Universities Fit for the Future

How to thrive in a skills-focussed economy
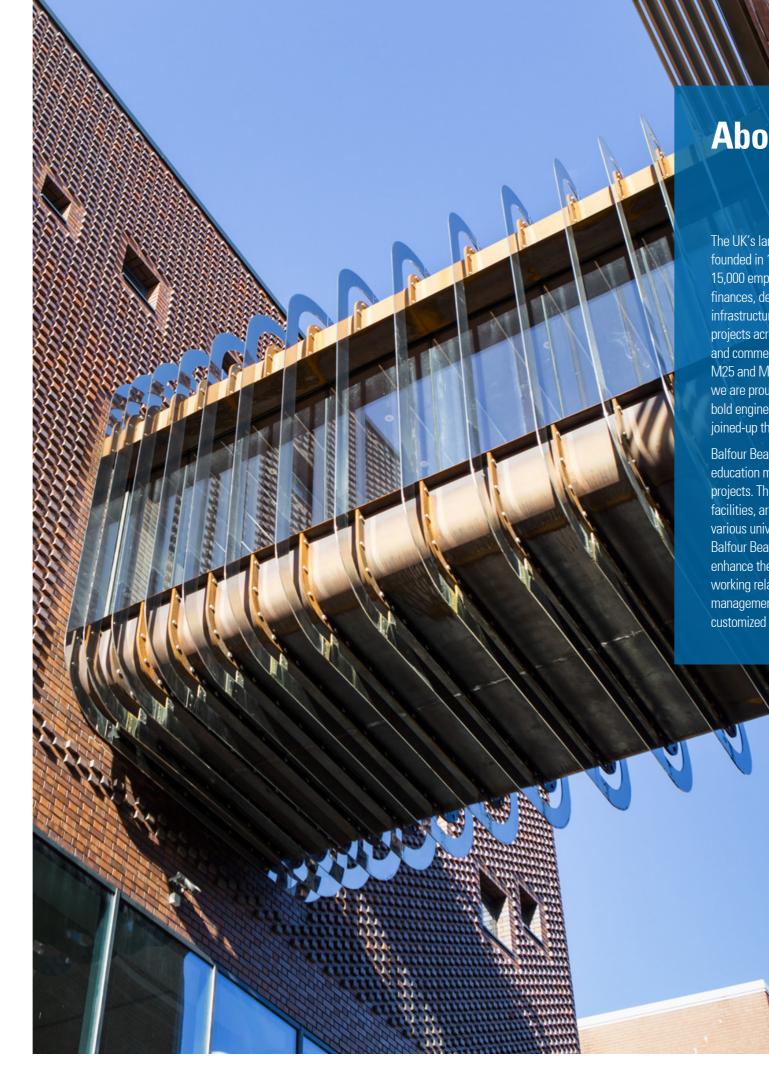
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Balfour Beatty

British universities are a world-class asset. They have a vital role to play in ensuring that we address critical skills shortages and unlock economic growth and productivity. But they face significant challenges on a number of fronts, not least in terms of embracing technological advances and competing for the brightest and the best students.

To thrive, universities will increasingly need to customise their offer, delivering a student-centred experience that reflects how the next generation want to learn and live. Active blended learning and collaborative working will take over from poring over dusty texts, while student rooms will increasingly be replaced with stylish, purpose-built accommodation designed to support study and socialising. Universities will have to work more closely with business, as young people increasingly expect university to give them skills that are directly relevant to the workplace, guaranteeing employability. The university experience, from lectures to the library will be reinvented. Attending campus will be a seamless, integrated digital experience.

Given this rapidly changing landscape, and the need to be more responsive and flexible than ever before, universities should look to work more closely with a wide range of private sector commercial organisations. This partnership will underpin and support the student learning experience of the future.

Leo Quinn
Group Chief Executive

About Balfour Beatty

The UK's largest construction contractor, Balfour Beatty, was founded in 1909 and is listed on the London Stock Exchange. With 15,000 employees and over 40 offices in the UK, Balfour Beatty finances, develops, builds and maintains the increasingly complex infrastructure that underpins the UK's daily life. With a legacy of projects across transportation, power and utility systems, social and commercial buildings: from Crossrail and Heathrow T2b to the M25 and M4/M5; and Sellafield; to the Olympics Aquatic Centre, we are proud to be a British company delivering iconic structures, bold engineering feats, behind-the-scenes innovation and joined-up thinking, financing and partnerships.

