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AI and the Future of Universities

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ChatGPT Enterprise is an advanced version of OpenAI's ChatGPT generative AI tool, powered by a Large Language Model that is specifically designed for businesses and large organisations.

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Glossary

Artificial Intelligence (AI): The general term for technologies that can analyse their environment and act with a degree of autonomy to achieve specific goals. It encompasses a wide range of applications.

Multimodal AI: Artificial intelligence systems that can process, understand and generate information across multiple modalities, such as text, images, audio and video.

Generative AI (GenAI): A subset of AI that can produce new content, such as text, images, or other media. Examples are OpenAI's ChatGPT, Microsoft Office's CoPilot, Google's Gemini and Anthropic's Claude.

Machine learning: A subfield of artificial intelligence that focuses on building algorithms that can 'learn' and improve automatically from data, without being explicitly programmed for every task. Instead of a human writing specific rules, the computer analyses large datasets to find patterns and make predictions or decisions.

Large Language Models (LLMs): A specific type of Generative AI designed to understand and generate human-like text based on vast amounts of data. For example, ChatGPT is has a remarkable ability to generate coherent output but also the potential for 'hallucination' (producing convincing but false information).

Foreword

By Dame Wendy Hall and Dr Giles Carden

These essays arrive at a pivotal moment, offering a multifaceted exploration of the profound impact of Artificial Intelligence on the academic landscape.

Far from being a distant future, the 'AI revolution is right here and right now', as Janice Kay and Derfel Owen remind us, demanding immediate and thoughtful engagement from institutions, educators and students alike. This volume serves as a compass, guiding readers through the complex terrain of AI's integration into higher education, highlighting key themes, contrasting perspectives and identifying crucial areas of convergence and divergence. The speed at which AI capabilities are advancing and permeating every facet of society necessitates a proactive and informed response, making this collection not just timely but valuable for anyone involved in shaping the future of learning.

At the heart of this discourse lies the varied definitions and expectations of AI itself. From Kate Borthwick's pragmatic view of GenAI as a ubiquitous and rapidly advancing tool, now increasingly integrated into familiar software like Microsoft Office's CoPilot and Grammarly, to Rose Luckin's more philosophical exploration of AI as a technology that 'analyse[s] their environment and act[s] with a certain degree of autonomy to achieve specific goals', the contributors grapple with what AI truly is and, more importantly, what it means for human intelligence. Luckin compellingly describes this moment as a 'perfect storm', driven by the convergence of vast data, advanced machine learning algorithms and unprecedented processing power, fundamentally challenging our traditional notions of intelligence. One of the fathers of the internet and Google Vice-President Vinton G Cerf's contribution, 'Large Language Models [LLMs], education and the evolution of digital dialogue', specifically focuses on LLMs, emphasising their 'remarkable ability to generate coherent and valid output' alongside their capacity for 'hallucination': the generating of convincing but counterfactual information. This phenomenon, as Cerf notes, underscores the critical need for users to apply common

sense and due diligence in fact-checking, preventing scenarios like a bot recommending 'eating small pebbles to add minerals to their diets.' This divergence in defining AI, as a practical tool, a philosophical challenge or a specific technological advancement, informs the diverse approaches to its application and the perceived opportunities and threats it presents.

A central theme woven throughout these essays is the urgent need for 'AI literacy'. Borthwick champions its development as 'essential skills for staff and students', emphasising six guiding principles: knowledge (understanding how LLMs work); collaboration (co-creating effective training); communication (articulating AI's role in learning outcomes); transparency (role-modelling responsible AI use); ethics (embedding discussions on societal impacts); and continuous learning (adapting rapidly to change). Each principle is vital for fostering an environment where AI is used effectively and responsibly. Kay and Owen echo this, advocating for a 'three-pronged approach to AI fluency' within the workforce, encompassing competency assessment (understanding current AI skills across roles), continuous skill development (embedding AI in professional development) and the nurturing of AI pedagogical leaders (identifying and empowering innovators). This convergence on AI literacy underscores a shared understanding that simply acknowledging AI's presence is insufficient; active, informed engagement and a structured approach to skill development are paramount to ensure universities remain relevant and effective.

However, contrasting perspectives emerge regarding the pace and nature of adaptation required. While Kay and Owen stress the 'daunting prospect' of integration and the need for universities to cultivate an 'appetite for agility and taking risks', a significant departure from established norms and regulatory frameworks, Borthwick acknowledges the uncertainty of AI's future development and the need for 'carefully considered' policy and practice changes to avoid 'unintentional harm or inequity.' This tension between rapid, transformative change and cautious, ethical implementation is a recurring thread, reflecting the inherent complexities of integrating a fast-evolving technology into established educational systems. Universities, often characterised by their deliberation, pace and robust quality assurance processes, face the challenge of accelerating

change while upholding academic integrity and ensuring equitable access, especially given worrying new digital divides related to GenAI use based on gender, wealth and subject discipline.

Another significant area of convergence is the recognition of AI's profound implications for assessment. Borthwick notes that GenAI is 'becoming very good at doing the activities we routinely ask our students to do to demonstrate their learning', posing 'significant challenges to our existing processes'. For instance, AI can generate sophisticated essays, solve complex problems and even simulate creative outputs, making it increasingly difficult to discern machine-produced work from human effort. Luckin expands on this, arguing that traditional assessment methods are 'increasingly under scrutiny' and advocating for a reimagining of assessment frameworks that prioritise 'sophisticated thinking and learning capabilities, such as metacognition and self-regulated learning' and 'uniquely human capabilities' like creativity, emotional intelligence and critical thinking. This concern highlights a critical juncture for higher education: how do we accurately evaluate learning when AI can so effectively mimic human output and how do we shift focus from mere output to the nuanced process of learning itself?

Giles Carden's 'Artificial Intelligence and the future of strategy' introduces a novel perspective on AI's role in institutional management, moving beyond pedagogy to explore how AI can 'automate and augment strategy processes.' He envisions AI providing 'rapid and extensive analyses of the external environment', offering real-time insights into market conditions, competitive positioning and global trends that were previously difficult to obtain. This allows for more sophisticated scenario planning and predictive modelling, enabling a 'more dynamic and real-time approach to the management of strategy implementation.' This contrasts with the more student- and staff-centric discussions yet converges on the idea of AI as a powerful tool for efficiency and insight, albeit one that requires careful consideration of 'technology choices and economics' (as exemplified by the varying costs of advanced LLMs) and 'data maturity' (the need for robust data architecture).

Ant Bagshaw, in 'It is time for university professional services to embrace GenAI (even though it might be painful)', highlights GenAI's capacity to streamline administrative tasks like drafting reports, preparing consultation responses and interpreting regulations, driving 'material productivity gains.' While acknowledging the potential for 'fewer jobs' due to automation, Bagshaw argues that this painful transition offers a path to a 'better higher education system' by reallocating resources and creating new, more impactful roles that leverage human creativity and sophistication. Sud Parwana discusses how AI can be successfully utilised in the professional services and suggests one should 'Identify high-impact use cases, targeting repetitive, rules-based processes and high-volume student queries', he also underscores the importance of adopting ethical safeguards, ensuring compliance with data regulations and the use of auditing tools to mitigate against bias or harm.

Perhaps the most profound area of convergence and indeed the overarching purpose of this volume, is the call to redefine and enhance human intelligence in the age of AI. Luckin argues passionately that 'humans need to become significantly more intelligent, not less', using AI 'to enhance – rather than replacing – human intelligence.' This sentiment is echoed implicitly throughout the collection: AI should not diminish cognitive work but extend it, acting as a 'mental extension.' The essays collectively argue that higher education's role is not merely to adapt to AI, but to leverage it as a catalyst for cultivating uniquely human capabilities – critical thinking, creativity, emotional intelligence, metacognition (the ability to understand and regulate one's own thinking) and contextual adaptation. The challenge, then, is to redesign education to foster these distinctively human attributes, ensuring that students are not merely consumers of AI-generated content but masters of intelligent systems, capable of critical evaluation and strategic collaboration.

