orangebox

The Sticky Campus
and the new dynamics of
Smartlearning®

b. 1995 –
2012/iGENS

Research & Insight by **Orangebox** and Written by **Nathan Hurley**

96% of chief academic officers at US universities say they're effectively preparing students for work,

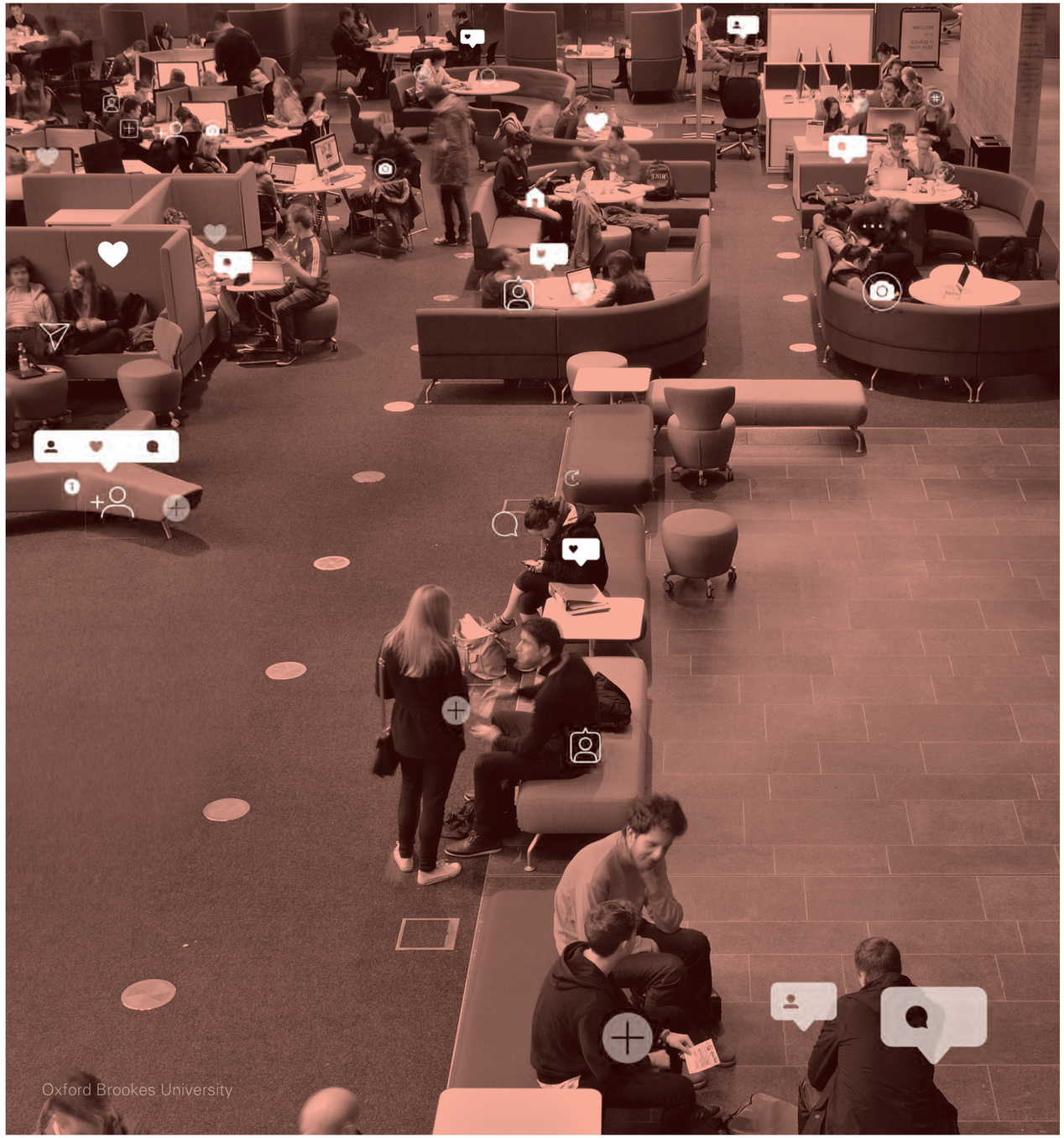
just 11% of business leaders agree.

A 2017 US Chamber of Commerce Foundation (USCCF) Center for Education and Workforce report

When Orangebox's Research & Insight team came across this great insight (opposite), we decided to dig a little deeper: **this document is the result.**

The Sticky Campus

and the new dynamics of Smartlearning®



Oxford Brookes University

Understanding today's higher educational experience will help us anticipate what iGens are going to **expect** to find – or **seek** to **introduce** – within the workplaces they enter. Within this report we've therefore explored the educational environments experienced by iGens and assessed the cultural impact these are likely to have on the workplace of the future.

Orangebox has been providing furniture for educational spaces for the last 20 years, and has a global network of university clients, specialist architects, business leaders, consultants, furniture dealers and spatial designers. We drew deeply on this professional network when compiling our research, and are grateful to those who generously agreed to contribute insight by sharing their expertise with us in workshops, round tables and one-on-one interviews.

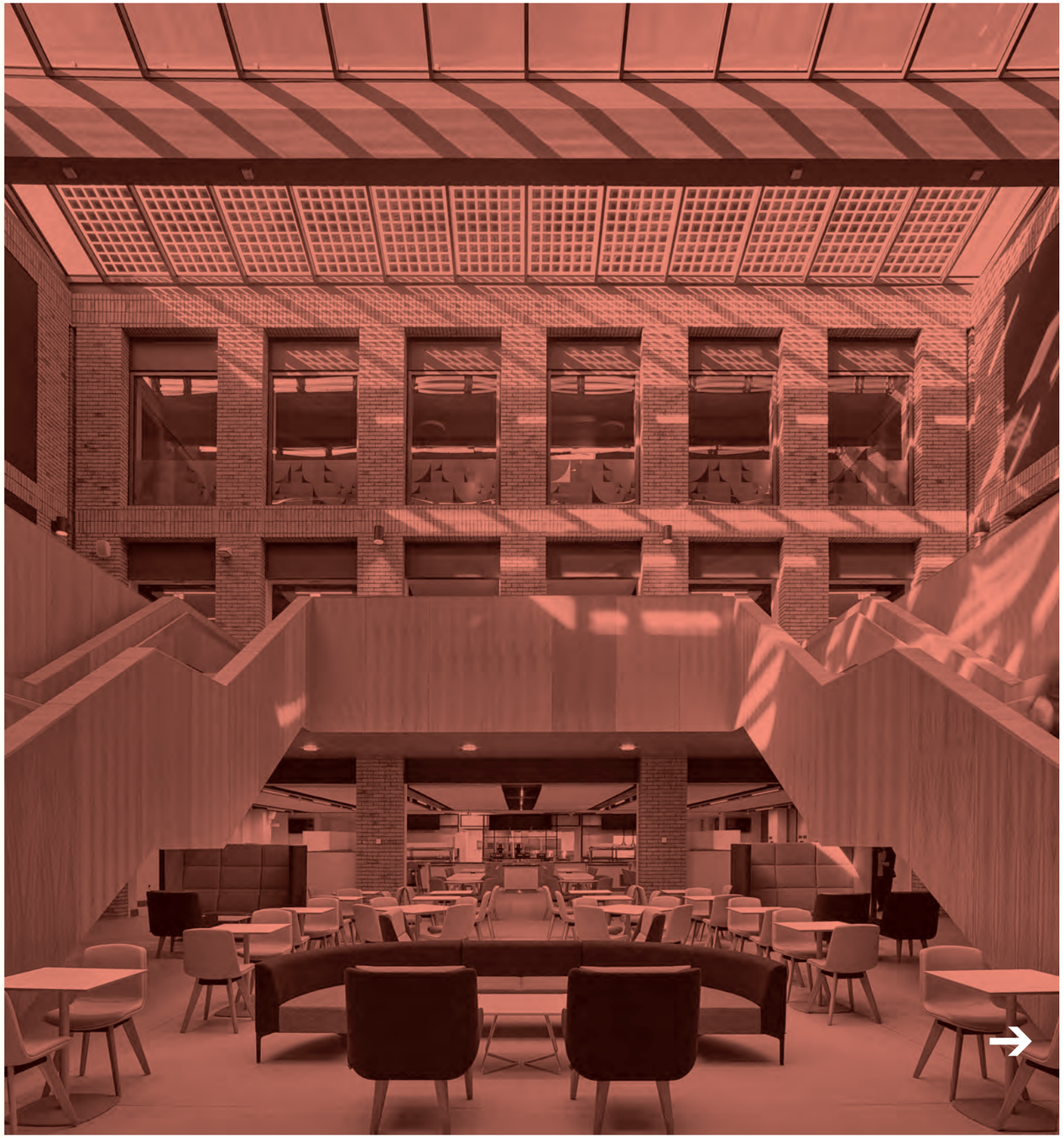
The move by many organisations away from hierarchical structures towards more networked ones has had many contributing factors. The pervasiveness of technology, changing balance of men and women in the workplace, advances in management styles and flexible working hours that typify the working life of Millennials have all had positive effects on the office. Over the next 15 years, as iGens (the internet generation, born between 1995-2012) flood the workplace, it's likely that their influence will be equally profound.

The UK's educational institutions are **mature** and **competitive**, seen, in many instances, as setting a global benchmark.

According to a 2017 report by *The Economist*, the two decades from 1992 to 2012 saw the global tertiary enrolment ratio (the percentage of the student-age population at university) rise from 14% to 32%. With so many young people attending university, it's vital we understand how the experience shapes them, and – perhaps more importantly – how it's setting them up for the careers that will follow.

Our goal with Smartlearning®, as with all of Orangebox's Research & Insight publications, was to arrive at a clear and purposeful insight, and to this end we sourced both primary and secondary research from September 2018 - September 2019. This included:

- A series of workshops with private industry leaders, university academics, other faculty staff and students
- Workshops and think tanks with design leaders and architects specialising in higher education
- A review of global surveys and reports from diverse sources, including students, global graduate employers, research institutions, government think tanks and authors.



Opposite – Durham University

Our Aims

This Smartlearning report aims to explore cause and effect, assess the likely strength of the iGen's impact, and identify potential solutions for some of the more difficult challenges arising from it. We're hoping that this initial report will improve our understanding of the iGen mindset, help us assess how iGens are being influenced by (and are influencing) higher education institutions, and give us a fix on the challenges that businesses are likely to face as they welcome them into the contemporary workplace.

Seminal texts such as ***iGen*** by Jean M. Twenge PhD and ***The Coddling of the American Mind*** by Greg Lukianoff & Jonathan Haidt helped us get to grips with our iGen protagonist, and the authors' invaluable insights are woven throughout this report. International case studies and examples of best practice provide insights into both where we stand currently and where we may be heading. Theoretical floor plans highlight the new furniture typologies that we believe to be relevant to the future of both higher education and the workplace.

The ten chapters of this report each reflect an area we believe to be key to understanding the iGen:

iGen – What we need to know...

iGen – What we need to know…

In 2012 Gerard Taylor, *Orangebox*'s Creative Director, outlined the polar differences between two bookend generations, Boomers and Millennials. The prescience of these insights became apparent as Millennials flooded the workplace, and organisations globally were faced with disruption and transformation, challenges and opportunities.

Eight years later, it's the internet generation – the iGens – who are poised to overturn the status quo. iGens, born in the period from 1995 to 2012, have no memory of a time before the internet. They grew up with mobile phones, were on social media before hitting puberty, and can't imagine a life offline. Their kinship with and addiction to smartphones has made them reliant on the instant access/instant information these provide.

Professor of Psychology and social observer Jean M. Twenge, author of ***iGen***, is responsible for pinning down our generational protagonist. While defining generational parameters isn't a strict science, we're opting for 1995, the year the internet came into being. *Facebook* opened up to anyone over the age of 13 in 2006, so those born after 1995 were able to live their entire adolescence on social media platforms. Twenge writes, **"It's anyone's guess when iGen will end; most generations tend to last between fourteen and seventeen years, so that would put us around 2012."**

iGens seem to have got here faster than anyone anticipated – while the world's marketers are still fixated on the needs and desires of Millennials. Yet it's critical we understand iGens and what drives them as, inevitably, a 21-year-old iGen in both the workplace and marketplace is going to have very different wants and needs to those of a 65-year-old.

Both ***iGen*** (published in 2017) and ***The Coddling of the American Mind*** (published in 2019) were pioneering in bringing together the relevant datasets and offering insights into a previously uncharted generation. While the authors acknowledge that our understanding of the iGen is only just beginning to take shape, the fact that they surveyed over 11 million people has resulted in datasets that are rich and varied, offering a considerable depth of understanding.

The direct comparison of data for participants of the same age is critical to generational study. To avoid the pitfalls of assuming that, "young people have always been this way," it's vital to compare what a Gen X'er thought at 20 with what an iGen thinks at 20.

So, what do we know so far?

While 94% of Boomers had a driving license at 18, in 2015 only 72% of 18-year-old iGens had a driving license.

Growing up slowly

Contrary to popular belief, young people today are growing up more slowly than their parents' generation, and taking longer to embrace the responsibilities of adulthood.

According to a 2016 *North American Child Development* report, iGen teens are less likely to date than previous generations: of those asked, only half had dated, compared to nearly three out of four Boomers and Gen X'ers. That of course leads us to a related area: sex. Contrary to expectations, the number of sexually active 15-year-old North Americans has halved since the 1990s, according to the same report. The average age for iGens to lose their virginity is just over 17, a whole year later than the average Gen X'er. This, along with increased access to birth control, has contributed to the number of teens giving birth being at an all time global low.

Learning to drive has also shifted out of iGens' focus. While 94% of Boomers had a driving license at 18, in 2015 only 72% of 18-year-old iGens had a driving license. And, in a flip of the previous default setting, it seems that the motivation for iGens to get a license today comes from their parents, rather than from themselves. According to *Governors Highway Safety Association* survey, a 21-year-old called Hannah wrote, "My parents drove me everywhere and never complained, so I always had rides." In another, Juan, 19, said he didn't learn to drive straight away, "because my parents didn't 'push' me to get my license."

The decline in the percentage of teens who work is staggering. While in the late 1970s only 22% of 18-year-olds didn't work for a pay cheque, a US *MarketWatch* report published in 2016 showed that this percentage had shot up to 44% by the 2010s. While this figure will obviously have been affected by a reduction in employment opportunities caused by the global recession of '07-'09, averages subsequently remained low even as the economy boomed, and have yet to bounce back to previous levels. These low figures of teenage employment could be caused by the increased number of teens choosing to enter further education.

It's often posited that the increased demands of schooling might be responsible for iGen teens not working as much. The data from the same *MarketWatch* report tells a different story, however: iGens actually have 33 more minutes of leisure time a day (leisure time being measured minus school, work and volunteering demands) than Gen X'ers had.

A lack of paid work may partially explain our next iGen revelation, which is that fewer and fewer iGens are drinking alcohol. A 2016 US publication from the *Journal of Studies on Alcohol* revealed that almost 40% of 18-year-olds had never tried alcohol, and in England (contrary to general perceptions) a large proportion of young people are shunning it too, according to a 2018 *NHS* report. Binge drinking on both sides of the pond has also seen large declines, dropping in England from 27% to 18% from 2005-2015.

The same *NHS* report said that abstaining from alcohol is becoming more mainstream among people aged 16-24, with the proportion who don't drink having increased from 18% to 29% in the decade from 2005. While cost may be a factor in the shift, it's estimated that health and body consciousness is the primary reason, with exposure to increasing numbers of healthy eating programmes, Californian-based reality TV shows and Instagram fitness stars having its effect.

So, our teens are growing up more slowly, taking longer to transition from adolescence to adulthood. Drinking, driving, dating and working are adult practices, and iGens are taking longer to progress to them. Sociologist David Finkelhor wrote in the *Washington Post* that iGens are, "showing virtues their elders lacked." He added that, "We may look back on today's youth as relatively virtuous, as the ones who turned the tide on impulsivity and indulgence." These trends, however, haven't only emerged recently: they've been on the rise since the '90s.

Screen Time

It appears that iGens, are obsessed with technology and the internet. Almost all teenagers allegedly sleep with their devices under their pillow or on the mattress, watching videos right before they go to bed and checking their notifications the instant they wake up.

●Texting 28% ●Internet 24% ●TV 24% ●Gaming 18% ●Video Chat 5%

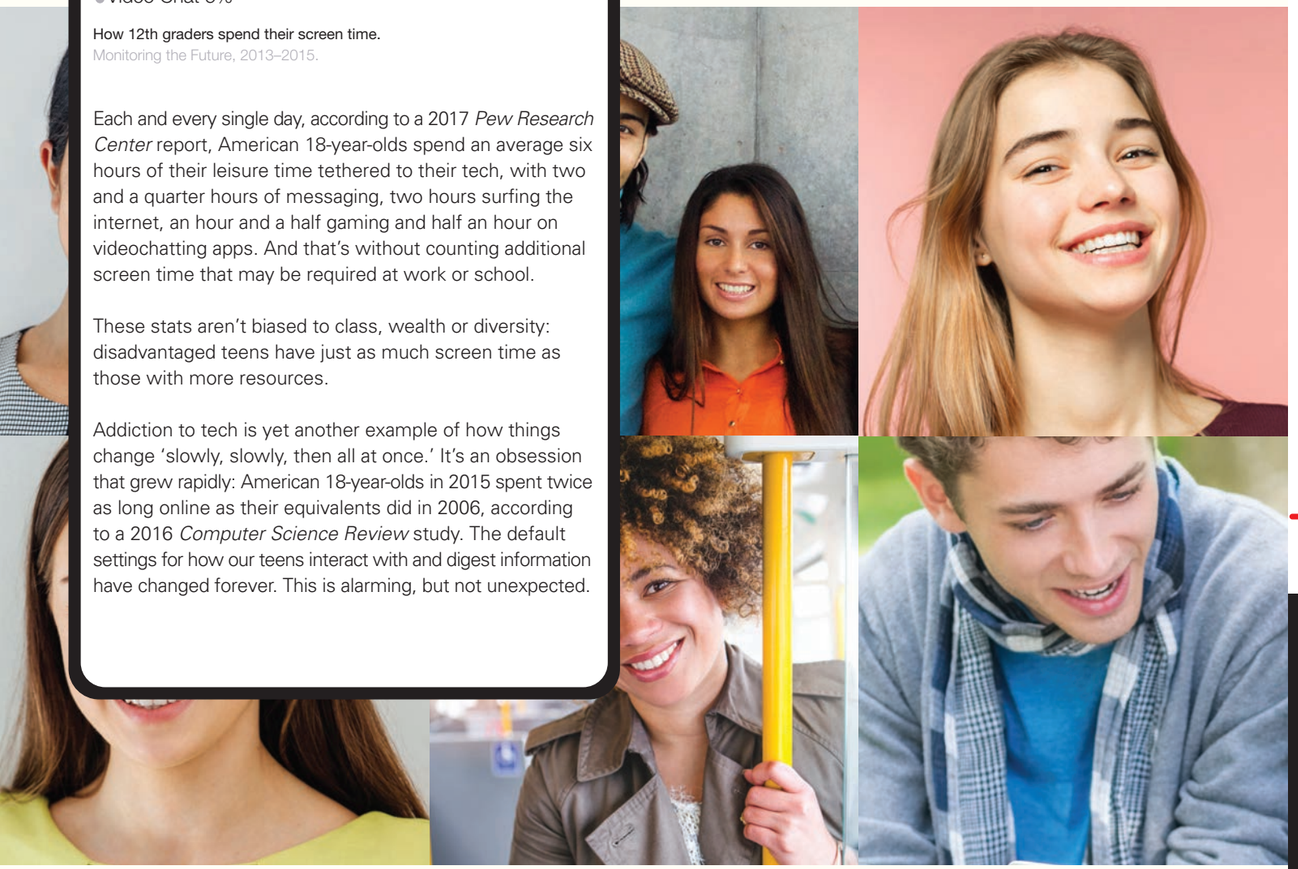
How 12th graders spend their screen time.
Monitoring the Future, 2013–2015.

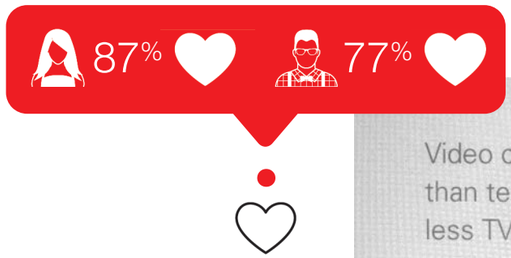
Each and every single day, according to a 2017 *Pew Research Center* report, American 18-year-olds spend an average six hours of their leisure time tethered to their tech, with two and a quarter hours of messaging, two hours surfing the internet, an hour and a half gaming and half an hour on videochatting apps. And that's without counting additional screen time that may be required at work or school.

These stats aren't biased to class, wealth or diversity: disadvantaged teens have just as much screen time as those with more resources.

Addiction to tech is yet another example of how things change 'slowly, slowly, then all at once.' It's an obsession that grew rapidly: American 18-year-olds in 2015 spent twice as long online as their equivalents did in 2006, according to a 2016 *Computer Science Review* study. The default settings for how our teens interact with and digest information have changed forever. This is alarming, but not unexpected.

It may be surprising to learn that girls are more active on social media platforms than boys, with **87% of girls** surveyed interacting on social media platforms every day, compared to **77% of boys**, according to a 2016 Journal of Communication report. This attachment to their devices and social media platforms means that social norms have morphed.



