GLOBAL CHALLENGES, LOCAL SOLUTIONS: THE ROLE OF UNIVERSITIES IN EDUCATION FOR THE FUTURE*

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Abstract

Universities around the world provide a crucial space for learning and social development for a seemingly ever-growing number of students, from a wide range of backgrounds and at different stages in their life. The fundamental role of universities as the center of education, optimizing the synergies with research, remains today and into the future. What is changing is the context within which universities operate. Financial pressures, geopolitical tensions, global climate and health emergencies and superfast technological change present challenges to the delivery of high-quality university experiences in a competitive global higher education market. In parallel, the demographics of staff and student bodies are changing. The welcome (albeit all too slow) improvement in diversity and an increased focus on lifelong learning challenge the traditional model of what is taught and how it is taught. In this chapter we discuss how these challenges affect the ability of universities to deliver on their integrated research-education missions. Putting measures in place to ensure resilience to shocks and an ability to adapt with changing context can allow for universities, open to evolving, to turn the apparent challenges into opportunities for growth and improved education experiences for staff and students. Impact and continued value-added comes from being agile.

Keywords: University, education, AI, MOOC, lifelong learning, climate emergency, pandemic, fake news, diversity, inclusivity, funding.

JEL classification: I20, I23, I29.

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* As befits a piece on the future of education and discussing AI, we have made use of Microsoft Copilot for our literature review alongside more common portals such as Google Scholar and EconLit.

I. DEVELOPMENTS IN HIGHER EDUCATION: SIMULTANEOUS CHALLENGES AND OPPORTUNITIES

In this chapter, we discuss the various challenges that higher education institutions –universities– have faced over the last couple of decades and which continue in various forms. We consider how universities can respond to these challenges and develop an institutional structure that is resilient to such issues. In many cases, the challenges are both a threat and an opportunity, with universities able to redefine the role of higher education in society and reaffirm their institutional value-added. Our focus is on the education remit of universities, recognizing that the challenges we discuss also impact on research funding and activity. As the world continues to change in various dimensions, universities have a chance to embrace this change and adapt to underline their role as centers of education. This will require a significant amount of strategic rethinking and detailed structural and operational work but given that universities have managed to engage in this kind of adaptation over many centuries, there is almost certainly reason to be hopeful about the future.

Many of the challenges and opportunities we discuss here are global in nature, in the sense that universities around the world are facing some version of these issues. In some cases, the solutions will need to have a global dimension as well –coordinated across countries and across international discipline networks. For example, understanding the implications of the rapid development of Artificial Intelligence (AI)– traditional and generative (Marr, 2023) –for higher education will require sharing lessons and adaptations across universities as what is feasible changes at pace. In most cases, the specifics of the solutions and exactly how the higher education sector takes advantage of the opportunities presented will have to be local in nature. Continuing with the case of AI and the role of Large Language Models (LLMs) (Ahn, 2023), the appropriate response is likely to be different depending on the existing regulatory arrangements for the university sector particularly relating to academic integrity requirements. The changing demographics of the key stakeholders within a university –staff and students– is another good example of where a common general change across countries will have different responses by country. The exact changes –more diversity across the various groups within the country, more internationalization, changing preferences for education in terms of how people access it, what subjects they want to study and when in their life they engage– will vary from country to country and by type of institution. So, the response will also need to be localized with the detailed work required to develop and deliver appropriate action reflecting the specific context.

We start by focusing on challenges external to the university. We consider both worldwide developments such as the COVID-19 pandemic

and developments like education funding pressures which are largely locally defined but are being faced by many university systems around the world. The geopolitical landscape including the Russian invasion of Ukraine in 2022 and the 2023 escalation in the Israeli-Palestinian conflict, and the pandemic have also disrupted student mobility over the last few years. This of course directly affects students and universities in those areas, with examples like the Kyiv School of Economics who have been proactively fundraising and rebuilding to continue their work and contribute to the efforts of the Ukrainian government (Gregory, 2023). Geopolitical conflicts, and responses to them including sanctions and changes in migrations rules, put physical restrictions on travel and as a result dampen the growth in international student enrollment which in many countries is a key revenue source for universities, and a defining feature of their global outlook. They also restrict access to the best educators in many fields who in peaceful times would work across countries. Faced with these challenges, universities might feel compelled to adapt by, for example, enhancing online learning experiences, fostering cross-cultural collaboration, and providing flexible study options. At the very least, this places an onus on institutions to diversify income streams, optimize resource allocation, and explore innovative funding and delivery models. In many cases, this kind of rethinking of the university's role can bring wider benefits, as the modern academy (Moscardini *et al.,* 2022) responds to a world where content access is no longer restricted to a select few and content delivery is no longer the key purpose of higher education.

At the same time, increased political polarization in many countries along with the spread of misinformation and "fake news" through social media has challenged the critical thinking and rigorous academic discourse which is the raison d'etre of higher education institutions (Baines, 2022). In the US, some leading politicians have taken to imposing their ideological preferences on local universities (Contreras, 2023) while in the UK, political debate on the role of universities, alongside legislation for free speech, has seen tightening of regulatory structures in ways which could be conceived as limiting the role of universities in national discourse (Beech, 2022). While much of the misinformation onslaught manifests as a challenge, it can also provide universities with an opportunity to redefine their value-added and play a crucial role in promoting media literacy, evidence-based reasoning, and respectful dialogue. More generally, they can foster open-mindedness and a spirit of scientific skepticism and inquiry and equip students with tools to navigate complex information landscapes. They can also lead the conversation on complex issues in civil society by making their research outputs, or versions of them, accessible to wider audiences and teaching and engaging directly with the public through media and outreach. This is core to the remit of knowledge exchange of a university, taking the research and education remits to a wider group.

