AdvanceHE

MEMBER BENEFIT

Future Student Experience Project

Exploring the art of the possible in higher education 2035: modelling evidence-informed competing realities. HigherEdu5

Arinola Adefila, Sue Lee, Stella Jones-Devitt and Paul Orsmond

Staffordshire University

Contents

1 Scenario: HigherEdu5 – focusing on digital experiences and capabilities 3
Vision 3
Value proposition 3
2 Approach 4
Research methods 4
3 PESTLE analysis 13
Political 13
Economic 14
Social 15
Technological 16
Legal 17
Environmental 17
4 Student experience 18
5 Bibliography 19
6 Expert Reference Group (ERG) Membership 20
7 Student panel membership 21
8 Research protocol (two scenarios, including HE5) 21

Future Student Experience

Exploring the art of the possible in higher education 2035: modelling evidence-informed competing realities. HigherEdu5

1 Scenario: HigherEdu5 – focusing on digital experiences and capabilities

Vision

HigherEdu 5 (commonly abridged to HE5)

HE5 is a new concept for 2035, based on notions of a global Quintuple Helix Organisation (QHO). A range of corporate players make up this sector, which flexes and adapts as per its nomenclature. The word 'university' is now redundant, as the infrastructure is based on an entirely lean process with no solo institutions.

In our HE5 QHO, stakeholders include organisations previously known as universities, governments, 21st-century industries, social media controllers and ecological balancers. The HE5 sector is made up primarily of pseudo-anthropomorphic structures and approaches, ie HE5 sounds human, looks human (albeit virtually) but is NOT human; in HE5 the world revolves around the AI bot. There are no campuses and behavioural nudges are normalised.

HE5 students come fitted already with subcutaneous implants providing enough DNA evidence as starting points to ensure that this expanding yet personalised database can drive the approach each student would wish to receive. The typical student will have the most suitable format of delivery chosen for them, considering previous knowledge, behaviours, DNA manipulation and the environment in which they live. The focus is on knowledge transfer as an 'anytime, anywhere, anyplace, learning experience' and is a lifelong, life-wide activity

Knowledge-transfer is delivered by Tutor-Avatars (TAs) who are re-programmable and have appropriate levels of emotional intelligence (EI) set within them. This is via data received and continually processed from student implants from a vibrant universal knowledge base; in HE5, the TA always knows how to respond and communicate effectively with the student.

Given that the HE5 QHO is driven entirely by meeting the evolving needs of the post-capitalist worldwide economy, it delivers a specific competency-based core global curriculum (constantly reviewed via the available data matrix) plus it has a sliding scale of further student choice options, eg some national curriculum options can cost less, while also offering further global-level highly customisable industry-required roles as specified by the sector stakeholders. These curriculum 'choices' for each student will be nudged accordingly, using the available data and evidence captured via personalised implant and by benchmarking against QHO skills and competency requirements.

Value proposition

For the learner: the student experience in HE5 is virtually guaranteed to be exceptional: the typical Tutor Avatar delivering the customised curriculum will be reliable and deemed personable to the specific student's emotional intelligence, and completely consistent. It will have immediate access to all the latest evidence concerning the student's best interests and capabilities, alongside driving QHO global requirements. In HE5, the TA always knows how to respond and communicate effectively with the student. The learner's every need is met through data-driven means.

2 Approach

Research methods

Literature review (scope, databases, search terms, method)

Desk-based research

There is already a considerable amount of evidence offering a plethora of data-informed approaches for future-proofing higher education; many of these are allied to reasoned hypotheses and assumptions for how higher education will be reimagined in 2035.

To construct, test and disrupt the HE5 scenario, the following sources were considered and synthesised, where relevant, as part of a dynamic evidence base to inform decision-making (note that these are funnelled from global to local).

OECD Future of Education and Skills 2030 which contains a mass of global data, analysis, publications, evidence-informed trajectories, concept notes, five key trends: connection, trust, wellbeing, flexibility, and career.

UN Sustainable Development Goal 4 (Education) which incorporates evidence gathered by the United Nations Department of Economic and Social Affairs, specifically about Goal 4 Education to *Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all* by 2030. This site holds data-informed targets and indicators, progress and information evidence, links to related goals, good practice publications, webinars, and engagement events.

Universities of the Future hosted by the European Universities Association, which contains research into Universities without Walls 2030. It also has an array of future-facing publications, strategic planning documents, expert opinion, projects, and manifestos on new learning in post-Covid contexts.

UF (Universities of the Future), a longitudinal ERASMUS+ knowledge alliance project, funded via the European Union. This contains a Blueprint for the Future, a series of open partnership digital captures, educational assets and a Virtual Teaching and Learning Factory for Industry 4.0.

Learning and teaching reimagined comprising an alliance of Jisc, UUK, Advance HE and Emerge Education in which post-Covid responses leading up to a new HE in 2030 are imagined. The site contains a summary report, *Learning and teaching reimagined: a new dawn for higher education* (Maguire, Dale and Pauli, 2020), which uses evidence gleaned from webinars, roundtables, consultations, focus groups, surveys, interviews and case studies. Near and far visions and scenarios are also published from key thinkers.

Wider literature searching was undertaken as proportionate to the allotted timeframe for the project, using meta engines (web searching) and educational research databases and research indexes when identified as relevant. The team undertook a review of Scopus articles using Boolean key words ‘Higher Education + Future’.

Relevant evidence emerging from an array of UK thinktanks, and HE-related policymakers and education platforms and databases were considered for relevance.

The prioritisation of global sources, prior to further funnelling, was to ensure that a western-dominated discourse was minimised when considering evidence. To ensure quality and consistency of approach, two of the research team undertook this desk-based evidence synthesis independently and the work was moderated by an additional research team member within the process.