The final essay in this volume 'Artificial Intelligence and the future of research in universities' has been drafted by OpenAI's ChatGPT Enterprise, using a carefully crafted prompt. We would encourage you to compare it to the other essays in this collection written by humans and form your own opinion on its strengths and weaknesses.

The chapters are not just a collection of essays on AI but a call to action. They frame the AI revolution not as a threat to be mitigated but as an opportunity to rethink the purpose and practice of higher education fundamentally. By drawing out the key themes, contrasting perspectives and areas of convergence and divergence, the collection aims to stimulate critical dialogue, encourage innovative practice and, ultimately, empower institutions to navigate this transformative era with foresight and purpose, ensuring AI elevates, rather than diminishes, the pursuit of knowledge and intelligence.

1. AI Literacy: developing essential skills for staff and students

Professor Kate Borthwick

Writing about the value and use of generative Artificial Intelligence (GenAI) in education with any certainty remains perilous. AI makes technological advances on a seemingly daily basis and research in this space often becomes outdated even as it is published. This means that we lack the broad evidence base on how AI might impact and affect the achievement of learning outcomes that we would usually draw upon to guide changes in higher education and delivery. In this chapter, I will discuss the current 'state of the nation' in AI and education and highlight the crucial importance of developing AI literacy.

Where we are in early 2025

From an education standpoint, the last couple of years have seen generative AI advance in terms of ubiquity and capability. We moved from a sudden awareness of OpenAI's ChatGPT through the rapid development of similar general AI tools like Claude and Gemini to the increasing integration of GenAI-type functionality in the software and systems that we are familiar with like Microsoft Office (CoPilot), Blackboard and Grammarly. GenAI functionality has gone from being something we had to seek out consciously to being readily accessible and even difficult to avoid.

Over the same period, advances in the capabilities of GenAI mean that educators cannot rely on understanding the potential limitations of such tools when attempting to identify machine-produced work. GenAI is becoming very good at doing the activities we routinely ask our students to do to demonstrate their learning and it can be useful at any stage in the learning process, from initial ideation to the development of ideas, producing content and checking and refining final outputs. Clearly, this presents powerful opportunities to advance learning but also significant challenges to our existing processes and approaches in the delivery, assessment and support of education.

As commercial technology companies rush to identify and establish business models around AI, the pace of development shows no sign of slowing down. Even so, it is unclear exactly how GenAI will develop in the future; the pathway is fraught with uncertainty.[1] The actions of the UK Government are also likely to impact higher education through the potential development of regulation and the initiation of an AI Action Plan.[2]

At the same time, recently published data indicate the extent of student use of AI to support their university studies. In February 2025, HEPI and Kortext reported survey data revealing a large increase in the use of GenAI by undergraduates between 2024 and 2025, with 92% reporting that they used AI in some way and, more specifically, 88% in assessments.[3] The same report noted students in 2025 felt staff were 'better equipped' to support them in using GenAI (42%) than in 2024 (18%) but also that they wanted further support and guidance.[4] Current students will graduate into a world where skills and knowledge in the use of AI will be vital for their employability prospects and will alter the nature of work itself.[5] In fact, AI is already changing how we seek and apply for jobs.[6]

AI is crashing hard into educational systems and processes that were conceived and established pre-AI and often pre-digital, so adaptation and transformation are necessary. While universities are engaging with GenAI through policies, guidance and increasing staff use of AI, there remains a continuing need to learn and review teaching and assessment to ensure fairness and quality in education. This becomes more necessary as our understanding of the impact of AI on society deepens: for example, the HEPI / Kortext data cited above also points to worrying new potential digital divides related to GenAI use based on gender, wealth and subject discipline. Such data need our focused attention to avoid inequities creeping into our education.[7]

Developing AI literacy

In this context, the development of AI literacy skills in staff and students is essential. This is how we are approaching the development of AI literacy and practices in education at the University of Southampton. We align to the Russell Group's agreed principles on the use of AI in education as

a starting point in empowering staff and students to use AI effectively in their studies.[8] Our guiding principles are: knowledge; collaboration; communication; transparency; ethics; and continuous learning. These principles apply to GenAI overall rather than to any particular tool and assist in developing knowledge at a time when different GenAI tools and their capabilities are advancing rapidly.

i. **Knowledge:** Gaining a basic understanding of how Large Language Models work and generate data offers illuminating insights into how and why GenAI makes mistakes, produces hallucinations and misinformation and also how GenAI can be creative and supportive in producing content. Learning about the range of AI tools and functions assists in developing contextual and effective knowledge of AI in practice and begins to accommodate criticality and creativity. One approach will not fit all and expertise in responsible and appropriate AI use will necessarily be contextual, acknowledging that opportunity and challenge in GenAI differs between disciplines, programmes and modules.

ii. **Collaboration:** Everyone needs to be 'on board', acknowledging and accepting that change is happening now and we have agency in how we respond. We need to work with colleagues and students to create effective AI literacy training that responds to real student and staff needs. At Southampton, we co-created our student guidance on using GenAI in university study and a range of teams are working together to generate staff and student training, including our Centre for Higher Education Practice, Digital Learning team, Library Skills and department-specific academic teams.[9] Sharing knowledge and experiences among staff and students deepens understanding of the reality and possibility of GenAI and cascades good practice.

iii. **Communication:** The way we talk about higher education in the context of machine learning is also important – remember 'the human' and articulate the richness of higher education teaching, knowledge and skills development to students. A degree is about developing knowledge over time through a range of interactions and activities; it is about the process of learning, not only the final award or output. Clear articulation of how, when and why GenAI should or should not be used in tasks

should link to overall learning outcomes. This needs consideration as research is beginning to emerge about the potential impact of GenAI on the development of critical thinking.[10]

iv. **Transparency:** Be transparent about the use of GenAI in supporting the delivery of education. As we begin to experiment with GenAI to make administrative tasks more efficient, we have an opportunity to develop responsible and purposeful use of AI by making it clear how it has been used. This might include the creation of education tasks, marking or feedback or routine office tasks. Transparency in staff use of AI should mirror the transparency we ask of our students.

v. **Ethics:** Embed consideration and discussion of ethical issues related to the use of AI tools in responsible academic practice. Also, consider wider issues that contextualise AI within society, such as their potential impact on the environment, data privacy and copyright or their impact on the nature of work.

vi. **Continuous learning:** It is the responsibility of all of us to learn quickly and continue to learn about how GenAI will affect our education practice (especially assessment) and change may need to be rapid or in small steps. Any policy or practice changes should be carefully considered to avoid unintentional harm or inequity.

What does the future hold?

It is important to 'hold fast' at a time of ongoing uncertainty and ambiguity. Universities have deep expertise in delivering and accrediting learning and established quality assurance processes are flexing to accommodate change. We should take heart from the fact that across the higher education sector, colleagues across multiple departments and services are taking the time to reflect upon what they do, make changes and then share their experience with others.

The future will belong to those who can adapt successfully – to learn new skills and keep learning, to contextualise and integrate GenAI in purposeful and varied ways across education delivery. This is likely to look very different if you are teaching, say, Computer Science as compared to

History, but acknowledging and responding to such diversity will enable us to develop responsible and human-centred AI-use and to build it among our students. The need to embrace change is not an abstract future reality – it is here now and our students and staff are living it. The AI-enhanced higher education of the future will look different and together we are already beginning to take the steps to get there.