Alongside these external changes, within the university, student and staff cohorts have become increasingly diverse with people from various backgrounds, cultures, and abilities entering the higher education sector in different roles (Wilson *et al.,* 2022). The value of the diversity is recognized but there is work to be done to ensure that interactions amongst individuals from different backgrounds happens in a way that unleashes the benefits of different ways of thinking and different lived experiences (Carey, 2023). Universities are increasingly working out how best to create inclusive environments that address cultural biases and provide equitable opportunities for all. In many countries, there are stricter statutory requirements which mandate accessible facilities, digital content, and support services for students and staff with disabilities. These imply an obligation for universities to invest in accessible infrastructure, assistive technologies, and training for faculty and staff. In parallel to these legal requirements, institutions face a growing push from their stakeholders and society at large to actively combat discrimination, promote social justice, and ensure equal access to education. This involves addressing systemic inequalities, fostering dialogue on race, ethnicity, gender and other protected characteristics. Yet again, these challenges present opportunities. Universities can play a leading role in helping society understand and define what inclusion means, starting with their own policies and sharing their research in this area in the spirit of the knowledge exchange role (Koutsouris, 2022). The ongoing digital transformation of the world around us provides universities with a chance to leverage technology for blended education delivery, personalized learning, virtual collaboration, and data-driven decision-making which can enhance educational outcomes for all students (Alamri *et al.,* 2021 and Liu *et al.,* 2017). Lifelong learning programs can cater to diverse learners, upskilling professionals, and promoting continuous education beyond traditional degrees. This kind of expansion can in turn help universities address their financial pressures by expanding their consumer base. Finally, universities can drive research and policy making on pressing global issues, such as climate change, public health, and social justice by extending the focus on interdisciplinarity into their education provision. Collaborations across discipline and geographic borders can lead to breakthroughs affecting education as well as research.

Whilst we highlight potential action that universities can take to adapt in the face of the challenges discussed it is important to emphasize that this is not easy or straight-forward. Many of the challenges discussed in this chapter are extensive and university staff and leaders can often feel overwhelmed by them. The drive for constant change, at the very least, is tiring, and at worst, can mean that business as usual is impossible. Investment is needed for any change, in physical and human capacity, but having a vision and stakeholder buy-in to it is equally important (Kotter, 2012). For progress to be made adapting to the challenges, university leaders need to bring their existing and potential

workforces along with them while retaining civil society's trust in what they do as educators. It is important to keep in mind at times like this, that universities have continued to exist, albeit in changing form, over a long history of external and internal challenges. With this word of caution about the difficulty of universities transforming in mind, we proceed in Section II to discuss the external changes that universities face and how they can respond to them. We examine financing and political challenges and AI and other technology-related challenges. In Section III we turn our attention to internal changes linked to the diversity of student and staff cohorts. We present our conclusions in Section IV.

II. HOW CAN UNIVERSITIES RESPOND TO EXTERNAL SHOCKS?

We start by looking at how external (global and local) challenges have affected universities in the recent past and how they might respond to these. Since the turn of the 21st century, alongside the Great Recession, the two biggest external shocks to the traditional university system have been the COVID-19 pandemic where local lockdowns and global travel restrictions shone a light on the centrality of in-person teaching and learning in most universities' activities, and the advent of increasingly sophisticated technologies that directly impact education provision. Both can be viewed as challenges and as opportunities. The pandemic brought to light the best practice in online asynchronous and synchronous teaching and learning which many universities have been developing for years, even while classrooms remained empty, and students were increasingly unhappy at not being able to enjoy the traditional university life. The growth of Massive Open Online Courses (MOOCs) and the rapid development of Generative Artificial Intelligence (Gen AI) can provide stiff competition to university education models, but they can also be used to democratize education and expand a university's reach.

Other external changes are unambiguous challenges. In the UK for example, funding for higher education has dried up at a time when government policy changes have made the revenue stream from international student demand more volatile. In the US, the cost of university to students has been soaring for many years, and the student loan system has created serious debt issues for many individuals. Meanwhile, the increased polarization of public debate and politics has created a difficult atmosphere for free speech and vigorous debate, which lie at the core of a university's mission. In this section, we discuss these changes that originate outside of the university sector but impact directly on it and indeed can be impacted by research and education in universities. We propose ways in which universities can respond to the resulting challenges and where possible, take advantage of the opportunities presented by these developments.

1. Financial Sustainability

As Brown and Hoxby (2014) show, the Global Financial Crisis (GFC) and the consequent Great Recession led to significant strain on American universities' finances through reduced endowment returns, decreased charitable giving and in the case of public institutions, tighter government budgets. The latter was also a key development in the UK and EU, where most universities are publicly funded, and the recession led to austerity measures of varying severity.