The second step involves using integrative review (IR) methodology to refine the scenario. IR is distinctive; set apart by use of varied data sources, comprising both empirical and theoretical literature and a combination of data from diverse research designs, rather than assuming that these evidence sources are mutually exclusive. Given the variety of 'future-proofing' literature already available, it is an ideal vehicle to sense-check assumptions underpinning further development, and refinement, of these scenarios.

IR goes beyond traditional boundaries of systematic evidence reviewing by welcoming 'experts' as valid sources of evidence and as providers of continuous data collection and synthesis. An online expert reference group (ERG) of 32 members was drawn from a range of mission groups and sector influencers within the research team's wide networks, comprising representatives from regulatory bodies, professional bodies, current academics, emeritus scholars and civic society organisations linked to HE. Lines of enquiry were extrapolated from the desk-based analysis, aligned with the research team's own contextualised understanding of the sector.

We also reconstructed the student experience of this scenario using a student panel who (re)imagined what the student experience looked like in HE5. To engage students in the decision-making, a panel of nine students was recruited locally to consider a synopsis of the HE5 scenario for 2035. Students were drawn from the widest possible range of levels, experiences and disciplines available at the time, to help create a tangible and successful student experience journey based around the HE5 scenario. Students were reimbursed proportionately for their time and effort as key stakeholders and will be acknowledged appropriately as contributors to this work.

Data extraction and synthesis

A total of 251 papers were identified as potentially useful. All were accessed, then scrutinised and given an abstract relevancy rating. This involved undertaking a systematic review of Scopus articles, using Boolean key words Higher Education + Future. Of these 251, nine sources were seen as fundamental for this project (Fig 1 below) and were subjected to a further detailed PESTLE analysis – i.e. consideration of political, economic, social, technological, legal and environmental factors which might inform, amend, disrupt or potentially lead to disregarding this scenario. A data extraction pro-forma was used (Appendix B) to analyse each source

Figure 1. Key sources

1. Learning and teaching reimagined (Maguire, Dale, Pauli, 2020)
2. Top Universities - Higher education on the road to 2030. IIEP-UNESCO (Martin, M. 2017, IIEP)
3. World Economic Forum - Webforum4 trends that will shape the future of higher education (El-Azar D, 2022)

4 Minerva Project – How will higher education be different in 2030?

5 The future of higher education in a disruptive world (Parker, 2020)

6 The Futures of Europe: Society 5.0 and Industry 5.0 as driving forces of future universities (Carayannis and Morawska-Jancelewicz, 2022)

7 KMPG – Future proofing the university. An approach to strategic collaboration

8 EUA – Universities of the future https://eua.eu/resources/publications/957:universities-without-walls-eua's-vision-for-europe's-universities-in-2030.html

9 The Future of education and skills: Education 2030 (OECD, 2018)

A data extraction pro-forma was used (Appendix B) to rate each found source for overall quality of evidence and impact. This was then moderated across the research team to ensure consistency of approach when reviewing all found evidence sources.

Data sources: integrative reviewing

As indicated, two elements of the integrative review process were constructed concerning: convening an online expert review group (ERG) who considered the possible veracity and feasibility of the HE5 scenario; alongside a follow-up event using a student panel. This latter panel comprised a physical meeting of a range of local students, who critiqued what a student experience would look like in HE5, drawn from the detailed scenario and exposure to the critical commentary provided by the preceding ERG.

Event 1 – the expert reference group (ERG)

The ERG was given the research protocol outlining the proposed stages that contributed to the construction of the HigherEdu5 scenario (see Section 8 below). The online ERG provided a safe space for members to explore ideas and possibilities. The ERG's principal task concerned assessing (and revising as necessary) the feasibility of this scenario using the following lines of enquiry (Fig 2):

Figure 2. Lines of enquiry for ERG

+ How plausible is this HE5 scenario for 2035?
+ What are the political, economic, social, technological, legal and environmental factors shaping this scenario's underpinning assumptions?
+ Which distinguishing factors can be identified as stable determinants rather than as uncertainties (eg demographic trends, governments' involvement, etc)?
+ Does this scenario remain tangible when a VUCA (volatility, uncertainty, complexity, and ambiguity) lens is applied to the constructed assumptions?

This work was also underpinned by access to a Microsoft Teams channel to provide additional opportunity for those who could not be present synchronously to input their thoughts and for those who wished to participate in continuous dialogue after the initial event. The ERG population comprised a good mix of colleagues across quality enhancement and academic roles, and they were geographically dispersed across UK, Europe and the Americas.

Event 2 – the student panel

A follow-up meeting occurred once the initial ERG had taken place. The panel comprised a mix of nine science, arts and education students across academic levels 5,6, 7 and 8. All student panel participants received voucher renumeration, post event, in recognition of their time.

The agreed scenario for 2035 – in this case HigherEdu5 (HE5) – was presented to our student panel for scrutiny, alongside a table of key themes and comments about the HE5 scenario which had emerged from our expert reference group (ERG).

The task involved the student panel considering what a student experience might look like at HE5 in light of this information, using a set of prompts provided for them to contemplate, which covered: learning expectations, anticipated level of satisfaction, what qualifications they assumed would be offered, how success would be understood and articulated, who students would interact with primarily, nature of subjects studied, and kind of student who might be attracted to study at HE5 (Primarily abridged from Barnett, 2014. See Fig 3 below.)

Figure 3. Student panel prompts and guidance:

You are invited to consider our HE5 scenario concerning what the future of higher education looks like in 2035. Think about what a successful student experience would be in the HigherEdu5 (HE5) scenario.