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2. The AI revolution is right here and now: so what about our workforce?

Janice Kay and Derfel Owen

Opportunities and challenges for the higher education workforce

The 'AI revolution is right here and right now'.[1] Higher education is at an inflection point: institutions must integrate AI literacy into their strategic priorities to remain effective and relevant. But embracing AI is a daunting prospect. Integration is complex and requires thoughtful leadership, engagement, innovation and, critically, an appetite for agility and taking risks – qualities that universities can find challenging.

Recent surveys highlight the rapid adoption of AI tools among students, including the HEPI / Kortext survey mentioned in the previous chapter. The Time for Class survey also indicates that students are adopting AI tools at a faster pace than their lecturers: 59% of US students in their Spring 2024 survey were using generative AI tools compared with 36% of their teachers.[2] A further 36% of teachers had never used AI tools, compared with 23% of students.

In both surveys, students were curious and cautious and expressed little desire to use AI to cheat, but rather to use it to draw on its power to accelerate learning.[3]

This open dialogue is the right way forward. We must encourage students to be open and honest with us and each other about their concerns and aspirations and how they can be addressed. As ever, student engagement is key so that we can understand their motivations and they can understand ours.

The HEPI / Kortext 2025 survey also highlighted a reassuring increase in the proportion of students saying that university staff are 'well-equipped' to work with AI, going from 18% in 2024 to 42% in 2025. This is a strong signal that the time is right to encourage staff to innovate and take risks, to cultivate an environment where risk-taking is supported, failures are

viewed as learning opportunities and transformative ideas are allowed to flourish. A supportive culture and ecosystems must be in place for students who venture to innovate and for lecturers who push the boundaries of teaching through AI.

An approach that embraces and encourages calculated risk-taking will be quite a departure from established norms in universities and regulators. We need to challenge a culture of quality assurance that has been built to mitigate risks and is balanced toward cautious action and enhancement. It is a culture that tends to introduce change at a slow and cyclical pace; for example, publishing schedules for prospectuses that then bind universities into a quasi-contractual commitment to deliver what was published. That can make sense, but to put it starkly, what is better for students and their institutions? Not sticking to assessment methods that were published two years ago? Or not adjusting to the fact that the way we access, digest and present data and information has been turned on its head in the last two years?

The pace of change demands that we act more urgently to ensure that our students are supported to use these tools. Solving this tension must be done in partnership between students and staff.[4] In a welcome intervention, we note that the Office for Students has recently encouraged the sector to make 'bold changes to adapt in this increasingly challenging environment'.[5] This must be matched by a continued focus on risk-based regulation that encompasses AI literacy and explicitly acknowledges the risk of not acting.

In a robust culture of AI literacy, effective staff development is a strategic imperative. Traditional change models of learning often rely on expert 'early adopters' to spread good practice. But this is not sufficient given the rapidity with which AI approaches are being adopted and the urgent need to equip staff to guide students with its responsible use. We must shift from gradual adaptation to institution-wide workforce planning, ensuring that staff are competent in using AI and equipped to engage critically with implications for pedagogy, assessment and academic integrity. Proactive workforce planning that embeds AI competency across the staff base must be a core institutional priority. Jisc provides a helpful toolkit for universities and colleges to assess AI maturity.[6]

A three-pronged approach to AI fluency

i. **Establishing levels of AI competency in your organisation:** Universities must be able to understand and assess the AI skills of their workforce. All staff should have some level of competency, differentiated according to job role and requirements. Skills of an educator are necessarily going to be different to those of a professional administrator. This means that universities need in the first place to be able to assess what levels of AI skills are needed across the organisation. This could include establishing threshold levels of AI competency across their workforce through using surveys, quizzes and gap analyses and building time in workload allocations to create competencies and enable experimentation.[7]

ii. **Maintaining and increasing AI skills to ensure proficiency.** Having established levels of AI competency across the organisation, universities should focus on embedding AI in continuous professional development across job roles appropriate to need.[8] Institutions should develop incentive structures to encourage staff engagement with AI upskilling. This could take the form of micro-credentials, professional development credits or recognition within promotion criteria, ensuring faculty and staff are not merely encouraged but actively supported in acquiring new competencies. Educators should be given time within their existing workloads to develop their skills, making AI proficiency an expectation rather than an optional extra. We note that the European Digital Competence Framework for Educators breaks down proficiency into six levels: Newcomer; Explorer; Integrator; Expert; Leader; and Pioneer. We think this is a useful framework for AI use.[9] The Quality Assurance Agency (QAA) has also produced a helpful Competencies Based Education Primer to help staff to support learners through their AI learning journeys.[10]

iii. **Developing leaders in AI pedagogies:** Leaders and Pioneers drive innovation and push the boundaries of AI use in learning and assessment methodologies. They can mentor colleagues across different job roles and can advise on and contribute to institutional strategy. Universities must not leave the emergence of leaders and pioneers in AI to chance but nurture and support their development and plan succession.

Universities should identify and empower educators and professionals who can critically assess emerging technologies and integrate them into pedagogically sound, ethical and discipline-specific frameworks. AI fluency should not be limited to technical skills but should align with expertise in learning science, assessment integrity and data ethics. In sum, leadership in this area requires structured investment in AI scholarship, AI literacy programmes and interdisciplinary collaboration.

Those institutions that proactively integrate AI literacy and competency into their strategic priorities will emerge as leaders in educational innovation. Those that continue to rely on fragmented short-term training efforts will find themselves struggling to maintain academic credibility and instructional relevance. The question is not whether universities and their senior leaders and governors can afford to invest in AI transformation, but whether they can afford the consequences of failing to do so.

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3. Artificial Intelligence and the future of strategy

Dr Giles Carden

It is difficult to define precisely when strategy was established as a concept and discipline in business but arguably its origins go back to the work of some key scholars in the mid-1950s and 60s. Peter Drucker's work in 1954 developed the concept of 'management by objectives', a strategic approach where managers and employees collaboratively set performance goals, develop action plans and regularly monitor progress towards achieving those goals'.[1]

Alfred Chandler's work in 1962 highlighted the importance of a long-term coordinated strategy for organisational structure and direction.[2] And Igor Ansoff's work in 1965 on gap analysis helped organisations to identify the gap between their current state and desired future state and to develop strategies to bridge that gap.[3]

When I entered my first professional role in higher education in 1997, few universities had clearly defined and published strategies. Strategy and the discipline of Strategic Management, the process of implementing and managing the strategies to achieve the organisation's goals, have advanced significantly over the last three decades.

Following the appointment of a new vice-chancellor, it is now commonplace that they will formulate a new strategy and that they will be supported in this endeavour by a strategy function which is a ubiquitous part of the university's professional services.

The next step in the evolution of strategy will be the application of AI. Recent developments in AI mean it now has significant potential to transform the way strategy is undertaken in universities, both in terms of strategy formulation and implementation.[4] This is not about AI deciding the strategy; rather, it relates to how the technology can automate and augment strategy processes.

Strategy formulation

The formulation of strategy, when distilled down to its basic components, comprises the following steps:

i. looking at the external environment;

ii. sector or industry analysis and examining competitive position;

iii. considering future position and intention; and

iv. making strategic choices and setting goals.

These steps involve extensive quantitative and qualitative strategic analyses and diagnostics, which inform goal setting and planning.

In the volatile world we now live in, AI can provide rapid and extensive analyses of the external environment and provide intelligence on the various exogenous forces that need to be considered when formulating strategy.

Furthermore, AI can accelerate and advance the analysis of data and provide more comprehensive and rapid insights on both the university's existing performance characteristics and the performance of its competitors. While UK higher education has the benefit of some of the most comprehensive data collection in the world, it has been notoriously difficult to benchmark its performance globally. Often, universities rely on global rankings, which provide an imperfect set of proxy measures. AI is likely to revolutionise global insights as it can harvest and analyse massive amounts of structured and unstructured data swiftly in real time. This will illustrate market conditions and trends and accelerate the production of critical insights.

