GenAI in UK Higher Education: Risks and Opportunities

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Executive Summary

By 2030, commercially available GenAI tools will likely be able to respond to most unsupervised written assessment prompts (including essays, creative writing, lab analyses, coding, and take-home exams) in a manner that effectively imitates high-quality university-level outputs. However, the hard work of engaged learning is the mechanism through which subject knowledge and critical thinking skills are earned. As a result, **students who regularly use GenAI tools as a substitute for the hard work of educational engagement will not learn effectively**, failing to develop the capacities that constitute the key outcomes of higher education. Unfortunately, UKHE students report that they are increasingly using GenAI to reduce their learning effort rather than to learn more effectively.

This report is a high-level summary that describes effects of GenAI on higher education. Regarding teaching and learning, it outlines three possible approaches to curriculum in this period of transition:

1. A **cost management** approach, in which learning effort and assessment continue to be mostly unsupervised, leading to declining differentiation between UKHE offerings and unevaluated online learning by individuals. This ‘status quo’ strategy poses significant medium-term risks for the sector.
2. A **revived version of early-to-mid-20th century pedagogy**, in which students learn primarily through lectures framing their independent engagement with media and text, and demonstrate competency through fully supervised assessment (e.g., invigilated exams and oral presentations).
3. A **move toward active learning modalities**, including project-based learning, community-engaged learning, field-based learning, and entrepreneurial activation. In these models, assessment is incorporated into high-impact activities which are partially supervised, and students are partially accountable to stakeholders beyond the classroom environment.

Many institutions will attempt to blend elements of these approaches, and may articulate others; there is not one right path forward for all institutions. Regardless of pedagogical choice, **effective UKHE strategy will begin with acknowledgement that GenAI use does not allow for lower-effort learning, because it is through personal effort at difficult prompts that learning occurs.** Subject knowledge and critical thinking skills require hard work to develop, and this will remain true no matter what tools are used. GenAI tools that purport to reduce the need for student effort will inevitably disrupt learning and thus deny students the opportunity to learn by testing themselves against difficult problems with the support and scaffolding of an academic community. The task of higher education institutions should remain, as it has long been, to create institutional structures that help students and researchers to become ever-more curious and engaged in learning about the world.

Researchers face a more nuanced challenge with regard to GenAI. These tools can be genuinely useful in the research enterprise, both in the laboratory and also in the writing process. Yet as is true for student learning, the short-term benefit of engaging in science without full intellectual engagement in prior art comes with concomitant dangers for the long-term skills development of scholars, who may learn to depend on GenAI tools as a substitute for an understanding of scholarly literature, or fail to develop core scientific practices of analytical rigour. These possibilities should be carefully monitored and guarded against.

UKHE institutions should respond rapidly to the general availability of GenAI tools. Successful institutions will adopt and promote GenAI use by both staff and students only where its use does not impede the development of subject knowledge or critical thinking. **In teaching, GenAI may be especially useful in providing iterative feedback to students on formative assessments and practice work. In research, it**

may be especially useful in rapid prototyping and testing potential solutions in large but well-defined problem spaces (e.g., modelling glacier movement or testing pharmaceutical candidates). However, there are significant educational, reputation, and business model risks from non-reflective GenAI use, especially when students use GenAI tools unobserved in ways that disrupt learning and rigour in assessment.

Universities should rapidly engage in a period of difficult work: critically examining legacy pedagogy and research practices, articulating both the moments when GenAI can be useful and also when its use subverts skills development, and then building new patterns of practice that reflect this distinction. Fortunately, there are pragmatic paths forward that reckon with the transition.

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Introduction

The rapid proliferation of Generative Artificial Intelligence ("GenAI") technologies poses significant risks for the existing model of UK Higher Education ("UKHE"). However, by clearly understanding the nature of the challenge that the GenAI transition provides, the sector can identify corresponding opportunities to change our practices and recommit to delivering on the twin missions of education and research for the public good. It is imperative that the sector squarely faces the existential nature of these challenges to our current models of operation in both education and research.

Education is the structured development of human abilities. **There is a direct relationship between the effort that students put into their studies and their development of subject knowledge and critical thinking skills** (Miettinen 2010, Kolb 1984). Historically it has also been true that there was a necessary and direct relationship between students' knowledge and abilities on one hand and the various outputs they produce for assessment on the other. The wide availability of GenAI tools breaks this linkage, making unsupervised assessment an unreliable indicator of learning.