Student panel questions:

1. How would you expect to learn?
2. Would you be satisfied in HE5?
3. Can you see yourself getting a qualification here?
4. What does success look like, and how would you know?
5. Who do you think you would interact with here?
6. What would you study here?
7. What type of student would come here?

Thematic analysis

Thematic analysis concerned a) presenting the HE5 as an integrated and moderated PESTLE perspective for ERG scrutiny, followed by b) student panel scrutiny and discussion of what a student experience would look like in the context of 2035', in a) the working scenario was scrutinised by the ERG and their discursive discussions and comments were ordered into five areas of interest, comprising:

+ legal/ethical
+ human interactions/relationships
+ impact on student wellbeing
+ what is learning/purpose of learning
+ wicked issues (things that solve some aspects but might create further problems).

This information was then tabulated (Fig 4 below) and presented to the student panel as part of the accompanying evidence base.

Fig 4. Key themes identified by the ERG process

Key themes – HigherEdu5				
Legal/ethical	**Human interaction/ relationships**	**Impact on student well-being**	**What is learning/ purpose of learning**	**Wicked issues?**
Defending AI focus here: it can be unethical, yet there are ethical versions of it. Many known platforms have ethical frameworks and clear guidelines in place transparently.	Potentially: argument that human interaction will always be needed for learning, regardless of tech. Can you really have learning devoid of compassion and empathy?	Coaching regarding student guidance, how does that occur. Students have several unknowns – limited guidance here.	Human social cultural aspects of learning?	There is considerable scope with this model to use machine learning and automation to remove the really dull routinised work away from humans so they can focus on more creative concerns.
The implants are a big implausibility. If institutions don't exist, where does the data from the implants go? Who sees it? Will private companies have access and possibly monetise it?	There are already clear generational IT literacy shifts, even at teen level: early-stage teens are much more comfortable with automation and predictive stuff, while late-stage teens use it more for sociability. Regardless of what we think now, technology is changing the ways people learn and their expectations.	No place for wellbeing.	Little on the employment market. Little on experiential learning.	Technology means that our learners in 2035 will probably have an urgency of expectation about accessing information instantly. Already seeing that learners want everything within reach.

Key themes – HigherEdu5				
Issues regarding the 'typical' students and 'choices made for them', and the possibility for discrimination.	AI surveillance learning under the pretext of personalised learning is often linked to ability to pay for a customised less-challenging curriculum; hence they learn very little and there is minimal academic stretch.		Economically fatal – too much extraction – what is education?	It may be more plausible when assessed at disciplinary level, ie certain science-based subjects may find it useful while other more contested and ambiguous subject areas might be less suited to AI driven curricula.
It is not too far-fetched. New technology moves fast BUT who programmes and re-programmes the avatars?	Not accommodating - what about things that cannot be automated?		Source of knowledge, ownership of knowledge and academic rigour and student agency?	
Potential for discrimination and not coping.	Similar to film surrogate – everything will fall apart Scenario untenable – 2050/2060?		Corporate employers often don't like the education offered by universities, so you could see how technology plus money could change things to become like HE5.	Difficult to implement, we are not Lego blocks.
Not sure that this model could be trusted and/or build trust.			What is knowledge? Employers control knowledge, skills, and attributes.	

Key themes – HigherEdu5				
There could be a dark side to this model scenario concerning what exactly drives AI? Who owns the collated information and who funds this approach?			Some aspects are likeable – nudge, mixing institutions.	
Horrific – “no learning.”				
Challenges – side steps the political economy of HE. Who is paying? Organisational issues – data ownership. It is caricature of potential. To many gaps. Individual element already a reality but not entirely plausible.				

Key themes – HigherEdu5				
political ramifications of sharing data to this degree? In 2035universities are anchor institutions. Politically, nations will not give up their power around educating citizens. Will require seismic political/ economic/ tech changes No legal basis for this. Too dystopian – too many people to give in, too many players. Students become a commodity/ commercially driven source. Proctoring software: No transparency, no compassion, kills creativity – leads to contraction				

3 PESTLE analysis

Higher education is more than ever subject to the demands, tensions and influences of external stakeholders. Socio-political forces making demands of HE are expanding, particularly as the link between knowledge-based economies and university education became established in political thought over the last 30 years. This has created massive expansion in student numbers and stakeholders as non-traditional students (more mature, different abilities, diverse ethnicities, etc) had greater access to university education; diversifying the resources required to support their education.

Funding for universities has gradually shifted from religious orders to government, donors and increasingly individual students and their families, Though the public 'good' of a university education is still recognised, the majority of the population attends post-secondary institutions. HE is viewed by more people as an industry. Students increasingly demand customer-like services. This frames the political, economic, sociocultural, technological, legal and environmental factors shaping the ways HE is evolving.

Political

The architecture and delivery of higher education differs considerably across the globe. A number of political approaches shape and frame access, participation and engagement. The prestige and status of HE influences government involvement. Many countries fund, regulate and, to varying degrees, control public universities, as well as providing and overseeing the legal framework for their operation. Tuition charges, loans and access programmes remain primarily controlled by the state, which uses this as a lever for a wide range of political ends. Some states use this to ensure the reputation of prestigious institutions are maintained, others to enhance access (widening participation in the UK), and in some cases, punitive measures are applied to undermine autonomy or political dissent.

National policies relating to the quality of early education, financial support for tuition, living expenses, access and extent of regulation and accountability, influence the scope, size and innovation of HE provision. There are wide variations between countries with older institutions and those with relatively new private systems, as well as states with high income and well-established research grant schemes and those with low incomes and substantially lower education grants.