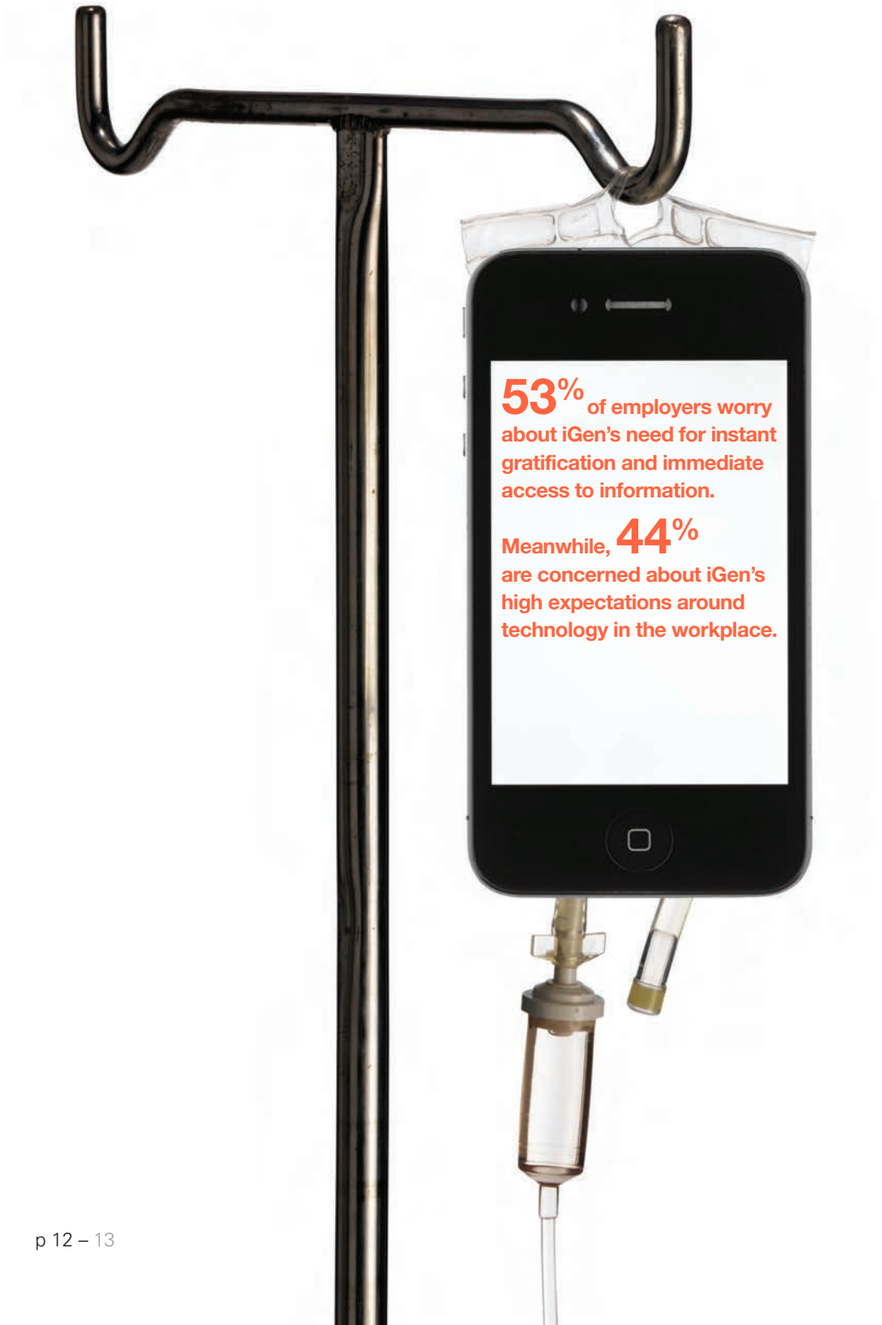


Video consumption is now switching to YouTube rather than television, with teens in 2015 watching about an hour less TV a day than was the norm in 1995, according to the same report. And if they do watch TV, it's TV on demand rather than the linear programming Boomers and GenX'ers were accustomed to.

Many commentators feel that this screen time addiction is undermining critical inter-personal skills such as patience, empathy and self-awareness. iGen's potential lack of such skills and behaviours is, of course, likely to have a profound impact on the workplace.

A group of US child welfare experts recently wrote to *Facebook* founder Mark Zuckerberg, urging him to close down Messenger Kids (a messaging app developed for children), saying it was irresponsible to encourage pre-teens to use the platform. It cited evidence of adolescents reporting severe mood changes because of social media use, and girls as young as 10 facing body image issues because of the pictures they are bombarded with on platforms such as (*Facebook*-owned) *Instagram*.

A 2017 study by *The Royal Society of Public Health* asked 1,500 young people aged 11-25 to track their moods while using the five most popular social media sites. The results suggested that Snapchat and Instagram were the most likely to inspire feelings of inadequacy and anxiety, while *YouTube* had the most positive influence.



iGen's Attitudes Towards Work

Gen Z – Agents for Change, a 2017 report by *Capta Resourcing*, saw hundreds of HR managers across medium and large businesses and 1,015 young people aged 16-20 interviewed and surveyed about UK iGen's attitude towards work and their careers.

They noted, "Perhaps, as the first generation of true technological natives, they are unfairly perceived to be too techno-centric, and overly accustomed to communicating and whiling away time on mobile devices and social media.

Indeed, it is the case that 53% of employers worry about iGen's need for instant gratification and immediate access to information. Meanwhile, 44% are concerned about iGen's high expectations around technology in the workplace.

Furthermore, far from feeling constrained by traditional working arrangements, iGen employees consider fixed, predictable hours (46%) to be almost as desirable as flexible arrangements (54%) – depending on the project.

Freedom and flexibility are naturally seen by iGen as desirable in the right circumstances, but they're far from the be-all and end-all.

A higher salary (66%) is considered preferable to unlimited holiday and time off (34%). Indeed, many of this cohort would also consider a higher starting salary (58%) to be preferable to flexible working hours and working from home (42%).

Many businesses can benefit from the flexible working opportunities new mobile technology brings employees. Improved staff retention and more agile working models can result. But finding the right balance between offering flexible working conditions and meeting business needs is important for employers. Encouragingly, iGen's attitude to flexible working appears sensible and balanced."

We know that a job for life is a thing of the past, and this is clearly true for the iGen, over half of whom (54%) expect to stay in their first job for under two years. This translates into an average expectancy of just 500 days for an iGen in their first role.

When it is considered that, in comparison, 45% of employers expect iGen workers to stay in their first role for three years or more, it becomes clear that there is an overestimation of iGen's "stickiness".

According to a *Bright Network* survey of over 3,000 UK university leavers, only 51% believed that their university experience had prepared them for the world of work. 58% of the same group planned to find a graduate position after university, with just 7% wanting to travel, while 17% weren't sure what to do. Interestingly the index showed that 36% of women were unsure about what to do after university.

This sentiment surrounding preparedness for work is shared by employers. In the *Capita* report, more than two-thirds (69%) of employers think it is difficult to find young workers who can hit the ground running and quickly make an effective contribution to the business.

Employers are faced with a challenge: invest in trying to retain iGens beyond the 500-day window, or accept that a high percentage will leave after two years. Directing efforts to maximise their effectiveness while onboard or training engagement is likely to be essential.

Inclusive iGen

LGBT identities, gender empowerment and racial equality are all movements seen by iGens as default settings. Up to a point, they live in an empowered world where a president can be black, and same sex partners can be married.

If that point is passed, iGens are shocked and feel compelled to act against prejudice: according to *FutureCast*, the issues that teens are most likely to support include racial equality (72%), gender equality (64%) and sexual orientation equality (48%).

In the West, the 2000s and 2010s ushered in a sea change in attitudes towards the LGBT community, with some of the largest and most rapid generational and time-period shifts. Research by *Ipsos Mori* found that just 66% of British young people between the ages of 16 and 22 describe themselves as "exclusively heterosexual", the lowest figure of any generation.

The report suggested that an increasingly "liberal context", in which gay relationships are seen as acceptable, has led young people to have a "less binary view of sexuality" in which there's no need to identify as exclusively gay or exclusively straight. Its research also shows that three in five of British 15 to 16-year-olds think sexuality is a scale, and that it's possible to be somewhere in the middle.

Issues around race are particularly salient for iGens, who've been surrounded by racial diversity their whole lives. In 2015, most US 18-year-olds said their school was at least half another race, double the proportion in 1980. In the US, more than half (52%) say the *Black Lives Matter* movement has shaped their world view, with 41% saying the same of the *#MeToo movement*.

In the US, the percentage of whites who wouldn't want a close relative to marry someone from another race plummeted from 54% in 1990 to 10% in 2010. And in a survey of 14 to 24-year-olds conducted by *MTV*, 88% agreed that favouring one race over another is unfair.

Youth in the US are far more comfortable than previous generations with people not identifying as either a man or a woman. According to a recently released survey from the *Pew Research Center*, almost 60% of those aged 13-21 (members of iGen) believe that forms that ask about gender should include options besides "man" and "woman". This compares to half of Millennials (aged 22 to 37) and just over 30% of Baby Boomers (54 to 72).

A number of initiatives have sparked the imagination of the iGen:

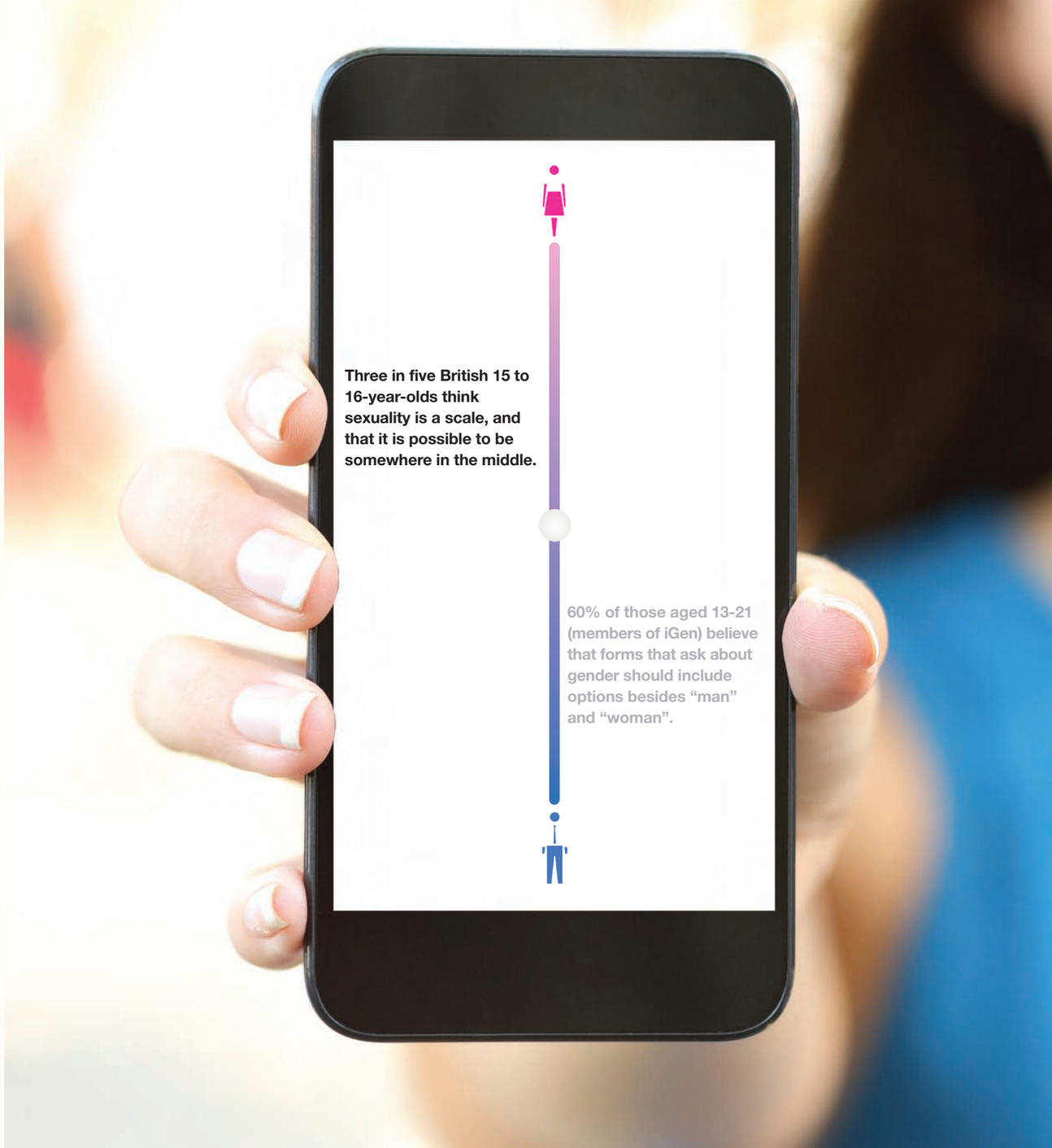
girlhood in a digital age, aiming to fight for change, reduce stigma and create meaningful conversations to give young female voices a platform.

2. *#Girlgaze* (@girlgaze): using the hashtag, anyone can submit their work to this digital media collective based in LA. The digital platform has ventured into an analogue world with a book and the project has achieved over one million contributions.

3. *Phluid project* (thephluidproject.com): part community and part retail marketplace, this New York-based retailer aims to cultivate a gender-neutral space, free from judgement.

4. *ReproRightsZine* (@reprorightszine): a free zine initiative to inform readers about the current state of reproductive rights.

5. *Kode with Klossy:* founded by supermodel Karlie Kloss, *Kode with Klossy* runs free summer coding camps across the USA for girls aged 13-18.



Searching for a Balance – Mental Health

Despite significant decreases in antisocial behaviours and substance abuse, mental health problems and self-harm are unfortunately on the rise in our teenagers. According to research in 2018 led by University College London and University of Liverpool, iGens are around two-thirds more likely to suffer depressive symptoms than their Millennial counterparts were.

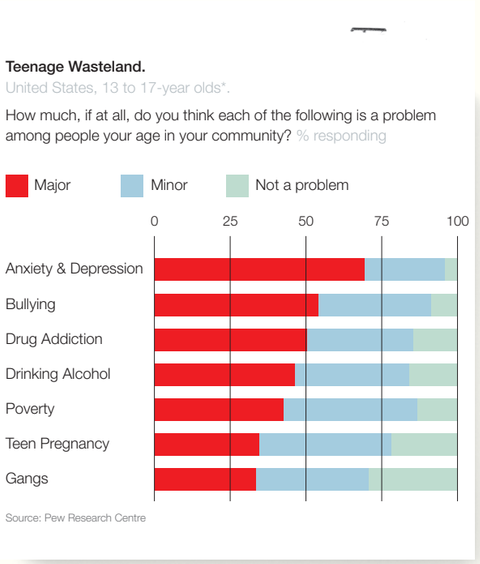
The study found 14.8% of 14-year-olds in 2015 said they were depressed compared to just 9% in 2005, while 14.4% of young people said they had self-harmed compared to 11.8% a decade ago.

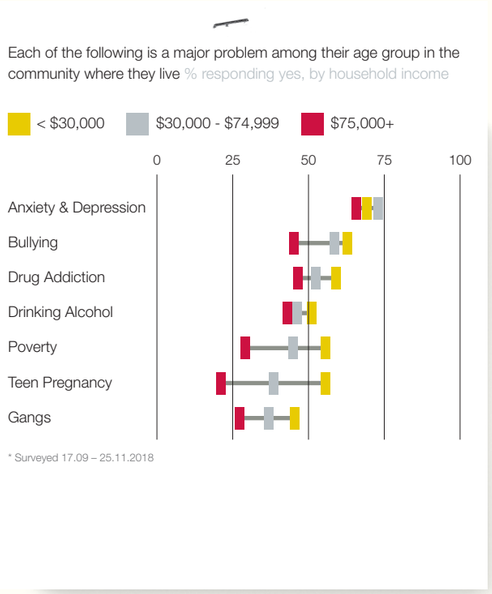
In the States, one in three teens aged 13-18 has an anxiety disorder. "The current rate of anxiety is 31 per cent in adolescents," says Dr. Elena Mikalsen, head of the Psychology Section at the Children's Hospital of San Antonio in Texas. **"It's an epidemic. It's a mental health emergency."**

"If you wanted to create an environment to churn out really angsty people, we've done it," says Janis Whitlock, director of the *Cornell Research Program on Self-Injury and Recovery*. Sure, parental micromanaging can be a factor, as can school stress, but Whitlock doesn't think those things are the main drivers of this epidemic: **"It's that they're in a cauldron of stimulus they can't get away from, or don't want to get away from, or don't know how to get away from,"** she says.

A 2017 *Guardian* study of more recent *NHS* data found that hospital admissions for self-harm by English teenage girls was 68% higher compared to the previous decade.

Understanding exactly why these trends are on the rise is always a challenge, says Twenge, author of ***iGen***, since researchers can only point out correlations, not causes. But, she says, since the trends are, "pretty large in a fairly short period of time, that helps us narrow what the likely cause might be."





She thinks the rise in smartphone and social media use is a significant factor. "Spending time on social media tends not to be in real time," she says. "You're not having a real time conversation with someone — usually you're not seeing their face and you can't give them a hug; it's just not as emotionally fulfilling as seeing someone in person."

In 2016 the suicide rate for teenage boys was up 34% in the US compared with the average rates from 2006-2010, while for girls it was up an astonishing 82%. In the UK the corresponding increase for teenage boys through to 2017 was 17%, while the increase for girls was 46%. Nobody knows for certain why recent years have seen so much more of a change for girls than boys, but the leading explanation is the arrival of smartphones and social media. Girls use social media more than boys, and seem to be more affected by the chronic social comparison, focus on physical appearance, awareness of being left out, and social or relational aggression that social media facilitates.

In Asia, teen depression and suicide rates are growing as a result of high competition in university entrance exams and growing concern about future prospects, with 51% of Hong Kong teens showing signs of depression, and the teenage suicide rate rising to 4.9% in 2017. As the pressure grows, increasing numbers of teens are rejecting college and the prospect of a highly competitive educational environment.

On entrance exam day in Korea, the stress actually precipitated a demonstration:

> "I was 13 years old when I met a friend who wanted to commit suicide because of studying. The education I wanted was learning how to love yourself – not killing yourself. Learning together – not competing with each other. I hope no-one has to lose their lives because of college entrance exams."

ehyun Jung, 17, Korea

Researcher and clinical psychologist Steve Ilardi of the *University of Kansas* tries to help anxious and depressed kids feel better. The good news, he says, is that it's clear that they, "intuitively grasp that how we live now is not ideal for us." Teens get that spending hours surfing, bringing their phones to bed, and, "this relentless cascade of stressful notifications and images is not good for them and they get it."

Ilardi developed a treatment approach based in part on cognitive behavioural therapy, which helps young people make lifestyle changes focused on better diet and nutrition, exercise, exposure to sunlight and getting a good night's sleep, all of which have been shown to reduce depressive symptoms. "Kids buy into it," says Ilardi.

With so many pressures, many young people have turned to online communities for support as they battle mental health issues:

1. *#Halfthestory*: a project to highlight our most human attributes via social media and reignite human connection in the digital space. It's dedicated to sharing experiences, struggles, entrepreneurial journeys and aspirations.

2. *Gurls Talk*: a safe space community for women that focuses on topics like mental health and the repercussions of social media. The project was founded by British model, Adwoa Aboah.

iGen Summary

As the first post-internet generation, iGens have always been able to rely on instant access to information at any time, so it may seem they have it easy.

However, 'always-on' technology brings with it significant challenges ranging from social anxieties to sexting, RSI tech injuries to the impact of pornography. As a society we need to work out how best to support iGens and help them navigate and survive the hotbed of fake news, hatred, racism and bullying that is the internet.

Twenge believes that

> "iGens are scared, maybe even terrified.
> Growing up slowly, raised to value safety, and frightened by the implications of income inequality, they have come to adolescence in a time when their primary social activity is staring at a small rectangular screen that can like them or reject them."

iGens – slow to grow up,  and with fewer social skills  than preceding generations – are inevitably going to make a dramatic impact on our classrooms and workplaces. 

On Campus…

According to higher education consultant Eric Stoller, "University leaders who understand the connection between digital engagement and student experience will cause dynamic changes within their organizations."

Generational shifts in attitude, behaviour and communication are becoming rife on campus – and now reach all the way into the classroom. Institutions will inevitably be shaped by these shifts – whether by accident or design.

In a recent article in *Efficiency Exchange*, Jean Mutton, a leading service design expert, pointed out that students have a fundamental role to play as change agents in learning, teaching and professional services. This is in large part due to the expectations they have of technology; their implicit assumption that they'll be able to discover what they need instantly, independently of others.

This last point is important. The brains of iGens are hard-wired to using the internet. What does the fact that students are so used to finding information by themselves mean for the campus or classroom? What value can a professor bring, when her/his students are six clicks away from all of the executive summaries of their life's work?

As a result, it's becoming increasingly important to get on the same page as your audience/student body. At *Lancaster University*, they got there by creating and rolling out the iLancaster app, engaging the student body via a channel they find intuitive and easy to use. Eighty thousand students now use *iLancaster* to apply and enroll for courses and modules, discover and book social events, and access their grades, timetables, events and reminders.

Of course, the fact that a university campus is overwhelmingly focused on one generation makes the design process much simpler, enabling strategies to be more targeted, congruous and successful. Things are obviously much more complicated when it comes to iGens in the workplace.

In the Workplace…

According to a poll of 5,000 iGens by the *Centre of Kinetic Generations*, participants were keen to engage one-on-one with their organisational leaders. The fact that they feel a need for management to be actively involved in the progress of their careers demands effective mentoring strategies. One-on-one guidance from leaders is therefore a good engagement and motivational strategy for iGens.

A *RainMaker Thinking* survey of 4,000 iGens revealed that they ranked positive relationships at work as one of their main priorities in a prospective job. Despite being a generation characterised by technology, iGens crave human connection in the workplace, with 16% of those surveyed emphasising the importance of their relationships with co-workers, and 15% highlighting the importance of supervisor interactions.

A report from *The Center for Generational Kinetics* also found that this generation is used to having conversations surrounding finances, money and debt earlier than previous generations did. And consulting group *Bridgeway* found that 35% of iGen respondents plan to start saving for retirement while in their 20s, with 12% of respondents indicating that they'd already started.

Organisations would do well to understand the nuances of the iGen. The fact that they're so tech-savvy means they may, for instance, pick up on some aspects of the job more quickly. But equally they may require additional training for jobs requiring high customer interaction as they're more used to communicating via text and video, so may be ill-equipped for such social interactions.

Like their Millennial counterparts, iGens desire regular feedback about their performance: used to 'Black Hawk' helicopter parenting, they may expect their future bosses to behave in a similar way. The *Bridgeway* report found, remarkably, that 40% percent of iGen respondents desire daily interactions with their boss.

The Baby Boomers
(born 1946–1964)

Invented: pop culture.

Known for: benefiting from free university education, a prosperous jobs market and robust economic growth.

Big on: telling each other that if you remember the 1960s, you weren't really there.

Generation X
(born 1965–1981)

Invented: irony and disaffected slackerism.

Known for: their diet of MTV, rave culture and indie films.

Big on: reminiscing about 1988's second summer of love.

Millennials
(born 1982-1995)

Invented: overly elaborate coffee orders.

Known for: prolific flat renting and being seamless selfie senders.

Big on: blaming Boomers for dismantling the concept of free university education, homeownership and jobs for life.

iGen (Generation Z)
(born 1995-2012)

Invented: the ability to hold a conversation and simultaneously scroll through their phones.

Known for: being globally connected and politically anxious.

Big on: experimenting with gender and sexual spectrums.