Strategic analysis also involves techniques such as scenario planning, predictive modelling and forecasting. AI will automate these analyses, produce them more rapidly and provide more sophisticated insights. However, predictive AI needs to be treated with caution. Its outputs should not be fully relied upon and need to be tested to see if they are trustworthy. Instead, generative AI provides another viewpoint for executive decision makers to consider and human judgement will continue to be essential in

shaping the future strategy of institutions. Humans tend to have conscious or unconscious biases and AI has the potential to help address this issue.

A dynamic and adaptive approach to strategy implementation

AI will also have a profound impact on strategy implementation. During the process of executing institutional strategy, AI will enable a better and more dynamic understanding of institutional performance in real time. In terms of decision support, it will provide Key Performance Indicators (KPIs) and performance analytics that can be more frequently monitored. It will allow a more sophisticated approach to the monitoring of strategy implementation. It will provide outputs that can be used to inform resource allocation, provide intelligence on the next move of competitors and actively illustrate trends in the sector both nationally and globally. This will allow plans to be adjusted more frequently and can be used to identify global forces that could impact the achievement of key strategy goals, facilitating swifter corrective action.

In terms of major transformation projects, AI can automate repetitive tasks such as scheduling, progress tracking and reporting. AI-driven virtual project assistants can support project managers by handling administrative tasks, providing reminders and even offering suggestions based on project data. This allows project managers to focus on more strategic aspects of their projects.[5] Machine learning algorithms can improve the accuracy of project estimates and timelines by learning from past project data. This leads to more reliable project planning and execution.[6]

In summary, AI will inevitably lead to a more dynamic and real-time approach to the management of strategy implementation in universities.

Netflix provides an illustration of a firm that has deployed AI to monitor its strategy dynamically and make swift corrective interventions. Netflix's recommendation engine, as well as suggesting films or shows, monitors how different content strategies are performing. AI tracks viewing habits, completion rates, search behaviours and the effectiveness of thumbnail images in real time. This allows Netflix to see immediately if a show intended to drive engagement in a particular region is succeeding or if there is a need to shift marketing / content investments.[7]

Challenges

Although AI represents an opportunity to revolutionise universities' approach to strategy, there are several potential challenges.

i. Technology choices and economics of AI

The choice of technology is a crucial factor and universities will need a strategy and roadmap to ensure a joined-up approach to the implementation of AI. Furthermore, the economics of AI capabilities will need to be carefully assessed and evaluated. The AI researcher Andrew Filev argues that by paying $200 / month for OpenAI's ChatGPT Pro rather than its $20/month subscription, he saves thousands. The Pro version provides specialised knowledge compared with advice from a traditional expert which would cost at least $500.[8] He goes on to argue that although we are used to the cost of computation decreasing exponentially, what might seem like an incremental increase in intelligence to a bystander sometimes requires a step-function increase in computational cost. For example, OpenAI's o1 reasoning model costs $60 per million output tokens, while o1-pro, their most expensive offering, costs $600 per million output tokens (output tokens being the fundamental units of data that AI models use to process and generate text). This illustrates that users will have a dilemma when it comes to procurement and may struggle to assess the price point versus value when purchasing AI tools.

ii. Data maturity

Many universities will have data architecture which is not mature enough to support the integration of some AI tools. This will mean they will require investment in technology for curating, creating and accessing both internal and external proprietary data sources.

iii. Filtering signals

Boston Consulting Group talks about using data competitively to generate a signal advantage – the ability to capture, interpret and act upon signals gleaned from rich and dynamic data rapidly.[9] However, with the potential for an avalanche of data being produced by AI, it will be important to glean and identify the important, valuable and authentic signals from

data. AI is imperfect, and although the application to process structured and unstructured data to generate insights is powerful, decision makers will have to filter the wheat from the chaff.

The quality of insights will inevitably improve as the technology matures. An example is the advancement of agentic reasoning in AI. We are used to posing a question of a Large Language Model (LLM) based generative AI. This is akin to writing an essay in one sitting without using the backspace key. Agentic reasoning is more sophisticated and iterative. To continue the analogy regarding the drafting of an essay, agentic reasoning would involve: writing an essay on topic 'x'; establishing whether web research is required; writing a first draft; considering what parts need revision and more research; and revising the draft.[10]

iv. Skills

As AI is rolled out in strategy support functions, there will be a need for new skills and roles to manage the inputs and outputs associated with the technology. These skills will need to focus on framing the questions the AI is seeking to answer, understanding the limitations of the technology and communicating the outputs in an accurate and authentic way for decision makers to utilise them.

AI offers major opportunities for the way strategy is undertaken in universities. The world we now live in is immensely complex and this presents challenges to strategists, but AI can help us to better understand these complexities.

As a strategist, I inevitably view the application of AI from the perspective of competitive positioning. Noting the challenges universities will face when seeking to adopt AI, those that adopt and integrate AI successfully and cost effectively to inform strategy formulation, adopt it across their operational areas and use it to facilitate implementation have the potential to out-compete those that are slow to adopt the technology.

1 Peter F Drucker, *The Practice of Management, 1954*

2 Alfred D Chandler, *Strategy and Structure: Chapters in the History of the Industrial Enterprise, 1962*

3 H Igor Ansoff, *Corporate strategy: an analytic approach to business policy for growth and expansion, 1965*

4 McKinsey and Company, 'How AI is transforming strategy development, 5 February 2025 **https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/how-ai-is-transforming-strategy-development**

5 Project Management Institute, 'Shaping the Future of Project Management With AI', October 2023 **https://www.pmi.org/learning/thought-leadership/shaping-the-future-of-project-management-with-ai**

6 Antonio Nieto-Rodriguez and Ricardo Viana Vargas, 'How AI Will Transform Project Management', *Harvard Business Review, February 2023* **https://hbr.org/2023/02/how-ai-will-transform-project-management**

7 Shiza Akif, 'Case Study: How Netflix Uses AI to Personalize Content Recommendations and Improve Digital Marketing', *Medium, 7 October 2023* **https://medium.com/@shizk/case-study-how-netflix-uses-ai-to-personalize-content-recommendations-and-improve-digital-b253d08352fd**

8 Andrew Filev, 'The AI Economy Paradox: When $20 No Longer Buys $200 Worth Of Intelligence', *Forbes, 14 April 2025* **https://www.forbes.com/sites/andrewfilev/2025/04/14/the-ai-economy-paradox-when-20-no-longer-buys-200-worth-of-intelligence/b**

9 Martin Reeves and Martin S Deimler, *Adaptive Advantage: Winning Strategies for Uncertain Times, Boston Consulting Group, 2012*

10 Sequoia Capital, 'What's next for AI agentic workflows ft. Andrew Ng of AI Fund', March 2024 **https://www.youtube.com/watch?v=sal78ACtGTc**

4. It is time for university professional services to embrace GenAI

Dr Ant Bagshaw

What are the Generative AI (GenAI) tools really good at? The Large Language Models – like OpenAI's ChatGPT, Google's Gemini or Anthropic's Claude – are great at working with words. They can produce written content more quickly, and often to a better standard, than many experienced writers. I use the tools to summarise large documents, to prepare initial drafts of reports and to get feedback on what I write. And yes, I used the tools to help me prepare this piece, though – in this case – the words were typed with my own fair hands.