It is also important to note the relatively significant link with national policies on human rights, global challenges such as climate change, research on non-human species, intellectual property and accountability around research funding, immigration, equity and equality, with respect to gender, disability, race, income or other protected characteristics. These factors can determine the control states have over institutions. The population of foreign students keeps some universities financially stable, as evidenced via institutions in Australia, the UK and US, with foreign intakes of between 25 and 60%. The countries of origin of these students, diplomatic relations with the sending countries, the country of delivery and where potential graduates emigrate to after their degrees, will always concern governments and state actors who retain control of access.

Variation in regulation will continue to differ according to political diktat, with policies relating to expansion, access and equality evolving according to ideological perspectives. The knock-on effects of these decisions will have ramifications for the economy, business, community and other social actors in the education sphere. The case for more global players outside the jurisdiction of nationalistic policies may also increase with transnational education becoming more popular, as access in the global south increases and the universal access in the world's largest economies leads to critiques of the quality and purpose of education.

Economic

Across the world, higher education has grown exponentially, with increases in student numbers, programmes and activities. This boom has led to great wealth for select, elite institutions. However, HE providers persistently have funding gaps, leading to even further activities on the periphery, such as provision of accommodation, entertainment, competition for grants and some fraught relations with business. A proliferation of new providers are asserting influence as the focus on student consumerism permits private institutions to engage in teaching-only provision. These nascent providers include well-known players such as religious orders and wealthy donors, predominantly in the global south. Conversely, large multinationals with new technological advantage are also entering the "market". These disruptions are likely to have a major influence on the availability, delivery and type of provision. However, much focus will be on affordability. It is unclear how much control institutions of state will concede to the market "over the content, process and assessment of teaching and learning" (Naidoo, Shankar and Veer, 2011). The state has so far retained some level of management as a premise to enhanced skills and knowledge, arguing that HE providers remain the most important bridges to national prosperity in a technology-driven knowledge economy.

Low-income countries are equally burdened with the conundrum of enhancing the skill set of their citizens and the relationship they have with home grown and foreign HE providers. This is likely to become even more complicated as global providers increase their anytime, anyplace, anywhere programmes.

Students have become more vocal as consumers of educational products, demanding a range of non-academic resources, support mechanisms and high-quality staff, while at the same time starting to resist high tuition fees, non-integrative and place bound provision. There is more interaction between prospective students and employers as a result of advice from parents and influencers questioning the cost and quality of HE degrees. HE providers need to advertise their provision. Consequently, there is a need to understand the desired student population and provide expanded services, resulting in more economic costs to institutions, including staff and technological resources.

Demand for graduate qualifications has plateaued, while many graduates do not find suitable employment. Consequently, graduates have crippling debt and poor employment prospects accordingly. This is generating considerable debate about the quality and utility of various degrees. The jobs market also fluctuates, exacerbating the challenge for potential students; hence, many students would like to be assured that the debt incurred will be worth it.

Social

HE providers distinctively impact society through their production and exchange of knowledge exchange. In many ways this is local but there are broader societal benefits through research and development in medicine, engineering and the humanities etc. It is broadly acknowledged the HE providers have symbiotic relationships with society which need to be preserved, though it is debated how to fund and regulate these institutions. There are also varied issues about the purposes or outputs of graduates, some question the values and attributes of recent graduates, others the skills and knowledge and there is a lot of debate about employers' needs not being aligned to graduate outputs.

The expansion of provision has also been a response to societal pressures; some countries focus on developing their economies by enhancing STEM subjects and 21st century skills. Countries have strategies to support HE which align with sociocultural demands; these overlap with economic demands to ensure egalitarian values, which guarantee that degrees are free and accessible to all. This is largely the case in European climes. While HE is relatively cheaper in Asia, Africa and South America, the quality is threatened by funding pressures and the entrance of transnational actors and private provision.

Other local dynamics affect HE futures such as religious values, which may have strong influence; for example, religious providers are dominant in countries such as the US, parts of Europe and the global south. There are also political ideological influences on society. For example, there is a generic acceptance of student debt which is beginning to shift, with students who have parents that did not have the same levels of debt questioning why the liability is necessary. There is also a greater emphasis on egalitarian access to education. The models that favour the privileged rich are increasingly shunned and interrogated.

Changing demographics and increasingly universal access will continue to impact HE. More mature students are engaging with HE, though the linear trajectory from secondary to post-secondary is threatened by declining birth rates, global migration patterns and different funding models, such as apprenticeships. HE providers are acknowledging the need to improve support for the diverse range of students entering HE. The nature and scope this assistance includes academic remedial programmes, wellbeing and pastoral provision, aimed at improving attainment and enhancing the employability prospects of graduates. In addition, the experience of HE is also changing with many students relying on paid employment during their degrees; commuting students are now commonplace and online provision is becoming a norm. Thus, students require a more flexible approach and infrastructure. There is less focus on education for learning, ie for the sake of it, in HE systems. The broad concepts discussed in this debate include employability, social mobility, personalised learning and autonomous problem solving.