Students who extensively use GenAI tools unsupervised appear to spend a rising proportion of their total effort on important but lower-order learning tasks, like organising notes generated by GenAI tools, reading simplified summaries of difficult assigned texts, or prompting GenAI tools to guide coding or laboratory tasks (Smith 2025, Freeman 2025). Similarly, GenAI tools allow students to provide adequate responses to conventional assessment prompts (e.g., both short- and long-form written outputs) without having developed subject knowledge, sidestepping the most difficult and time-consuming tasks of the learning process. **Used uncritically, GenAI tools allow students to avoid the substance of education by bypassing sequences of experiences designed to scaffold thinking skills and to facilitate substantive evaluation.**

In research, the risks of GenAI use are distinct. **Novel scientific work can be produced by the use of any number of technological aids, including GenAI, because the explicit goal is the scholarly output rather than learning for the researcher.** If an expert researcher is able to supervise a set of GenAI tools to facilitate new knowledge,that is not in principle different than supervising a set of lab instruments in operation, or a wet lab filled with hard-working graduate interns. **However, as is true for students, it remains the case that *the process of struggling to understand* is how researchers build up their own capacity for expert-level knowledge production over a career**. Thus, using GenAI tools may extend a researcher's ability to produce knowledge at any instance in time, but some modes of use have the potential to erode individual researchers' growth in expertise over time. Supervising GenAI in science is its own skill, and a potentially valuable one, but not one that directly replaces internalised domain expertise or critical thinking skills. UKHE institutions will need both kinds of capacities in the future.

At core, GenAI tools enable process automation. When GenAI tools are used to automate difficult learning tasks, then GenAI use is a *substitute* for human learning. If the result is that a student or researcher redeploys the time freed from one subject of study (via automation) toward other equally difficult and valuable discovery tasks, then the substitution merely serves as a choice about what knowledge is valued, and is pedagogically neutral. But **if the result of GenAI use is less total effort spent on the hard work of discovery, or a shift in time spent from higher-order thinking tasks to lower-order ones, then both students and researchers will inevitably learn less.**

For both teaching and research, the sector should reckon with the following questions:

1. **What forms of automation impede the development of capacities** in students or researchers? The automation of these tasks should be avoided for students, and considered carefully for researchers. Wide implementation devalues the university's educational offering in the marketplace and (over time) may erode core competencies within the sector.
2. **What forms of automation *do not* impede the development of capacities** in students or researchers? This kind of automation should be embraced and systematically implemented. When it does not impinge on learning, GenAI can create cost efficiencies and should be widely used.
3. Finally, **which important tasks are unlikely to be automated** in the near-to-intermediate future? These should be embraced as differentiators for UKHE and considered as areas for potential institutional investment.

To succeed, **UKHE institutions should pivot to embrace GenAI tools whenever there is little cost to learning**. **They should adopt institutional practices that require students to continue engaging in the difficult tasks that facilitate substantive learning.** Researchers should continue to practice the habits of mind which allow them to develop insight through practice.

Background on GenAI: Capabilities, Trajectories, and Disruptive Potential

The term GenAI is a shorthand for a suite of text- and image-generation tools generally available to the public. The term is in some ways misleading: from a technical point of view, these technologies are better described as 'recombinatory' than generative, and the tools that are publicly available are not 'intelligent' in an everyday sense but rather patterned on the outputs of intelligence (Denning 2025). However, the term has become widely understood in the marketplace and is thus used throughout this report.

Precursors to contemporary GenAI technologies have been steadily developed in research and practical applications for decades. These techniques were already deployed extensively to non-expert users through a wide array of tools, including but not limited to phone cameras, voice- and facial-recognition software, language translation software, automotive safety systems, voice assistants, and industrial control automation. From a computer science perspective, there is not a sharp dividing line between research from 2016 on machine learning and 'big data' on one hand and the current state of the art of GenAI research on the other: they are part of an ongoing research trajectory.

The innovation that undergirds the current GenAI boom was the development of what was called a transformer architecture for machine learning at Google, the principles of which were published in 2017 and then widely adopted across the industry (Vaswani et al., 2017). This transformer architecture is at the heart of most of the current generation of so-called 'frontier' models, most commonly 'large language models' ("LLMs") but also including other large transformer models. The first transformer model with wide public availability capable of generating large chunks of fluent text in response to user prompts was ChatGPT, introduced by OpenAI in late 2022.