Early in 2024, the lobby group Universities UK published a report on the financial sustainability of the UK higher education system, prepared by the consultancy firm, PwC, which found that funding per student at UK universities was at its lowest level since the turn of the century (Kett and Ashford, 2024). The restriction in government grant funding since the Great Recession and the subsequent austerity drive, coincided with a period where research income options were increasingly competitive. Tuition fee income needed to fill a large and growing funding gap. In the UK, with a cap on nominal fees charged to "home" (resident in the UK) undergraduates, universities have had to rely more heavily than before on fee income from overseas students and those in postgraduate taught degrees. A 2020 report from the European Universities Association (Estermann *et al.,* 2020) finds that while only a few European countries cut higher education funding immediately after the GFC, by 2012, 14 out of the 24 university systems studies had done so. Similar funding constraints prevail in the US as well, at least outside of the elite private universities (Oliff, 2015).

Fee income is unpredictable because of changes in the level and nature of demand for universities' traditional offering –undergraduate and postgraduate taught degrees. Demand is correlated with demographic changes, international mobility of students and labour market changes. Population growth has led in some countries to a rise in demand for "first" degrees as discussed in Section III.1, as well as to a growth in the enrollment in postgraduate degrees (House, 2020). This has, and will continue to be, tempered in some countries by reductions in birth rates and aging populations. The demographic changes leading to the rise in undergraduate enrollment are likely to stabilize in the next decade or so (Bekhradnia and Beech, 2018). There is also uncertainty and fluctuations in the number of students moving across countries to study, with political, policy and natural factors (such as a pandemic) changing the ease with which people can migrate for education. In the UK, for example, the growth in postgraduate enrollment seems to have levelled off with Brexit and changes in immigration rules. Unless participation rates in higher education increase, these trends in student numbers and hence tuition fee income imply additional pressures on university finances.

A potential mitigating factor could be increased employer demand for university degrees – if more jobs require such degrees, and if those already with a graduate requirement now require master's degrees, for example, then potential students might be more inclined to go to university and to stay in university for longer. The evidence here is mixed. In some countries and some sectors, high supply of well-qualified graduates with bachelor's degrees has led to employers putting more emphasis on postgraduate qualifications as a selection mechanism. For example, Modestino *et al.* (2019) find that US employers increased the skill requirements for their job postings during a period where there was a glut of graduate applicants. Degrees that help graduates develop skills that employers are looking for, through research-based education and experiential teaching experience, could be in higher demand. The increased focus on transferable skills does mean that there is less focus on the subject that a graduate has studied and increasing number of employers not stating a required degree class that they are looking for (Forsdick, 2023). English, engineering, economics and philosophy graduates with different level of qualification are all eligible to apply for the same jobs. On the other hand, there is growing recognition that employees may not always need a degree qualification. There are concerns about the trends of overqualification in "non-graduate" occupations, such as security guard, care worker and waitstaff (CIPD, 2022) and evidence on firms moving away from undergraduate degree requirements (Fuller *et al.,* 2022; Intelligent, 2023; Hays, 2024).

There may be a "hollowing-out" of the graduate labour market (Xu, 2023), with a relatively greater demand for postgraduate degrees compared to undergraduate degrees in some sectors and countries and less demand for degree qualifications in other sectors. Where employers are not requiring a degree, they will be developing staff hired from high school through a mix of on-the-job training and degree-style learning opportunities through a career rather than before. This implies a very different type of provision for universities with a higher proportion of older and more qualified students and a parallel demand for shorter experiences, with university qualification status, from professional learners. This can be an opportunity, especially if postgraduate degrees and lifelong learning courses can be more profitable for universities, but needs careful planning given the difference between the provisions in terms of the kind of education and student experience as well as the characteristics of the student body.

In such an uncertain situation, and without much respite in sight, universities have of necessity had to look at alternative revenue models. The income from teaching is needed to meet the rising costs of education provision and in many universities in the US, UK and the EU to cross-subsidize research. Thus, the need to think creatively about university finances is doubly important. Hoxby (2014) and Brown and Tiu (2014) focus on American universities' endowment

management and asset allocation models. For universities without significant endowments and limited philanthropic scope, the 2024 PwC report suggests corporate partnerships to provide students with valuable opportunities they can leverage into the workforce, while at the same time providing alternative income streams. Finally, extending the education provision beyond traditional university students by providing online and hybrid short courses with or without accreditation may be a profitable way for universities to diversify their finances. For both this initiative and for streamlining administrative and other costs, AI and other technological advances discussed in Section II can help.

2. Polarization of Political Discourse in a World of Fake News and Misinformation

In addition to the changes in the financial security of universities, or perhaps related to them, the political landscape in many countries has changed since the early years of the 21st century. There has been more polarization and the growing importance of conservative or right-wing views, some of which strike at the very heart of a university's mission.

Even before Donald Trump's victory in the 2016 US Presidential election and the EU referendum in the UK in the same year, issues around propaganda, the tone of political discourse and protected speech have been contentious. Universities often define themselves as centers for intellectual discourse, where diverse perspectives intersect. They play a pivotal role in fostering an environment conducive to robust debate, critical thinking, and the exchange of ideas. By upholding academic freedom, universities empower students and faculty to express their views openly, even when those views challenge prevailing norms. However, recent debates around "no platforming" and "safe spaces" have raised concerns about the delicate balance between free speech and safeguarding marginalized voices (Malcolm, 2020). The challenge for universities is to find the balance between protecting freedom of expression whilst ensuring respectful discussion does not cause harm (Macgregor, 2020; Kings Policy Institute, 2022; Bacevic, 2024).