High-Ed LTD –

Big Business, Bigger Brands

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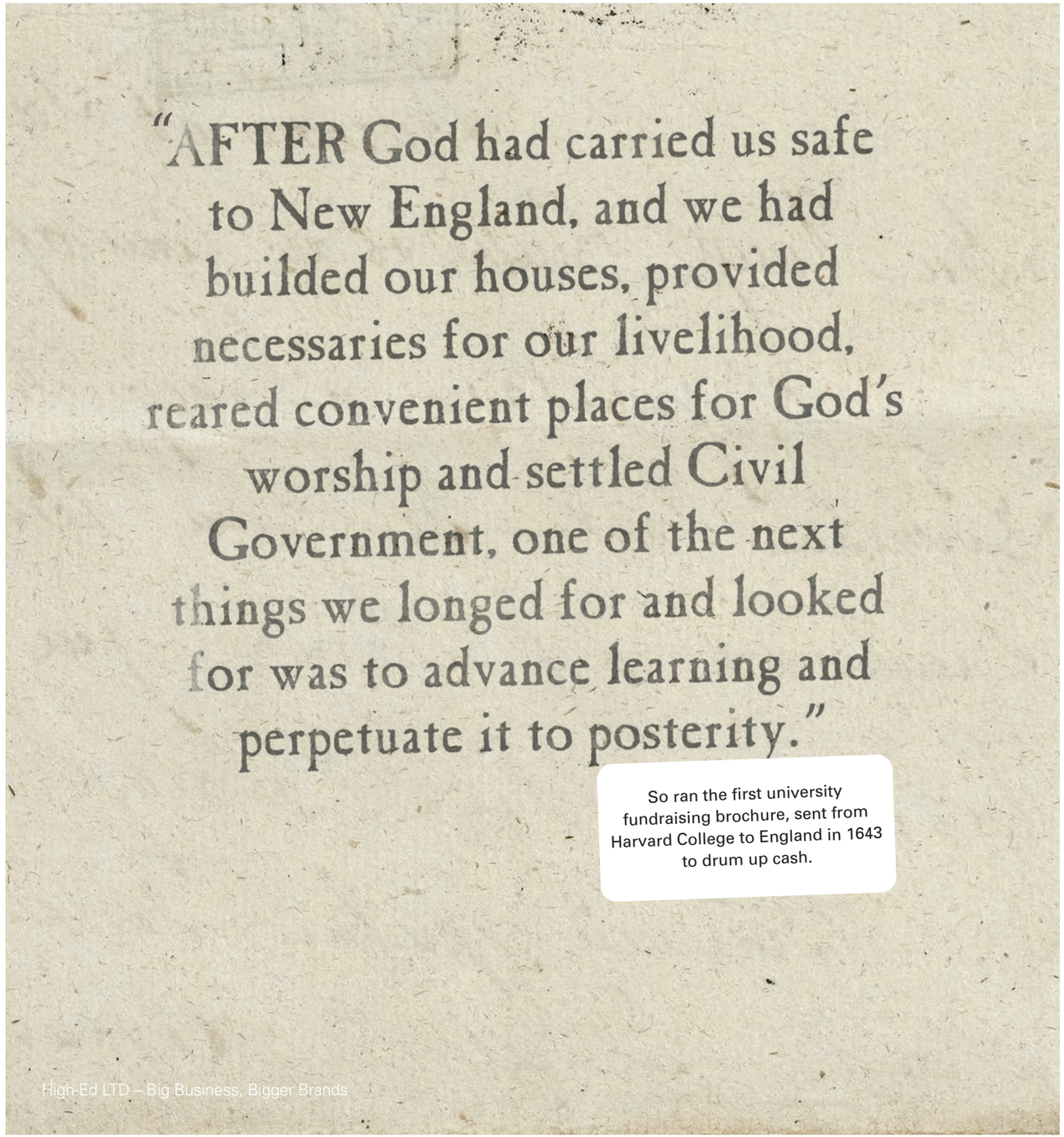
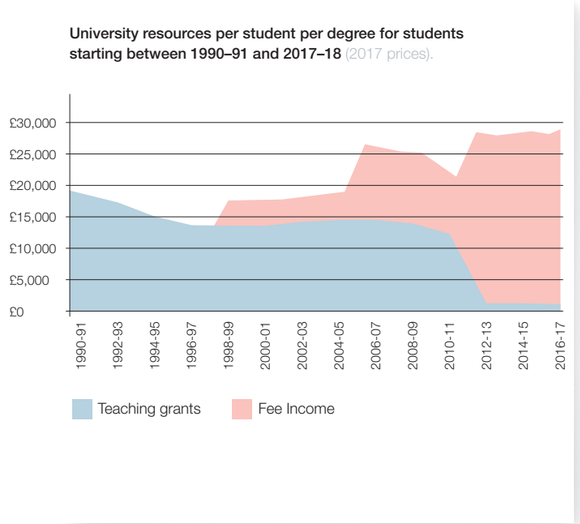


So ran the first university fundraising brochure, sent from Harvard College to England in 1643 to drum up cash.



High-Ed LTD – Big Business, Bigger Brands

Over the last 30 years, the funding of Higher Education institutions in the UK and US has changed radically. Instead of public teaching grants, they're now funded heavily by student tuition fees and private investments. In fact, only 23% of UK universities' funding now comes from the government, according to a Universities UK 2016 report. It's hardly surprising that this has fundamentally changed their outlook. When you're funded by the public purse, your attentions can be focused on esoteric matters such as the attainment of academic excellence, student and community citizenship, and research and development, with success coming from attracting the very best undergraduates. When that public funding stops, however, and you have to rely on students (or their loan programmes) for your income, tertiary education becomes more of a numbers game.

During the 1980s, around 15% of 18-21 year-olds in England attended university: by 2017, according to *Universities UK*, the level had grown as high as 49%. How has higher education achieved this extraordinary growth? This great 'massification'? If that growth were to be mirrored in other industries it would be heralded as a new dawn.

The knowledge that funding needs to be sourced privately from student loans forces universities to behave like commercial ventures: their primary business is now attracting customers, rather than educating students. The emergence of the student 'customer' naturally increases competition: 162 educational institutions in the UK now vie for the business of 2.32 million students. This competitive marketplace changes everything.

~~STUDENT'S~~ CUSTOMER'S SIGNATURE

SIGN ON THE DOTTED LINE

The radically different role of further education (a role originally instigated by Blair's Labour government of 1997-2007) is now to offer a private good that benefits the individual students, rather than to serve a public good through the creation of better-educated citizens. It's the same in other parts of the world. In 2011 Benjamin Ginsberg, political science professor at Johns Hopkins University, argued that US universities were losing hold of the academic project by becoming administrative institutions.

However, the contention that further education is no longer about centres of learning and R&D and is instead about businesses clawing for customers, is unfair. It assumes that universities weren't previously performing like efficient businesses, and also ignores the fact that their 'product' remains a world-class education. A more salient observation is that as institutions clamber up and slip down the Sunday broadsheet rankings, they need to act not just like businesses, but like brands.

"Desirable brands make us think, feel and act differently to 'non-desirable' or 'neutral' brands." comments Peter Askew, director of strategy at *Clear*, a leading brand consultancy. "We see a world now where CMOs are under increasing pressure to improve the commerciality of marketing to deliver returns and with these measures we are showing how you can use that desirability to create commercial return."

> "Desirable brands make us think, feel and act differently to 'non-desirable' or 'neutral' brands,"
>
> Peter Askew, Director of Clear

In the last 15 years, over 50% of the universities in the UK have rebranded in some way and are newly focused on creating marketing campaigns to attract customers. The University of Northumbria's marketing department has almost doubled in the last decade, according to a member of its teaching faculty. Like other brands, universities sometimes get it wrong: Loughborough's attempt at rebranding was put on hold after protesting students rejected the new logo.

There are many ways that a strong Hi-Ed brand can increase desirability. The traditional mechanisms for attracting students are obviously academic performance and the quality of the teaching. But now, beyond that, the facilities offered by a university play a large role in leveraging the minds of young people and their families. Billions have already been spent on campus facilities to help universities (and the cities they're based in) compete in the lucrative race for students.

A study by Russell Group Universities shows that from 2013-2017 its 24 member universities spent a total of £9bn on infrastructure improvements ranging from better-designed student accommodation blocks to entire new campuses. Students increasingly desire and demand learning facilities that are high tech, welcoming and contemporary. And they're getting them. Infrastructure improvement has proven to be a great weapon in the marketing armoury for Hi-Ed: the greater your investment in libraries, sports facilities and student unions, the more desirable your 'product' becomes.

The building boom in the Hi-Ed sector is not going to end soon. In a report published in 2018, the *Higher Education Funding Council for England* forecast that a further £19.4 billion would be invested in the period 2016/17-2019/20, a 48% increase on the previous four-year average.

Offering great teaching within great facilities is now the aim of every UK Hi-Ed institution, and as a result they've seen numbers of domestic students rising steadily over the last few decades. The next logical step for a 'product' that's been branded and marketed successfully at home is the export market, and that's something our universities have proved very effective at addressing. According to *HE Global*, "The higher education sector is regarded as one of the most important export earners for the UK economy – and internationalisation has become a major priority for all UK universities and the UK government alike."

In 2017, just under half a million international students enrolled at UK universities, the vast majority of them at English institutes. Students came from far afield, with China topping the charts in regards to the students' homeland, followed by India and Nigeria.

International student numbers by UK nation 2016-17

Country	Total EU students (not inc UK)	Total non-EU students	Total international students
England	104,875	258,710	363,585
Scotland	21,245	31,045	52,290
Wales	6,235	19,970	21,206
N. Ireland	2,480	2,810	5,290
UK	134,835	307,540	442,375

Source: HESA Table 11HE student enrolements by domicile and region of HE provider 2016/17.
Note the Total = full time and part time students studying at all levels

Top ten non-EU sending countries

Country	2016-17	2015-16	2014-15	2013-14
China	95,090	91,215	89,540	87,895
Malaysia	16,370	17,405	17,060	16,635
USA	17,580	17,115	16,865	16,485
India	16,550	16,745	18,320	19,750
Hong Kong (special administrative region)	16,680	16,745	16,215	14,725
Nigeria	12,665	16,100	17,920	18,020
Saudi Arabia	8,065	8,570	8,595	9,060
Singapore	7,300	7,540	7,295	6,790
Thailand	6,175	6,095	6,240	6,340
Canada	5,915	5,980	6,075	6,350

Source: HESA Figure 11 – Top ten non-EU countries of domicile in 2016/17 for HE student enrolments 2012/13 and 2016/17

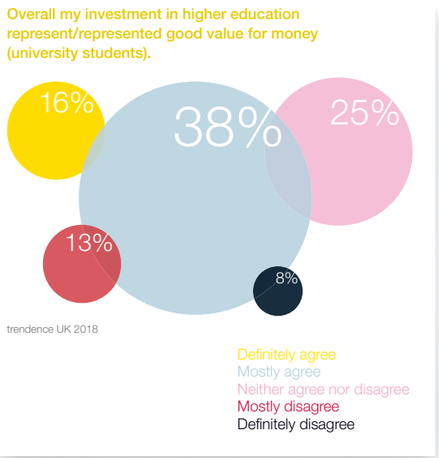
Top ten EU sending countries

Country	2016-17	2015-16	2014-15	2013-14
Germany	13,735	13,425	13,675	14,060
France	13,560	12,525	11,955	11,500
Italy	13,455	12,135	10,525	9,550
Republic of Ireland	10,070	10,245	10,905	11,490
Greece	10,045	9,790	10,130	10,670
Cyprus	9,145	9,330	9,745	10,295
Spain	8,820	7,480	7,040	6,585
Romania	8,110	7,200	6,590	6,515
Poland	6,585	5,655	5,245	5,200
Bulgaria	6,585	6,195	6,255	6,355

Source: HESA Figure 10 – Top ten EU countries of domicile (excluding the UK) in 2016/17 for HE student enrolments.

International students pay up to four times the annual fees a domestic student can pay – meaning a degree can cost them as much as £120,000 in tuition fees alone. Attracting foreign students is therefore big business, and it's something that our Hi-Ed brands have become extremely good at in recent years. Although international students are coming to study a broad range of subjects, there is some commonality. UK business schools seem to have been targeting their appeal to foreign students with admirable accuracy, as two out of every five transnational education students are here on Business and Management courses. The heritage and reputation of the UK's world leading financial and law sectors undoubtedly play their part in the popularity of Social Studies and Law courses, which attract one in every five foreign students.

However the true power of the brand shows itself when we start exporting not just the image of our universities, but the product itself. From Middlesex University's site in Mauritius to Glasgow Caledonian's branch in Bangladesh, Britain's 136 universities now have 39 foreign campuses, educating 26,000 students (according to a 2018 Migration Advisory Committee report). Only Australia, which has a much smaller higher education system, can boast a similar ratio of home to overseas campuses.



In addition, there are now many more students taking British degrees at foreign institutions, with 703,000 students studying for a British higher-education qualification overseas in 2015-16. These arrangements see British universities providing a curriculum – and sometimes also teaching staff, training and support – in return for their well-earned fee.

The UK's Hi-Ed brands are booming!

Brand building is all about consistency. McDonald's may have a different menu all around the globe but its restaurants all look the same and behave in the same way. Heritage, authenticity and traditionalism are all traits that UK Hi-Ed brands can benefit from exporting. That's why Newcastle University's Malaysia Medicine campus features a replica of the original's famous entrance arches, which were built in 1911 and designed by WH Knowles.

With students, domestic and international, investing huge sums of money in their future and buying relatively expensive courses, it's no surprise that the perception of value has been brought sharply into focus. When university students were asked in a 2018 *Trendence UK* survey if their investment represented good value for money, only 16% definitely agreed, while just 38% mostly or definitely agreed. We've established that to keep the big Hi-Ed brand ticking over, students are being treated like customers, yet customer satisfaction clearly isn't as high as it could be. The survey also highlighted how the experience of different ethnic groups varied. While 65% of UK-domiciled white students report they are learning 'a lot', and 40% say they are receiving 'good' or 'very good' value for money, UK-domiciled Asian students report a poorer experience, with only 57% saying they are learning 'a lot' and just 23% perceiving 'good' or 'very good' value for money.

> "A student of mine missed the first four lectures of the semester due to illness. When she returned she approached me to ask when we could reschedule and catch-up on the class to suit her timing – she said I owed her £324 worth of tuition. I was in shock."
>
> Anonymous Professor at Glasgow University

The brands have become so desirable that we've shifted value. Are we now on a path to buying, returning and refunding education? If students are customers, surely they have a right to complain?

The educational institution turned business turned brand is playing to mixed reviews. It's working well for UK plc and the exchequer, and also for other industries involved in the 'boom', but its student 'customers', with their newly developed sense of value, are being left disappointed.

Universities need to continue to invest in spaces, campuses and teaching to create the best possible product if they're to live up to the brand hype. The question is, however, whether they can afford it. We're on the brink of a tuition fee review (at time of going to print, 2019) that, according to rumour, is likely to reduce fees by 25%, meaning universities will have to tighten their belts.

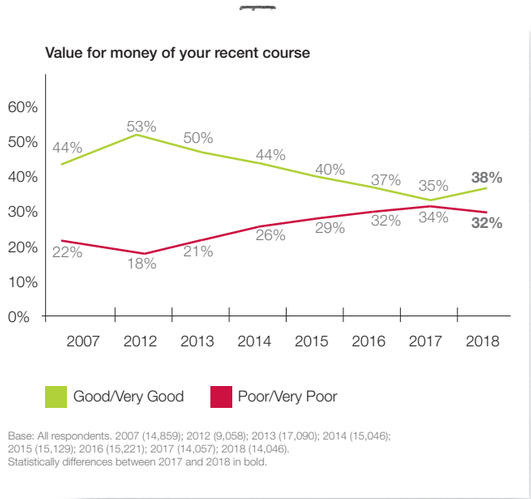
Will we see the first UK Hi-Ed institution go out of business in the next two-five years? It's possible. Some universities are already facing precarious finances – with borrowing, recruitment problems and emergency bailouts – and a few of them, it's claimed, are at risk of collapsing.

Nick Hillman, director of the *Higher Education Policy Institute* and former Universities Minister Special Adviser, says the rule of thumb is that every cut in fees of £1,000 will take about a billion away from the current funding stream. A significant cut in per student funding, will, he says, "push some to the wall."

As well as facing a reduction in fees, Hillman says universities are facing a "perfect storm" from the combination of a demographic dip in the number of 18-year-olds and Brexit casting its shadow over the recruitment of international students.

Despite this, it's almost certain that in the long term our Hi-Ed brands will continue to innovate. The pace of investment and attitude towards innovation in the Hi-Ed sector has been feverish over the last 15 years, and in future our institutions will still need to be committed to creating better experiences for their 'customers' – adopting newer technologies, providing better accommodation and building more efficient campuses.

Business therefore needs to be vigilant. Graduates will be on the lookout for organisations that share the attitude, culture and level of investment that they enjoyed at their universities' multi-billion pound campuses. If, having experienced technological freedom and state-of-the-art environments, graduates are left staring at the grey walls of a cubicle on their first day at work, it won't be long before they start hunting for their next position. Those whose investment in their brand reflects that seen in the Hi-Ed world will flourish.



Base: All respondents. 2007 (14,859); 2012 (9,058); 2013 (17,090); 2014 (15,046); 2015 (15,129); 2016 (15,221); 2017 (14,057); 2018 (14,046).
Statistically differences between 2017 and 2018 in bold.

Our Social Campus

ch. 02

Our Social Campus

Has the university library become the new student union? If so, how will this shape our corporate working landscape?

About 100,000 results (0.53 seconds)

“
Google can bring you back

100,000

answers,

a librarian can bring you back the right one. ”

Neil Gaiman, author

In the great university boom, no other facility has seen as much investment as the campus library. There have been some monumental and hugely successful efforts to re-imagine a learning space at the very core of a campus – University of Birmingham’s award winning £60m new library building springs to mind.

No other space signifies learning and knowledge sharing in the same way a library does. With the invention of paper, great ancient dynasties like Alexandria and Chinese Imperialists started to accumulate important scroll collections and the library was born, serving as a tool to educate the elite. Then, as empires fell, monasteries and other religious institutions took ownership over texts and developed their own libraries. As the Renaissance and then the Enlightenment movements took hold, public libraries started to become commonplace, with universities taking the lead in their development and management. Today, some of the finest and most comprehensive libraries belong to our global higher education institutions.

However, the library must continue to evolve, just as it has over the past 400 years. The digital revolution is undermining not only the mass collection of books, but also the very notion of what a book is. Thankfully, according to the *Publishers Association*, sales of physical books have remained steady this decade and still heavily outweigh sales of e-books – but we are nevertheless migrating towards a significant reduction in the number of books on our shelves. At the University of Virginia, college students checked out 238,000 books during the 2007 academic year: in 2017, that number had shrunk to just 60,000. Similarly, Yale’s Bass Library has seen a 64% reduction in book check outs in the last three years.

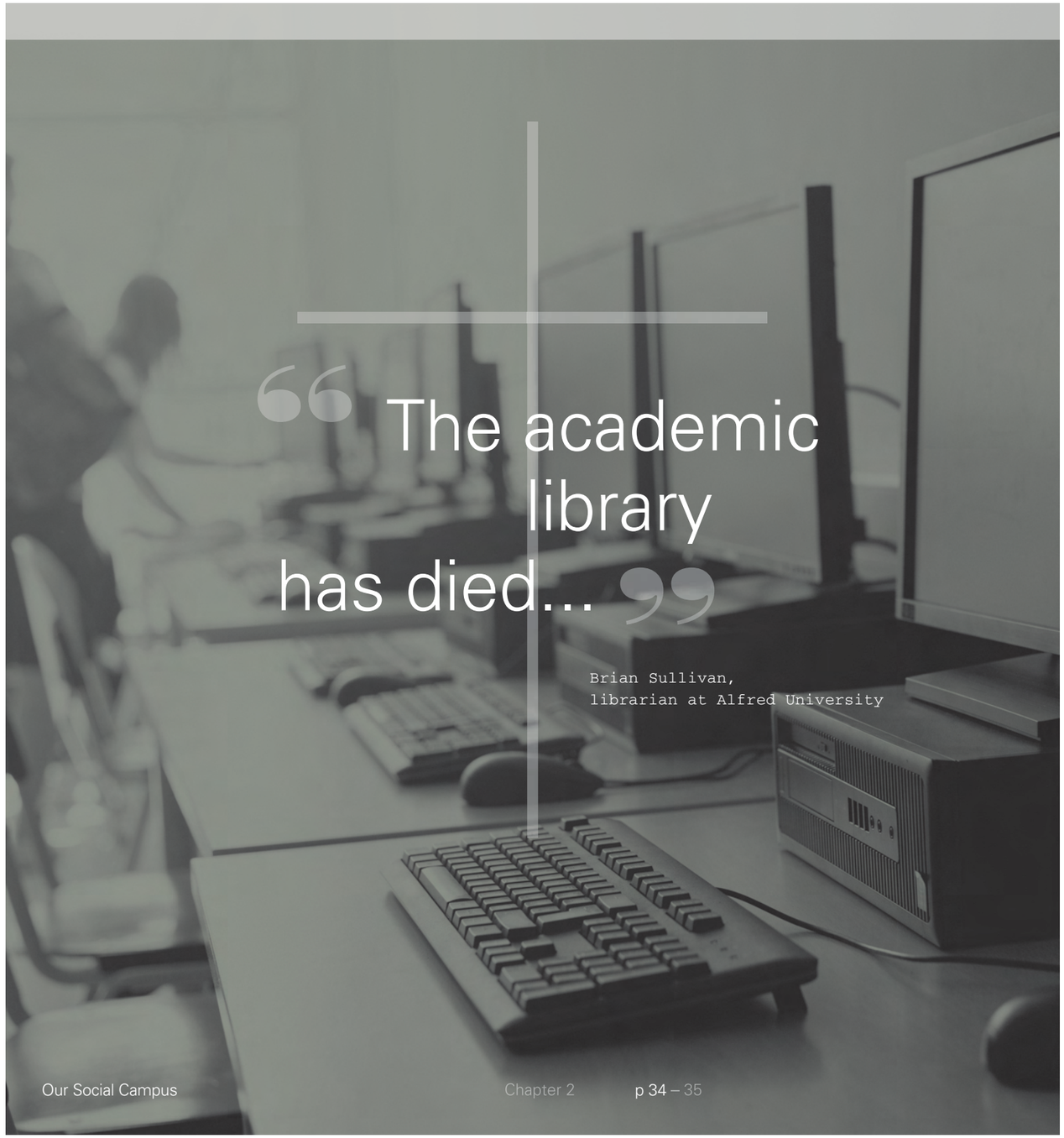
Birmingham University

The role of both public and educational libraries needs to be re-imagined. In the hearts of many in the UK, libraries are in the same bracket as post offices and churches: for a variety of complex sociological reasons, most of us want them to remain, but we're seeking to give them new relevance for the future. According to a 2016 *BBC* investigation, 343 public libraries have disappeared in the UK in the past five years. Librarian numbers are down by a quarter, with 8,000 jobs lost, and public usage has fallen by 16%, spending by 14%. This is, of course, a challenge, and suggests that the community library needs to be rebranded and repurposed.

This is in contrast, however, to the university library, although that too has needed to evolve. Exercises such as the *National Student Survey* and the teaching excellence framework are placing growing emphasis on the learning environment and the student experience. There's perhaps no other area of a university with such a high level of footfall and student interaction as the library, so it's an important weapon in keeping student satisfaction high.

> "Pedagogy is the driver for the changes in library design...
>
> ... changes to the way undergraduates are expected to study, for example, including more social spaces, more social learning and group learning. The way that library buildings are changing is designed to reflect that."
>
> Ann Rossiter, Director of the Society of College, National and University Libraries

left – University of Hull



So how has a space so under threat in the public realm not only managed to survive in higher education, but also evolved into the major weapon in learning development, student attraction and modern marketing?

The University of Birmingham spent £44 million on its new, award-winning library. The University of Manchester opened a new £24 million learning commons in 2012, designed to, “give students a focal point for learning, offering a stimulating and comfortable 24/7 environment for study.” Having enough space and the right facilities continues to be one of the biggest problems libraries face. How do you meet the demand for books when a course has hundreds of students on it? Can you provide enough study space when 10,000 students all want somewhere quiet to revise?

“The academic library has died,” wrote Brian Sullivan, librarian at Alfred University, in an opinion piece responding to the gloomy tone of a 2011 report on the future of academic libraries. “One cause of death is that library buildings were converted into computer labs, study spaces and headquarters for informational-technology departments.”