Today, there are many providers delivering transformer-architecture tools that can generate long-form text, images, and video in response to complex and multi-modal prompts. Whilst the state of the art is moving quickly, **current-generation tools are able to**:

- **summarise uploaded creative works** (either text or visual media) at arbitrary levels of abstraction;
- **generate outlines** for essays on most topics that universities teach;
- reliably **produce highly fluent blocks** of hundreds or thousands of words of text in response to both factual and conceptual prompts;
- iteratively and interactively **produce software** that responds to many introductory-to-intermediate computer science prompts; and
- **respond to both empirical and theoretical queries** about uploaded images, scientific figures, maps, and video.

Current-generation tools also have **significant and well-known weaknesses**. These include but are not limited to:

- **non-deterministic outputs to deterministic prompts** (strengths at addressing large-world problems are mirrored by performance weaknesses in well-defined small-world problems like basic maths and operating light switches);
- **sycophancy** (a tendency toward reinforcing the pre-existing views and biases of users); and
- **hallucination** (a tendency to produce outputs that contain confident but false assertions).

There is significant uncertainty about the near-term trajectory of capability for GenAI tools. Some industry stakeholders argue that multiple companies are only a few years away from deploying pervasive and massively scalable superintelligence (where 'super' indicates 'more than human') (Quiroz-Gutierrez 2025b). Others expect increasingly useful 'virtual collaborators' in the next 2 years, where GenAI tools are not superintelligent but will be capable enough to approximate entry-level knowledge workers at a wide range of tasks. Still others see a current market bubble in which the industry has oversold its trajectory and is already approaching a near-term functionality plateau in which companies will compete on price and domain optimisation (Metz 2026).

With regard to UKHE, where GenAI technology falls on this spectrum of possible outcomes matters less than that it will likely fall somewhere within it. GenAI text-generation tools are already capable of producing an adequate (i.e., middling but passable) or better response to many assessment prompts in higher education contexts (Hill 2023, Corbin et al 2025). **Even if there is no forward progress from today's state of the art in the next five years, UKHE would still need to materially grapple with GenAI's implications for learning and research.**

It is a reasonable expectation that by 2030, nearly any unsupervised text-based assessment prompt will be adequately answered by widely available GenAI tools.

Effects of Student GenAI Use on Learning in the Contemporary Context

There is a long history of pedagogical scholarship on both the introduction of technology in learning environments. Whilst specific research on the effects of text-generation tools (like OpenAI's ChatGPT, Anthropic's Claude, and Google's Gemini) on learning is less robust, there is some early evidence that sits alongside a wider body of work on the impact of GenAI tools on worker performance generally.

The case for widespread educational technology deployment has involved relatively consistent rationales since the 1980s, even as technological regimes have changed: increased **efficiency** in teaching delivery, increased **personalisation** of educational materials for students, improved **monitoring** of student activity and performance, and increased **student engagement** in learning material through increased use of video, multimedia materials, and live screen annotation, etc. Despite ongoing enthusiasm, **technology deployment in the classroom over the past several decades has often had little positive effect on student performance** within traditional knowledge domains (e.g., language skills or mathematics) (Chatterji 2018).

This may be because the technology does not have the expected effect, or because unintended negative effects of using the technology weigh against the positive ones. For example, the literature on technological distraction in classrooms is at this point well established: the proliferation of laptop and phone screens in classrooms offers students many opportunities to lose focus on shared activities, ultimately harming learning outcomes despite allowing for more rapid, extensive, and multi-media note-taking (Baker et al 2012, Taneja et al 2015, Sana et al 2013).

The case for deeper integration of GenAI tools into teaching pedagogy has echoed previous arguments about educational technology in general. Technology vendors and advocates emphasise student interest, personalised learning strategies, efficient use of staff resources, and the ability for students to explore questions whilst minimising the cost of staff engagement (Lee et al 2025, Connelly 2026). Unfortunately, whilst there is more research to be done, research to date indicates that when students use GenAI in many real-world contexts, learning outcomes are not improved. **Students who use GenAI tools at secondary and university levels exhibit less task-related intellectual curiosity, reduced independent creative writing capacity, and reduced independent maths performance** (Bastani et al 2025, Fen et al 2024, Niloy et al 2023). Students struggle to reliably supervise GenAI tools, in part because the output of the tools demonstrates similar lexical polish and confidence regardless of validity (Yang and Zhang 2024). Confidence in findings about the effects of GenAI use by students is reinforced by effects seen in wider populations of knowledge workers, who also demonstrate reduced critical thinking and autonomous writing skills as well as struggles with supervision of errors (Lee et al 2025, Flenady and Sparrow 2026).