My favourite task is asking one of the tools – which has ingested the last ten years of the organisation's policy positions and media releases – what a mission group's response should be to the latest government consultation document. It is pretty good, not least because the same issues in the sector recur with enough regularity that the group already had a position. Generally, I get an answer which is around 80% there and I feel able to take that informed view because I already have a reasonable sense of what a right answer might be. The machine's output is not the final position, but I use it as an input to the work process. This is a material productivity gain that helped a small mission group to have access to an institutional memory which had otherwise been lost through personnel changes or which was impractical to navigate through other search tools.

Preparing consultation responses or drafting media releases is just one narrow part of what happens in universities. But in my experience working in professional service roles in institutions and working with many universities as a consultant, there are many tasks which GenAI can help with. Universities are typically paper-driven. Reports, agendas, policies and minutes are all standardised texts which are ripe for GenAI to work on. Navigating and interpreting statutes, ordinances and regulations need no longer be a specialised task but one which is accessible through open-

access and intuitive tools. Some of the skills, knowledge and processes held dear in universities are no longer as rare or precious as they once were.

Knowledge work is changing

You can find any number of reports from the big consultancies which show predictions of AI's role in changing the nature of work. McKinsey's 2023 *Generative AI and the future of work in America* claims that 30 per cent of hours worked today can be automated by 2030.[1] Those roles securing the biggest productivity gains, its analysis suggests, are professionals in STEM (Science, Technology, Engineering and Mathematics) and Education and workforce training. These are closely followed by Creatives and Arts management, Business and legal professionals and Managers. GenAI is coming for the work of everyone involved in ensuring that universities keep running.

It seems implausible that universities will run completely absent of professional staff, not least because there are many roles where physical actions are essential or where human contact makes a material positive impact. We need to recognise, however, that GenAI has massive implications for universities and the net result is likely fewer jobs.

The promise of AI automation is both quality improvements and efficiency. Machines will make mistakes, but humans are fallible too. We can build tools which provide advice to students at any time of day and in any language and which are more conscious of potential bias than many people. We should start from the premise that we need better and we need cheaper. In the context of enormous pressure on university finances, the only place that real and sustained savings can be made is through staff cuts.

This will be painful and difficult, but it also offers us a path to a better higher education system which uses its limited resources well. The university exists not to serve its staff but to be a place where students receive high-quality and useful education and from which research makes a positive impact on the world. Achieving the ambition of a high-participation system sustained by limited resources can only be achieved with improved productivity.

How do we get there?

We currently have both the burning platform for change and the tools we can use to shape and reshape the work of universities. The barriers to change are both cultural and technological, though it is culture that will likely raise the most obstacles. The idea of the university as a community and a place of human-to-human interaction is beloved by many in the sector. But massification has already depersonalised much of the staff and student experience. Faceless systems, generic mailboxes and relentless standardisation are more commonly experienced than an authentic and personal interaction.

As grim as it might sound to some, higher education at scale is here to stay. It needs to be of higher quality. We can only achieve better and for more people if we ensure that resources are used as well as possible. That means applying the technologies that we have and banking the savings.

Widespread AI adoption for professional service functions will not be free. But we need not simply hand over blank cheques to big tech companies. There is expertise both within the sector and material competition through which we can leverage the right deals. There is much imperfection in the tools available – including bias, intellectual property infringement, error and hallucinations – but we should not pretend the system we have now is perfect. If our choice is between two flawed systems, we should choose the cheaper one.

Change is hard and we need to support people through a respectful transition. New jobs are being created. Universities are also places where we can offer re-training opportunities to colleagues affected by these new tools. It is more humane to help colleagues into new roles now than to sustain jobs which machines can do better and cheaper. That would do a disservice to staff and would fail to support institutional missions.

Best foot forward

AI will change work fundamentally, making some roles redundant but also creating new opportunities. Our response should be proactive, not defensive. The excitement for our universities should come from

the creation of new and better jobs within universities where there is empowerment – through the application of high-quality tools – to do impactful, creative and sophisticated work. There is an opportunity for leaders in professional services to use this time of change to take personal responsibility for leading new ways of working.

My experience is that most people working in professional roles in universities believe in the mission. They want to support research which makes a difference to the world. They want as many students as possible to benefit from transformational education. Yes of course they want jobs too. We should seize on this belief, define better the future for professional services and articulate how at-scale implementation of AI delivers for stakeholders. There is a bumpy road ahead, but universities have always been able to reform and reshape as new technologies and new social expectations have arisen. It is time to embrace the change.

1 McKinsey Global Institute, *Generative AI and the future of work in America*, 26 July 2023 **https://www.mckinsey.com/mgi/our-research/generative-ai-and-the-future-of-work-in-america**

5. Large Language Models, Education and the Evolution of Digital Dialogue

Vinton G Cerf

Much has been written and more will be on the use of AI in education. Once the generative capacity of increasingly Large Language Models (LLMs are a type of artificial intelligence designed to understand and generate human-like text based on vast amounts of data – ChatGPT is an example) became apparent, cries of alarm rose. Students would use chatbots to compose their themes, teachers could no longer tell whether students were learning anything or were merely exercising clever prompting methods to 'automagically' generate output. Efforts were launched to train bots to detect bot-composed outputs. These were not always reliable. While students were not necessarily learning the subject matter, they were implicitly learning how to prompt bots for output.

All the evidence so far shows that LLMs are simultaneously remarkable in their ability to generate coherent and valid output and fully capable of generating convincing output that is completely counterfactual. The latter is sometimes called 'hallucination' by the experts in the field. This situation reminds me of an earlier experience I encountered as the World Wide Web (WWW) and education met in the classroom.

A teacher complained to me that she hated the Internet.

'Why is that?', I asked.

'Students are bringing their laptops to the classroom and using them while I am lecturing!', she said.

'What are they doing?', I asked, thinking they were on Twitter(X) or LinkedIn or TikTok or some other entertaining site.

'They are looking things up that I am talking about!', said the teacher.

'Wait a minute!', I said.

‘You are unhappy that students are interested enough in your lecture to look up the subject matter online?’

‘I’m the teacher and they are sometimes challenging what I am teaching!’

I suggested an exercise for her to consider. Pick 10 websites and give the students an assignment to pick one of them and then evaluate the website for its clarity and accuracy. Tell them that they do not get full credit unless they consult offline as well as online sources. There are these places called libraries and they have in them things called books that may have information relevant to your assignment.

In today’s world, LLMs are new elements found in the digital ecosystem including the WWW. Suppose teachers allow the use of LLMs in the fulfilment of writing assignments but then require the students to show due diligence in checking the veracity of the information in the resulting output? Citations for assertion of facts, references to on- and off-line sources. Could LLMs become a new Socratic mode of learning? The more I think about this, the more attracted I am to both text and oral exchanges with LLMs, augmented by traditional library and web search methods for validation. Of course, common-sense validation ought to be applied. There is a story about a bot recommending that people eat small pebbles to add minerals to their diets … common sense applies here.[1]

Setting aside the potential for hallucination, LLMs have remarkable recall capacity. They can reliably recall vast quantities of detail that humans might not be able to demonstrate. Over time, humans tend to forget, but LLMs will not, short of computer memory failure. Of course, this excellent recall, in the absence of context in training, can lead to counterfactual generated output. Fact-checking LLMs and LLMs with common sense might tip the balance towards increased utility of LLMs. The latter have been a holy grail for artificial intelligence from its origins in the mid-1950s.[2]

Returning to the Socratic theme, it is evident that LLMs are increasingly capable of engaging in both spoken and written dialogue. These natural language interfaces represent a new and perhaps more flexible Application Programming Interface (API) than more traditionally structured ones. This suggests the possibility of natural language as an interface between

LLMs! Of course, natural language is how humans communicate with one another but, as smart as we are, that means of information exchange is subject to ambiguity and misunderstanding.