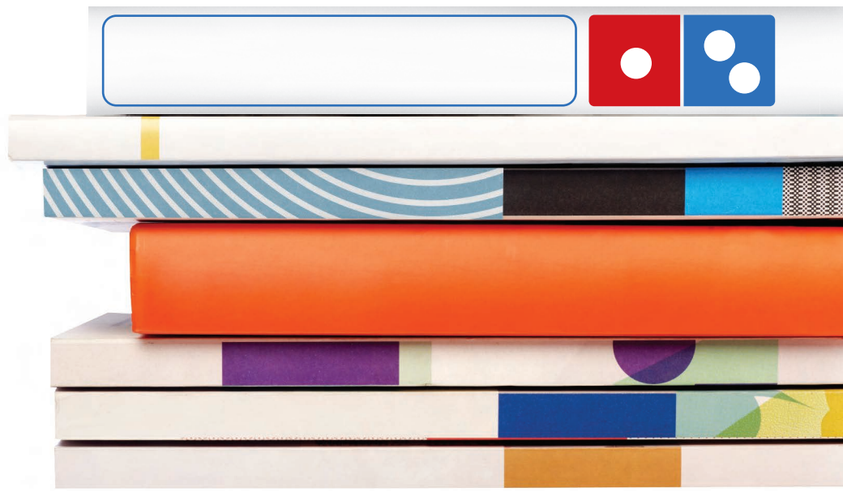
It seems it used to be that the university library was a place for individual focus with pockets of collaboration – now it seems to have flipped to a place of collaboration with pockets of individual focus areas.

Writing in *Architecture & Design* (Australia), Hamilton Wilson from Wilson Architects says that the library is no longer defined by a physical space: “A 21st century library provides diverse learning experiences. Printed and digital information are combined in an environment that is user-focused and service-rich. Students can work collaboratively in spaces that support today’s social and learning patterns. Because resources can be accessed from anywhere, spaces need the flexibility to be used for impromptu study sessions or classes by both students and teachers.”

The best demonstration of the changing role of the library on campus, is how students are engaging within them:

“Now that they’ve taken away the food & drink restrictions, we just order Domino’s pizza straight to the library.”

Student at the University of South Wales



Students today often spend hours at a time in the library, and this makes environmental factors like furniture comfort, temperature, natural light, wifi speed and plug sockets, plus access to food and drink, incredibly important.

Students want the library to fit with the way they work, but many libraries have been adapted over the years, rather than being purpose-built with the modern student and their requirements and way of working in mind. For reasons including estate management, the large number of listed university buildings in the UK and complex planning regulations and restrictions, most library spaces aren't meeting the demands of the modern student. A lot of retro-work has therefore had to take place.

Students don't want unnecessary hurdles in their way, and will quickly go elsewhere if they can get better, faster services that are easier to use. Like every other part of the university, libraries must change their culture to become genuinely customer-focused.

Libraries are now centred on the needs of modern students, offering spaces not just for individual focus, but also for both small teams and larger, more collaborative groups. These adaptable environments can flex depending on the needs of a group, offering spaces for social sharing, digital learning, eating, presenting, and tranquility. Contemporary library environments are very much like Activity-Based Working spaces (an ABW is defined as an environment that enhances performance by providing a choice of work settings for a variety of workplace activities and tasks).

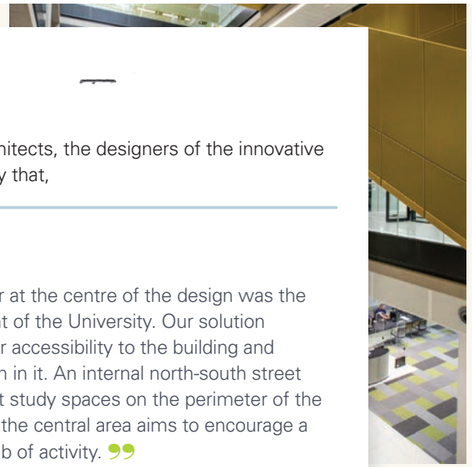
> "The Library should be an inspirational destination, whether visited virtually or to a space at the heart of our campus. It should be where people connect with information, resources, ideas, technology, and with the creative outputs and research generated in the University but above all, where people connect with each other."
>
> Diane Job, Director of Library Services

The library has evolved to a point where it's difficult to even pin it down to its original name. The University of Northampton, along with countless other institutions, calls its shared student space a Learning Hub rather than a library. The subtle naming correction more accurately describes the dynamics at play – it's more in tune with what is actually going on.

The new Waterside Campus has a fluid approach to the purpose of the spaces across all of its five floors, with clear sight lines, open atriums and mezzanines providing huge amounts of light and visual stimulation. But, tellingly, it's the quieter spaces that are the most popular. An entire floor is dedicated to silent study, then, as each floor cascades down to terra firma, the rules on privacy become looser and looser until you enter a true social environment on the ground floor.

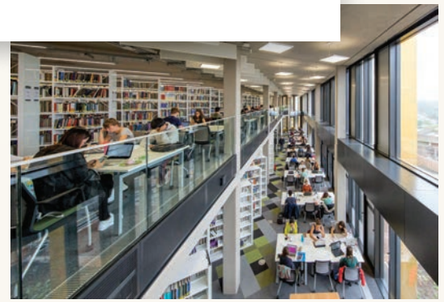
Interestingly, a student survey at the university uncovered that 91% of students will have two devices as they enter a library, and that 50% of them will have three devices on them at any one time. BYOD (bring your own device) made the architects re-evaluate the role of the fixed computer, and as a result the Learning Hub doesn't have a single fixed PC.

However, a balance between social and focus space is paramount. "It has become increasingly hard to find a place of quiet, even in Oxford," says the Oxford University Bodleian Libraries' Dr Christine Madsen. "There is nowhere you can sit down and have a quiet conversation except somewhere you have to pay a lot of money for a drink."



Associated Architects, the designers of the innovative UoB Library, say that,

> "Placing the user at the centre of the design was the key requirement of the University. Our solution provides greater accessibility to the building and circulation when in it. An internal north-south street carves out quiet study spaces on the perimeter of the building, whilst the central area aims to encourage a collaborative hub of activity."
>
> Associated Architects



above – University of Birmingham

Dr Madsen continues, "We need to return to the original purpose of the library, which is to support all the various needs of the scholar and provide him or her with a place to come up with ideas and make breakthroughs that would not otherwise have happened."

The isolation of internet learning, which now often takes place within dormitories or digs, can mean that students look to the library as a space to meet, share ideas and socialise.

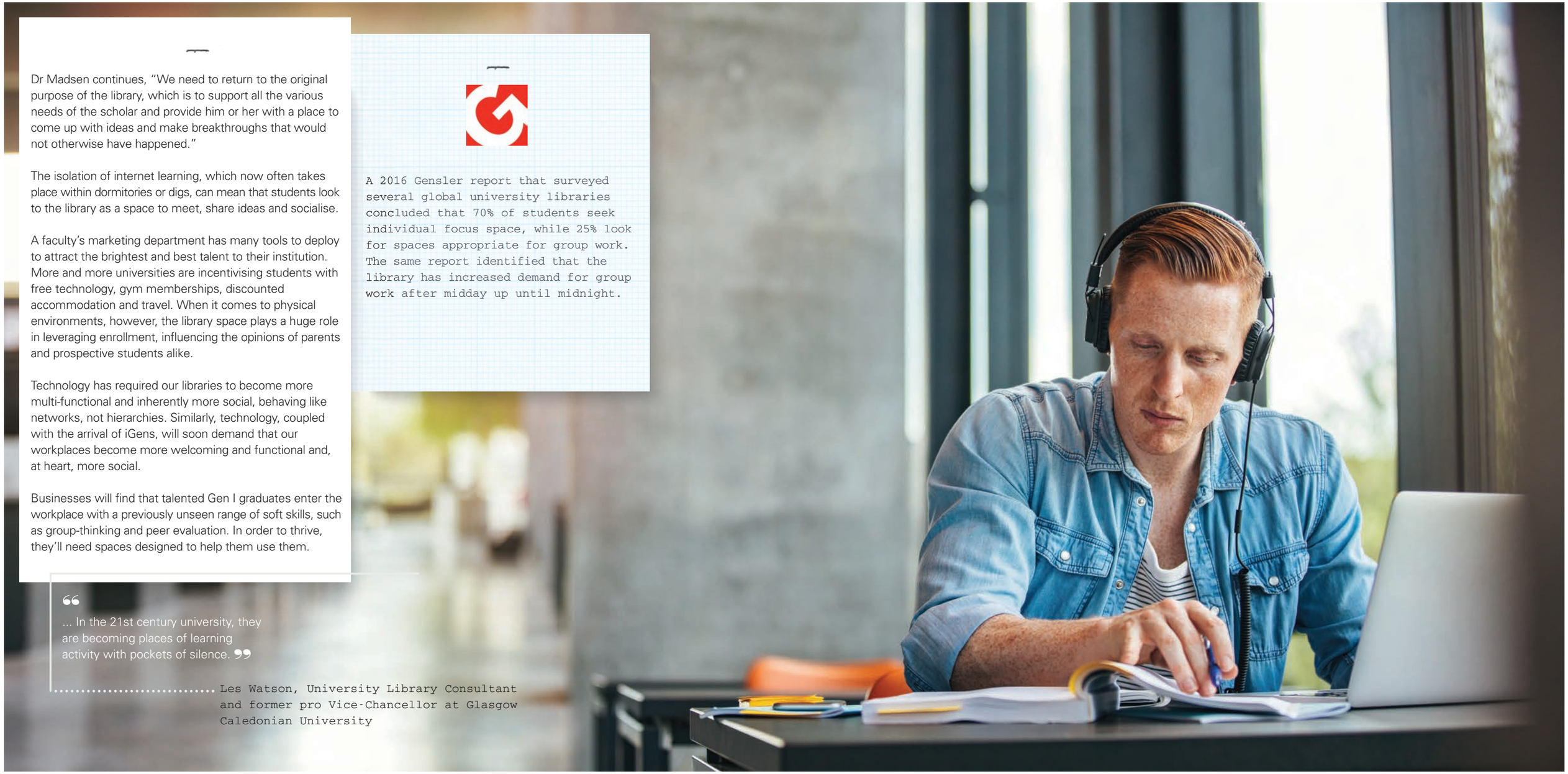
A faculty's marketing department has many tools to deploy to attract the brightest and best talent to their institution. More and more universities are incentivising students with free technology, gym memberships, discounted accommodation and travel. When it comes to physical environments, however, the library space plays a huge role in leveraging enrollment, influencing the opinions of parents and prospective students alike.

Technology has required our libraries to become more multi-functional and inherently more social, behaving like networks, not hierarchies. Similarly, technology, coupled with the arrival of iGens, will soon demand that our workplaces become more welcoming and functional and, at heart, more social.

Businesses will find that talented Gen I graduates enter the workplace with a previously unseen range of soft skills, such as group-thinking and peer evaluation. In order to thrive, they'll need spaces designed to help them use them.

A 2016 Gensler report that surveyed several global university libraries concluded that 70% of students seek individual focus space, while 25% look for spaces appropriate for group work. The same report identified that the library has increased demand for group work after midday up until midnight.

> "... In the 21st century university, they are becoming places of learning activity with pockets of silence."
>
> Les Watson, University Library Consultant and former pro Vice-Chancellor at Glasgow Caledonian University



University of Birmingham Library Case Study

Designers: Associated Architects
Dealer: Southerns Broadstock
Project Size: 55,000 sq.ft.

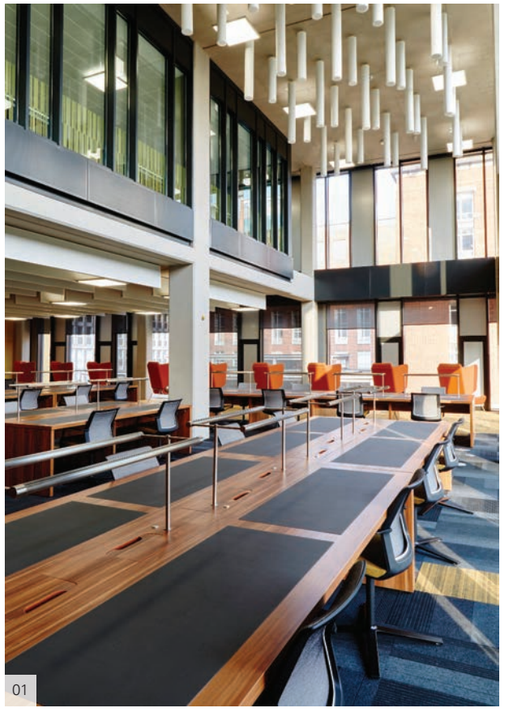
The award-winning library, described as heralding a new generation of libraries in UK higher education, opened its doors at the University's Edgbaston Campus in 2016.

The milestone building provides state-of-the-art facilities for students, staff and researchers, as well as a cultural hub for the University and the city, with some facilities being open to the public.

A variety of learning spaces cater to users' differing needs. Video editing booths, wireless mobile charging facilities and media rooms sit alongside 62km of shelving filled with thousands of books from the University's most important collections. A below-ground reserve store houses over 1.5 million items, allowing users to access materials from a single location, with staff on hand to enable research.

The library has been tailor-made to suit modern users' requirements. The variety of multi-functional furniture typologies available makes it easy for students, whether working alone or in teams, to choose the most appropriate setting for the task in hand.

By using Orangebox's **Away from the Desk** system the University was able to achieve a vibrant mix of individual study spaces and flexible group configurations.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02


03

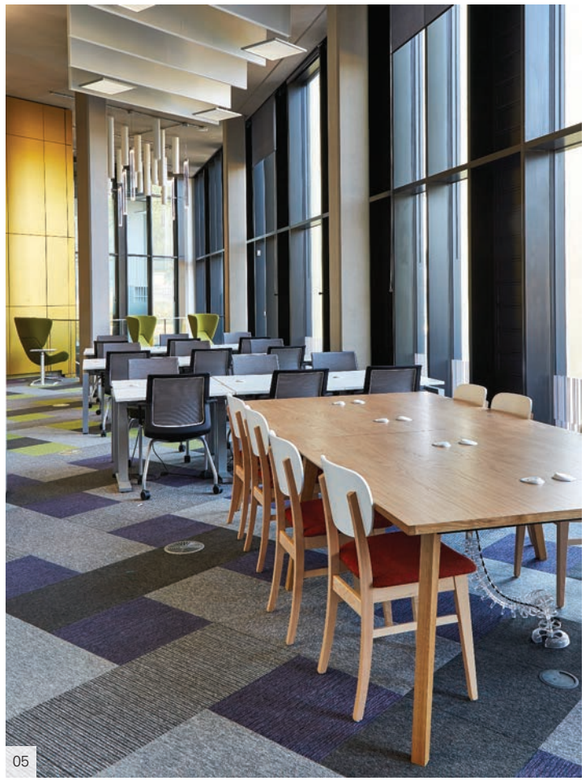

04

01. Open library tables provide students with ample work surface areas, without the need for anchored fixed-PC desking. These typologies are heavily occupied in pre-exam periods when focus needs to be high and disruption low. **02**. Collaborative work settings enable groups of two or more to be productive in open and non-bookable spaces. **03**. Dining and café spaces are well used across the library, often doubling up as teamwork booths when required. **04**. Light touch, truckable seating means spaces in the library can quickly be reconfigured to suit the needs of students or staff.

05. Team tables can offer ideal settings for multiple project members to base themselves in for extended periods of time. This ownership of space allows them to focus on the task at hand. **06**. Media booths have created a sanctuary for teams who seek an increased level of privacy while working. **07**. Large, open and collaborative furniture configurations create a sense of community in the library, with integrated power within those configurations making them usable for longer periods of time.

> “Everywhere you turn there’s always somewhere different to study, that’s so important in a busy environment. The new library is so much easier to navigate – it’s now the go-to space.”

Student at the University of Birmingham



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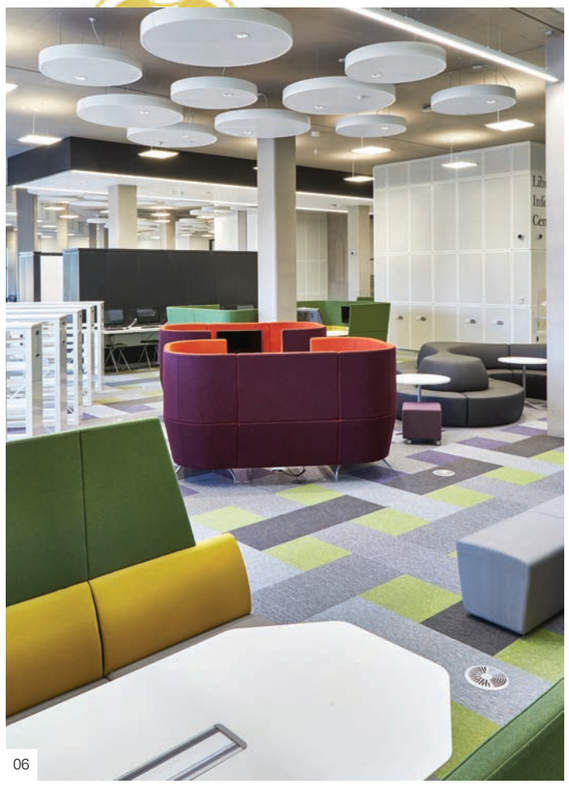


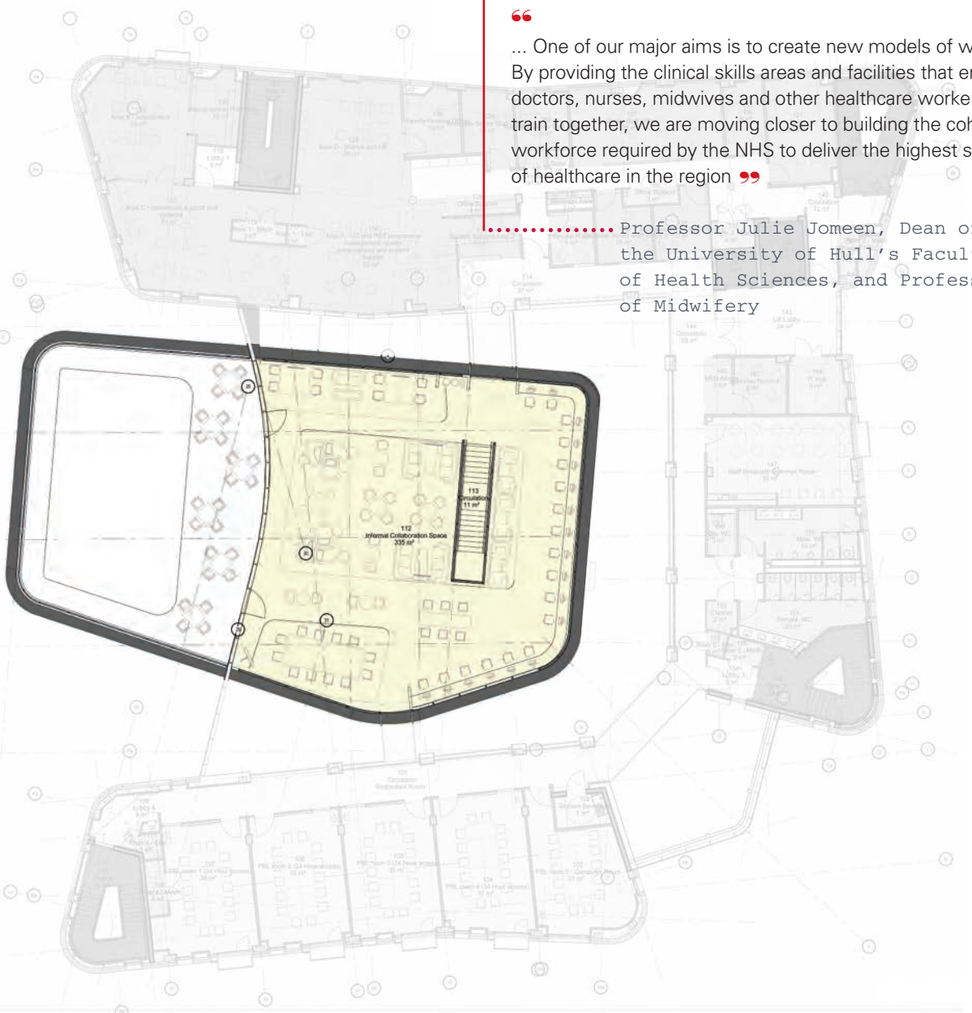
06

07

Allam Medical Building, University of Hull Case Study

Designers: BDP
Dealer: Southerns Broadstock
Project Size: 75,0002 ft

The University of Hull's Allam Medical Building has transformed the way the next generation of health professionals is being trained. By enabling doctors, nurses and midwives to train together, its collaborative environment is preparing them more effectively for their future careers.



"... One of our major aims is to create new models of working. By providing the clinical skills areas and facilities that enable doctors, nurses, midwives and other healthcare workers to train together, we are moving closer to building the cohesive workforce required by the NHS to deliver the highest standard of healthcare in the region"

Professor Julie Jomeen, Dean of the University of Hull's Faculty of Health Sciences, and Professor of Midwifery

01. In November 2017, Her Majesty The Queen performed the Opening Ceremony of the Allam Medical Building. The building, which was designed by BDP and fitted out by Southerns Broadstock, is at the heart of the University's £28 million health campus.

01

The Allam building spans five floors. The research institute is on the third floor, in a quieter and more private workspace away from main undergraduate areas and student hubs. Space is provided for students to relax in, including accessible terraces on low-level roof areas, and generous social atriums that house groups of medical students, encouraging the seamless sharing of ideas.

Student opinion was integral to the final design, which was shaped by the views of a diverse range of interested parties, from trainee medics to social workers. This gave the designers a clearer sense of how the space would need to be used, and the demands that students were likely to face after graduating.

By deploying a wide range of products from Orangebox's Smartworking® portfolio, the University of Hull was able to create a variety of working typologies reflecting the different needs of their students. Media booths sit alongside large collaborative tables, while **Away from the Desk**' open, collaborative modular system seating allows students to work together in teams for long periods, or dip in and out as they need to.

02

03

04

> "You can sense the students' pride in being able to learn in a building that is as state of the art as this, and which has already attracted some of the highest-calibre academics and healthcare professionals from across the country."
>
> Professor Julie Jomeen

02. In the heart of the building is a multi-functional study space that provides open collaborative furniture adjacent to teamwork booths, complementing the fixed, task-based desking. **03**. Lounge seating fills the atriums to provide ample touchdown or catch-up meeting spaces. These typologies are essential in allowing students and staff to connect in an informal setting. **04**. Cafés are morphing from exclusively hard, durable spaces into much softer and more relaxing environments that offer opportunities to work, dine or meet in comfort.

ch. 03

University YouTube

What do Tech Platforms Hold in Store for Education?

The Alternative to the Classroom

15,000 views

Typical Student
I am in charge of my own timetable now
2626

Non-Degree Student
This is sooooo much cheaper than a full time degree course
10784

Full-time Student
When I don't understand something, I just play it again until I get it... so cool!

Online Student
I design my study schedule around my professional life

University YouTube

What do Tech Platforms Hold in Store for Education?

Technology has changed the way we think about the world around us, and, of course, it has also transformed our experience of education.

According to a 2018 *Florida National University* survey, almost 30% of Americans currently in school take at least some distance education classes, while as many as 15% exclusively take online courses to obtain their degree.

These numbers are only set to rise, as iGens – true digital natives – move through our higher education systems. The *McGraw-Hill* survey found that a whopping 81% of students say digital tools have helped improve their grades, and 82% say laptops, tablets and apps have helped them spend even more time studying. Personal computers and the internet have made education more accessible to more people, but the transformation goes well beyond that.