Balfour Beatty is developing a leading position in the higher education market, delivering a broad portfolio of infrastructure projects. These include student accommodation, academic facilities, arenas and other campus projects. Working with various universities, local communities and local supply chains, Balfour Beatty delivers high quality, sustainable facilities that enhance the student experience. Clients benefit from the close working relationship between the investment, construction and management service teams, meaning Balfour Beatty can offer customized solutions for each college, university and their students.

Executive summary

The UK currently has record numbers of university students, with 1.7 million young people in full-time higher education[1]. The UK higher education sector as a whole continues to attract a high quality of international capital. But the shifting landscape has prompted some to question whether universities as we know them will continue to exist in the future.

The momentum behind digital technology and other factors driving change in the UK universities sector is unstoppable. The higher-education model of lectures and exams has barely changed for decades if not longer. However, a series of new challenges has recently emerged: from changing demographics; the growing interest in technical and vocational routes; fierce competition to attract students following the removal of the cap on the number of undergraduates universities can recruit; the implications of Brexit and the visa regime; a decline in the number of mature and part-time students; and higher graduate debt levels linked to rising costs as universities try to balance their books.

In the medium-to-long-term there is also the unquantified impact of the digital revolution providing online learning, much of it free, and the opportunity to replace a rigid lecture and seminar schedule with access to learning available on-demand.

Balfour Beatty believes that assuming access to online courses will mean universities are no longer needed is too simplistic: along with the challenges the sector faces, are a range of opportunities for those that are prepared to take them. There will always be a place for bricks and mortar universities not least due to the fact that the skills needed in the future, as digitisation and automation increasingly take hold, are predicted to be higher level skills[2]. Along with this will come a stronger focus on upskilling and retraining workers throughout their careers to respond to technological developments and of course, for many people, the social aspect of education is just as important as the academic.

In order to capitalize on the increasing demand for higher level education and continuous upskilling, universities, traditionally slow to adapt, will need to reinvent themselves. While those universities less willing to adapt will suffer, those prepared to innovate will thrive. They will need to ensure a stronger connection between what is being taught and what the market is looking for, while maintaining the focus on academic rigour and important academic research, which will become more and more important commercially to universities. And they may need to change the range of courses on offer, their length and how they are taught, to allow for blended learning. This new approach will require learning-enhancing buildings which encourage and facilitate collaboration and socializing. Indeed, the trebling of tuition fees in 2012 means students and their parents are now consumers demanding value for money. As a consequence, accommodation, libraries, learning centres, laboratories, graduate centres and other facilities have become a key marketing tool in the competition to attract the best students.

Those commissioning and building new facilities will need to understand the needs of the next generation of students and the requirements of smart, digital campuses and accommodation equipped with intelligent facilities. They will have to effectively interpret the data they collect and use it to enhance the student learning experience, creating an effective digital learning environment and personalized individual learning experiences. And they will need to future-proof designs to allow for technological developments that are happening at increasing pace.

Weaker universities, or those which cling to tradition rather than considering how they need to change their offer, may not survive. Others have the potential to thrive in the new skills-focussed economy.

Key points

1. While universities face challenges, there are also a number of opportunities for forward-looking universities that are prepared to evolve their offer.

2. To cement their position as drivers of economic growth, universities must continue to integrate into the economy and develop their commercial awareness.

3. Universities should be at the forefront of building skills throughout the workforce – the skills that employers and the economy need: developing closer relationships with employers must also increasingly become a focus.

4. Most universities and employers will continue to see online education as an addition to traditional degree courses, rather than a replacement. The future is likely to be in blended learning, or web-enhanced courses rather than web-based courses.

5. The five days a week for two-semesters pattern, with timetables which suit academics, will be replaced by year-round 24-hour learning.