Universities can also be battlegrounds for what is often referred to as "culture wars." These conflicts arise from differing ideologies, values, and worldviews. Given that universities comprise a somewhat self-selected group of people who are likely to hold strong views and be able to argue their case, this is not at all surprising. As educational institutions, universities have an obligation to model and facilitate respectful dialogue, encouraging students and staff to engage with diverse perspectives. By promoting cultural awareness and knowledge of historical context, universities can

foster understanding and bridge ideological divides or at very least, promote an environment of "disagreeing well" (Spence, 2023). This is essentially what academic do in their research and their teaching, facilitating and contributing to discussions on contentious issues with the focus on critical analysis rather than dogmatism (Revers and Traunmuller, 2020).

The changes in the political landscape have happened alongside a significant shift in how people access information online and resulting concerns about misinformation and fake news. For example, in the UK 71% of 16- to 24-year-olds access their news via social media and they are most likely to read the news items that are being read by others (Ofcom, 2024). As the amount of information on the internet has grown, and social media sites present news in bite sized chunks driven by algorithms and limited fact checking, trust in democratic institutions and experts has fallen (Baines, 2022). In this information landscape universities are under increasing pressures to justify their role. Through their education provision, universities can also help by contributing significantly to data and media literacy and critical analysis. Using rigorous research- and evidence-based teaching, they can equip students with the tools to discern reliable information from "fake news". By emphasizing critical thinking, fact-checking, and source evaluation, universities can counter the proliferation of disinformation and thereby provide a valuable contribution to democratic societies where credible, high-quality information plays a big role. Building digital literacy, ethics and communication skills into programs can also help students to responsibly navigate the information landscape.

More broadly, universities can play a crucial role in nurturing informed citizens who can navigate complex political and societal challenges. By nurturing intellectual curiosity and a healthy level of skepticism, promoting rigorous research, and fostering respectful dialogue, they contribute significantly to addressing free speech concerns, combating fake news, and navigating culture wars. These skills and competencies may also be the key value-added in a world increasingly dominated by AI.

3. Pandemic, Climate and Other Extreme Disruptors

Amid these economic and political challenges, the worsening climate crisis and the more recent COVID-19 pandemic disruptions have meant among other things, that the essentially global nature of many of the world's top universities has come under scrutiny. While in many countries, universities are at the forefront of the response to these major challenges with their research, their education provision has been put to the test.

The COVID-19 pandemic provided the latest example of how easily the status quo of traditional university education provision can be disrupted. At the most basic level, university education moved away from on-campus provision to online provision and slowly to more hybrid or blended models, as happened with primary and secondary education in many countries. As countries around the world closed their borders, students scrambled to get home in the middle of teaching with no clear idea of when they would be able to return or what would happen to their classes and assessments in the interim. While these changes were forced upon universities in an emergency, as recent research has found, there are several lessons from this experience which can be beneficial for universities in the long run (Champagne and Granja, 2021).

The pandemic prevented many students from travelling to their university while environmental concerns have led to less enthusiasm for the long-haul flights which have traditionally carried international students to the leading universities in Australia, Canada, the UK, the US and some European countries. At the same time, many universities are having to depend on overseas student fees for their financial sustenance. These revenue sources are also particularly susceptible to global disruptions as well as to change in perceptions among potential students. As table 1 shows for many countries a high proportion of their student base are international (from another country). A disruption to the students' ability to, or interest in, travelling overseas to study has a significant

TABLE 1

SHARE OF INTERNATIONAL STUDENTS IN TERTIARY EDUCATION IN 2021

Country	%	*Country*	%	*Country*	%	*Country*	%
Luxembourg	49	New Zealand	12	**OECD – Europe**	8	Korea	4
Australia	22	Portugal	12	Finland	8	Spain	4
United Kingdom	20	Estonia	12	Iceland	8	Italy	3
Austria	19	Germany	11	Lithuania	7	Israel	3
Switzerland	18	Slovak Republic	11	Sweden	7	Greece	3
Canada	17	Denmark	10	**OECD – Total**	6	Türkiye	3
Czechia	16	Belgium	10	Japan	6	Chile	1
Netherlands	15	Ireland	9	Poland	5	Mexico	1
Hungary	14	Slovenia	9	United States	5	Colombia	0
Latvia	13	France	9	Norway	4		

Source: Share of international students enrolled by field of education, accessed March 23rd 2024 (OECD, 2024): https://www.oecd-ilibrary.org/education/data/education-at-a-glance/share-of-international-students-enrolled-by-field-of-education_e86f4692-en

impact on their financial resources. In the UK, where student migration reached an all-time high in 2022 (Cuibus and Walsh, 2024), a third of higher education providers saw a sharp fall in the growth of non-EU overseas applications in 2023 (FT, 2023). In both the US and the UK, political developments including the rise of the right wing and exclusionary politics and Brexit and its fallout (Tournier-Sol, 2021; Moreau, 2016), respectively have led to a distinct change in student perception of the attractiveness of moving to these countries, despite their universities continuing to be recognized as world-leading academic institutions.

The application of these lessons to other disruptions which might not be widespread is obvious. For example, at any point in time geopolitical disturbances or climate change related disruptions in particular parts of the world might mean that students in those areas cannot attend university in person, constrained in a similar way to what happened with lockdown measures in the pandemic. Whilst the crisis may not be global, the impacts in particular areas can be similar and significant. There is value in learning how to adapt to the risks by developing a plan for online provision which is roughly equivalent to the in-person provision, and to plan provision for the specific challenges of online provision including digital poverty and social isolation and its effects on mental health. This is likely to bring broader benefits for other groups as well. For example, students who have caring responsibilities or health issues might benefit from such flexible provision, as explained further in Section III. Universities will need to continue to rethink how they can bring education to those who are unable to travel, at a particular point in time or on a more permanent basis, making best us of the available technologies. Changing the nature of where people are taught and how through technologies does challenge the traditional university model, however.