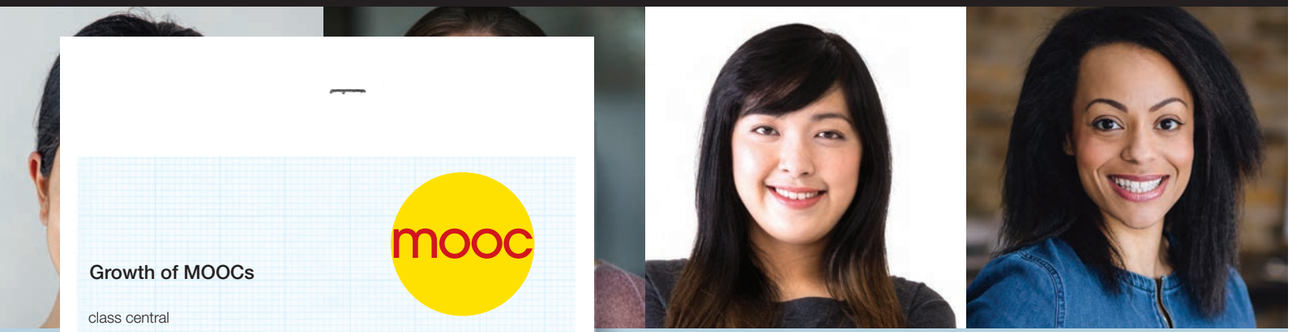
Today's students don't need to sit in classrooms, studying textbooks that have little relevance to their careers and cramming for deadlines dictated by somebody else. New online programmes like *Capella's FlexPath* emphasise a self-paced approach, letting students set their own schedules and use their professional experiences to show how they've mastered the material.

How has online education evolved? The rise of online universities in the early '90s first gave people the option to earn a degree without having to sit in a physical classroom. While universities had been taking advantage of computers and the internet for a quite a while, that new freedom proved incredibly popular. Today, hundreds of accredited schools offer online degrees in the US, and between 2002 and 2008 the number of students taking online classes almost doubled.

The early success of online universities inspired traditional colleges to fold digital learning experiences into their own course offerings. The resulting combination of face-to-face and computer-mediated learning is known as blended learning. Online portals are now commonplace for all university courses, with both entirely online classes and hybrid online/in-class learning opportunities available at many colleges. For more than a decade, private companies, non-profits and universities have been experimenting with online courses, often offered for free or at low cost to large numbers of students around the world. Research has shown that a combination of online courses and traditional in-classroom instruction is as effective as only taking classes in person.

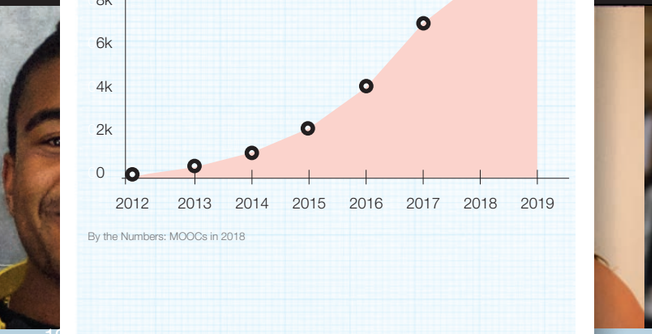
The Harvard Extension School offers high-tech adaptations of courses that used to be taken by postal correspondence. Almost 2,000 degree candidates and over 13,000 non-degree students take classes online, on campus, or via a mix of the two. Students can earn a Bachelor of Liberal Arts degree in extension studies, with the cost of the four-year degree – estimated at $49,500 – being cheaper than a single year on campus at Harvard.

The *NMC Horizon Report: 2017 Higher Education Edition* notes that, "An overarching goal is to cultivate the pursuit of lifelong learning in all students and faculty. Institutions are beginning to experiment with flexible programmes that provide credit for prior learning and competencies gained through employment…or extracurricular experiences."



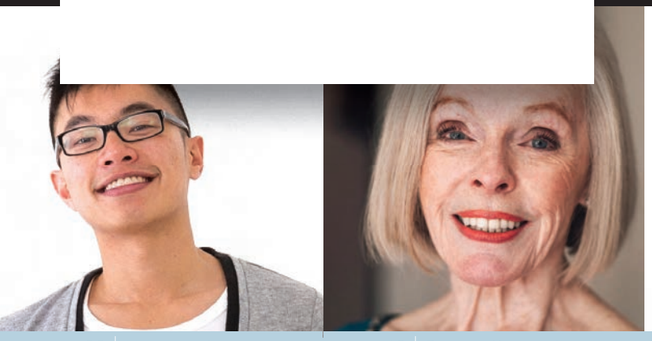
34 | Julie Wong
Brooklyn, New York

29 | Sheryl Davis
Fairmont Pk, Philadelphia



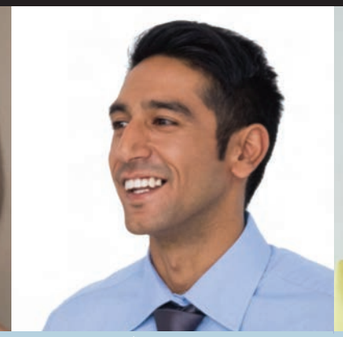
26 | Tracey Lamont
Sea Cliff, San Fransisco

22 | Paula Peebles
Camden, London

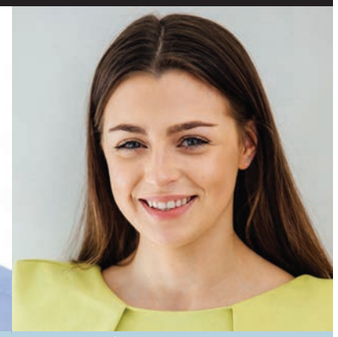


20 | Michael Kom
Brookmont, Washington

48 | Dorren Carrington
Richmond, Vancouver



25 | Paul Parkin
Kensington, London



19 | Sharon P Glass
Bletchley, Milton Keynes

MOOCs (Massive Open Online Courses)

When the first Massive Open Online Course was launched in Canada in 2008, 2,200 students signed up. MOOCs offer the accessibility of online learning and are free to anyone, and are frequently used to supplement in-school learning.

Universities are now partnering with MOOC platforms to offer their own classes free and online. The University of Oxford is branching into free online courses through the edX platform this year, while Leeds and Open University are now allowing certain MOOCs to contribute credits towards the final degree.

The top five MOOC providers by registered users are:
- Coursera – **37 million**
- edX – **18 million**
- XuetangX – **14 million**
- Udacity – **10 million**
- FutureLearn – **8.7 million**

3

benefits of MOOCs

1. Scalability
In a traditional set-up, if you want to increase the number of students taking a class, you need to move to a bigger classroom (or, potentially, expand your infrastructure). With an online classroom, however, scaling up the course batch size is just a few clicks away.

2. Self-paced
We all have different learning styles, and pick up new concepts at varying paces. Self-paced courses allow everyone to study and learn at the rate that works for them.

3. Removal of constraints:
Not everybody in the world is privileged enough or wealthy enough to be able to go to developed nations for higher studies. And those working full-time can't really squeeze enough hours out of their work schedules to pursue their academic interests at conventional universities. By removing such systemic barriers, online courses are helping to make education a universally available resource.

It's not only education that can benefit. Online learning is a social mobility tool that can open up a wider talent pool for businesses, enriching their workplace with greater employee diversity than that provided by traditional universities.

Flexible online courses are perfectly pitched for iGens:

"When I'm doing my homework, I'll look up how to solve a problem on YouTube,... I like it because it's really easy to follow. I can pause it, or I can rewind it if I have a question."

imie Moreano, a sophomore at Locust Valley High School (outside NYC)

With over 1.8 billion logged-in users a month, *YouTube* (which this year celebrates its 10th anniversary) is notorious as a 'time suck': a prime site for procrastination, and haven for cat videos. However, viral sensations are also to be found in an unexpected channel: education. In fact, education videos are viewed twice as often as videos in the Pets & Animals category.

In a 2018 survey of people aged 14-23 (right at the heart of the iGen), *YouTube* ranked highest as a 'preferred learning tool': 59% picked *YouTube* as a learning preference, 57% chose in-person group activities, 47% picked learning apps or games, and 47% chose printed books.

The study, conducted by global market researchers *The Harris Poll* on behalf of education specialists *Pearson*, examines the differences between iGens and Millennials when it comes to their outlooks, values and experiences in education and the use of technology.

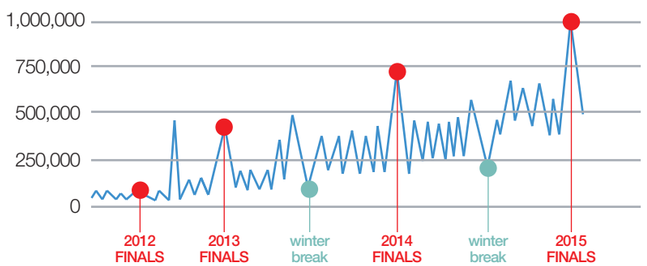
The iGen age group has a "specific brand relationship" with *YouTube*, said Peter Broad, Pearson's director of global research and insights. "When younger learners are looking for answers, they're going to the most straightforward, familiar force, and for them that's *YouTube*." The *Google*-owned platform is "full of explainers and tutorials," and content that is "short and easily digestible," he added.

In the Mineola school district outside New York City, Superintendent Michael Nagler has been encouraging teachers to use more video in the classroom. The district has a *YouTube* channel for educators and students, with videos covering topics ranging from growth mindset to science and math lessons. Videos complement the regular curricula and give students real-life connections about why they're learning something.

Channel views go through the roof when it's exam time and students are looking to cram in as much revision and study as possible. The graph below shows channel views for the CrashCourse *YouTube* chemistry module. As iGens gravitate naturally to the more informal and flexible tools available to them online, the way in which our bricks and mortar universities are structured will have to fundamentally change. Institutions that can harness and exploit this growing trend will thrive: the challenge will lie in doing so without undermining the fees generated or the attraction and value of the campus experience.

These changes will inevitably affect the workplace too. *Yahoo* is reimbursing employees for the cost of verified course-completion certificates from *Coursera*. Online US retailer *1-800-Flowers* announced that it's to create an online education portal on the *Udemy* platform for its network of independent florists. *Tenaris*, a global manufacturer of steel, has licensed *edX*'s software platform and course materials for its employee learning programme. But it doesn't just stop with redeploying training programmes: MOOCs can also play a significant role in the recruitment of talent. iGens can be guided through tailored study content that enhances their understanding, relevance and attractiveness to organisations. *AT&T*, *Google* and others are working with *Udacity* to develop courses to teach college students and recent graduates the skills demanded by clients, building a pipeline of qualified talent. Similarly, *Facebook* and *Twitter* are working with *Coursera* to reach out to students who perform well on certain courses relevant to their businesses needs.

CrashCourse *YouTube* channel for its chemistry module.



> "I believe MOOCs will affect workplaces more than it will universities – we're social beings – kids who are 20 years old want to be with other kids who are 20 years old."
>
> Mark Evans, Director of Architecture

More and more companies are realising the potential and teaming up with MOOC providers to enhance employee training, with *AT&T*, *GE*, *L'Oréal* and *Marks & Spencer* being prominent examples. The University of Leeds/*M&S* MOOC will draw on the *M&S* company archive (70,000 items going back to the 1880s, held on the university's campus), and look at examples of business innovations relevant to the retailer, such as the introduction of chilled foods and the development of man-made fibres. It will employ videos, quizzes, interactive polls and live discussion and also draw on the expertise of the university's design, engineering and business researchers.

A *Harvard Business Review* study of 28,000 learners in 127 countries found that when employers provide support for MOOCs, completion rates rise from 15% to 58%.

The 2018 *Deloitte Millennial Survey* estimates that Millennials will have as many as ten employers across their careers. Are iGens set for even more? If businesses want to keep their models relevant and their people skilled, they need to embrace online training tools. The same report highlighted that knowledge workers have only 24 minutes a week available to dedicate to learning. More micro, modular, fast-paced MOOCs could be the answer to solving the skills gap for the ever-evolving requirements of work.

Blending an approach of online and in-person could also be a way forward. According to a 2018 *Towards Maturity* report, 77% of employees surveyed want learning that is relevant and timely for their life/work situation, but, importantly, 61% of learners are motivated by using technologies that allow them to network and learn together in teams.

So what will be the effect of new platforms on our classrooms? Even though most experts believe the presence of teachers is still critical, there will be changes to a teacher's function and to educational best practices. The *Artificial Intelligence Market* in the US Education Sector report says that AI in US education is expected to grow by 47.5% from 2017 to 2021.

Companies including *Content Technologies* and *Carnegie Learning* are developing intelligent instruction design and digital platforms to provide learning, testing and feedback via AI. The AI will give students from nursery to postgraduate level the challenges they are ready for, identifying gaps in knowledge and redirecting them to new topics as and when they're ready for them. As AI gets more sophisticated, it might even be possible for a machine to read the passing expression on a student's face indicating that they're struggling, and modify the lesson accordingly. The idea of customising the curriculum for every student's needs isn't viable yet, but thanks to AI it soon will be.

Presentation Translator is a free plug-in for PowerPoint that creates subtitles in real time for what the teacher is saying, helping make global classrooms available to all – including those who speak different languages or have visual or hearing impairments.

How can we embrace this growing trend? A quicker adoption of 5G into schools, more mobile devices, induction charging, and dedicated digital learning libraries where the lighting, acoustics and even the temperature support digital learning, could be a good start.

Whether these new tools are utilised at home, at the coffee shop, in the classroom or in the boardroom, they will inevitably shape and enhance our continued learning. Architects, educators, designers and manufacturers need to embrace these developments as we design education tools for generations beyond iGen.

The Sticky Campus:

a 24/7 Education

ch. 04

The Sticky Campus: a 24/7 Education

With 'Destination Work' the big new thing for business, there are valuable lessons to be learned from universities, who, thanks to the influx of foreign students, have had to be accessible 24/7 for decades.

> International students have meant a very different approach – the campus is now under pressure to be open 24/7. The library was really busy on Christmas Day, students often want a coffee at 2am… they demand an estate that is much more responsive to their needs.
>
> Professor Sir Steve Smith, Vice-Chancellor and Chief Executive of University of Exeter

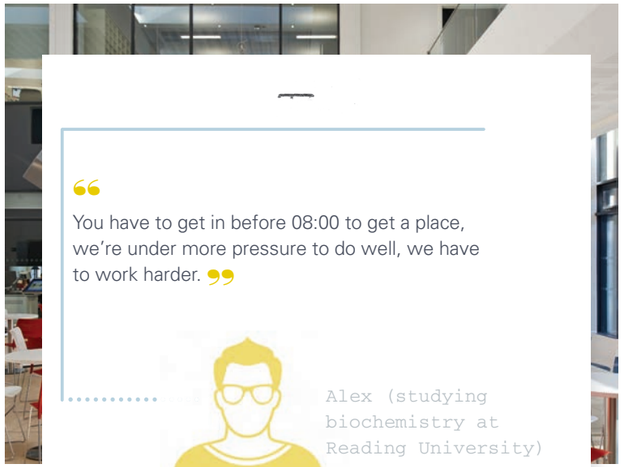
Universities are no longer just labs and lecture halls: the diverse cultures and needs of their students are demanding more of universities and their campuses than ever before. Even the simple acknowledgment that enrolment is now likely to be 20% international students, who typically won't return to their home country between terms/semesters, makes it clear that the campus now has a 24/7, 365 function and responsibility.

Students are socialising and studying in different ways, at different times, in different spaces. Caterers are providing more (and more varied) meals, at all times of the day and night. Security teams are patrolling a bigger area, with a more diverse population, more or less non-stop. And librarians are indexing books and stacking shelves when previously they'd have been tucked up in bed.

The library is as good a place as any to start if we're to understand how rapidly things are changing. In 2014, students from Leeds, Reading and Kings lobbied their universities to provide 24-hour library services: now, in 2019, well over half of the universities in the UK offer them. **Businesses should take note.**

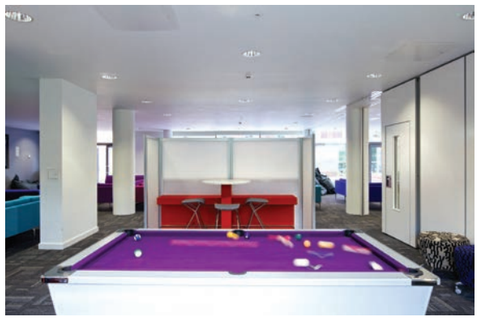
When students are paying £9,000 per year, they demand excellent facilities. "It's essential to have a good library," says Jon Gleek, Welfare Officer at the University of Sheffield's Students' Union. He also points out some of the positive reasons why students may require 24-hour libraries: "It is always worth remembering that students are a hugely diverse group of people and the stereotype of the 18-year-old fresher who is pulling an all-nighter for a deadline doesn't reflect the range of needs and experiences of the whole student body. Some students who take part in life-long learning courses or some part-time degrees, for example, may only come onto the university campus later in the day and use the library after their evening classes. Many students have to take part-time employment during the day to fund their studies and living costs, so having a resource such as a 24-hour library can be a vital asset to their academic progress."

But a well-equipped, 24-hour library isn't the only thing a university needs to offer if it's to attract the students it needs. Whether the demand is for faster wifi or an on-site *Café Nero*, a university in a competitive marketplace will need to provide it. In a workshop I was running with university leaders in South Wales, the term 'sticky campus' came up. This term, which I like, describes an active strategy to get students to stick around. You do this by equipping the campus with things they'd previously have gone off site for: the best coffee shop, the most comfortable cinema, the most varied restaurants. This obviously boosts revenue, but it also helps give students a sense of belonging and of ownership, offering them the flexibility to learn, socialise and interact on-site how, when and where they want to, and in the ways that suit them.



> You have to get in before 08:00 to get a place, we're under more pressure to do well, we have to work harder.
>
> Alex (studying biochemistry at Reading University)

What does this mean for those designing university facilities? Clearly, offering the 'best facilities' no longer means simply great lecture rooms, labs and teaching spaces. It also encompasses interstitial spaces that offer a framework of emotional support for the students. It's no longer possible to separate academic facilities from those social, more informal elements that are the backdrop for learning. To create the best student experience, living and learning must be inextricably intertwined.



> Student centres often become the heart of the campus – the void that completes the solid. They are the infill to student life: a place to go to in between the more formal aspects of studying.
>
> Helen Groves of Architects Atkins

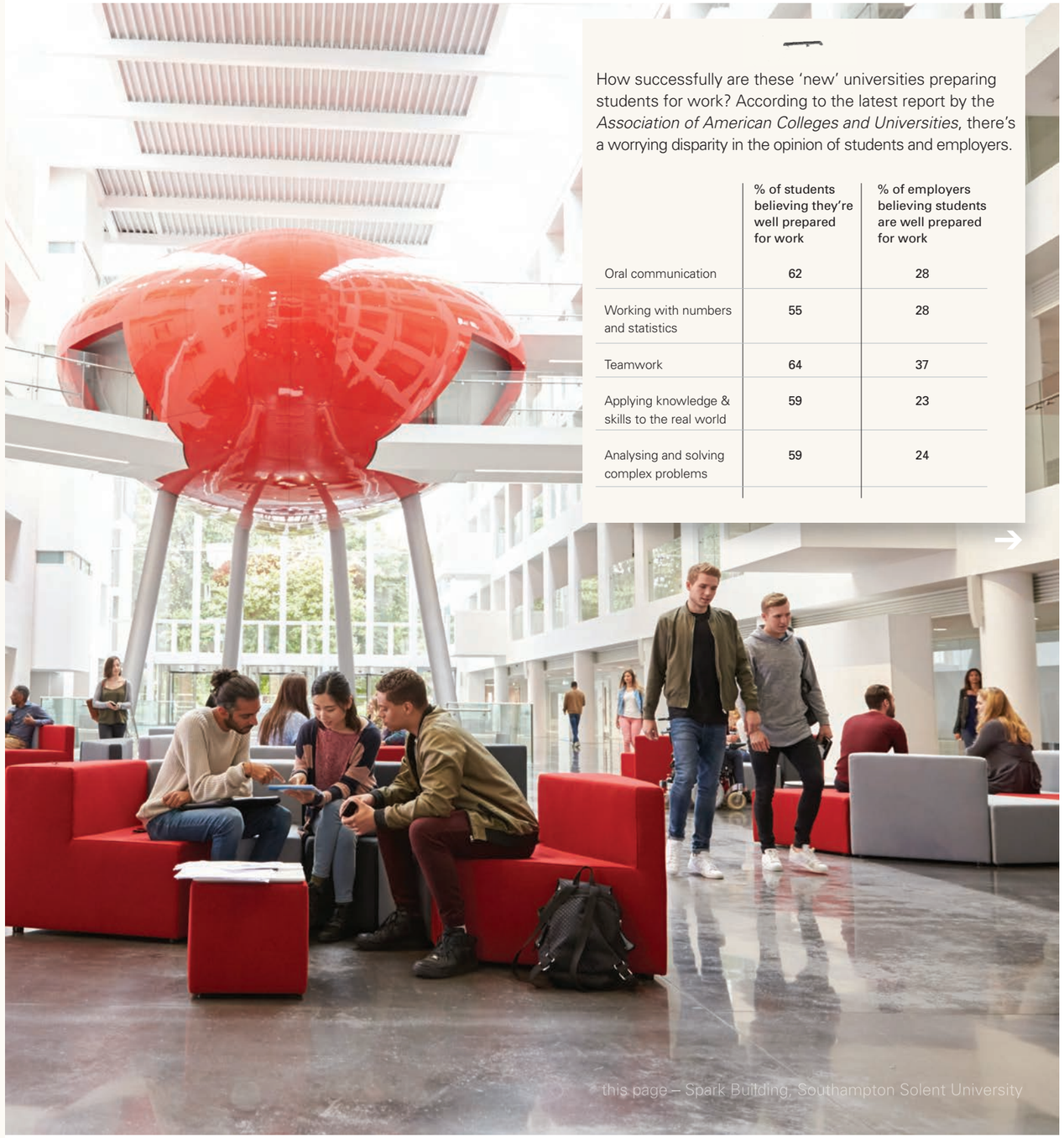
> In the aftermath of the Christchurch earthquakes, we learned the importance of the student community to the success of the campus,...
>
> ...there was complete loss of social spaces for students both on and off campus. The emergency rebuild needed to not only fix the formal academic and research facilities, but also recreate the campus life. It was a big challenge to fix this, while balancing all the other critical infrastructure projects.
>
> Graeme Finlay, Director of FinlayWarren and Mahoney Architects.

Two projects were key to doing this: a temporary events centre to replace the damaged USCA Building, and the construction of the Puaka James Hight, which provided a new student hub. Both buildings have become central to university life.

At the University of Utah, the new tagline for their technology studios is "**Live. Create. Launch.**" The residential component of the school has been absorbed into this live-work building, replicating the early lifestyle of dot.com employees. But, where dot.com accommodation usually resembles tiny walk-in wardrobes, the Utah version is much plusher. Residents, who can be graduates or undergraduates in any field of study, can choose pods (cubby-like rooms with built-in bed, desk, storage and TV), lofts in an industrial styling (beds in a communal setting with shared kitchen, lounge and bathrooms) or more traditional single or double rooms.

Different floors have different themes, based on Utah's existing strengths: games and digital media, adventure and gear, design and the arts, global impact and sustainability. The ground floor "garage" has workshops equipped with 3-D printers, laser cutters and other prototyping tools, available to anyone at the university and staffed by work-study students. All the programmes offered by the University's Lassonde Entrepreneurship Institute – the division that's building the studios – are extracurricular and interdisciplinary, with a few degrees offered in partnership with the Business School.