In my early work on the Internet with my colleague and friend, Robert Kahn, we would occasionally get into heated debate (mostly initiated by me). 'What? It can't possibly work that way!' I might rant. We quickly discovered that the source of my surprise was not that Bob was wrong but that we had incompatible models for the problem we were discussing. For example, I might have assumed a task had to be completed in a few weeks and could not possibly be done that quickly, while Bob had a much longer-term view – perhaps five years out. We learned to stop and compare our mental models of the problem in question. After we ironed out the mismatches, we could go back to our collaboration without the heated debate, but instead relying on the assumption that we had the same model about which we were debating. Using natural language interfaces between LLMs might require some additional semantic specificity for precision.

There already exist services that use oral or textual natural language as an API. Google Assistant is one example. LLMs could tell other LLMs what to do or ask LLMs to respond to queries. This would be like turning to an assistant for help or a colleague for advice or information. In effect, LLMs and this natural language interface could become the means by which research is undertaken or supporting functions are served. Thirty-five years ago, Robert Kahn and I speculated about a related concept: the knowledge robot or knowbot for short.[3] In this scenario, a knowbot could be created (perhaps by a dialogue with a supporting application) that could be launched onto the Internet to carry out research (or other) tasks. The knowbot would go to sites on the Internet (remember, this was 1988, pre-WWW), land at what I thought of as a knowbot hotel and ask the concierge what services were available and how to activate them. Using these functions, the knowbot would accomplish its task. Knowbots could clone themselves to accomplish aspects of their tasks in parallel. The clones would eventually return the required information to the originating site. Ways of documenting the 'language' of exchange between the concierge and the visiting knowbot might be developed today on the website: schema.org.

In today's WWW, browsers are knowbot-like interlocutors. The browser, under the control of a person or maybe an LLM, ingests HTML (Hypertext Markup Language, the code used to create and structure web pages and their content) or XML (Extensible Markup Language, a flexible text format used for structuring data) pages, which it interprets and acts upon. A web server is expecting HTTP (HyperText Transfer Protocol) requests in the same way that the knowbot concierge is expecting queries / transaction requests from an arriving knowbot. The web servers respond and the browser user processes the response. If LLMs could become browser users through natural language dialogue interfaces and the more formal HTTP structure, we might be closer to the world of knowbots than I had anticipated.[4]

1 Liv McMahon and Zoe Kleinman, 'Glue pizza and eat rocks: Google AI search errors go viral', BBC website, 24 May 2024 **https://www.bbc.co.uk/news/articles/cd11g-zejgz4o**

2 Dartmouth, 'Artificial Intelligence Coined' Dartmouth **https://home.dartmouth.edu/about/artificial-intelligence-ai-coined-dartmouth**

3 Robert E Kahn and Vinton G Cerf, ***The World of Knowbots: An open architecture for a digital library system and a plan for its development***, Corporation for National Research Initiatives, 1988 **https://www.cnri.reston.va.us/kahn-cerf-88.pdf**

4 An interesting side-effect of the use of natural language as a way of dialoguing with the WWW is that blind users might find this *modus operandi* more convenient than the classic screen reader for web pages. The natural language interfaces of LLMs are already attractive accessibility features for blind users.

6. AI and human intelligence

Professor Rose Luckin

In this essay, I explore how AI is reshaping our understanding of intelligence, the implications for higher education and the urgent need for policy interventions that ensure AI serves as a tool for enhancing – rather than replacing – human intelligence.

The 'perfect storm' of AI development

AI refers to technologies that 'analyse their environment and act with a certain degree of autonomy to achieve specific goals.'[1] This includes everything from speech recognition applications to sophisticated generative AI models like ChatGPT.

However, what makes the current AI revolution significant is the convergence of three factors into what one might call a 'perfect storm': vast amounts of data, advanced machine learning algorithms and unprecedented processing power. Every day, what we do as we interact in the world is tracked and lots of data are collected about us. Secondly, we have access to very sophisticated algorithms that can process and learn from these data. And thirdly, there has been an extraordinary growth in computational capacity to enable the processing of vast amounts of data by AI algorithms. This convergence has fundamentally transformed what is possible with AI, bringing us to a moment where we have scaled access to powerful and sophisticated AI. These developments challenge what it means to be intelligent.

Human intelligence in the age of AI

We face a crucial paradox in our relationship with AI. At this pivotal moment, as we develop increasingly sophisticated AI tools, humans need to become significantly more intelligent, not less. This represents a profound challenge for educators because the consumerisation of AI – the mainstream commercialisation of AI into consumer products and services – is sending counterproductive messages to students. While technology companies

promote AI as making life 'easier' and learning 'effortless', I argue that this rhetoric fundamentally misunderstands education's purpose. Meaningful learning requires strenuous mental effort and AI should be used not to diminish this cognitive work but rather to help this mental extension.

AI processes information with remarkable speed and accuracy. But it lacks the reflective and contextual understanding that defines human intelligence, the rich and complex repertoire of our capabilities from critical thinking, emotional intelligence and creativity to academic knowledge.

As AI increasingly replicates aspects of academic intelligence, one part of the road map to increasing our human intelligence is to reconsider what makes human intelligence unique. In my research, I have identified several dimensions of intelligence where humans excel. These include, for example, understanding what knowledge is and how to make good judgements about believing something to be true or not; understanding our own thinking; and being able to plan, monitor and reflect on what we are thinking and doing so that we can constantly improve. This capability is called metacognition and it is vitally important for our ability to learn and become more intelligent.[2]

While the creation of advanced AI is precipitating a need for us to advance the sophistication of our own human intelligence, AI is also a tool to help us in that journey toward increased intelligence. I see extraordinary potential in intelligent analytics.

Traditional education systems typically measure only narrow outcomes, such as test scores and completion rates, while missing the nuanced development of cognition. This is partly because these were the only tools that were available. AI can now help us understand much more about the nuance of the way in which a learner is learning. For instance, with the right data and well-designed algorithms, AI can identify patterns in how students engage with feedback, how they approach problem-solving or how their motivation fluctuates throughout a learning journey. This tells us much more than has been previously possible about the way students learn, not just the outputs they produce. These insights into the learning process enable more nuanced and targeted support to be provided. They

also lay the foundation for students to develop a more sophisticated understanding of themselves as learners.

Data are the foundation upon which AI's learning capabilities are built. This fundamental reliance on data means the quality, comprehensiveness and integration of our data systems ultimately determine what AI can help us achieve in education and how we use AI to increase human intelligence.

The data challenge in higher education

To effectively leverage AI, higher education institutions must address significant data challenges. My research highlights four key issues:

i. **Quality and comprehensiveness of available data:** Many institutions lack sufficient high-quality data to train AI models effectively.

ii. **Integration of disparate data sets:** Siloed data systems prevent holistic insights into student learning.

iii. **Ethical considerations in student data collection:** Privacy, consent and bias must be carefully managed.

iv. **Building institutional data literacy:** Faculty and administrators need the skills to interpret and use AI-generated insights responsibly.

I use the metaphor of 'pipes and poems' to illustrate this challenge. The 'poems' represent transformative educational experiences that AI might enable and the sophisticated thinking capabilities we need students to develop, while the 'pipes' refer to the foundational data infrastructure required to make those experiences possible. Without robust data infrastructure, AI implementation in higher education remains superficial.

Policy Recommendation 1

Higher education institutions should develop comprehensive data strategies that:

- identify specific educational challenges AI can help address;
- identify sophisticated thinking capabilities students should develop that AI can track;

- define clear ethical guidelines for student data use; and
- ensure the interoperability of data systems across departments and institutions.