6. Short-burst, full-immersion programmes in areas such as big data modelling, specialized 3D printing may become more prevalent, with people requiring student accommodation for a 3-month course rather than a 3-year course.

7. While many universities will continue to co-exist with online options, blending their offering to incorporate their own MOOC elements, competition and the increasing use of online ratings will result in some lower-tier universities eventually becoming defunct.

8. University infrastructure has become a defining point in the attraction of new students. It will increasingly be expected to meet challenging sustainability targets, with low carbon footprints and high quality building design which is sensitive to the local environment.

9. The demand for higher quality, better-connected accommodation is rising, making some existing old-fashioned, purpose-built student accommodation obsolete.

10. Students are increasingly demanding cross-disciplinary learning, especially in areas such as science, engineering, and technology. This will see the development of new purpose-built hubs which bring business and universities together.

11. There will be fewer large lecture halls, but an increase in high-quality, smaller learning spaces and seminar rooms. The emphasis on collaborative work spaces will increase.

12. The way academic libraries are designed and built will need to evolve alongside the reinvention of their purpose and use.

13. Libraries and learning centres will become even less book-focussed and ever more technology-rich. They will focus on being a quiet space to work, catering for online study and group working, with access to rarer texts in hard copy. They will need more study space and collaborative group-study rooms, access to technology and digital content along with IT infrastructure capable of supporting 24/7 fast-paced learning and connectivity.

Universities as economic drivers

Compared to other G7 nations, the UK has a significant productivity gap, and has done for many years[3]. It is widely acknowledged that progress in raising productivity requires major improvement to skills across the UK. For this reason, the Government's productivity plan[4] outlines 15 steps to improving the nation's productivity: chief amongst them are commitments to improve school performance, increase the number of apprenticeships, improve the further education system, remove the student numbers cap, change funding arrangements and open higher education market to new providers.

Universities, especially those with a significant focus on research, not only play a part in helping improve the UK's poor productivity, but also have a critical role in underpinning economic growth that goes beyond upskilling the next generation and directly employing thousands of people. They also generate growth in the communities around them: creating social value and making an impact locally. Through science and research, they drive the innovation that leads to growth, developing new technologies and products, collaborating with business to generate new ideas, facilitating knowledge transfer and increasingly leading to business start-ups and supporting businesses as they grow[5]. The sector is a source of skills, innovation and exports in its own right. This important role places universities at the heart of the economy.

To cement their position as drivers of economic growth, universities must continue to integrate into the economy and develop their commercial awareness. Students now view attending university as an investment in their careers and future employability. Universities should be at the forefront of building skills throughout the workforce – the skills that employers and the economy need. Universities' value proposition is therefore evolving and developing closer relationships with employers must also increasingly become a focus.

The short-to-medium term

The university sector faces a number of current challenges, including higher tuition fees and increasing student debt deterring young people from taking up degrees[6]; changes in the perception of apprenticeships and increasing numbers of young people choosing them over academic routes; a fall in applications to university as the number of 18-year-olds in the population declines[7], alongside a drop in applications from older and part-time students[8]; and visa restrictions putting in question the UK's ability to continue to attract overseas students[9].

However, in spite of these challenges, there are also a number of opportunities for forward-looking universities that are prepared to evolve their offer.

Increasing digitisation and automisation is driving a shift away from low-skill, occupations to higher-skill, more agile roles[10], which means that people will increasingly need to pursue a higher level of skills.

Meanwhile, an increase in the availability of higher and degree apprenticeships which combine work, on-the-job learning and funded part-time university education, mean that students do not have to choose between an apprenticeship and a degree, and can avoid the high costs and debt associated with academic routes.

Universities are also responding to changes in how people want to access education and up-skill, making it easier for them to take up higher education throughout their careers. Innovative ways of delivering degrees which fit around students' lives, such as accelerated degrees offer an attractive option for mature students, those looking to re-skill quickly and non-traditional learners. These have the potential to reverse the decline in the numbers of mature and part-time students.

We believe therefore, that the number of students going to university in the UK each year will remain high.

Online or bricks and mortar?