4. The Growth of Massive Open Online Courses

In addition to their core education provision, universities are increasingly having to navigate the uncharted territories carved out by the spread of free online content such as MOOCs, Gen AI and other emerging technologies. This is nothing new –the first calculators, computers and other educational technologies have also required universities to rethink their education provision and processes. With the rise of Gen AI in the form of ChatGPT and similar technologies and the earlier development of high-quality content on portals such as Coursera, universities are having to question and consider their role as education providers. We explore here, and in sub-section 5, how institutions can both address the specific issues surrounding the value-added of academic staff in teaching and learning design thrown up by new technologies as well as embrace the possibilities that these technologies bring in terms of improving core education processes.

Coursera and EdX, two of the biggest providers of MOOCs were founded in 2011 (Ng and Widom). Ten years earlier, however, MIT launched its Open Courseware initiative which provided the course content for most of its undergraduate and graduate courses online for free (MIT Open Learning, 2021). Despite this, the demand for a traditional university education has shown no signs of abating, boosted by demographic changes as well as the perceived benefits of a college degree in challenging times for the global economy. In the UK, despite a period of slow economic growth following the GFC, Brexit and the COVID-19 pandemic, enrollment in both undergraduate and postgraduate degree programs has continued to grow (HESA, 2022). This points to the fact that "going to university" is about much more than content and so even when content from the world's top universities is freely available online, students seek out the full experience of being at university. This in turn means that universities need to prioritize student experience, whereas in the past they may have focused more on education as knowledge transmission. Student experience is of course not just about extracurriculars or social activities. A student's educational experience –the way teaching and learning is shaped inside and outside the classroom– along with peer interactions and network building can make the in–person university experience a valuable complement to the content provided. But to ensure high quality student experience, universities first need to understand who their student body is, and their needs, preferences, challenges and motivations. Section III of this chapter focuses on this issue.

Going forward, the availability of MOOCs and similar online learning will continue to broaden access to higher education which can be a blessing in disguise for universities. On the one hand, creating and selling university-designed and delivered MOOCs is an alternative revenue source at a time when, as discussed in sub-section 1 of this Section, public funding may be restricted (Morris *et al.,* 2020). The opportunities to sell online courses, rather than give them away for free, is helped by employers becoming more aware of and valuing credentials issued by online portals (Horton, 2020). This may seem at first like a challenge to the demand for traditional university education but as much of this provision is developed by universities themselves, they can use their reputation to develop this funding source. On the other hand, broadening access to higher education can extend universities' traditional "consumer base". More and more people can get a low-stakes taste of the kind of learning universities excel at through these online portals, and when convinced of the value, and when the time is right for them, they may be more likely to commit to the longer and in-person degree format. In other words, the rise of MOOCs may help broaden the revenue base for universities even vis-à-vis their traditional provision.

One key difference between traditional university programs and MOOCs are in terms of completion rates. MOOCs often have completion rates in single

digits (Duncan *et al.,* 2022) though there is quite a lot of variation across individual courses. This creates an interesting situation for universities. On the one hand, this highlights the unique value-added of a standard university educational experience. On the other hand, if universities intend to expand their provision into the MOOC space, this finding suggests that they will need to make significant effort to modify their current provision. More generally, given the essentially learner-centred approach of MOOCs in contrast to more instructor-centred approaches in in-person university settings, development of MOOC activity requires additional resources invested in course design. A recent study looking at a British and a Spanish university reiterates this point (Leon-Urrutia *et al.,* 2018). The courses delivered on campus will need to be redesigned for MOOC delivery, but putting in this effort and investment will increase returns as the learners are more likely to succeed in completing and paying for the full experience.

5. Gen AI and Education

The rise of Gen AI and, LLMs are possibly the biggest technological development in the higher education sphere since MOOCs and arguably have the potential to have a much bigger impact (Milano *et al.,* 2023). At the very least, AI can analyze vast amounts of data to identify trends in student performance, enabling educators to tailor curricula to meet individual learning needs. Personalized learning experiences, powered by AI algorithms, can adapt to students' pace, learning approach, and preferences, fostering a more engaging and effective educational environment. As we discuss in Section III there is an increased need for such an approach due to changes in the student body.

In this section we focus on how Gen AI might affect instructors and university personnel, looking at both the challenges and the opportunities (Gan *et al.,* 2023). The most obvious effect is probably in terms of how we educate and how and what we assess. Education models focused on students learning facts (content-focused) and reproducing them as assessment of learning are likely to be made obsolete by the rise of Gen AI. At the same time, the ability to curate, evaluate and apply content is likely to become more valuable than ever. This directly affects assessment design –how can we tell what a student knows or is able to do (Perkins, 2023)? On the one hand, there can be a temptation to make all assessment closed book and in-person, so that there can be certainty that what the student produces is their own work. However, this form of assessment may not appropriately measure how well students have developed evaluation skills, and indeed have mastered the skills needed to use AI tools effectively. Instructors face a challenge to find assessment formats, and teaching strategies that prepare students for those assessments and life after

university, that are authentic for a GenAI world (McArthur, 2023). Those that design institutional and even national regulations on academic integrity will also need to reassess how to protect the value of a degree without limiting the scope for students and lecturers to embrace AI tools where the gains clearly outweigh the downsides.