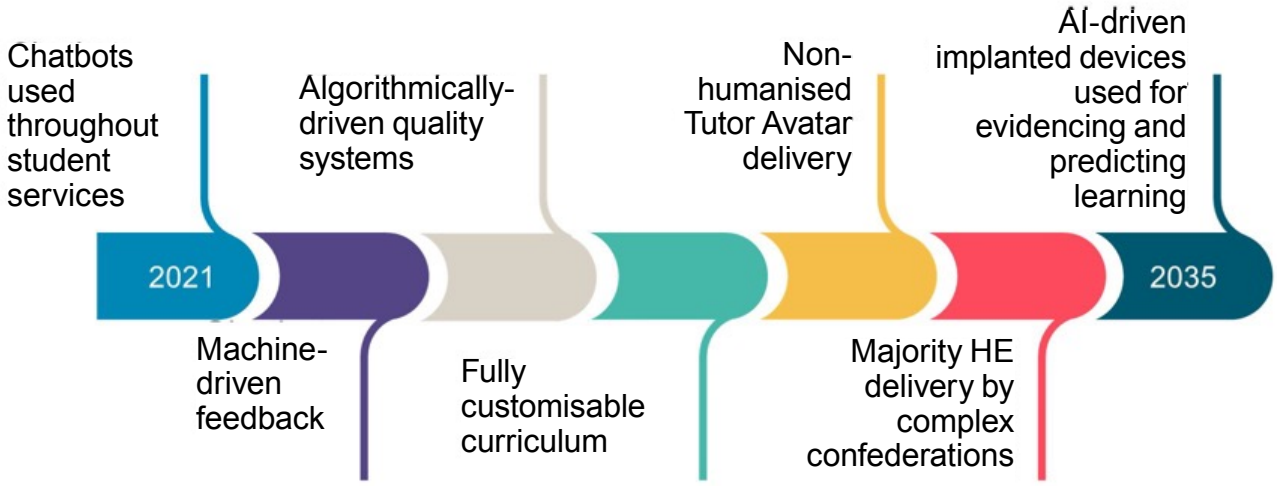
The pressures of demographic changes, given the reality of the 21st century on the higher-education system, have been immense. The dramatic expansion of the student population, increased diversity, and more variation by age, ability and interest, have all transformed the academic landscape. This is having sociocultural implications for how the HE sector is required to enhance access, engagement and attainment.

Though HE certification is still broadly appreciated, on the job training and real-world learning is seen as purposeful and useful. Theoretical knowledge that does not link with practical skills is now approaching obsolescence.

Technological

Over the last decade, major drivers in the HE landscape have been shaped around technology. This was conspicuous at the peak of the Covid-19 pandemic, when HE providers had to respond to national lockdown policies by moving delivery into online spaces. A number of issues were raised around using technology in HE, including:

+ digital poverty
+ misalignment between digital nomads, i.e. those who work alone as remote workers, and efficient use of educational technology to support
+ technology driving education, rather than vice versa
+ fast pace of innovative technological development leading to obsolete infrastructure.



Educational technology developed by academics could be much more purposeful and adaptive. There is a need to develop resources within educational technology to enhance the quality, provision and adaptability of useful resources for teaching and learning in HE.

Technology needs to be in place to make provision robust and reliable for both student and staff experience, though there is considerable hesitance around the use of big data, learner analytics and the processing / sharing of these kinds of data. There is considerable speculation about the reliability of the technology and how it may link to dehumanising learning. The graphic below signposts the key technological drivers which are shaping future learning development.

Legal

The major legal challenges in the near future are around how technology that collects personal data may be used. This is a tricky point as many institutions use learner analytics already. Other key challenges are around liability with respect for consumer style protections and government regulation that may be unclear; specifically, around pastoral care, support for wellbeing and the emphasis on student satisfaction.

Environmental

Many of the ideas above interlink with environmental factors, the most significant in the project were around responsible use of resources, sustainable institutions and the skills that enhance the graduate's ability to develop sustainable solutions.

Egalitarian values and attributes outlined in the United Nations' Sustainable Development Goal (SDG) framework were discussed, focusing on:

SDG4 – quality education for all

SDG8 – decent work and economic growth

SDG 9 – industry, innovation, and infrastructure

SDG 10 – reduced inequalities

SDG 11 - sustainable cities and communities.

4 Student experience

Vignette 1 – Morgan's experience at HE5, constructed by the student panel

Morgan is a Level 1 student at HE5 and expects to be told what to learn by AI processes facilitated by her dedicated Tutor Avatar (TA). Morgan likes the idea that the technology has already worked out what she learns in advance, to gain maximum benefit while studying. Morgan finds this beneficial yet recognises that some of her friends wouldn't come to HE5 as they wanted opportunities for collaborative learning and felt that the AI-driven approach could have a detrimental effect on overall quality. She also knows that satisfaction at HE5 might be compromised for such learners due to lack of interaction. For Morgan, this has never been a problem as she does not need to rely on a more personalised human context to enjoy studying. She values that qualifications here are linked primarily to employment niches. This is precisely why she is here. The AI-driven way of learning is certainly helping her to gain qualifications that are quite content-focused and will be very useful for her chosen industries. She was drawn to studying at HE5 as getting a well-paid competitive job is a key metric here; although she recognises that for some learners it is still useful to consider personal signifiers of success, not only those dictated by the jobs market. Nevertheless, she loves the freedom brought by having an individualised curriculum that doesn't rely on being in a large cohort. She interacts regularly at HE5 with her personal TA and already knows that HE5 has chosen her individually tailored subjects very carefully, based on her continually measured abilities. She finds this very fulfilling. At HE5 she is learning across a range of STEM subjects as these are where her abilities lie, but some others are learning across humanities and arts-focused industries. The technology had already identified her as having a sophisticated approach to digital learning, therefore she is really enjoying her time at HE5 and, as it is part of a Quintuple Helix Organisation (QHO), she is looking forward to gaining relevant employment and a fulfilling career.

5 Bibliography

Abad-Segura, E, González-Zamar, M-D, Infante-Moro, J C and Ruipérez García, G (2020) 'Sustainable management of digital transformation in higher education: Global research trends', *Sustainability,* 12 (5): 2107. Available at: doi.org/10.3390/su12052107

Barnett, R (2014) *Conditions of flexibility: Securing a more responsive higher education system.* York: Higher Education Academy.

Campbell, D F and Carayannis, E G (2012) *Epistemic governance in higher education: Quality enhancement of universities for development.* New York, NY, Heidelberg, Dordrecht, London: Springer.

Carayannis, E G and Morawska-Jancelewicz, J (2022) 'The futures of Europe: Society 5.0 and Industry 5.0 as driving forces of future universities', *Journal of the Knowledge Economy.* Published online.