There are no prizes for predicting that in the future, digital technology will play an increasingly significant role in the delivery of higher education. More and more universities are already establishing massive open online courses (MOOC), offering access via global online platforms free of charge. With low startup costs and economies of scale, online courses significantly lower the price of learning and widen access to it, by removing the need for students to be taught at set times or places for many subjects. While laboratory, medical and other practical, hands-on skills need to be taught with close supervision and access to specialist equipment, even elements of science-based and medical subjects can be studied remotely.

We believe that most universities and employers will continue to see online education as an addition to traditional degree courses, rather than a replacement. For example, over half the 4,500 students at MIT already take a MOOC as part of their course. There will be an increase in degrees with elements of MOOCs as students are able to pick and choose, trying out new subjects online, enhance existing degrees with new modules, choose less popular courses from other universities to complement their main studies, undertake part-time work or have children while finishing their studies online. The future is therefore likely to be in blended learning, or web-enhanced courses rather than web-based courses.

This will mean that the five days a week for two-semesters pattern, with timetables which suit academics, will be replaced by year-round 24-hour learning.

Universities are also beginning to maintain better contact with former students and may see them re-enrol for specific courses for shorter periods as lifelong learning becomes embedded and people need to ensure their skills keep up with new technologies. For example, short-burst, full-immersion programmes in areas such as big data modeling, specialized 3D printing may become more prevalent, with people requiring student accommodation for a 3-month course rather than a 3-year course.

Meanwhile, student demand for social interaction in terms of both a social environment and working directly with faculty and fellow students, will also remain. Students, who are often leaving home for the first time, want to live in supportive communities where they can make friends, socialise and learn from each other. Similarly, academics can learn from student interaction. Going to university is and will remain a rite of passage.

Balfour Beatty believes that, while many universities will continue to co-exist with online options, blending their offering to incorporate their own MOOC elements, competition and the increasing use of online ratings for example, will result in some lower-tier universities seeing declining revenues and enrolment, eventually becoming defunct.

[3] Office for National Statistics, October 2017
[4] Fixing the foundations: Creating a more prosperous nation, HMG, 2015

[5] HMG, Encouraging a British Invention Revolution: Sir Andrew Witty's Review of Universities and Growth, October 2013
[6] UCAS, July 2017; and The annual Sutton Trust poll, August 2017

[7] Office for National Statistics, 2010
[8] http://www.hefce.ac.uk/media/HEFCE,2014/Content/Analysis/HE,in,England/HE_in_England_2015.pdf

[9] Office for National Statistics, February 2017
[10] State of the Nation report on social mobility in Great Britain, HMG, November 2016

The infrastructure offer

Evolution in the universities sector of course has an impact on the infrastructure needed - infrastructure which has become a defining factor in the competition for students, playing a key part in student recruitment and retention. University infrastructure will also increasingly be expected to meet challenging sustainability targets, with low carbon footprints and high quality building design which is sensitive to the local environment, while those designing and building them will need to ensure that they are future-proofing them for years to come as developments in digital technology continue at pace.

1. Purpose-built student accommodation

Universities spend £1.3 billion a year maintaining existing student accommodation while investors spent a further £3.1 billion in 2016[11] funding development projects to meet demand. For many investors, purpose-built student accommodation is now a key element of a diversified portfolio: the purpose-built student accommodation sector is set to reach a total combined value of £50bn by 2020[12].

The number of students seeking accommodation is likely to exceed the amount of accommodation which currently exists, both in terms of purpose-built student housing and privately rented properties, especially as demand for shorter periods of accommodation is likely to increase. Students will continue to look for affordable accommodation close to university campuses and with good transport links to city centres.

Student living is already being shaped by the latest technology. More and more the expectations and requirements of students in the digital era will mean that purpose-built accommodation needs to keep pace. Meanwhile, today's digitally-literate students are already accessing detailed information on the options available to them: reading reviews, comparing costs and room details, looking at pictures and online virtual tours of accommodation before making choices on where to live. The demand for higher quality, better-connected accommodation is rising, making some existing old-fashioned, purpose-built student accommodation obsolete.