It is also concerning that a rising proportion of students use GenAI without regard to risk of impaired learning or academic penalties (Berg 2025, Hsu 2025, Connelly 2026). At the beginning of the 2025-26 academic year, two-thirds of polled UK university students used GenAI tools in their work. One in six admitted to using GenAI intentionally to cheat on assessments and to using GenAI to produce unmarked formative work, whilst one in three admitted to using it for activities that are not academic misconduct but are intended to reduce the effort of their learning process, such as making readings more digestible (Smith 2025). **The most common two reasons that undergraduates offer for their rising use of GenAI tools are to reduce the time they spend on academic work and to improve the quality of their submitted assessments, rather than to learn more effectively** (Freeman, 2025).

Based on the rapid trajectory of increasing use, the sector should expect these numbers to continue to organically rise unless intervention is made (Freeman 2025). Educators who see student writing regularly are already anecdotally aware of significant shifts in the patterns of writing they receive over the past three years in ways that reflect systematic use of GenAI tools: inelegant sentence structures, bullet point summaries, poor transitions between sections of short declarative paragraphs, and less coherent arguments from beginning to end. Our current best practice models of teaching and learning—which sometimes include warning students of the dangers of careless use of GenAI—have not been persuasive to students, who experience both time pressure and a distracting wider media environment.

Whilst the present report is by design a high-level summary of current knowledge, it is important to emphasise that there is still an evolving understanding of the effects of GenAI tools on learning. Some scholarship does suggest potential for positive effects from GenAI use by students, especially when structured into phases of independent critical thinking, GenAI prompting, and independent writing. When students use GenAI as a laboratory tool (as described in the research section, below) it may in some cases be very effective. Unfortunately, it is common in this dissenting literature to evaluate the effectiveness of student learning *via evaluation of outputs produced using GenAI tools,* rather than attempting to evaluate students' independent capacities when they stop using such tools (cf. Shanto et al 2024, Qawqzeh 2024). The most positive use of GenAI in a learning environment appears to be in providing extensive iterative feedback to students on work that they themselves produce without GenAI. This appears to have mostly positive impacts, especially for language learners or learners who are transitioning into new skill areas and benefit from extensive feedback on introductory-level work (cf. Song and Song 2023, Mahapatra 2024).

Pedagogical Models in the Context of GenAI

If UKHE students are increasingly distracted by technology, decreasingly engaged in learning activities, deploying GenAI in ways that compromise learning, and submitting work that demonstrates either difficult-to-detect technological plagiarism or evidence of significant impairment to writing and analysis skills, what is to be done about the university? There are a number of options for changes to both teaching and evaluation. All involve tradeoffs between staff time, institutional resources, and educational efficacy. Three scenarios are described below: a minimum-change scenario, a return-to-basics scenario, and an active-learning scenario.

(1) **A cost-management approach that 'prices in' the impact of reduced learning as a result of widespread 'off-stage' student adoption of GenAI tools.** As long as students continue to engage in university activities in good faith and without shortcuts to their learning effort, current pedagogical approaches have demonstrated their historical effectiveness in helping students to learn. Universities can simply accept that there will be widely differentiated learning outcomes between those who extensively deploy GenAI tools and those who do not in such a learning environment. This approach allows students take moral and practical responsibility for whether they are gaining a degree as an individual or as a human-GenAI hybrid, and allows universities to deflect responsibility for the degree to which students themselves are capable of completing learning tasks in a satisfactory way.

In this scenario, over time GenAI systems will likely generate an increasing portion of the material (textual and quantitative) that students submit to lecturers for assessment. This may well lead to pricing pressure (discussed in more detail below) as students and parents come to question more sharply the value of a university degree. Indeed, many key actors advocating for rapid GenAI development already publicly denigrate the value of higher education, including the leaders of potential institutional GenAI partners like OpenAI, Apple, Microsoft, xAI, and Palantir (Hornstein 2025, Quiroz-Gutierrez 2025).

Universities that accept or encourage uncontrolled use of GenAI by students in response to conventional assessment prompts will still offer an education that can produce real learning. But if students are decreasingly inclined to engage as individuals, the sector should anticipate that pricing pressure will rise. In response to pricing pressure, universities will be forced to make difficult choices about the what to prioritise in delivering educational opportunities, offering increasingly asynchronous lecture content with assessment that is increasingly unsupervised. This will offer declining differentiation between UKHE offerings and unevaluated online learning by individuals.