D2L What's driving the vision for the University of the future? Navigating the skills gap, digital transformation and a global pandemic. *D2L eBook-University-of-the-future EMEA EN* Available at: https://studylib.net/doc/25846061/d2l-ebook-university-of-the-future-emea-en

European University Association (2021) *Universities without walls: A vision for 2030.* Brussels: European University Association. Available at: eua.eu/downloads/publications/universities%20without%20walls%20%20a%20vision%20for%202030.pdf

Maguire, D, Dale, L and Pauli, M (2020) *Learning and teaching reimagined: A new dawn for higher education?* Bristol: JISC. Available at: repository.jisc.ac.uk/8150/1/learning-and-teaching-reimagined-a-new-dawn-for-higher-education.pdf

Naidoo, R (2011) 'Rethinking development: Higher education and the new imperialism', in King, R, Marginson, S and Naidoo, R (eds) *Handbook on globalization and higher education.* Cheltenham: Edward Elgar Publishing, pp 40-58.

Naidoo, R (2018) 'The competition fetish in higher education: Shamans, mind snares and consequences', *European Educational Research Journal,* 17 (5): 605-620.

OECD (2018) *The future of education and skills: Education 2030.* Paris: OECD. Available at: www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf

Parker, S (2020) *The future of higher education in a disruptive world.* Global: KPMG International. Available at: https://assets.kpmg/content/dam/kpmg/xx/pdf/2020/10/future-of-higher-education.pdf

Reichert, S (2019) *The role of universities in regional innovation ecosystems.* Brussels: European University Association. Available at: eua.eu/resources/publications/ 819:the-role-of-universities-in-regional-innovation-ecosystems.html

Stöber, H, Gaebel, M and Morrisroe, A (2021) *Greening in European higher education institutions:* EUA survey data. Brussels: European University Association. Available at: eua.eu/downloads/publications/greening%20report.pdf

UNESCO IIEP (2018) *The IIEP letter: news and analysis on educational planning and management,* 34 (2). Available at: unesdoc.unesco.org/ark:/48223/pf0000366327

6 Expert Reference Group (ERG) Membership

We want to thank the following people, who offered their expertise and scrutiny of the HE5 scenario:

Liz Austen
Karen Barton
Lucy Berthoud
Steve Cook
Ailsa Crum
Myfanwy Davies
James Derounian
Alan Donnelly
Michael Draper
Louise Drumm
Andrew Fisher
Roz Hall
Julie Harris-Hulme
Alan Hayes
Pamela Henderson
Samia Kamal
Rosie Kneafsey
Kate Mori
Luca Morini
Rebecca Page-Tickell
Amanda Pate
Romualdo Portela de Oliveira
Annika Saarto
Katy Savage
Susan Smith
Anne Tierney
Guy Walker
Nicola Watchman Smith

7 Student panel membership

We want to thank the following people, who offered their expertise and scrutiny of the HE5 scenario and contributed directly to construction of the student experience:

Nikoleta Bogdan
Jared Darcy
Beth Fox
Britta Kuusik
Sue Lee
Malachy Mbah
Dan McLlwaine
Cameron Sharp
Ty Vint

8 Research protocol (two scenarios, including HE5)

Advance HE Collaborative Development Fund: new challenges, new solutions – the Future Student Experience Project

PROTOCOL

Exploring the art of the possible in higher education 2035: modelling evidence-informed competing realities

1. Background and context

We were asked to create two evidence-informed HE scenarios, which anticipated what a future HE sector, and associated student experience, could look like in 2035. We drew on some major future-facing sources (see Appendix A) to create two competing scenarios, enhanced by the digital world we will inevitably occupy in 2035. We were given two rationales as starting points, which also briefly described the anticipated student experience that might prevail:

1. Digital experiences and capabilities including fourth industrial revolution (4IR) technologies, including internet of things, augmented and virtual reality are embedded into learning and teaching, providing opportunities for all students to experience authentic and engaging student-centred learning and to develop the skills they will require for the 21st century workplace.

Student experience starting points: students learn through and about 4IR technology and prepare for Education 5.0.

AND

2. Quality higher education for all comprising emergent technologies have gained wide-spread usage to support a global, quality, higher education sector, including: learning analytics (providing on-demand feedback to students); adaptive learning (providing personalised learning pathways for students); social network analysis (puts connection and linkage to the fore); discourse analytics (providing automated assessment); semantic web technologies (automated personalised enabling of customised support and content feeds); virtual problem-based learning (immersive environments to develop virtual collaboration and interdisciplinary problem solving skills); online proctoring and authentication technologies (iris recognition, key stroke pattern) that would automate learning validation

Student experience starting points: students' learning is monitored, analysed and adapted to their needs and aptitudes.

Our proposed methodology – and this protocol – use a combination of desk-based research and 'expert' opinion (see below) to construct, contest and expand on the given starting points above as part of an integrated process; in essence, developed as a proportionate integrative review (or IR).

2. Methodology overview

Desk-based research

There is already a considerable mass of evidence, offering a plethora of data-informed approaches for future-proofing higher education; many of these are allied to further reasoned hypotheses and assumptions for how higher education will be reimagined in 2035.

To construct, test and disrupt each of the stated scenarios, the following sources were considered and synthesised, where relevant, as part of a dynamic evidence base to inform decision-making (note that these are funnelled from global to local).

OECD Future of Education and Skills 2030 which contains a mass of global data, analysis, publications, evidence-informed trajectories, concept notes, five key trends: connection, trust, wellbeing, flexibility, and career.