Gen AI technologies can be used to ease some of the costs of designing and developing content for teaching and assessing and more broadly delivering an appropriately supportive student experience (Aldawan and Alsaeed, 2020). This kind of support can range from help with producing lecture notes and slides, to writing assessments and to a certain extent, marking and feedback though this functionality is probably less developed than others. While early LLMs like ChatGPT 3.0 had clear limitations, others such as Microsoft Copilot and Google Bard and even later versions of ChatGPT are more able, for example, to extract reliable information. Study support is another area in which AI can help –there is already limited evidence of chatbots used as "study buddies" or tutors (Labadze *et al.,* 2023) which can provide individualized and real-time assistance to students, thereby relieving instructors from answering similar questions multiple times and focusing instead on other areas which need specialized and human attention.

While the potential benefits of AI in higher education are immense and some of these can help to address the many challenges facing universities discussed in the previous section, there are significant ethical considerations involved in the wider adoption of these technologies. Responsible innovation implies safeguarding against biases in AI algorithms, protecting data privacy, and ensuring equal access to educational opportunities (Slimo and Carballido, 2023). Beyond the legal protections, transparency in AI decision-making is crucial. Students and educators alike will need to understand how AI influences assessments, grading, and learning experiences. Institutions must establish robust ethical guidelines for the use of technology, emphasizing accountability and fairness in all AI applications. Finally, as universities become data-driven entities, the security and privacy of student and faculty information are key areas where universities will need to review and strengthen their policies (Huang, 2023). Strict protocols for data protection will need to be in place, ensuring that the benefits of technological advancements do not compromise the confidentiality and integrity of sensitive information.

III. HOW CAN UNIVERSITIES RESPOND TO THE CHANGING NATURE OF THEIR STUDENT AND STAFF POPULATION?

While external changes and shocks are a key element that universities will continue having to respond to in the coming years, the change in the

characteristics of their main stakeholders, students and academics is at least as big a challenge. The people working in and learning in universities have become more diverse and their preferences over work and study patterns have changed. Over the last few decades, higher education has generally seen an expansion all over the world with a doubling between 2000 and 2020 and participation rate of 40% in 2020 (UNESCO, 2022). A larger proportion of the population is going to university and many more are continuing to postgraduate study. At the same time, the demographic profile of the student body is changing, with for example an increase in the proportion of females studying and a tripling of the number of students studying outside their home country (UNESCO, 2022). A combination of inclusion policies and natural demographic change has meant increased diversity on the staff front too, although it still does not match the diversity amongst student populations.

While the increased demand for higher education has meant larger student enrollment in many countries around the world, in the US and the UK at least, there has also been a growing trend towards precarious contracts for staff (Wolf and Jenkins, 2021). Parallel to this, recruiting and retaining academic staff who teach has also become a challenge in many countries (Lord, 2022). European universities tend to have very different institutional structures, but here too, the literature shows for example, issues around workload and job satisfaction among Spanish academics following on from changes to the governance and regulation to public universities (Olaskoaga-Larrauri *et al.,* 2018). In this section, we consider the details of the changes in the staff and student bodies, evaluate the implications of these changes for higher education and the structure of the academy, and discuss how universities can respond to the resulting challenges and opportunities.

1. Changes in Staff and Student Characteristics

In the UK, the number of students aged 18 to 24 in full-time education has almost doubled between 1992 when a major drive to expand higher education started, resulting in approximately 1 in 3 people in this age range being in full time education in 2016 (ONS, 2016). Female students comprised the majority at both the undergraduate and postgraduate population in 2020-2021, with increased representation in the undergraduate student population from students from disadvantaged backgrounds and areas, of non-white ethnicity, mature students and those with disabilities (OfS, 2022). The US saw a slightly different pattern, with undergraduate enrollment as a proportion of the population falling between 2010 and 2021 after a steady rise since the second World War, and at a time when tuition fees have risen steadily in real terms (Irwin *et al.,* 2023). Post-

baccalaureate enrollment, however, has increased. The demographic profile of students in US higher education institutions has also changed dramatically over the last few decades, with an increase in diversity in ethnicity, gender, socioeconomic status, age and disability status (Cheeseman Day, 2020). In both countries, more recently, the COVID-19 pandemic directly affected both attainment and mental health status of higher education students significantly and changed the perception of the value of in-person versus online or hybrid education (ONS, 2020). In addition, school level attainment effects imply long run effects for universities as students may arrive with a different level of maturity or knowledge due to disruptions in their schooling at a younger age.

In addition to these demographic changes, the way in which students engage with university learning has changed. For example, –not surprisingly given the recent cost of living crisis– in many countries, a higher proportion of students are working whilst they study (Remenick and Bergman, 2020). This may have implications for the student support universities provide, for example in terms of providing employment opportunities within the university. There is also increased competition for student time, from social media and extracurricular activities to pressure to succeed in internships, which overall reduces the amount of time spent on study (Barton, 2024). These competing pressures also mean that students have more choices to make about when to study, including when to attend live teaching sessions. Spending time on your degree during 'normal' working hours is no longer the default. All this might mean that a more flexible learning environment is needed, to facilitate those considering work today as well as their future careers needs. This can also benefit other groups of students, for example, those who have caring responsibilities, commuting students or those with specific disabilities.