(2) **A revived version of early-to-mid-20th century pedagogy.** In the early 20th century, students at UK universities experienced a much more individually motivated *learning* process and a much more stringently invigilated *evaluation process.* One reaction to GenAI technologies is to return to such an approach. Instruction could move in the direction of lecturing, with students expected to independently read through a significant body of scholarly literature on their own (or in self-organised groups) in preparation for lectures. Evaluation need not be written in blue books, but carefully invigilated exams would expand significantly in length and complexity, at the expense of unsupervised long-form writing. Examination prompts in the early 20th century were significantly longer and more complex than those commonly offered today, and exam sessions often ran significantly longer as well. Other modes of fully supervised in-person assessment (such as oral presentations and examinations) would widen the breadth of student work whilst remaining resistant to abuse.

This approach explicitly relocates responsibility for learning from academic staff to students. It emphasises the importance of the individual's engagement with the full body of learning materials and lecture activities. It is also resistant to GenAI misuse by students in the assessment process. If GenAI tools are used to study in ways that are genuinely helpful to learning, students will benefit from their use. If these tools are used in ways that are counter-productive for learning, student cohorts will learn through rapid experience that their performance is impaired by such practices.

Unfortunately, this approach counters contemporary understandings of best practice in terms of student engagement and participatory classroom pedagogy. It also has potential recruiting implications as students consider competitive options with assessment modalities that seem softer-edged.

(3) **A move toward active learning modalities.** Active learning is when students learn through engagement in intrinsically valuable learning activities. This includes a wide array of pedagogical approaches, including project-based learning, community-engaged learning, field-based learning, and entrepreneurial activation. In these models, assessment is generally incorporated into high-impact activities which are partially supervised, such as entrepreneurial pitch decks, community-embedded development projects, or scientific field reports based on students' personal data collection.

This approach retains UKHE's historically explicit commitments to student engagement, intellectual effort, and assessment rigour. It does so by requiring that students engage directly in difficult learning tasks in order to progress toward assessment, and then creating process accountability by building assessment tasks that are not amenable to GenAI text production.

Active learning can be facilitated in-person or online, and be synchronous or asynchronous, though students tend to thrive when they experience direct connections with stakeholders and educators. Active pedagogical approaches *can* be high-labour and thus higher-cost, but they can also be designed such that community stakeholders, business stakeholders, and groups of students themselves each provide partial accountability mechanisms for the production of assessment materials independent. For example, an entrepreneurial course in which students build real-world business proposals for community partners requires students to be genuinely confident or risk their personal reputations (and that of the university) with external stakeholders.

There is a significant literature on how real-world stakes for assessment can be part of a pedagogical approach that centres rigour in learning (Doppelt 2003, Sanger and Ziyatdinova 2014, Rohm et al. 2021). Overlapping parts of academic work and assessment (for example, business plan presentations, or creative writing performances) can be supervised by different actors in ways that produce an overlapping set of incentives for students to complete difficult learning tasks themselves.

What all three of the models discussed above share is that they take a realist perspective on the ways that students approach academic effort. A significant fraction of students attend university with the intent of working as hard as possible to learn as much as possible; these students currently eschew text generation aids, read extensively, and tend to learn effectively through these efforts. But students' independent habits of learning are changing rapidly, and it is clear that many students are not intrinsically motivated to maximise their learning. These students require guardrails to shape their 'off-stage' use of GenAI tools in the learning process. **UKHE institutions should re-examine educational approaches with the assumption that if student work is not intrinsically motivating and assessment is not directly observed, a significant and rising percentage of students will avoid the educational process by using GenAI tools to avoid learning effort.**

Patterns of Research Practice in Response to GenAI

Use of GenAI tools in research is, at this point, well-established across many disciplines. Various machine learning techniques are at this point deeply embedded in computational data analysis and many scholars use them in process simulation across the physical sciences (Kussel et al 2025, Singh et al 2025). GenAI tools are also widely used in the technical creative disciplines, for example in software development, digital animation, illustration, and architecture (Şimşek et al 2025, Lobo et al 2025, Liu et al 2025). **We should expect that machine learning tools will continue to become increasingly useful to scholars as they evolve in the coming years.** There is also, of course, computer science research advancing the development of large models themselves; this is an area where the UK is notably currently lagging the state of the art compared to the U.S. and China, and where UKHE is well-positioned to make larger contributions.