UN Sustainable Development Goal 4 (Education) which incorporates evidence gathered by the United Nations Department of Economic and Social Affairs, specifically about Goal 4 Education to *Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all* by 2030. This site holds data-informed targets and indicators, progress and information evidence, links to related goals, good practice publications, webinars, and engagement events.

Universities of the Future hosted by the European Universities Association, which contains research into Universities without Walls 2030. It also has an array of future-facing publications, strategic planning documents, expert opinion, projects, and manifestos on new learning in post-Covid contexts.

UF (Universities of the Future) which is a longitudinal ERASMUS+ knowledge alliance project, funded via the European Union. This contains a Blueprint for the Future, a series of open partnership digital captures, educational assets, and a Virtual Teaching and Learning Factory for Industry 4.0.

Learning and teaching reimagined, comprising an alliance of Jisc, UUK, Advance HE and Emerge Education in which post-Covid responses leading up to a new HE in 2030 are imagined. The site contains a summary report *Learning and teaching reimagined: a new dawn for higher education* (Maguire, Dale, Pauli, 2020) which uses evidence gleaned from webinars, roundtables, consultations, focus groups, surveys, interviews, and case studies. Near and far visions and scenarios are also published from key thinkers.

Wider literature searching was undertaken as proportionate to the allotted timeframe for the project, using meta engines (web searching) and educational research databases and research indexes when identified as relevant. The team undertook a review of Scopus articles using Boolean key words 'Higher Education + Future'.

Relevant evidence emerging from an array of UK thinktanks and HE-related policymakers and education platforms and databases were considered for relevance.

The prioritisation of global sources, prior to further funnelling, was to ensure that a western-dominated discourse was minimised when considering evidence. To ensure quality and consistency of approach, two of the research team undertook this desk-based evidence synthesis independently and the work was moderated by an additional research team member within the process.

The second step involves using integrative review (IR) methodology to refine the scenarios. IR is distinctive; set apart by use of varied data sources, comprising both empirical and theoretical literature and a combination of data from diverse research designs, rather than assuming that these evidence sources are mutually exclusive. Given the variety of 'future-proofing' literature already available, it is an ideal vehicle to sense-check assumptions underpinning further development, and possible refinement, of these scenarios.

IR goes beyond traditional boundaries of systematic evidence reviewing by welcoming 'experts' as valid sources of evidence and as providers of continuous data collection and synthesis. An online expert reference group (ERG) of around 15-20 members has been drawn together from a range of mission groups and sector influencers within the research team's wide networks, comprising representatives from regulatory bodies, professional bodies, current academics, emeritus scholars, and civic society organisations linked to HE The ERG provides a safe space for members to explore ideas and possibilities. The ERGs' principal task concerns assessing (and revising as necessary) the feasibility of each scenario using the following lines of enquiry:

+ How plausible is this HE scenario for 2035?
+ What are the political, economic, social, technological, legal, and environmental factors shaping each scenario's underpinning assumptions?

+ Which distinguishing factors can be identified as stable determinants rather than as uncertainties (eg demographic trends, governments' involvement, etc)?
+ Does each scenario remain tangible when a VUCA (volatility, uncertainty, complexity, and ambiguity) lens is applied to the constructed assumptions?

We are also reconstructing the student experience of each scenario using a student panel who will (re)imagine what student experience will look like in each finalised scenario. To engage students in the decision-making, a panel of 15-20 students is being recruited locally to consider a synopsis of each scenario for 2035. Students will be drawn from the widest possible range of levels, experiences and disciplines to help create a tangible and successful student experience journey based around each scenario. Students will be reimbursed proportionately for their time and effort as key stakeholders and will be acknowledged appropriately as contributors to this work.

Data extraction and synthesis

A total of 251 papers were scrutinised and given an abstract relevancy rating. Of these, nine sources were seen as fundamental for this project (Appendix A) and were subjected to a further detailed PESTLE analysis – i.e. consideration of political, economic, social, technological, legal and environmental factors which might inform, amend, disrupt or potentially lead to disregarding each scenario. A data extraction pro-forma was used (Appendix B) to analyse each source

3. Scenarios construction

We took the two divergent starting points already provided by Advance HE, synthesised these with the prevailing materials we had already analysed and below present our two digital scenarios of the future which model evidence-informed competing realities; hence these comprise what the HE world might look like in 2035….

SCENARIO ONE

HigherEdu 5 (commonly abridged to HE5)

HE5 is a new concept for 2035, based on notions of a global Quintuple Helix Organisation (QHO). A range of corporate players make up this sector, which flexes and adapts as per its nomenclature. The word 'university' is now redundant, as the infrastructure is based on an entirely lean process with no solo institutions.

In our HE5 QHO, stakeholders include organisations previously known as universities, governments, 21st-century industries, social media controllers and ecological balancers. The HE5 sector is made up primarily of pseudo-anthropomorphic structures and approaches, ie HE5 sounds human, looks human (albeit virtually) but is NOT human', in HE5 the world revolves around the AI bot. There are no campuses and behavioural nudges are normalised.

HE5 students come fitted already with subcutaneous implants providing enough DNA evidence as starting points to ensure that this expanding yet personalised database can drive the approach each student would wish to receive. The typical student will have the format of delivery chosen for them as the most suitable, considering previous knowledge, behaviours, DNA manipulation and the environment in which they live. The focus is on knowledge transfer as an 'anytime, anywhere, anyplace, learning experience' and is a lifelong, life-wide activity

Knowledge transfer is delivered by Tutor-Avatars (TAs) who are reprogrammable and have appropriate levels of emotional intelligence (EI) set within them. This is via data received and continually processed from student implants from a vibrant universal knowledge base; in HE5, the TA always knows how to respond and communicate effectively with the student.