> One thing about the building is it has no formal classrooms, and no faculty or staff offices,...
>
> ...we didn't want to have a classroom because that says, 'In this room you learn, out here you don't learn.
>
> Troy D'Ambrosio, Executive Director of the Institute



How successfully are these 'new' universities preparing students for work? According to the latest report by the *Association of American Colleges and Universities*, there's a worrying disparity in the opinion of students and employers.

	% of students believing they're well prepared for work	% of employers believing students are well prepared for work
Oral communication	62	28
Working with numbers and statistics	55	28
Teamwork	64	37
Applying knowledge & skills to the real world	59	23
Analysing and solving complex problems	59	24

this page – Spark Building, Southampton Solent University

Is environment and culture playing a role here? Are students on campus gaining confidence in their skills by working and socialising in the ways that suit them in the company of their peers, but then struggling to apply these within a very different working environment?

If this is the case, the workplace will need to echo the experience of the campus to get the most out of student recruits and ensure an effective flow of talent. Wellness strategies, on-site gyms with great showers, fantastic kitchen facilities with even better coffee… If *KPMG* hasn't embraced them yet, and *PwC* or *Accenture* have, the talent tunnel will adjust accordingly. If *Ford* hasn't, perhaps *Audi* or *Renault* have?

Creating 'sticky offices' is just as important as creating 'sticky campuses'. It's happening all around us. *Google* offers free food in its offices. *Zappos* has nap rooms available 24/7. *Capital One* has complimentary gym access with fitness classes. *Facebook* has free haircuts and dry cleaning. *WeWork* has chilled Prosecco on tap.

This changing approach to multidisciplinary space is only going to become more critical as we aim to reskill to drive society forward. Our newly networked society means education doesn't necessarily need to take place on campus, and work no longer needs to take place only at work. To become 'sticky' and attract and add value to the student or employee, campus and workplace alike need to offer more than they ever before. Businesses would do well to learn from the success of Hi-Ed's destination-learning strategies.

A campus designed to bring students together to group think or peer review with greater efficiency and energy can only be positive for the educational system. Similarly, our workplaces need to be where ideas can be shared, briefs discussed, and projects pondered, rather than a space for isolated, individual tasks. More and more, the office and campus are about connecting people.

Experiential design prioritises human interaction with a built environment, using design elements to elicit an emotional connection between a brand, business or building and its human users. In their 2017 *Experience Index*, *Gensler* notes that, "the human experience must be the driving force behind every element of a space – from the design of physical space to the qualities of interaction, expectation, and intention." This type of design evokes a connection that is becoming critical to many spaces, and is already essential in education.

Learning experience design (LX Design) is the process of creating learning experiences that enable the learner to achieve the desired learning outcome in a human-centred and goal-oriented way. In contrast to instructional design, which focuses on the instruction and the instructor, the space or platform in LX design is focused on the learner and their process of learning. Businesses may benefit from focussed LX Design as employee training becomes critical for future growth.

Tokyo-based architect *Takaharu Tezuka* designed a kindergarten for a Montessori school, whose approach gives children the freedom to range around the classroom and learn via discovery. Rather than impose physical boundaries on the primary school children, he designed a continuous space that allows for unbounded learning and play. *Tezuka* looks at the way children would naturally choose to play without gadgets and screens, then facilitates it with future-forward designs like the oval-shaped roof that encourages the school's 600 children to run and explore. He calls this concept, "the nostalgic future."

At ground level, sliding doors allow the classrooms to be open to the elements during good weather. *Tezuka* believes standard classroom design is unnatural and counter productive to a positive learning environment. Instead of using dividing walls he created child-sized boxes made from light-coloured wood with rounded edges, which can be stacked to create shelves and display areas. The free plan design encourages independence and collaboration, rather than forcing children to sit still and in silence for long periods of time.

Comparisons can be made between what's happening in education and in sports stadiums. With fans able to watch on TV or stream games, stadiums are having to offer services designed to go way beyond the game. At Tottenham Hotspur's new stadium, for instance, an on-site brewery provides fans with the product that they'd otherwise be consuming at bars around the ground. Equally impressively, it has super fast wifi capabilities, whereas mobile data at most sports grounds is non-existent. Such facilities encourage people who don't strictly need to go to the game to choose to go anyway. This same dynamic is happening in the workplace.

> "Just as a fish cannot live in purified water, children cannot live in a clean, quiet and controlled environment"
>
> Takaharu Tezuka

this page – kindergarten designed by Takaharu Tezuka.

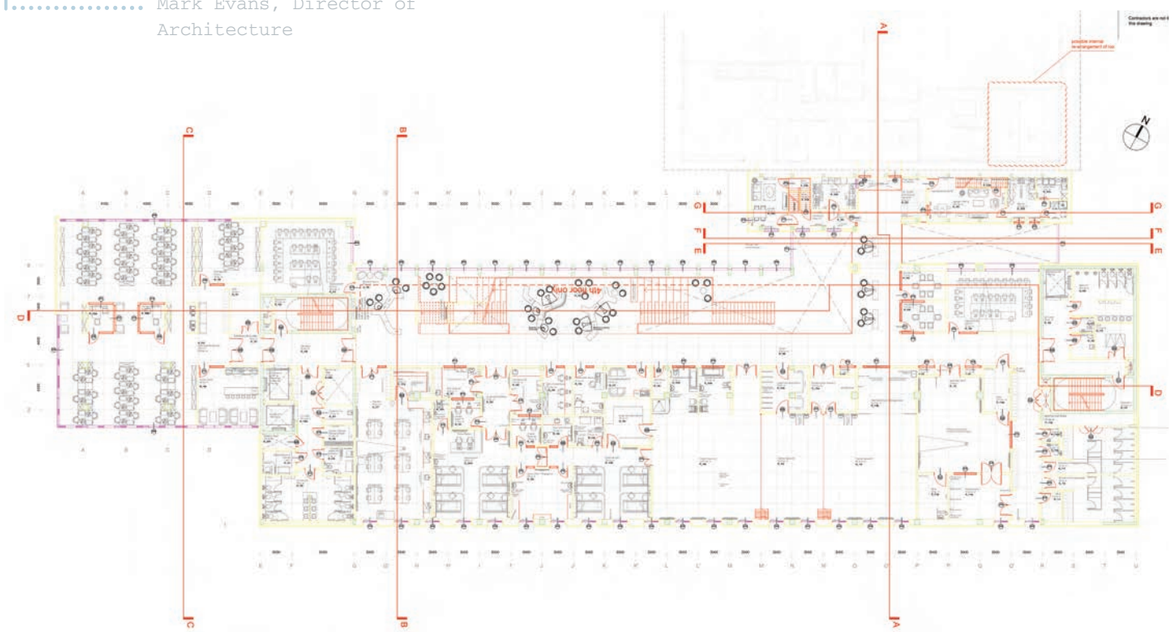
Coventry University –
Science & Health Building Case Study

Designers: Broadway Malyan
Dealer: Southerns Broadstock
Project Size: 120,000 sq.ft.

> “This is a building that has been designed ‘from the inside out’, driven by the needs of its users and how collaboration between spaces can be maximised.”
>
> Mark Evans, Director of Architecture

Coventry University’s award-winning new £59m Science & Health Building is unique in providing replicas of career environments for its students, including hospital wards, an ambulance, operating theatre and running track. The facility trains students to care for a patient at every stage of their medical experience, from paramedics arriving at their home and the subsequent ambulance journey, to their stay in hospital, discharge and rehabilitation.

The facility even incorporates two fully furnished terraced houses, one of which is fitted with top-of-the-range assistive technology including adjustable kitchen units and a shower that can be controlled remotely by iPad. These houses, which are equipped with augmented reality technologies to help students learn from different scenarios, provide realistic experiences of working within patients’ homes.

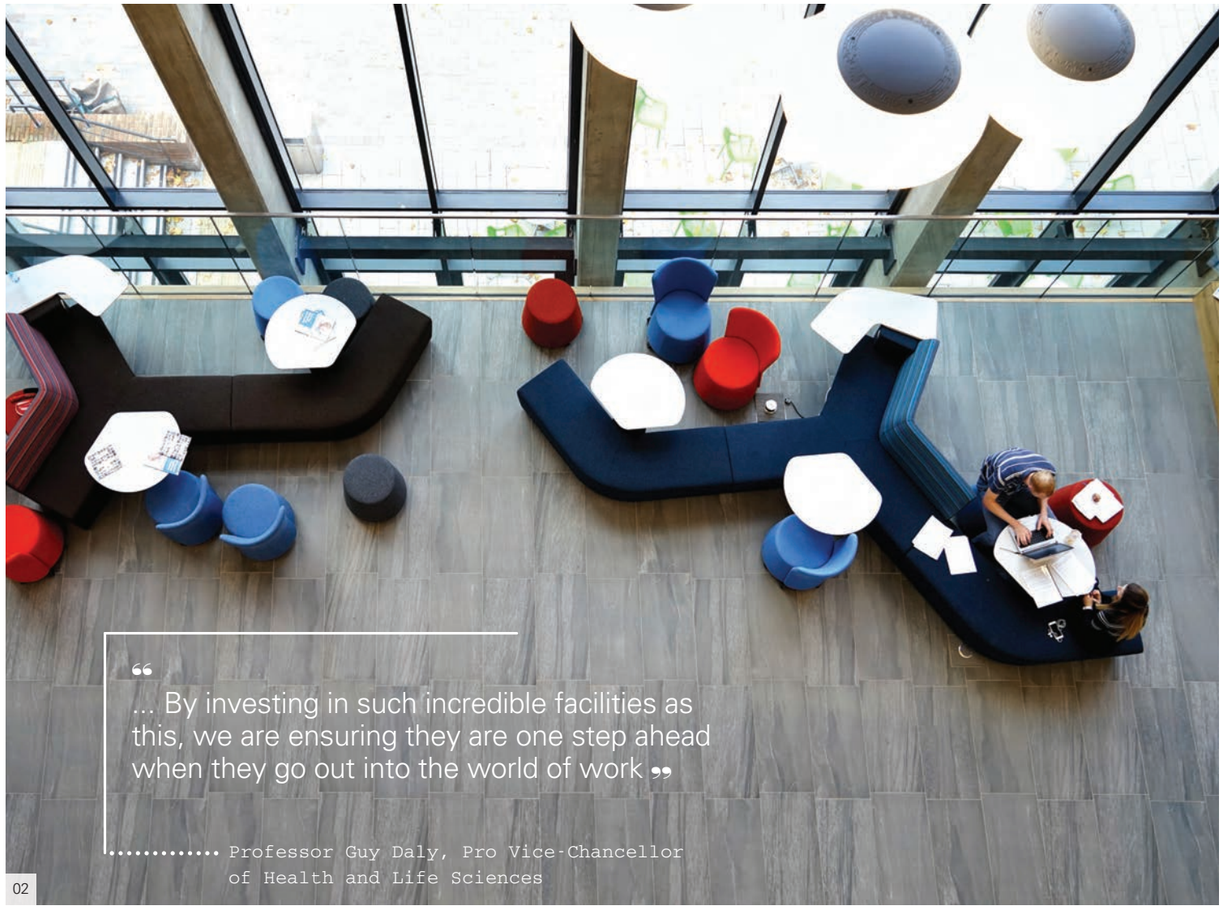


01. The layered mezzanine design provides pockets of work settings that students and staff can choose to use as they traverse the building. High project tables fill the atriums too, facilitating light-touch down work, acting as meeting beacons, and enhancing the flow of the building.

01

The Science & Health Building isn't only about training those on healthcare courses: it brings all of Coventry University's Faculty of Health & Life Sciences practical facilities together under one roof for the first time. Its industry-grade education-based laboratory, Lab+, can host more than 250 students at once, while its sports research and teaching facilities host an environmental chamber that can simulate the altitude of Mount Everest. It also has a sports therapy clinic that is open to the public.

"It is absolutely crucial that we prepare our students for the challenges and situations they will face in their future careers," said Professor Guy Daly, Pro Vice-Chancellor of Health and Life Sciences at Coventry University. "By investing in such incredible facilities as this, we are ensuring they are one step ahead when they go out into the world of work."



02

The building is transforming educational opportunities for future health professionals, sport and life scientists focussing on hands-on learning experiences that replicate situations students will face in their careers.

The space incorporates a plethora of Orangebox's Smartworking® solutions that allows students to seamlessly migrate from one task to another. '**Away from the Desk**' media tables allow students to huddle and collaborate while having the right technology to share their knowledge. The building has a large mix of varying furniture typologies to service every student need.

03

02. Open and collaborative spaces were also designed for the mezzanine spaces, enabling large and small teams to camp together. Mobile seating provides adaptability when needed. **03**. When specifying collaborative typologies, Coventry University ensured they were providing sufficient power and data for students and staff. Low but open configurations provide good sight lines, while integrated ergonomic tables supply surfaces for mobile technology.

Oxford Brookes University Case Study

Designers: Design Engine
Dealer: Southerns Broadstock
Project Size: 262,000 sq.ft.

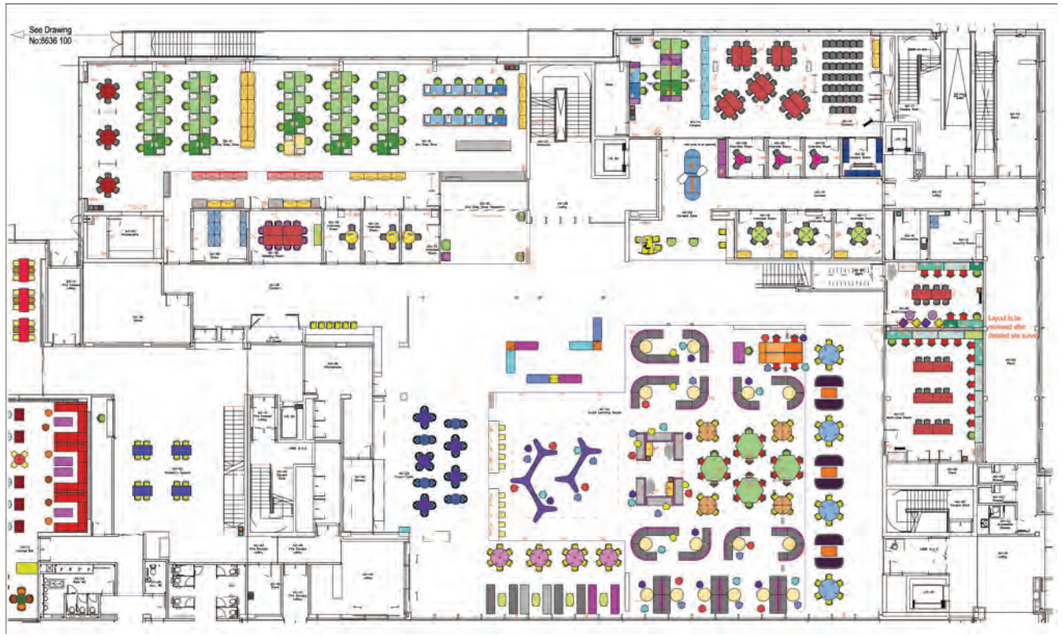
“Anyone who has seen the way in which students have already made the space their own will recognise that not only is it beautiful, it is also functional.”

Professor Janet Beer, Vice Chancellor
Oxford Brookes University

This award-winning central campus building at Oxford Brookes University, completed in 2014, was one of Orangebox’s first large-scale higher education projects.

Understanding and reflecting the views and ambitions of the students themselves was central to the project’s success. To facilitate this, groups of students came to Smartworking® London to take part in development workshops and test the furniture being proposed for the scheme, under the guidance of Design Engine and project dealer, Southerns Broadstock.

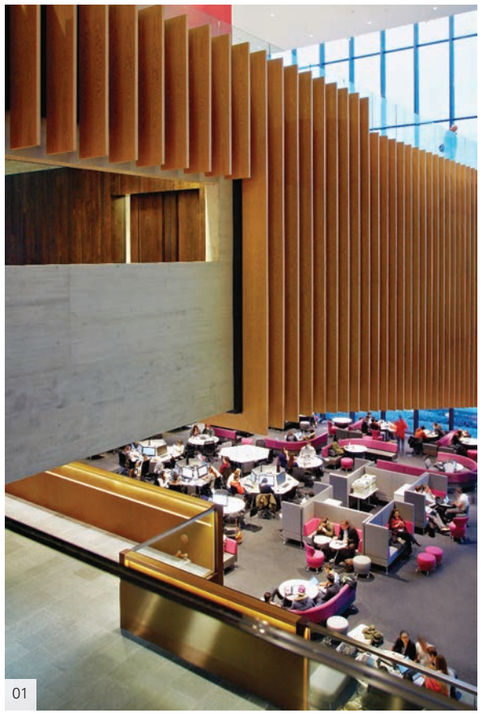
The project’s origins lie in ‘Space to think’, a research document produced by architects and designers Design Engine and the Oxford Brookes University project team. ‘Space to think’ had a far-reaching agenda: to provide an excellent experience for the university’s students through the creation of inspiring spaces and facilities.



Renowned for its world-class teaching, Oxford Brookes wanted to provide buildings and facilities to match. The new campus building symbolises both the university’s ambition and the dynamic education it offers to students. Replacing numerous out of date facilities, it has given the university a lively and engaging cultural centre, and helped to create a more coherent, dynamic and appealing identity.

The building’s flexible and collaborative social learning spaces have transformed the way the campus is used. Students now spend much more time together socialising, studying or simply hanging out. The large-scale atrium space has a collective energy, alongside pockets of individual concentration, with the designed environment and furniture groupings encouraging and supporting students’ ability to focus, whether they’re working alone or collaboratively. The sheer number of students using the facility is testament to the project’s success.

01. Large library atriums tend to facilitate high levels of student traffic. Their purpose at Oxford Brookes is to provide a balance of work settings for those studying a variety of curriculums at the university. **02**. Varying furniture heights provide visual and acoustic privacy within the atrium. Social study spaces often need a mix of privacy to suit the students’ needs. **03**. Integrating power within softer and more comfortable typologies extends the life of the setting, so it’s suitable for task-orientated work, not just team catch-ups. **04** & **05**. These high traffic spaces will often be reconfigured to suit the differing needs of individuals from hour to hour. It is important that Oxford Brookes provides work settings offering this flexibility.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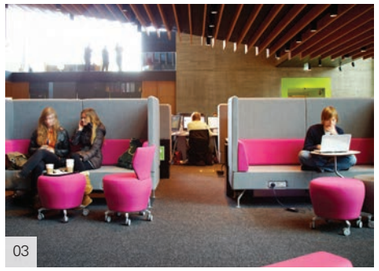
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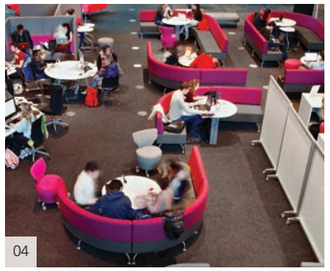

04

05

Beta Learning – Adaptable First

The Current Status Quo of the Classroom: Lessons from Around the Globe.

ch. 05

Beta Learning – Adaptable First

The Current Status Quo of the Classroom: Lessons from Around the Globe.

> The idea of a standard lecture, set at a certain time for a certain amount of minutes in front of a big class using PowerPoint, is surely past its sell-by date.

Nick Petford, Vice-Chancellor
University of Northampton

In the UK, university estates cover some 26 million sq m, seven times greater than *Tesco*'s landholdings and just behind the *NHS*' 30 million. Many university buildings are local landmarks, while major campuses can stretch over vast areas. It's therefore important that – just as with our contemporary workspaces – we're getting the most from these estates. Estate managers need to exploit the assets under their care as efficiently as possible, and ensure that they are working well for their students.

Over the last 20 years there's been a big increase in estate investment, and as a result conditions have improved noticeably. *AUDE* (Association of University Directors of Estates) found that 80% of non-residential university properties are now new (or in "as good as new" condition), compared with only 63% in 2002. So what does new look like? And how is it performing?

Today, technology is changing the face of education, leading to innovations including blended learning, adaptive learning and flipped classrooms.

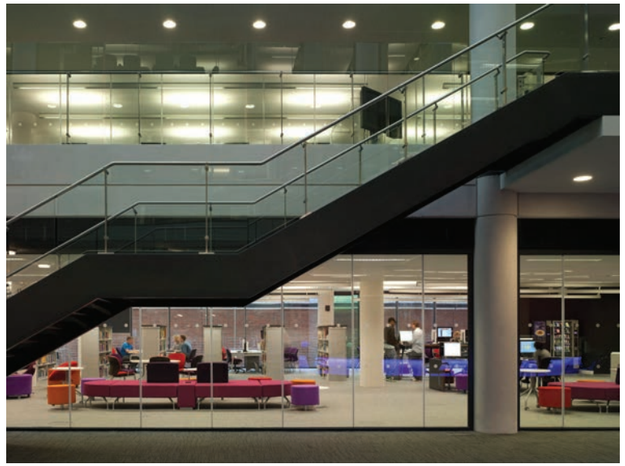
Blended learning sees online and traditional teaching methods used in tandem to provide a more effective learning experience for the student. Online learning components might include, for instance, educational videos, games, online learning materials and podcasts. The two modalities, online and traditional, complement each other: rather than replacing face-to-face teaching, online material is used to support it. A teacher might, for instance, instruct their students to watch a video lesson or engage with a podcast to broaden their understanding of the topic.

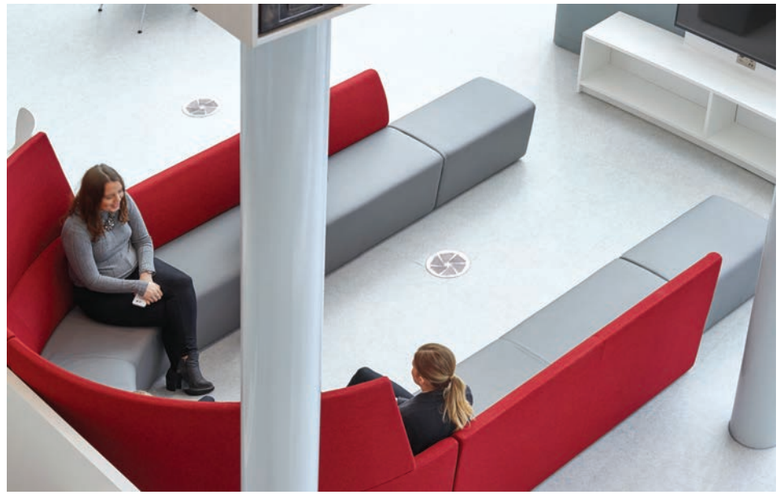
An evolution from blended learning is a pedagogical concept called the "flipped classroom" – a shift away from students acquiring knowledge en masse in huge lecture halls. Students instead use video or audio lectures to go through course materials outside class, freeing up staff time for small group teaching, for example.