GenAI scientific tools are especially useful for rapid iterative prototyping within very large empirical domains. For example, GenAI tools can be instructed to iterate through thousands of potential pharmaceutical molecules to identify candidates with particular physical characteristics that researchers might then focus on more directly. These kinds of **laboratory use cases for GenAI offer clear benefits by automating parts of the research process that would be prohibitively time-consuming for humans and require approximation of judgement that can then be rigorously followed up by (human) research teams.**

It is of course also the case that academic researchers across the breadth of the sector may sometimes deploy GenAI text-generation tools in ways more analogous to those of students: to simplify literature reviews, generate outlines or blocks of text for editing before submission to scholarly journals, etc. Unlike for students, the goal of academic research is not, in a strict sense, the continuing development of the researcher's capacities. Rather, it is to contribute knowledge to the collective body of scholarship. As a result, **as long as the contributions of GenAI tools to literature reviews and analyses are accurate and explicitly acknowledged, there neither an ethical failing nor an immediate practical problem with output of their use**.

However, it is inconveniently the case that a key way that researchers develop into better researchers over time is by doing the hard work of reading difficult academic work and practising the skill of synthesising it into an understanding of the state of scientific knowledge. This in turn provokes good research questions and requires the cultivation of critical thinking. For individual reasons of maintaining career trajectories it will be important to cultivate awareness of the risks of dependence on tools that could blunt the critical thinking skills of researchers. Additionally—at least at present—GenAI tools are not generally capable of producing text demonstrating the kinds of autonomous insights associated with cutting-edge science. **As a result, there is some risk that developing significant dependence on GenAI tools for scholarly writing and literature summary could impair the sector's research enterprise as it seeks to expand in the coming years.** There is a still-developing scholarly debate regarding the efficacy and ethics of using GenAI writing tools in this manner for scholarship, but views in the sciences have not yet consolidated (Schlagwein and Willcocks 2023).

The prudent path is to continue to critically evaluate the impact of GenAI in the authorship cycle on the intellectual and professional development of researchers as well as the quality of innovative scholarship, but to cultivate ongoing awareness of potential negative impacts and revisit regularly as the state of scientific knowledge about GenAI use improves.

Risks to UKHE Business Models from GenAI

UK universities operate as independent organisations, with varying corporate structures based on history, devolved national lawmaking, and operational strategy. Unlike in other national contexts, UK universities set their own budgets and are generally expected to manage their own costs and revenue despite being notionally public institutions. However, **universities are unable to independently set prices for the majority of their students.** Domestic fees are set differently across the devolved nations, but in general, the revenue per domestic student across the UK is controlled by state policy. Similarly, UK research funding council grants are competitive, so in principle individual institutions can improve their funding by improving on execution of research proposals. However, **the total pool of both conventional research council funding and baseline funding based on REF results (e.g., QR or REG) is set by government policy**. The amount of these funds and the rules for their distribution are set in ways that make it increasingly difficult for the sector as a whole to break even on traditional research activities.

Taking teaching and research funding constraints together, **even prior to the widespread use of GenAI tools, the sector was facing widespread financial challenges** (Ogden and Waltmann 2024). For a period of time, UK universities were encouraged to meet a rising gap between institutional costs and available funds by recruiting a growing number of international students, for whom institutions were free to set fees as at market levels. However, UK government policies since 2023 have significantly undercut the sector's ability to compete for such students, reducing enrolment across the sector. As a result, UKHE institutions are seeking to continuously cut budgets in the face of falling financial support from government, stagnant fee levels, and inflationary pressure on costs.

Because universities are not in control of their pricing structure, they are not free to make choices to optimise the cost/benefit ratio of a university degree by raising the cost of delivery in order to ensure the delivery of satisfactory value. **This means that the sectoral response to the widespread availability of GenAI tools cannot be for universities to move 'upmarket' by reducing staff:student ratios or to offer more contact-intensive educational experiences. Instead, the sector's primary available financial optimisation in the GenAI era is to reduce the staff time that is required to deliver each student's education.** Finding new revenue streams (e.g. philanthropy or research commercialisation) are beyond the scope of this document but would widen the sector's scope for competitive reaction considerably.