Given that the HE5 QHO is driven entirely by meeting the evolving needs of the post-capitalist worldwide economy, it delivers a specific competency-based core global curriculum (constantly reviewed via the available data matrix) plus it has a sliding scale of further student choice options, eg some national curriculum options can cost less, while also offering further global-level highly customisable industry-required roles as specified by the sector stakeholders. These curriculum 'choices' for each student will be nudged accordingly, using the available data and evidence captured via personalised implant and by benchmarking against QHO skills and competency requirements.

The student experience in HE5 is virtually guaranteed to be exceptional: the typical TA delivering the customised curriculum will be reliable and deemed personable to the specific student's EI, consistent and they will have access to all the latest evidence immediately concerning both the student's best interests and capabilities, alongside driving QHO global requirements.

SCENARIO 2

The Virtual Learning Analytics University (VLA University)

VLA University knows everything there is to know about evidencing what works for effective student learning. Since the first Covid pandemic more than 15 years ago, it has collected evidence about individuals and organisations, monitored data, benchmarked globally, and has used this information continuously for extensive predictive trajectory analyses.

Stakeholders in VLA University comprise students and HE auditors, plus a range of worldwide regulatory bodies, including WOfS (Worldwide Office for Students), Advance Quality HE Evidence for Enhancement (AQHEE) and the Global Compass of Wellbeing (GCW) conglomerate. A Pro Vice Chancellor metaverse is responsible for overseeing the curricular quality.

In VLA University, each student has an individualised learner profile package completely customisable and entirely evidence-driven, with a range of approaches dependent on the purchase level made by students. AI advice and guidance is a prerequisite for each student and successful career routes are predicted based on potential capabilities drawn from the analytical level purchased and options made.

Once choices have been made by each student, their progress is then monitored by highly skilled human HE auditors, whose sole responsibility is the success of students, regardless of starting point. This means that the continually synthesised data can be used to adapt and tweak levels of engagement, offer behavioural interventions, customise pedagogical approach and stretch intellectual and cultural capital processes experienced by the student for successful outcomes.

VLA has an interdisciplinary focus throughout to ensure that global benchmarking processes can be provided (at additional cost) to ensure competitive edge for the individual student within their personalised, evidence-informed, digitally data-driven curriculum. Profiling is key. Hence, students can buy an employer package if they wish, based on predictive abilities as advised by the HE auditors, drawn from analysing a matrix of digital evidence sources.

The student experience in VLA University is virtually guaranteed to be exceptional: the student learns within a context in which they are predicted to succeed; plus, all HE staff are benchmarked and checked against prescribed quality standards reviewed continuously in accordance with all known student success outcomes and VLA University stakeholders' regulatory frameworks across the globe.

Appendix A. Key sources accessed and analysed

Learning and teaching reimagined (Maguire, Dale, Pauli, 2020)

Top Universities - HIGHER EDUCATION ON THE ROAD TO 2030

World Economic Forum - Webforum4 trends that will shape the future of higher education

Minerva Project - How will higher education be different in 2030?

The future of higher education in a disruptive world (Parker, 2020)

The Futures of Europe: Society 5.0 and Industry 5.0 as driving forces of future universities (Carayannis and Morawska-Jancelewicz, 2022)

KMPG - Future proofing the university. An approach to strategic collaboration

EUA - Universities of the future (eua.eu)

The Future of education and skills: Education 2030 (OECD, 2018)

Appendix B. Data extraction pro-forma

Type of output/source:	**Review date:**
Title of project/activity:	
Author(s):	**Publication date:**
Publisher:	**Place of publication:**
What change is anticipated? (Brief description(s) of structures, processes, experience)	
Why the change needs to occur? (Rationale for the change)	
What difference has occurred/will hopefully occur as a result? (Tangible change made successfully or envisaged)	
How do we/will we know? (How is the change measured)	
Who has been/is involved in making any judgements? (Who decides on effectiveness)	
Any lessons learned/to apply? (Applied ongoing learning)	
Any barriers? (Any unsuccessful elements)	
Any unintended or less tangible outcomes anticipated?	
Own notes, including up to three key themes/aspects:	
Rating: Quality of overall approach (including levels of evidence; proportionality, scale, strategic influence) A Excellent, B Fair, C Weaker	**Rating: Impact assessment 1 Strong, 2 Some, 3 Minimal**
A	**1**
B	**2**
C	**3**
Actions for Research Team: **P**(olitical) – **E**(conomic) – **S**(ocial) – **T**(echnological) – **L**(egal) – **E**(environment) –	

Contact us

General enquiries
+44 (0) 3300 416201
enquiries@advance-he.ac.uk
www.advance-he.ac.uk

@AdvanceHE

Media enquiries
+44 (0) 1904 717500
communications@advance-he.ac.uk
www.advance-he.ac.uk/contact-us

Advance HE helps HE and research be the best they can be.

We are a member-led, sector-owned charity that works with institutions and higher education across the world to improve higher education for staff, students and society. We are experts in higher education with a particular focus on enhancing teaching and learning, effective governance, leadership development and tackling inequalities through our equality, diversity and inclusion (EDI) work.

Our strategic goals to enhance confidence and trust in HE, address systemic inequalities and advance education to meet the evolving needs of students and society, support the work of our members and the HE sector. We deliver our support through professional development programmes and events, Fellowships, awards, student surveys and research, providing strategic change and consultancy services and through membership (including accreditation of teaching and learning, equality charters, knowledge and resources).

Advance HE is a company limited by guarantee registered in England and Wales no. 04931031. Registered as a charity in England and Wales no. 1101607 Registered as a charity in Scotland no. SC043946. The Advance HE logo should not be used without our permission.

To request copies of this report in large print or in a different format, please contact the Marketing and Communications Team at Advance HE: +44 (0) 3300 416201 or publications@advance-he.ac.uk