Reimagining assessment in the AI era

Traditional assessment methods are under scrutiny as AI tools can generate sophisticated responses to standard exam questions. This shift presents an opportunity to rethink how we evaluate learning. AI can help identify patterns in student learning behaviours, track the development of problem-solving skills and analyse how students engage with feedback.[3] Instead of relying solely on standardised exams, institutions should explore:

- AI-assisted formative assessment that tracks learning progression;
- portfolio-based assessment demonstrating real-world problem-solving; and
- self-assessment and peer-review mechanisms supported by AI analytics.

For example, work conducted at Arizona State University used AI to track and analyse if and how students were acquiring Learning to Learn (LTL) skills as they were studying their degree subject. LTL can be conceptualised as improvement in self-regulated learning capabilities – where students actively participate in their own learning process metacognitively, motivationally and behaviourally. It is associated with improved academic performance and knowledge acquisition.[4]

Policy Recommendation 2

Higher education should develop new assessment frameworks that:

- evaluate sophisticated thinking and learning capabilities, such as metacognition and self-regulated learning;
- use AI to track students' cognitive and problem-solving development over time; and
- prioritise demonstrations of uniquely human capabilities, such as creativity, emotional intelligence and critical thinking - noting that AI

increasingly 'appears' to display human attributes and can certainly support humans in their pursuit of these intelligent behaviours, making the task of assessment harder.

Developing increased human intelligence, not just artificial intelligence

Higher education should focus on increasing the sophistication of our human intelligence, using AI to enhance human cognitive abilities rather than replace them. This requires teaching students to evaluate AI-generated content critically, understand AI's limitations and develop strategies for working effectively with intelligent systems.

Conclusion

The AI revolution represents a pivotal moment where humans need to become more intelligent, not less, as we develop increasingly sophisticated tools. For higher education, this means shifting from concerns about cheating to a broader reconsideration of what and how we teach and how what we do increases our students' human intelligence in new and sophisticated ways.

Subject disciplines remain valuable, but primarily as vehicles for developing complex thinking skills that will enable students to thrive in an AI-augmented world. As I have long argued, we must harness uniquely human capabilities – metacognition, social learning and contextual adaptation – while using AI to enhance, rather than replace, human intelligence.

The challenge for higher education policy is not merely technological but deeply human. We must rethink intelligence itself and redesign education to cultivate the uniquely human capabilities that will remain essential in the age of AI.

1 European Commission, 'Digital-ready Policymaking' **https://interoperable-europe.ec.europa.eu/collection/better-legislation-smoother-implementation/glossary/term/artificial-intelligence#:~:text=Glossary-,Artificial%20intelligence,autonomy%20–%20to%20achieve%20specific%20goals**.

2 Rose Luckin, *Machine Learning and Human Intelligence: The Future of Education for the 21st Century*, 2018

3 Rose Luckin, 'Towards artificial intelligence-based assessment systems', *Nature Human Behaviour*, vol.1 **https://www.nature.com/articles/s41562-016-0028**

4 Carmel Kent, Abayomi Akanji, Benedict du Boulay, Ibrahim Bashir, Thomas Fikes, Sue Rodríguez De Jesús, Alysha Ramirez Hall, Paul Alvarado, Jennifer Jones, Mutlu Cukurova, Varshita Sher, Canan Blake, Arthur Fisher, Juliet Greenwood, Rose Luckin, 'Mind the Gap: From Typical LMS Traces to Learning to Learn Journeys' in Goran Trajkovski, Marylee Demete and Heather Hayes (eds.), *Applying Data Science and Learning Analytics Throughout a Learner's Lifespan*, 2022 **https://discovery.ucl.ac.uk/id/eprint/10144816/**

7. Transforming professional services in higher education with AI

Dr Sudheer Parwana

Artificial intelligence (AI) has captured the imagination of higher education leaders, particularly for its transformative potential in teaching, research and assessment. But some of the most immediate and impactful applications may lie in professional services, the administrative and operational backbone of a university. From admissions to finance and from student support to human resources, these services shape the daily experience of students and staff alike. Yet they are often hampered by legacy systems, overstretched teams and manual processes. AI offers a chance to address these challenges, not by replacing human staff but by rethinking how they work.

Professional services staff comprise roughly half the workforce in UK higher education. They underpin the student journey, answering queries, processing forms, managing data and ensuring operations run smoothly. However, frozen domestic undergraduate tuition fees, growing student numbers and high expectations for personalised digital services has left many teams under pressure. The result is inconsistent service delivery, backlogs, errors and a poor experience for students and staff.

AI can help universities do more than simply 'go digital'. It can streamline processes, scale support and personalise services in a way that human teams alone cannot. The early adopters suggest this is not speculative hype, but a practical opportunity for reform.

At the University of Glasgow, for example, robotic process automation (RPA) has been used to tackle high-volume and repetitive administrative tasks. This includes automating document processing and data transfers across systems, tasks which previously consumed significant staff time. The result is fewer errors, faster turnaround times and the liberation of staff to focus on student engagement and strategic work. Crucially, staff were engaged early in the process, ensuring that automation was seen

as assistive, not threatening. This people-centred approach is essential if AI is to be embraced rather than resisted.[1]

A similar logic underpins the use of AI in student-facing services. Staffordshire University, for example, introduced a digital assistant that lets students access their timetable, request documents, interact with student societies and even check in on their mental wellbeing. The chatbot operates 24/7, giving students immediate answers while reducing the burden on front-line staff. Rather than replacing human advisers, AI serves as a triage system, freeing staff to focus on complex or sensitive cases that require empathy and discretion.[2]

Beyond automation and chatbots, AI can also enhance decision-making. Predictive analytics models, using historical and real-time data, are being used to identify students who may be at risk of dropping out. At Nottingham Trent University, a dashboard system tracks engagement metrics and enables early interventions. These tools help support teams act proactively, reaching out to students before problems escalate. They also allow institutions to allocate support more efficiently, focusing attention where it is most needed.[3]

The potential benefits extend to marketing and admissions. AI-driven models can forecast application trends and applicant behaviour, enabling better planning and more targeted outreach. Some universities use machine learning to personalise communications with prospective students or to inform decisions about scholarship allocations. These applications offer a way to improve conversion rates and support widening participation, if designed and monitored with care.

Yet the path to AI-enabled professional services is not without hurdles. One is the challenge of AI maturity. Many institutions are still in the early stages of adopting AI tools and staff may lack the skills or confidence to use them effectively. According to a recent international survey, only 37 per cent of higher education institutions offer AI-related training for staff and only 1 per cent have hired new AI talent.[4] Professional services organisations, including PwC, have made significant investments into upskilling their workforces in AI, developing initiatives like AI Academies

and social learning events to build digital fluency at pace. The Responsible AI framework provides a structured model for the safe, ethical and transparent adoption of AI, emphasising governance, bias mitigation and accountability – principles that are equally relevant to professional services within higher education.[5]

Upskilling is only part of the solution. Institutions also need to engage professional services staff in the design and implementation of AI tools. Without their insight, universities risk introducing systems that fail to reflect real workflows or that reinforce poor processes.

AI is not a silver bullet, it must be part of a broader shift towards process improvement, data integration and a more user-centred approach to service delivery.

There are also ethical and regulatory considerations. Professional services teams often work with sensitive student data, including health records and financial information. AI systems must comply with General Data Protection Regulations (GDPR) and be designed with transparency and fairness in mind. Predictive tools that flag students as 'at risk' should never be used punitively and decision-making should always involve human oversight.

There is a further risk that AI could exacerbate existing inequalities, particularly if the training data reflect past biases. For example, recruitment tools that learn from historical hiring data may disadvantage certain groups unless explicitly corrected. Universities must ensure that AI systems are regularly audited for bias and that their design reflects institutional values of inclusion and fairness.