At the same time that the sector is struggling, the technology industry is working rapidly to reduce the value of our signature educational products in the marketplace by competing via textbook 'disruptive innovation' offerings. This strategy starts with disruptive offerings at the bottom of the market, and grows by incrementally increasing their value proposition upward over time. Companies like Skillshare and Coursera provide largely non-accredited educational offerings which emphasise micro-credentialing and targeted skill-building rather than coherent bodies of subject knowledge or critical thinking skills. Youtube offers a massive library of edutainment video content algorithmically honed to be more immediately pleasurable satisfying than any university lecture. Massive online open courses ("MOOC"s) from edX and FutureLearn offer 'auditing' of university-style online curricula for low or no cost with limited or automated assessment as a fee-based add-on. Meanwhile, Google, Anthropic, and OpenAI suggest that their GenAI chat products will soon be able to interactively answer nearly any questions a learner might have with infinite patience and nominal cost.

Whilst these private educational technology companies have diverse business models, as a group they are working to undercut UKHE pricing by unbundling education and automating as much of their offering as possible. These companies focus on delivering educational materials to students at scale and downplay the role of scaffolding across a programme of learning or rigour of assessment that leads students to a set of goals over time. **These non-UKHE actors offer much less to students, but what they offer is available at a significantly lower selling price.** The effect of GenAI will be to accelerate this competitive dynamic by offering an increasing amount of simulated feedback without taking responsibility for rigour or accountability in the assessment process.

There has been ongoing competitive pressure from alt-education providers for some time. What has changed since 2022, however, is that students are learning less from UKHE institutions because they are increasingly avoiding the hard work of learning. Our students understand that they are gaining less from their education. It has been within their power all along to learn more by working harder. However, the evidence is rapidly mounting that when left to their own devices, our students are not willing to work harder in exchange for more learning. **In order to control its pricing power and thus its destiny, UKHE must maintain the clear market value of, and its central role in, assessment and credentialing. This will mean finding ways to insist that students actually do the hard work of learning and ensuring that assessment has durable, verifiable rigour.** It will also mean focusing academics' educational labour on experiences that students explicitly value.

<u>*Conclusions*</u>

UKHE institutions have a long history of offering excellent, transformational education to a broad public at a cost that offered excellent value both to government and to the students who attended. At the same time, the country's universities have been crucial scientific explorers, driving generations of economic development across the UK and the world. The sector's national and international reputation is excellent, the quality of our scholarship continues to be high, and our students achieve success after graduation.

However, in both of our core domains of teaching and research, **the impact of GenAI on universities is likely to be significant and fast-developing.** It is worrying that, unlike in previous generations of scientific advancement, cutting-edge GenAI research is happening almost entirely outside of the UKHE ecosystem (and, indeed, in many cases outside of the UK entirely). The innovations that are sweeping the sector are currently outwith our control.

The first order of business should be to rapidly revise educational offerings so that students cannot continue to opt out of the work of education and still receive a degree. This is an existential risk for the sector. Thankfully, **the sector has the pedagogical tools and the teaching skills to intervene before the reputation of higher education is systematically undermined.** The faster we move, the easier it will be to persuade students to change their practices and to preserve, or even improve, the learning process and concomitant educational outcomes.

In the background of this urgent reshaping of teaching, carefully observing the use of GenAI in research processes is the prudent path. Universities that find ways to use GenAI appropriately across the breadth of the research enterprise will succeed. **There is a 'middle path' between ignoring the productivity potential of research process automation via GenAI on one hand, and eroding our own scientific capacities and rigour as researchers on the other.** This will require ongoing reflection, a focus on our ongoing development as scholars, and institutional care.

Moving forward, in order for UKHE to control its educational and research destinies, it should invest in autonomous capacity to use GenAI in the educational context. **If for-profit education-adjacent technology companies define the shape of GenAI use for higher education over the coming decade, the university sector will struggle to differentiate our own offerings within our own industry.** At the same time, focusing on "GenAI for education" is an area of investment with the potential to move our institutions back into a competitive position in the wider GenAI innovation ecosystem.

There will be many different successful institutional approaches for the GenAI era in higher education. At core, however, all successful institutions will need to be able to answer fundamental questions about the rigour of their educational offerings, the sharp edge of their research capacity, and their approach to making sure that GenAI use serves students and society. **UK universities must continue to offer unparalleled expertise, judgement, and evaluation capacity across both teaching and research domains.** To the degree we succeed at this, the sector will be able to control its future path.

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