Just as the student body has changed, so has the staff profile. The pace of change is slow but data from the Higher Education Statistical Authority in the UK shows that the proportion of females working in universities has increased from 46% to 48% between 2017/2018 and 2021/2022. During the same period, the proportion of white staff fell from 77% to 72% and the proportion of staff with a declared disability increased from 4% to 6% (HESA, 2023). In the US there has also been an increase in the proportion of females working in universities and an increase in the proportion of people of color, although there is significant variation by job role and position (ACE, 2019). There is less inclusivity when it comes to the pipeline moving upwards In the university rankings, with most academics in top universities still coming from a small set of other top universities (Wapman *et al.,* 2022). In the UK, there is also a rise in temporary contracts (HESA, 2023) and a casualization of the workforce which in recent years has led to significant industrial action.

Growing dependence on such a contingent faculty body is also evident in the US (Colby, 2023).

2. Implications of the Changes in University Staff and Student Bodies

The diversification of the student and staff body has meant that universities have had to think about how to support different kinds of needs while also reaping the benefits of a workforce that better represents the general population. Equity and inclusion have become non-negotiable considerations for universities. From the legal requirements to consider protected characteristics and to find reasonable adjustments for students and staff with disabilities, to good practice to build a harmonious working and learning environment in a multicultural setting, universities are having to think seriously about elements of their core activities which they may have neglected before. For example, the fundamental nature of education has come under pressure. The increased diversity of the student body, and changes in how they have experienced education since the pandemic, has led to increased demand for inclusive and flexible education. This can include requests for live teaching sessions to be delivered in hybrid mode or at the very least recorded, pushback from students when the timetable is not working for them and increased focus on having spaced out and flexible assessment deadlines.

These requests for a change in what is taught and how it is taught fall to staff to deliver, both in the classroom and in the wider student experience. Universities need to equip their staff with the ability to respond to these challenges, while at the same time, providing a supportive environment for them. A more diverse workforce is likely to help in supporting a more diverse student body, but if the representation in the former lags, universities will face a challenge in providing an appropriate learning environment. Amongst academics, including in leadership positions, there is still a high proportion of white males which means the diversity of thinking needed to consider the changing demands of students is not always evident. As a result, a more conscious effort has been made in many institutions to design actively inclusive strategies for the workforce and for the design and delivery of teaching. This often includes policies on recruiting, training and hiring practices to ensure that institutions and their students can benefit adequately from a diverse global talent pool. The increase in non-permanent and part-time contractors, particularly in the case of instructors, also requires consideration of how best to recruit, train and retain staff and how to ensure sharing of lessons learnt across faculty from one year to the next. In some countries, such as the UK, the expectation for a greater focus on equity and inclusive practice is also reflected in national regulations providing an extra incentive for universities to act.

3. Flexible Personalized Learning Models for Student Success

The changes in student behaviors and the diversity of the cohort, and wider demands on their time alongside studying, suggest that a more flexible approach to teaching and learning may be needed at least for some of the student body. A blended approach, with a mix of asynchronous materials a student covers in their own time and timetabled live sessions that are recorded, is a common middle ground that has emerged since the pandemic. Such a flexible approach needs to be designed with care, to ensure the maximum benefit whilst managing potential downsides.

One of the lessons emerging from the COVID-19 pandemic experience is that high quality blended learning provision is possible but requires a great deal of resources (Herpich, 2022). This is true both in terms of technical systems and in terms of staff training and support. It also requires managing student expectations around what a university education is and broadening the definition of this beyond contact hours. In addition, the experience of the pandemic has highlighted issues such as digital poverty (Times Higher Education, 2021) which imply that while universities can indeed harness technology to reduce inequalities in access to education, there are other reasons why these inequalities might persist. For universities in cities and other areas with a premium on physical space, this also means reimagining the use of this space to maximize impact. Whereas a lecture-based model of education focused on content delivery might have been the norm, universities are able to think more carefully for example about what kinds of content delivery can occur online and what parts of the learning experience inherently require in-person interaction. Such systemic reviews can in turn help universities to clarify their raison d'etre in a world of MOOCs as discussed earlier.

There is a lot that can be done with data to personalize the flexible learning journey for students. Given the extent to which Virtual Learning Environments or Learning Management Systems (VLEs or LMSs) are ubiquitous across higher education, universities are already using data analytics through these and other portals to individualize the learning experience (Krawitz *et al.,* 2018). This may range from using data mining to identify and target students at risk of dropping out (Alyahan and Dustegor, 2020) and supporting distance learning programs (Mattingly *et al.,* 2012) to tracking engagement of different groups of students (Foster and Siddle, 2019). Like any prediction model, the efficacy of this process depends on the data available on which to train the model, but as more and more universities are using VLEs extensively in their core education provision, the quality and amount of this data will make these predictions better and easier to interpret and use (Francis *et al.,* 2019). While there are always concerns about data privacy and the ethics of such data use, there is an increasing feeling that

such an approach is required with appropriate safeguards to move from VLEs being largely a content repository as they often were prior to the pandemic, to becoming more of an "immersive and social learning environment" within a "structured ecosystem" (Brown and Foster, 2023).