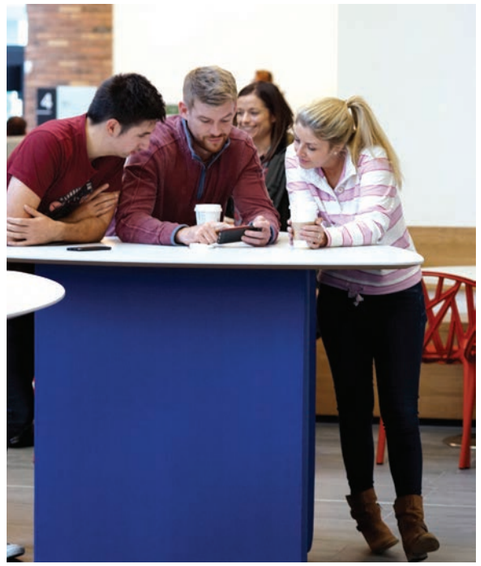
This shift away from lecture theatres is a definite trend, says Isabelle Taylor, co-author of University Trends and Head of Research and Publications at *Turnberry Consulting*. "Online learning is transforming the spaces that universities are building," she suggests, noting a rise in student demand for "hub buildings" that, "comprise informal learning spaces, social spaces, IT facilities, dining areas and counselling [services]". *AUDE*'s report notes the rise in, "social learning space as an adjunct to more traditional learning or library resources."

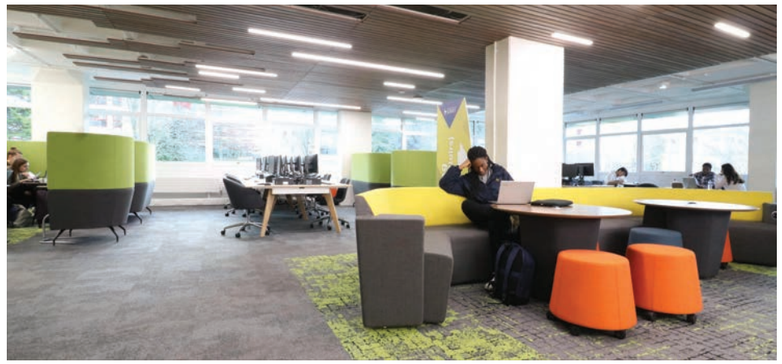
According to the *THE Journal*, since 2012 the number of active members of the *Flipped Learning Network*'s community site has increased from 2,500 to more than 15,000. And a recent survey by *Campus Technology* revealed that three in five teachers have already flipped their classrooms, or are planning to do so. This is a big shift in our default settings. The benefits of this approach are that knowledge can be taken in at one's own pace, with videos and reading material able to be consumed over and again, while problem-solving tasks traditionally set as homework now take place within the classroom under the supervision of the lecturer.

this page – Leicester University









There is growing evidence that the flipped classroom model can improve student achievement in almost any subject. According to the *Flipped Learning Network*, 71% of teachers who flipped their classes noticed improved grades, and 80% reported improved student attitudes as a result. What's more, 99% of teachers who flipped their classes reported that they would do so again the following year. The different requirements of the flipped classroom mean that the design of the space needs to change, however.

Technology is improving learning efficiency across the board. With **adaptive learning**, every student is provided with her own individual path of learning relating to how much she already knows/what she needs to know/the time she requires to comprehend a particular concept. Adaptive learning emerged a few years back, when researchers in education wanted to exploit modern technology for the advantage of education (just as with flipped classrooms). A number of colleges and universities realised that a standard catch-all learning approach wasn't fully efficient, and invested a huge amount of money in enhancing the technology after initial investigative models of adaptive learning were seen to bring positive results.

We can see an example of this technique in practice at Arizona State University (ASU), where adaptive software is currently being used to gauge students' knowledge in some online math courses. Using *McGraw-Hill*'s *ALEKS* technology, students are assessed on which maths concepts they're already knowledgeable about/ need help with. The software includes specialised individual lesson plans to help students improve in areas they find challenging. The results are impressive: pass rates have risen by 17%, course withdrawals have dropped by 56%, and 45% of students are finishing the courses four weeks earlier than normal.

> "Before [*Knewton*], I worked on the assumption that all students were at the same place. Now I meet them where they are."
>
> Irene Bloom, Senior Lecturer, ASU

Of course, these developments demand different facilities. Frank Coton, Vice-Principal (Academic and Educational Innovation) at the University of Glasgow, told the Times Higher Education's Teaching Excellence Summit that his institution was currently converting many of its lecture halls into "active learning spaces" containing fewer seats and offering more space for tables to promote discussion among students. The new £91 million Learning and Teaching Hub building at Glasgow University opened in August 2019, and has 50 flexible learning spaces (including a 500-seat lecture hall), equal to around 35% of its centrally bookable rooms.

> "Although it costs a lot of money, changing the physical spaces is actually relatively easy to do – the biggest challenge is taking colleagues on a journey with us, where they evolve their approach to teaching."
>
> Frank Coton, Vice-Principal, University of Glasgow

According to the *McGraw-Hill* Education study, Adaptive Learning technology enables instructors to spend 72% less time on administrative tasks and 90% more time on active learning experiences, while the kinds of insights it offers up should mean much more dynamic learning experiences.

In addition to working with new technology and the so-called "flipped classroom" model, academics will need to adapt to a different power balance within the classroom, which would see students invited to interrogate lecturers' ideas more extensively. "Within the lecture space, academics are completely in control – it's a scenario they control, and many have never put themselves in a position of vulnerability where it's possible they don't know an answer."

This is nothing new, however. We are all becoming increasingly familiar with systems featuring adaptive learning components, highly visible in algorithms that touch our daily lives, by, for instance, managing our personal finances, discovering new medications, and finding us jobs, books, and dates. In an increasingly digital world, such applications carefully learn and organise complex information drawn from the paths of data that follow us in real time and are left behind.

We've all witnessed the power of the *Google* search engine and the sophisticated maths that serves up results, products, and advertisements relating to our search history and online persona. Another example is *Amazon*'s recent patent application for "anticipatory shipping", a system that shortens delivery times by predicting what buyers want before they buy it and shipping products to the customer's general geographic area (possibly even to their door!) before they even hit the "buy" button.

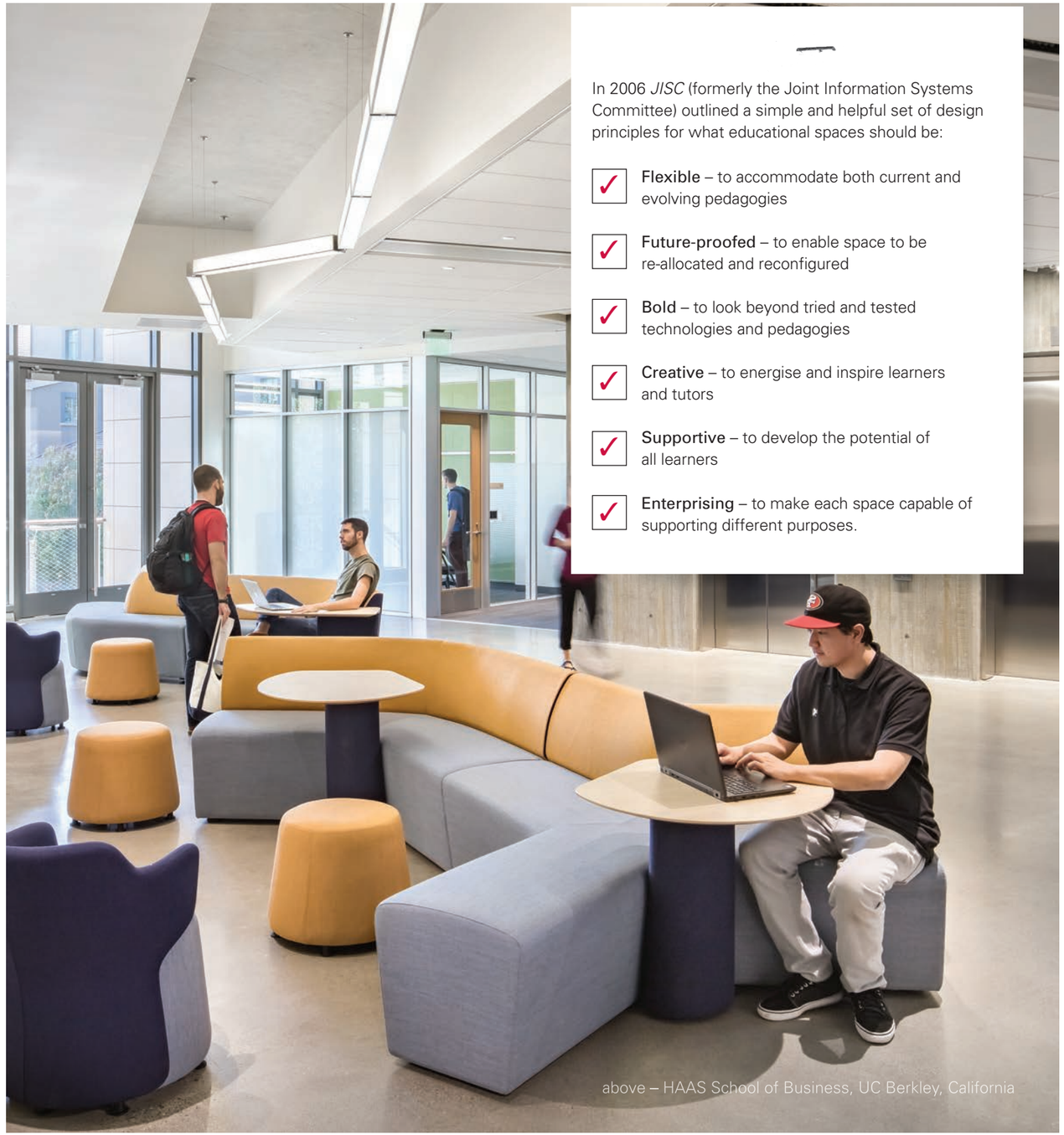
These new developments in the delivery of knowledge still require the classroom and campus to play a huge role, and getting these environments right in the future is likely to demand greater design flexibility. The rapid pace of technological change and varying rates of adoption of new teaching approaches mean the only sensible thing an institution can do now is ready itself for change, with a flexible mindset and adaptable spaces as well as adaptable learning.

Estate managers/space coordinators need to prioritise flexibility: a space that's able to change from a 60-person traditional linear lecture into four separate team workshops within 15 minutes, for instance. This makes truckable furniture, flippable tables, folding walls and wireless BYOD-sharing technology a given for the modern learning and research campus.

Flexibility, the first principle outlined by JISC, is vital. However, Bruce Rodger, Head of Infrastructure, University of Strathclyde, tells us that it can be a bugbear for him:

> "When people say they want flexibility and you ask them exactly how it should flex they don't know. Flexibility always involves compromise and sometimes you break what it was meant to do in the first place."
>
> Bruce Rodger, Head of Infrastructure, University of Strathclyde

Flexibility can be a bind in certain instances. Take, for example, a space designed with a movable partition in the centre so that it can be used as one large or two small rooms. If, in practice, it's only rarely used as one large room, the AV control system will have been overly engineered, the flexible partition will make noise transmission a problem between the two rooms, and two walls won't be available for hanging anything on.



In 2006 *JISC* (formerly the Joint Information Systems Committee) outlined a simple and helpful set of design principles for what educational spaces should be:

- ✓ **Flexible** – to accommodate both current and evolving pedagogies
- ✓ **Future-proofed** – to enable space to be re-allocated and reconfigured
- ✓ **Bold** – to look beyond tried and tested technologies and pedagogies
- ✓ **Creative** – to energise and inspire learners and tutors
- ✓ **Supportive** – to develop the potential of all learners
- ✓ **Enterprising** – to make each space capable of supporting different purposes.

above – HAAS School of Business, UC Berkley, California

The adaptability of a space has an impact on learning efficiencies. A 2012 study by UK-based design firm *IBI Nightingale* working with the University of Salford, UK found that the confluence of classroom design features (such as room orientation, HVAC, acoustics, and furniture) can enhance or set back a student's academic progress by up to 25 percent during the course of a year. The report found that making it easy for teachers to rearrange furniture for different activities was a key factor in improving student learning. The study, which selected 27 schools and surveyed a total of 153 classrooms, identified that children's academic performance was boosted in reading, writing and maths by an average of 16% over the year –and in the most extreme cases by as much as 25%.

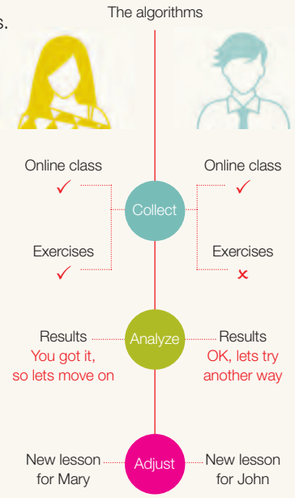
To make this more tangible, it's estimated that the impact of moving an 'average' child from the least effective to the most effective space would be around 1.3 sub-levels, a big impact when pupils typically make 2 sub-levels of progress a year. The impact of the physical space occupied is indeed an holistic experience, in which a full range of factors is in play. Naturalness (light, temperature and air quality) accounts for half the learning impact, with individualisation (ownership and flexibility) and stimulation (appropriate level of complexity and colour) about a quarter each.

The key takeaway for designers? Caroline Paradise, who heads up research and development at IBI Nightingale, says furniture should be specified during design development: "If you get it wrong, it can have a lasting effect on the performance of the students, and it is difficult and costly to change," she says. This approach is the same for businesses and the contemporary workplace. Organisations don't know what's around the corner so are now adopting beta-strategies to workplace estates, allowing them to be more agile in the face of change.

University estate teams are striving for greater efficiency across the campus while retaining high performance, by, for instance:

- Balancing the campus between specialist and flexible space
- Opening facilities to local businesses
- Enabling year round use of the campus
- Striving for space efficiencies via the sharing of services
- Re-planning and reducing private office space.

Adaptive Sequence
Mary & John are classmates.

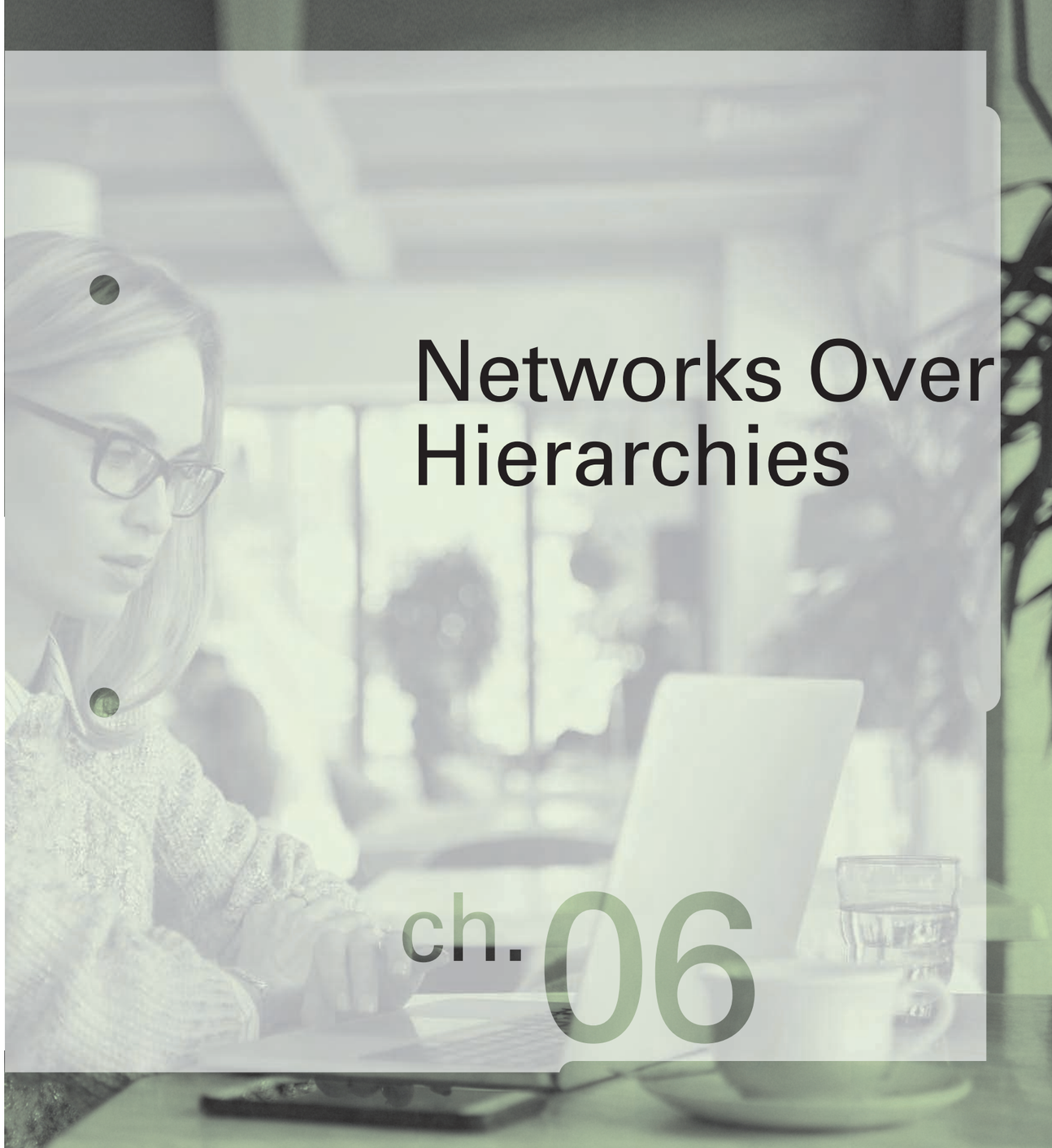


Interactive content
Mary and John are given a maths problem to solve.

Controlled content
The tool 'reads' every they make and collects information continuously.

UH-OH!
Mary finds it easier than John!

Personalised path
Mary will move onto more complex problems and John will revisit the original maths problem.



Networks Over Hierarchies

ch. 06

Networks Over Hierarchies

Organisations have traditionally been structured either hierarchically (many layers of managers, with smaller spans of control), or horizontally (a flat structure with fewer layers of managers, with wider spans of control). Forty years of Harvard Business School research indicates that organisational structure – or lack of it – is (alongside market conditions, consumer behaviour, increased competition and failure to keep pace with technological advances) one of the major reasons why just 12% of the *US Fortune 500* companies of 1955 still survive today.

Organisational structure can play a vital role in the success or failure of any business. Today, the rapid pace of technological change is facilitating a new type of structure that's bringing business benefits to the organisations embracing it, enabling them to be more dynamic and flexible. The networked (or clustered) organisation is connected by informal networks and the demands of the task, rather than by a formal organisational structure, prizing its 'soft structure' of relationships, networks, teams, groups and communities rather than reporting lines.

In 2016, a Global Human Capital Trends report from *Deloitte*, for which hundreds of global C-Level executives were cross-examined, uncovered an increasing focus on the network organisation. Only 14% of executives believed that the traditional organisational model, with hierarchical job levels based on expertise in a specific area, made their organisation highly effective. The report went on to add, "just over 40 per cent of respondents expect they will increasingly place more focus on facilitating the exchange of ideas, the flow of conversations across the organisation, and providing greater autonomy at team and individual levels. This shift from "top- down" to what we might see as "alongside" is a crucial component of the equation." *Deloitte* noted that 37% of the global workforce is already mobile, made up of individuals armed with the tools to work away from a fixed, assigned desk. As that number grows, businesses will naturally adopt a more networked approach to organisational structure.

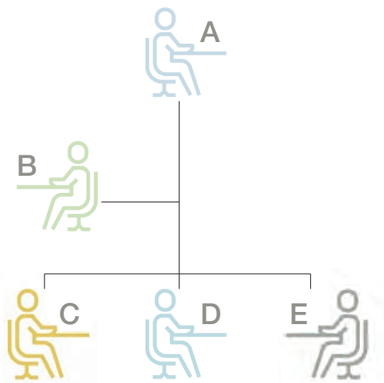


fig 1. How things *were*

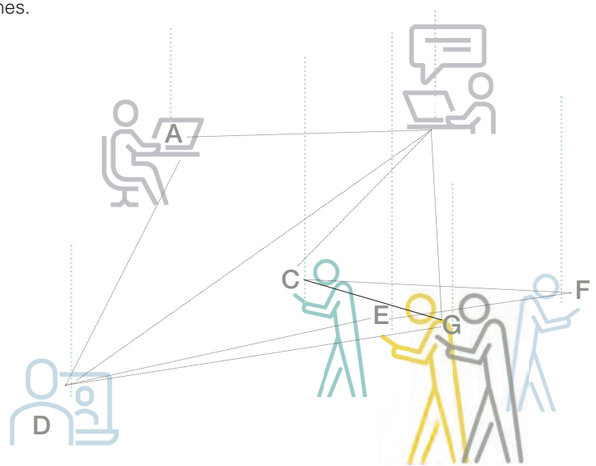


fig 2. How things *are*

How things *work*

- Shared values and culture
- Transparent goals and projects
- Free flow of information and feedback
- People rewarded for their skills and abilities, not position.

The ubiquity of technology in networked businesses is having a huge effect on our workspaces as it enables staff to work anywhere, meaning assigned workspaces are no longer necessary. *Orangebox* specifically addresses this new reality with its Smartworking® portfolio. Smartworking® is defined as a space that allows users to work collaboratively, privately or however they choose, with permission and privacy.

Effective networked structures have proved successful across many industries. To create the most effective teams with the greatest impact, the *US Department of Defence* now undertakes continuous highly detailed analyses of its seven million personnel. These analyses grade every soldier's leadership experience and skills; capture their occupational specialties and detail their experience levels; and enable a complete service history, including degrees and certifications, to be compiled. Over the last decade, this has helped the *DOD* develop the capability to deploy a single individual or a specifically chosen group anywhere in the world, with relative ease.

To help it compete in an increasingly competitive and fast-moving global market, *General Electric* created 'FastWorks', an internal programme based on the principles outlined by Eric Ries in 'Lean Startup.' The programme established smaller, cross-functional product development teams that were given a level of financial autonomy unusual in a business of *GE*'s size. Part of the ethos of FastWorks is to involve customers with the design process from the beginning: teams create a prototype to share with customers, solicit their feedback, and then adapt and adjust the product to meet their needs. FastWorks has reduced the development time and costs for new *GE* products from diesel engines to refrigerators.

As Gerry Taylor outlines in his book, *That's not a stick, that's a log!*, agility is vital in our rapidly changing business landscape. The ability to move from hierarchy to network depends on a business's willingness to become more culturally open and inclusive. A 2016 article in the *Financial Times* asked, "If bankers abandon it, who will be left to support the ancient and august institution of the men's suit?" This referred to a memo sent to all 237,420 *JP Morgan Chase* staff asking them to abandon the suit for 'business casual' style – part of a cultural shift in response to increasing competition from potential *Fin-Tech* giants *Google* and *Facebook*.

The rapid advance in technology is one of the key factors enabling businesses today to vastly improve their structural networks, with many of them reaping significant organisational benefits as a result. But is this the case in Hi-Ed, or are professors and faculty staff still stuck in their offices? And if so why? While preparing this report, it's become clear that academics are often reluctant to leave the sanctity of their individual 'culturally hierarchical' offices and work in a more exposed, open-plan space.

This is a difficult issue, and the twelve universities *Orangebox* visited while compiling this report have all had to approach it with caution. Traditionally, each member of academic staff has had their own office, a place in which to hold meetings with other academics or students, where they can focus undisturbed and where they feel 'at home', surrounded by their possessions and research reading materials.