Despite these challenges, the case for reforming professional services with AI is strong. It is not simply about cost-cutting or efficiency, though these are important in a constrained funding environment. It is about enabling more responsive, resilient and student-centred services. It is about allowing talented professionals to focus on where they add the most value and about ensuring students receive timely, relevant support throughout their journey.

To realise this potential, institutions should start with the following:

i. **identifying high-impact use cases, targeting repetitive, rules-based processes and high-volume student queries;**

ii. **engaging staff in co-design, ensuring AI tools reflect real workflows and are seen as enablers, not threats;**

iii. **investing in digital skills, providing ongoing training and support across all professional services teams;**

iv. **adopting ethical safeguards, ensuring compliance with data regulations and auditing tools for bias or harm; and**

v. **sharing success stories, creating a culture of experimentation and collaboration across the sector.**

Professional services may lack the visibility of academic innovation, but they are central to the student experience, supporting research, enterprise and knowledge exchange as well as the sustainability of the sector. As UK higher education faces growing complexity and pressure, the intelligent reform of these services using AI may prove not just beneficial but essential.

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8. Artificial Intelligence and the future of research in universities

ChatGPT

Introduction

Artificial Intelligence (AI) is reshaping how knowledge is created, interpreted and disseminated across society. For the higher education sector, particularly in research-intensive institutions, this presents both an opportunity and a challenge. While AI tools are already improving research productivity and enabling new modes of inquiry, they also pose risks in terms of equity, research integrity and institutional readiness.

This chapter outlines how AI is transforming the research lifecycle in universities, explores its implications for institutional strategy and national policy and provides recommendations for how HE leaders, research funders and policymakers can create the conditions for responsible and inclusive adoption.

Higher education institutions are under pressure to deliver greater research impact, foster innovation and maintain global competitiveness in an increasingly digital world. At the same time, the volume of research outputs, data sources and administrative demands placed on academics continues to grow.

AI offers a compelling set of solutions. From accelerating literature reviews and data analysis to supporting writing, peer review and public engagement, AI systems have the potential to reduce researcher workload, improve quality and enable entirely new research paradigms. However, without strategic foresight, these same technologies could exacerbate inequalities, undermine trust or bypass essential ethical considerations.

The question is not whether AI will affect research, but how well the higher education sector is prepared to shape its use. A coordinated policy response is now essential.

AI Across the research lifecycle

AI technologies are impacting all major stages of academic research:

i. **Discovery:** Natural language processing (NLP) powered tools such as Elicit and Semantic Scholar are enabling researchers to find and synthesise relevant literature far more quickly, reducing time spent on scoping and improving the precision of problem definition.

ii. **Data collection and processing:** AI models can clean, integrate and extract insights from diverse datasets – ranging from biomedical sensor streams to social media content at unprecedented speed and scale.

iii. **Analysis and modelling:** Machine learning and deep learning techniques to support pattern recognition and predictive modelling in ways traditional statistical approaches cannot match. This has driven new insights in fields as varied as climate science, education policy and digital humanities.

iv. **Writing and dissemination:** Large Language Models (LLMs) like OpenAI's GPT-4 are now used to draft summaries, structure papers, translate research and create outputs for non-specialist audiences. Meanwhile, AI is being trialled to assist peer review and spot duplication or methodological flaws.

These capabilities are not merely iterative improvements; they enable transformational change in how research is conducted, especially in multi-disciplinary and data-intensive domains.

Benefits for universities and the national research ecosystem

The uptake of AI in research promises a number of system-level advantages:

i. **Increased research productivity:** By automating routine tasks, AI frees up researchers' time for high-value activities, helping institutions meet performance targets under frameworks like the Research Excellence Framework (REF) or the Knowledge Exchange Framework (KEF).

ii **Accelerated translation and impact:** AI can speed up the pathway from academic insight to societal application, particularly where real-time data or policy responsiveness is required.

iii. **Interdisciplinary innovation:** As a general-purpose technology, AI facilitates collaboration between traditionally siloed disciplines, encouraging integrated approaches to global challenges.

iv. **Enhanced equity of access:** AI tools can help under-resourced institutions or researchers from the Global South participate more fully in international research, especially when open-source and multilingual platforms are prioritised.

Emerging risks and structural challenges

Despite the promise of AI, its use in university research must be approached with caution:

i. **Bias and transparency:** AI models trained on historical data may reinforce existing academic or societal biases. Black-box systems challenge norms of transparency and reproducibility.

ii. **Research integrity and authorship:** The use of generative AI for drafting content raises questions about originality, academic misconduct and the role of human creativity in scholarship.

iii. **Ethical and legal compliance:** AI-based research involving personal or sensitive data brings complex compliance issues under frameworks such as GDPR, the Data Protection Act and emerging AI regulation.

iv. **Capacity and capability gaps:** There is currently wide variation in researchers' ability to use AI appropriately. Without focused investment in training, a new digital divide may emerge – both between and within institutions.

Strategic recommendations for the higher education sector

The sector must move beyond piecemeal experimentation and towards a whole-system response. The following six recommendations outline how

universities, funders and policymakers can support the responsible and inclusive integration of AI into research:

i. Invest in AI-compatible research infrastructure

AI-enabled research requires robust digital infrastructure—high-performance computing, cloud-based platforms, secure data environments and federated access to national datasets. Institutions should align their strategies with the ambitions of UKRI's Digital Research Infrastructure Programme and explore shared services across consortia.

ii. Create specialist AI research support units

Universities should establish dedicated teams within their research offices to provide AI advisory services, curate approved tools and build bridges between technical and domain expertise. These teams should play a role similar to existing statistical or grant support services.

iii. Develop responsible AI policies and governance

Institutions must issue clear policies on:

- use of LLMs and AI in authorship;
- data ethics and consent in AI projects; and
- transparency and reproducibility for AI-enabled findings.

These policies should draw on existing frameworks such as the UK AI Research Ethics Framework and should be co-designed with academic communities.

iv. Embed AI literacy in research training

Funders and institutions must incorporate AI training into doctoral programmes, staff development and research methods curricula. Training should cover not only technical skills, but also critical awareness of ethical, legal and social implications.

v. Encourage interdisciplinary AI research clusters

Creating AI-focused research centres that bring together social sciences, computer science, humanities and policy disciplines will drive high-impact

and cross-sectoral projects. Funders should provide seed funding for experimental collaborations and challenge-led research themes.

vi. Engage with national and global stakeholders

Universities should form strategic partnerships with AI companies, publishers and civil society to shape tool development, data governance standards and responsible innovation. These partnerships should ensure that AI advances contribute to the public good and uphold academic values.

Policy implications and next steps

If AI is to become a source of research excellence and innovation for the UK HE sector, national agencies must take an enabling stance.

Key steps include:

- funding calls that support AI capacity building, particularly in non-Russell Group institutions;
- standards development for AI-related authorship, ethics review and compliance reporting; and
- interoperable data ecosystems, where HEIs and government share access to high-quality datasets for research under trusted conditions.

A joined-up approach – between universities, regulators, funding bodies and industry – is critical to achieving safe, inclusive and value-driven AI integration across the research sector.

Conclusion

Artificial Intelligence offers one of the most significant opportunities in a generation to enhance the efficiency, inclusivity and impact of academic research. However, realising this potential requires more than just new tools – it demands new strategies, new capabilities and new ways of thinking about what research is and whom it serves.

By investing now in the skills, infrastructure and governance frameworks needed, the UK's HE sector can position itself not only as a user of AI, but as a global leader in its responsible and transformative application.

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In this collection of pieces, nine human authors – plus ChatGPT – look at how artificial intelligence (AI) is already changing higher education.

They also consider what AI could eventually mean for teaching and research as well as professional services – and even touch upon what it might mean for the future of human intelligence.

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