- Institutions are already focussing on ensuring that students have as much interaction with other students as possible, either through shared study or general social contact, as this promotes student well-being. This focus will continue and grow.
- Students will increasingly expect access to comfortable, high-quality kitchens and lounges: communal space for cooking and dining, study, interaction and recreation.
- Generations of students used to being immersed in technology will expect high-performance, high-density Wi-Fi as standard, to enable them to watch lectures remotely, undertake research and organize their lives.
- Students paying significant amounts for their degrees are highly motivated in terms of studying and will expect their accommodation to facilitate a positive learning environment.
- And of course, they also want their accommodation to be safe, high-spec and architecturally interesting.

2. Lecture halls and learning spaces

Students are increasingly demanding cross-disciplinary learning, especially in areas such as science, engineering, and technology. This will see the development of new purpose-built hubs which bring business and universities together.

Academic teaching spaces will also need to respond, becoming more dynamic and flexible, as students choose to listen to lectures from other locations, attending campus for tutorials, seminars and to conduct research. There will be fewer large lecture halls, but an increase in high-quality, smaller learning spaces and seminar rooms. The emphasis on collaborative work spaces is likely to increase.

Meanwhile, the discerning, value for money focussed and health conscious "generation Z" has a growing appetite for exercise facilities and healthy eating. Students will require more gym access – which has superfast broadband to enable continued study and music and film streaming during leisure time.

3. Libraries

As the way in which students access and consume information changes in the digital information age, so to must the traditional academic libraries. Indeed, the library is arguably the area of the university which is seeing the most significant shift to its identity. The way academic libraries are designed and built will need to evolve alongside the reinvention of their purpose and use.

The library has not been the starting point for students accessing information for many years and academic libraries have therefore already developed an offer that goes beyond books. They have become more accessible, with 24/7 access policies, self-service loan facilities, welcoming cafés and digital solutions to accessing information with greater use of online journals, e-books and digitised versions of core texts.

Libraries will continue to evolve over the next decades to ensure that they continue to meet student needs. They will become even less book-focussed, organizing their space around the student experience rather than around collections, and becoming ever more technology-rich. They will focus on being a quiet space to work, catering for online study and group working, with access to rarer texts in hard copy. To achieve this, they will need more study space and collaborative group-study rooms, access to technology and digital content along with IT infrastructure capable of supporting 24/7 fast-paced learning and connectivity.

While the overall number of books, the "collection" in most university libraries will continue to be reduced, archives, special or distinctive collections and rare or unique books may see certain universities become centres of excellence, using this as a defining factor and selling point.

University libraries in the digital age will also fast become repositories of data about students, how they are accessing information and how they are learning. Mining this data will enable universities and specifically the libraries to continually improve their offer. It will also enable universities to offer student support services in the form of personalized data analysis to help them in improve how they study and research. While this kind of "learning analytics" is widely used across the US and Australia, many UK universities are yet to embrace it according to research[13]. Implementing such a strategy would also have an impact on the design and layout of the library, requiring consultation rooms for example.

[11] Knight Frank Student Property Report 2017
[12] Knight Frank, 2017

[13] https://helfuk.blogspot.co.uk/p/about-helf.html

Conclusion

Technology will change the universities sector, but, we believe, in a way which re-energises, rather than weakens it. Thomas Edison predicted in 1913 that "books will soon be obsolete" because people would be taught "every branch of human knowledge with the motion picture". He was to be proven wrong, as, we believe, will be those who forsee the end of universities.

Universities are not just about amassing knowledge: as well as being places of learning, they are also social institutions where students interact with academics, learn from each another and mature into adults. "Going to university" will remain a rite of passage for many people, and a way of maximising the educational experience.

Furthermore, the role of universities in research, the application of knowledge, expertise and intellectual rigour will remain, while the reputation of the UK for excellence in higher education will continue to attract students to the country's academic institutions.

We believe that place-based education and the need for physical campuses with purpose-built student accommodation will remain for the foreseeable future.

Veena Hudson

Head of Public Affairs | Balfour Beatty
veena.hudson@balfourbeatty.com
5 Churchill Place, Canary Wharf, London E14 5HU
+44 (0)20 7963 4235 | +44 (0)7790 340 693
www.balfourbeatty.com