Even where students are not driven by their personal circumstances or global events like the pandemic, universities may be faced with a demand for more personalized and customizable learning models. One such situation is the development of the Lifelong Learning Entitlement (DfE, 2023) in the UK, which is the government's attempt to enable learners to accumulate credits towards a qualification in discrete units rather than having to commit to a multi-year degree. The stated motivation for the introduction of this policy is to help broaden access to higher education and to make it easier for the workforce to upskill at any point in their lives. While the take-up of this offer is yet to be seen, the rise in employers accepting MOOC credentials suggests that this kind of provision may be in demand. One obvious change that universities will need to make to facilitate the Lifelong Learning Entitlement is more modularization so that learners can take classes at different times according to their preferences and needs. While this may not be a major change for many universities, it is likely that such learners will be less likely to be attending university in person for extended periods, and therefore will need a blended provision.

The demand for more modular learning is likely to also lead to a demand for interdisciplinary provision, which many universities may not have focused on in the past. This might in part be driven by learner interest and a move towards a learner-defined education path, compared to the traditional degrees based on core disciplines and defined by universities. This is of course a natural next step from the classic liberal arts model popular in American universities but is not quite the same thing. The demand for this kind of education may also be driven by employers looking for potential hires with skills spanning disciplines (Becerra, 2021). More generally, as interdisciplinary research especially focused on global problems such as climate change, geopolitics and pandemics has become more popular, interdisciplinary education seems to be the natural next step.

4. Using Technology and Training to Meet Wider Needs of Staff and Students

No matter how the education delivery model develops, universities will need to pay more attention to the support provided to students to enable them to learn how to learn in a resilient and adaptable way whatever their context. While the 2021 UK National Student Survey (OfS, 2021) brief on student experience during the pandemic finds that undergraduate students in the country generally

found their universities' response to the teaching and assessment challenges at this time satisfactory, they had less favorable impressions of the mental health and other student support provisions. Not surprisingly, staff training in disability awareness (Morina *et al.,* 2020), inclusive pedagogies, and student support more generally has become an important part of most universities' provision to meet their legal obligations as well as to ensure that their offering is appropriate to facilitate student success. While there has been successful ramping up of support in many universities around the world, the growing demand for higher education itself implies that these efforts may need to increase over time. At the same time, universities and their staff will need to understand the nuances of specific types of support that are most impactful for specific groups of students (Barnes *et al.,* 2024).

One of the potential benefits of the developments in learning technology including Gen AI as discussed earlier is that it allows universities to use data on learner behavior to identify the need for intervention to improve student outcomes and to tailor those interventions. Such use of "learning analytics" can be a first step to understand both the issues facing individual students and to equip staff with a better understanding of individual circumstances even within large student cohorts so that they can develop appropriate support. Similar considerations abound for staff as well, especially given the additional workload and skill development associated with making changes to meet the needs of the diverse student body. As the nature of the university's mission in higher education has and continues to evolve, academics have needed to change too. They are moving from being largely focused on disciplinary knowledge development and dissemination to having to be competent in a range of other student experience related skills (Whitchurch, 2023). While universities in many countries also have a legal obligation to provide support for staff mental health, there is a risk that this provision constantly falls short as staff are asked to do more and more to support students who may also be needing more and more (Jayman *et al.,* 2022). This cycle of increasing pressure on scarce resources, to deliver on the education mission for a diverse student population, needs to be managed through training and support provision for staff. Of course, increased investment in human and physical capital will help increase the productivity of the resource as well.

IV. CONCLUSION

Universities worldwide are navigating a complex landscape of challenges that impact their education provision. These challenges span global and local contexts, and their implications are profound. As we look ahead, it is important for universities to proactively respond to these challenges and embrace them as

opportunities for growth and innovation. In this chapter, we have considered a range of different changes that directly or indirectly affect universities and developed potential responses which may end up transforming these institutions for the better.

The COVID-19 pandemic has disrupted traditional education models, forcing universities to rapidly adapt to remote and hybrid learning. However, it also helped to surface good practice existing within universities and the need to continue investing in robust digital infrastructure, faculty training, and student support to ensure resilient education delivery. Concurrently, geopolitical tensions and shifting alliances impact international collaborations and student mobility. Many universities have the networks to diversify partnerships, foster cross-cultural understanding, and promote global citizenship and move beyond these challenges. Finally, rapid technological advancements, including MOOCs and AI, are reshaping education. Universities must integrate these tools thoughtfully, enhancing personalized learning experiences and improving administrative efficiency, and where possible, seize the opportunity to both cut costs and develop new revenue streams using these technologies.

Universities are at their heart a function of their people, and here too, there has been significant change. Student and staff demographics are evolving faster than ever. Universities will need to address the needs of non-traditional and lifelong learners, international students, and a diverse staff cohort. Cultivating inclusive environments and tailoring support services are critical. Increasingly, learners are also demanding flexibility in the education offering, to fit around their lives and their skill requirements. In order to address these, universities will need to explore competency-based education, micro-credentials, and stackable degrees. Customized pathways and lifelong learning opportunities empower students and enhance employability. This can be a challenge at any time, but with shrinking budgets, reduced public funding, and increased competition, university management and staff can feel like they are constantly operating at heightened levels of financial and operational stress. Diversifying income sources, optimizing resource allocation, and fostering industry partnerships can mitigate financial strain.

Going forward, universities must be agile, forward-thinking, and responsive to both global and local dynamics. By embracing challenges as catalysts for positive change, institutions can shape a resilient and impactful future for higher education. They will also need to be innovative about their external engagement, working with policy makers, industry and the third sector to develop solutions to global and local problems and to remind internal and external stakeholders of their value to society.

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