework within the curriculum, assessment and institutional strategy, universities can strengthen human potential while responding responsibly to the opportunities and risks associated with AI.

This report complements HEPI's wider contribution to national debate on AI – through both its annual HEPI / Advance HE *Student Academic Experience Survey* and its recent AI essay collection – which highlight the urgency of developing coherent, human-centred approaches to AI across the sector.

Recommendations

Given HEPI's policy role, the following recommendations are proposed:

1. **Higher education institutions should have and publicly articulate explicit institutional policies that clearly delineate acceptable and prohibited uses of GenAI in teaching, learning, assessment and professional services, with explicit guidance tailored to different disciplinary contexts, student cohorts and learning activities.**

The current ambiguity surrounding GenAI use creates anxiety for both staff and students. Generic institutional statements help fuel rather than temper these anxieties, and thus higher education institutions must develop formal policy frameworks that specify when GenAI use is expected, supported or prohibited and how students should acknowledge or report AI-assisted work or workflows. Critical to this will be 'spelling out' what constitutes authentic engagement in different disciplinary contexts. In addition, it is time for higher education institutions to develop academic integrity principles fit for an AI-enabled environment.

2. **Sector bodies and government must establish and adequately resource mechanisms to ensure equitable access to high-quality GenAI tools and infrastructure. Not only will this help ensure equity of access, but also reduce the risks associated with using unchecked tools. This is particularly important for ensuring students from disadvantaged backgrounds and institutions serving widening participation cohorts are not placed at a disadvantage.**

Without planned and organised intervention, GenAI adoption risks deepening existing inequalities in higher education. Students who can afford subscriptions to premium GenAI services will have access to more capable systems than those reliant on free-tier tools. Sector bodies should consider collectively negotiating institutional licensing agreements that guarantee equitable access and government must fund infrastructure to ensure that all institutions can provide students with equivalent GenAI capabilities. Monitoring and transparent reporting on access equity must become a standard institutional metric.

3. **Institutions should deploy the FUTURES and Jisc AI maturity framework in parallel as complementary strategic tools: Jisc for assessing and strengthening organisational infrastructure, governance and systemic readiness; FUTURES for articulating capability development pathways and embedding human-centred values within curricula and assessment.**

Neither framework alone is sufficient. The Jisc toolkit provides essential diagnostic clarity on institutional readiness, infrastructure, data governance and risk management capacity. FUTURES addresses the equally critical imperative: developing the human capabilities that determine whether technological infrastructure actually supports meaningful and equitable educational practice. Universities should establish integrated implementation roadmaps that connect both frameworks, linking institutional strategy statements (informed by Jisc assessment) with curriculum design, assessment approaches and staff development priorities (informed by FUTURES).

4. **Professional development programmes for academic and professional services staff must prioritise and substantively resource three interconnected dimensions:**

   - confidence and competence in using GenAI tools critically and creatively;
   - ethical practice and institutional compliance; and
   - cross-disciplinary collaboration, with particular attention to supporting those teaching and learning in the humanities, where disciplinary concerns about authenticity, interpretation and critical engagement may be especially pronounced.

Professional development is often positioned as optional upskilling. It must become central to institutional strategy and appropriately resourced. Colleagues require opportunities to experiment with GenAI in their discipline-specific contexts, to reflect on its implications for their pedagogical practice, and to develop the intellectual and pedagogical frameworks to guide their students' own engagement.

5. University curricula should systematically embed critical engagement with GenAI across all disciplines and levels of study. Course teams must position engagement not as a separate module or optional topic but as an integrated dimension of disciplinary practice, supporting the development of digital fluency, ethical reasoning and informed reflection on GenAI's capabilities, limitations and risks.

GenAI literacy cannot be taught separately from disciplinary knowledge and practice. Curricula should integrate opportunities for students to:

- use GenAI critically within their subject context;
- reflect on when and how AI-generated content is useful;
- examine the ethical and epistemological implications of AI-assisted knowledge production; and
- develop discipline-specific digital competence.

This requires curriculum design that resists both technophobia and uncritical enthusiasm, positioning GenAI as a tool that must be deployed with discipline-appropriate judgment.

6. Higher education institutions must undertake a comprehensive review of existing assessment approaches and explicitly ask whether current practices remain fit for purpose in an AI-enabled educational environment. This review should be informed by open, evidence-based dialogue with all stakeholders about how the principles and practices of academic integrity must evolve.

Assessment design will fundamentally determine whether GenAI adoption advances or undermines educational quality. Institutions should not attempt to 'AI-proof' assessment through prohibition. Instead, assessments should be redesigned to emphasise skills where human judgment remains irreducible: where interpretation, application, integration of evidence, justification of decisions, ethical reasoning and creativity are rewarded. Authentic assessment tasks should require students to demonstrate not whether they can produce output, but whether they can evaluate, critique and responsibly integrate GenAI-assisted work into their own intellectual practice. These conversations about assessment and integrity must be explicit, evidence-informed and inclusive of diverse institutional perspectives.

7. **Higher education institutions should establish systematic and sustained research and evaluation programmes to monitor and understand the impact of GenAI adoption on: student learning outcomes across different disciplines and cohorts; student and staff wellbeing, workload and sense of agency; and institutional efficiency and effectiveness. These programmes should be designed to generate evidence on both risks and benefits, enabling continuous improvement, responsible innovation and, where evidence suggests harm, course correction.**

Current institutional adoption of GenAI often outpaces evidence gathering. Universities and the sector must engage in asking the critical questions around whether GenAI use enhances or diminishes learning outcomes and in which disciplinary and pedagogical contexts.

This evidence-gathering should be coordinated across the sector to enable comparative analysis and the identification of promising practices, while remaining sufficiently institution-specific to address local contexts and concerns.

8. **Sector bodies and universities must integrate environmental sustainability into GenAI strategies. Together with clear rules about procurement and deployment, this should help ensure that the expansion of AI-enabled teaching and administration aligns with institutional environmental commitments and responsible digital practices.**

The rapid increase in the use of generative AI in higher education brings with it environmental implications that need to be thought through carefully. These include energy and water use, as well as inference and wider cloud-based infrastructure. Universities should incorporate AI-related energy and carbon considerations into their digital estate plans, procurement frameworks and vendor selection processes, favouring, where possible, transparent reporting and more efficient use of the language models driving products and services.

Sector bodies should develop shared guidance and, where possible, collective procurement approaches that reduce unnecessary duplication. Any high-intensity infrastructure across institutions must also form part of the students' and staffs' critical engagement with GenAI, helping to ensure the environmental impact is a clearly recognised dimension of responsible AI use alongside ethical, legal and pedagogic concerns.

Monitoring and reporting mechanisms should be established that can track the environmental impact of institutional GenAI use and to support evidence-informed decisions about when, where and how GenAI deployment delivers sufficient educational or operational benefit to justify its ultimate resource costs.

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In this HEPI report, Doug Specht and Gunter Saunders outline the 'FUTURES' framework: a practical tool for integrating AI into teaching and learning. The framework considers seven domains – ranging from digital fluency and ethical judgement to resilience, wellbeing and social intelligence – that can be embedded across curricula, assessment and institutional strategy.

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