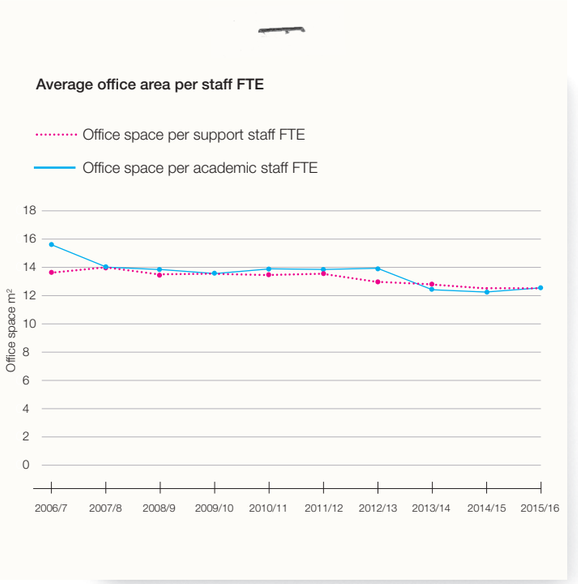
But, as with traditional workplaces, university offices often have low occupancy rates: "In some universities, desk utilisation at 25% is regarded as good," says Ian Whittle, an architect with *FaulknerBrown*.

Why give teaching staff expensive offices if they barely use them? According to *AUDE*, approximately 15% of a university's space is occupied by academics and researchers as office space, with *BCO*'s 2017 report, 'Space on Demand,' showing that the average university desk is occupied for just 48% of office hours. In a bid to increase efficiency and lower estates costs, estate managers are therefore challenging (and starting to overcome) academics' reliance on the office.

Non-traditional pedagogy requires non-traditional learning spaces. According to the *US National Survey of Student Engagement* (*NSSE*), contact out of the classroom between students and faculty is a critical driver of student engagement. Yet only 40% of first year undergraduates have had such an experience. Faculty offices can be isolated, inaccessible, or intimidating (even the name sounds off-putting!). Hi-Ed institutions are, as a result, rethinking their spaces to allow faculty to get their work done while also being accessible to students. Students and educators need to use in-between spaces such as lounges, courtyards, and atriums to interact with and learn from each other. These spaces can then be tested, improved and expanded upon.

Conversations about the need for new academic workspaces are inevitably driven by those who supply or manage the space (estates professionals and architects), rather than by the academics using them. Attempts to transition teaching and research staff away from individually allocated, cellular offices to open-plan spaces have provoked strong reactions, with some academics asserting that this reflects – and is part of – a challenge to the very definition of academia. But in fact a change in space might well improve their wellbeing and effectiveness at work, as, according to *Gallup*, only 33 percent of university faculty and staff are currently, "involved in, enthusiastic about, and committed to their work and workplace."

As the graph below shows, the space given to full-time university staff has already decreased to a per employee level similar to that of commercial offices – an average of 12.5m² average sq/m per employee in 2016.



What's changed within academia is how work is being done/how the space is being used. According to *The Economist*, the average number of authors per academic paper grew 38 percent (from 3.2 to 4.4 contributors) from 1996 to 2015: this implies that more collaborative and flexible spaces are needed.

The Smartworking® approach offers both privacy and collaboration, and enables a seamless transition between the two types of space, via defined adjacencies. Universities would do well to follow the example of business and explore how this design strategy could work for them (although understanding the needs of the users and the institution and designing spaces to suit their needs is of course paramount). A university marketing coordinator will clearly need a different set of spaces to that required by a psychology professor, and what's good for Oxford Brookes may be very different to that required by University of the Arts, London.

A 2015 multinational *Steelcase/Ipsos* study revealed that switching attention between tasks and managing distractions takes time and energy, and can affect the quantity and quality of work. People in open-plan offices, it revealed, lose up to 86 minutes a day as a result of disturbance. During one of my university visits, the academic taking me on the tour explained that 80 academics were sharing an open-plan office space, something he felt was detrimental to both his productivity and his personal wellbeing.

Noise is, clearly, particularly problematic for academics. Ringing telephones and people chatting can distract them from tasks requiring deep concentration, complex processing and creativity. In his 2011 report 'The Physical Environment of the Office: Contemporary and Emerging Issues' Matthew C Davis concluded that users of open-plan spaces who spend a large amount of time in 'Focused Attention' suffer from higher levels stress and are less productive. A 2006 Association of University Teachers report found that only 10% of scholars are able to work uninterrupted in their institutions: this causes them considerable stress, especially when work demands are high.

University management should therefore work closely with academics to develop spaces and flexible working initiatives that support different types of working and accommodate individual preferences. If you try to implement change you have to be inclusive, and be open and honest about the reasons behind it.

Change programmes need to focus on the effectiveness of a space for its intended uses and users, rather than simply looking for cost savings. At the University of Sunderland, they chose to open up their faculty spaces with a Smartworking® programme that saw space per person lowered from 11m² to 7m². With building costs at approximately £100 per square metre, the cost savings were obviously significant. What made the programme a success, however, was the fact that, having been consulted from the outset, staff clearly understood the university's desire to make the space more inclusive and connected, so quickly bought into the cultural change.

When Loughborough University initiated a more open-plan programme for faculty staff, it achieved substantial increases in user satisfaction. At the *Department of Civil and Building Engineering*, for example, it resulted in an increase of over 20% in satisfaction with facilities (from 71% to 93%), and a 50% improvement in satisfaction with environmental conditions (from 36% to 86%). Whilst such assessments are subjective, these substantial rises in user satisfaction are clearly significant.

'Flexible Working at the University of Minnesota' is a campus-wide activity-based workplace programme developed by *Work+* to offer the university's staff greater flexibility and more choices as to where to work. In initial pilots with the *Office of Human Resources* and *University Facilities groups*, the programme enabled staff to become more responsive and effective in 30% less space, increasing productivity by 14%.

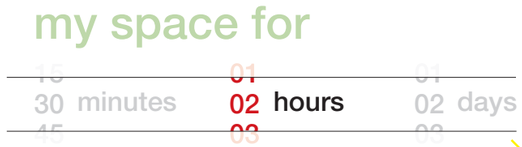
At the latest campus building for New York's Cornell Tech University, the spaces for learning, teaching and collaboration have had a rethink.

> "Being in bigger interactive spaces encourages expansive thinking, while being in a box of a room encourages box thinking,... sometimes you need to be in a box to concentrate, but to always sit in a little box is a problem."
>
> Dan Huttenlocher, Founding Dean and Vice Provost, New York's Cornell Tech University

Within the primary academic building, no one has a private office, and opaque walls are few. The only spaces faculty members can call their own are lockable storage cabinets, with carts for equipment. Traditional classrooms are also few, as the Cornell Tech curriculum privileges projects over lectures. Instead, people will be able to choose where and how they like to work, from open-plan spaces by the windows to a roof deck with a garden to huddle rooms for groups of up to five.

Similarly, the University of Northampton's new city campus has no allocated offices for staff. Library Manager Dave Felton said, "It's a change of culture, one we sought buy-in for from staff members from the beginning. But we're on a train heading in a certain direction, and if academics don't like the journey they can get off and leave at any time." Since the new space was opened, two academics have left the faculty, something Felton sees as resulting from their reluctance to change rather than from a damaging design strategy. "If academics need quiet space then we have plenty of quiet spaces that they can book, for 10 minutes or for two weeks. We're working in a much more efficient way."

Paul Temple, Reader Emeritus at the UCL Institute of Education, says, "Universities are possibly the least intensively used space you can imagine." Hi-Ed can learn valuable lessons from the experience of businesses in this area. In 2017, *Land Securities* went on a dramatic workplace change programme that saw them move from eight floors to a single floor, reducing their footprint by 26%. After a *Leesman* study deemed that the tasks of 65% of staff could be fulfilled without an allocated desk, the decision was taken to not provide them with a set workspace, taking an activity based-working approach instead. This enabled *Land Securities* to accommodate its 450 staff in a reduced space in which perceived productivity nevertheless leapt from 51% pre-move to 87% post-move – the largest rise in that index ever seen by *Leesman*.



Such stories clearly show where our spaces are going, and a lot has been written about the shift in Millennials' aspirations, away from desiring a corner office and company car towards less tangible things such as company purpose, training and improved wellbeing and services. For many of the academics we've interviewed, however, having an office – a personal space for their books and for study, where they're left alone to focus – is as important as it's ever been. As a result, the university may well prove to be the last bastion of the personal office. But that doesn't mean that estates have to be rigid: large flexible pods can provide serenity but also be moved to other spaces in a matter of hours.

Universities and colleges therefore need to be cautious about going entirely open-plan, as an allocated office can help to attract a highly sought-after academic and the research funding that may come with them. We believe we're likely to see Hi-Ed institutions starting to leverage access to personal offices (rather than the free fruit or beer used by the tech industry) to attract and retain talent.

Although there are some direct similarities between the networked journey Hi-Ed and private businesses are on, the cultural and occupational differences between them means there is no single 'best' answer, no one-size-fits-all formula. When designing for Hi-Ed, it's important not to throw the baby out with the bathwater, ejecting academics from their personal office into an open-plan space that hasn't been specifically designed to offer them the right degree of acoustic and visual privacy when their work demands that they focus. Every Hi-Ed cultural change programme needs to clearly articulate what the organisation is trying to achieve, and offer a vision of how its people could improve their wellbeing, engagement and productivity by working in new ways within new spaces.

In conclusion, university faculty and academic environments can learn from the strides taken in private businesses, while private businesses can learn from Hi-Ed's more networked and open study environments, softening the landing for iGens entering the workplace.

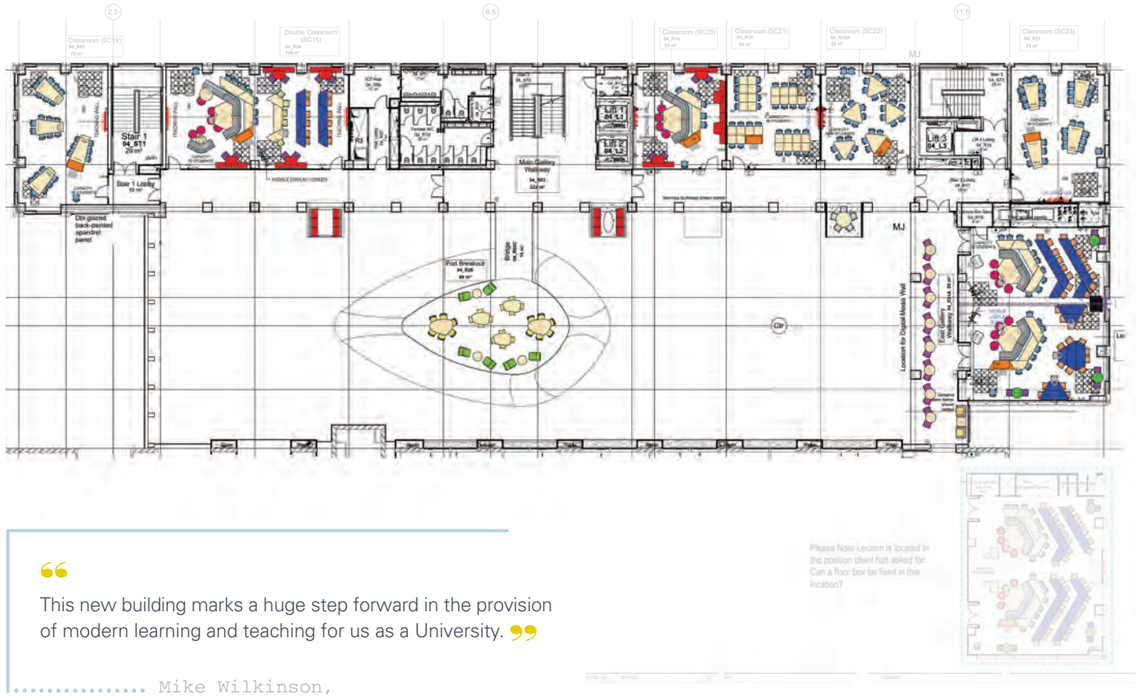
Spark Building, Southampton Solent University Case Study

Designers: Scott Brownrigg
Dealer: Southerns Broadstock
Project Size: 108,000 sq.ft.

Architects Scott Brownrigg and university FF&E specialists Southerns Broadstock designed The Spark, Southampton Solent University's new flagship campus.

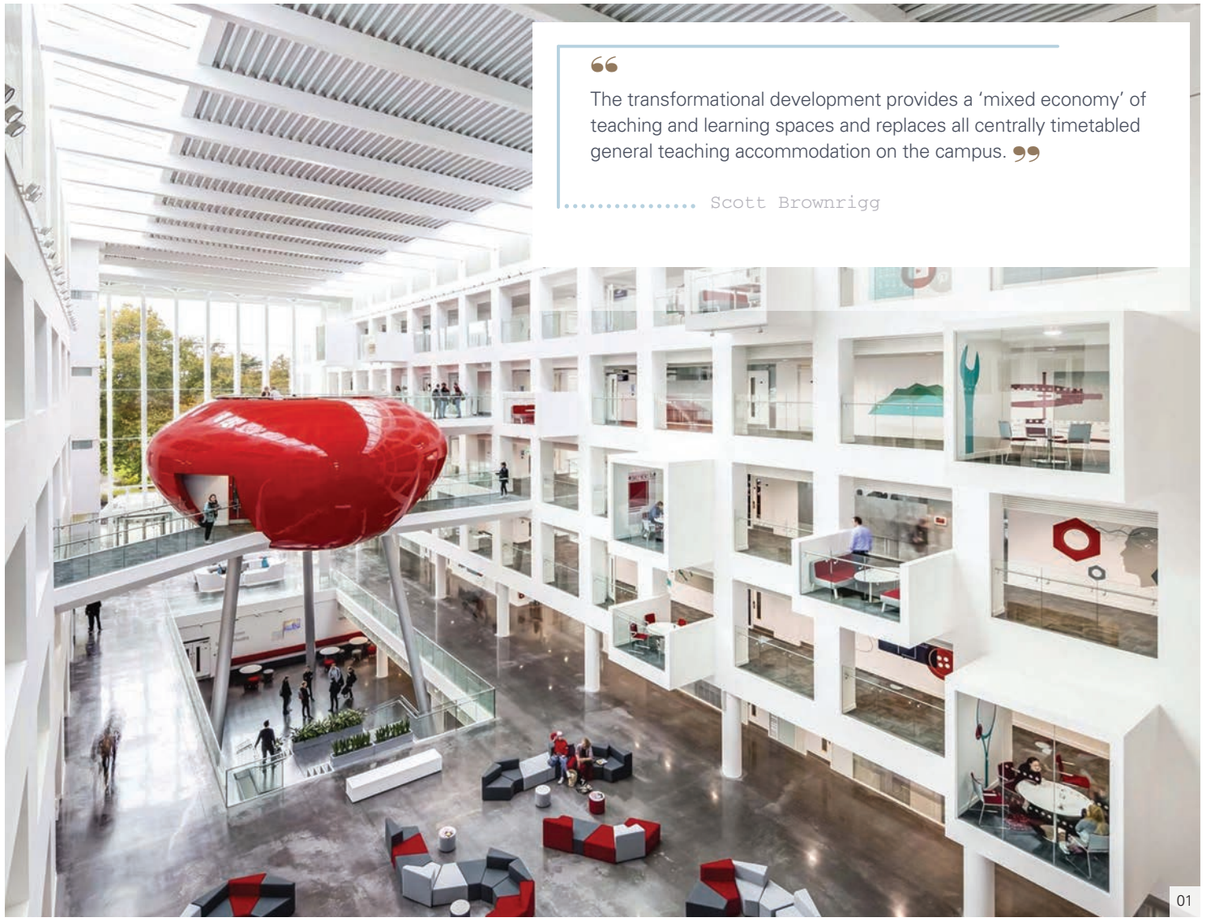
A curvaceous 20-metre long bright red 'pod', raised on slender angled columns, lies at the centre of the multi-faculty building's light filled, five-storey-high atrium. Linked by glass-sided bridge walkways to the main building, this eye-catching sculptural form is designed to capture the imagination of all those who see it.

The unique classroom designs within The Spark make it stand out from spaces found in the majority of other universities. A strategy of adaptability over traditional didactic learning spaces was adopted from the beginning. According to Southerns Broadstock, who were key to helping design these classrooms, "*The Spark embodies the University's vision in its iconic design and use of space and is the first academic building with 84% of classroom space dedicated to non-traditional learning.*" Director of Estates, David Coreless says, "*The internal configuration of varying classroom types and sizes and informal and formal social space demonstrates the [designers'] understanding of the needs of teaching and learning for a modern university.*"



> This new building marks a huge step forward in the provision of modern learning and teaching for us as a University.
>
> Mike Wilkinson,
> Deputy Vice-Chancellor Professor

> The transformational development provides a 'mixed economy' of teaching and learning spaces and replaces all centrally timetabled general teaching accommodation on the campus.
>
> Scott Brownrigg



01

02

01. Here the building's huge arrival space provides the perfect welcome for students and staff travelling through the campus. Contained meeting spaces and workspaces cascade from the floors above, allowing varying levels of privacy for each space. **02**. Soft collaborative work settings complement flexible tabling and seating in the classrooms, suiting didactic, collaborative and social study.

HAAS School of Business, UC Berkley, California Case Study

Designers: Perkins & Will
Project Size: 80,000 sq.ft.

> The nature of work has changed and this building reflects how collaborative work has become.
>
> Rich Lyons, Dean of HAAS School of Business

Completed in 2018, the HAAS School of Business campus has transformed the way the University of California, Berkley thinks about academic space. The new six-story building features adaptable classrooms and private study spaces, a café, a 300-person event space, and, importantly, unassigned in-between spaces where students can meet and collaborate.

Orangebox's **Away from the Desk** was used alongside other Smartworking products to create large open collaborative spaces right across the building and wider campus, enabling students and faculty members to connect easily. The integration of arms and tables into the **AftD** configurations means students not only benefit from the ergonomic support offered by **Away from the Desk**, but also from working surfaces that can help them study more effectively.

01. Using softer, more adaptable furniture typologies has allowed the business school to make the most of previously overlooked spaces. Here, walls used as writable surfaces, and collaborative seating used for group think work effectively make this an open classroom.

“We didn’t have nearly enough breakout rooms or flexible classroom space. Now the honeycomb workspaces facing the courtyard are places where you can see people at work day and night. I know people talk about a building “arms race” among business schools, but we have grown a lot and we needed space that would allow us to catch up.”

Rich Lyons, Dean of HAAS School of Business

The 80,000 sq.ft. building houses 850 new classroom seats in eight tiered classrooms and four flat flexible classrooms, 28 student meeting rooms, a top floor convening space capable of hosting 300 people, and a café with an outdoor terrace. It doesn’t, however, contain a single staff office. Ample breakout rooms sit alongside every teaching space, and at the heart of each floor generous and flexible intermediate spaces facilitate group discussions, casual meetings and spontaneous activities.

02

02. Individual lounge chairs couple with each other to make small, informal, semi-private meeting spaces. This typology again utilises space that would otherwise be underused.

Career Tinder –

New Attitudes to Work

ch.07

Career Tinder – New Attitudes to Work

Today, not only are there no longer jobs for life, there probably aren't even jobs for a decade… So, what are current attitudes relating to having a career?

Education is the number one driver of productivity, business, and economic prosperity. But, more than this, a world-class education system is essential for social justice and a fairer society, a society in which prosperity is shared by all.
CBI Report 2018

We live in an economy of driverless cars run by algorithms and built by robots. Students are spending years (and a fortune) studying for degrees and gaining knowledge that could be obsolete within five years. It's a perfect storm.

All around us, previously worker-heavy industries are metamorphosing: according to a study by Ball State University, almost 9 in 10 jobs that have disappeared in the US since 2000 have been lost to automation. And, as Barack Obama said in his presidential farewell speech in Chicago, the next wave of economic dislocations, "will come from the relentless pace of automation that makes a lot of good middle-class jobs obsolete."

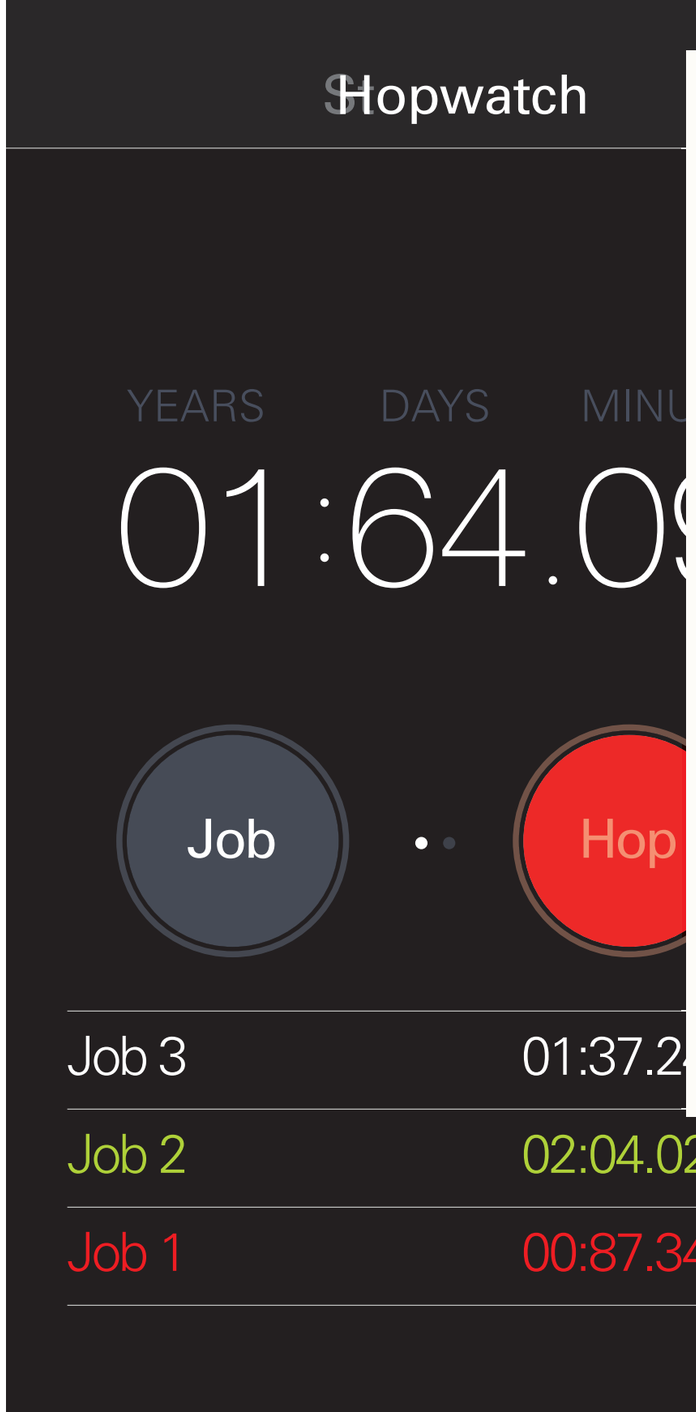
A report released in November 2017 by *McKinsey Global Institute* found that up to 800 million global workers are going to lose their jobs to new technology by 2030. And, contrary to expectations, further education offers no sure fire way to escape the algorithms eating our jobs. It may be comforting to think that the first rung of 'redeployment' will be low-skilled, low-wage occupations, but the risk is actually pretty evenly spread between the unskilled and highly skilled/the low paid and highly paid.

The Changying Precision Technology Company's workshop in Dongguan produces parts for cell phones. These days, the arms on the automated production lines are robotic rather than human – able to work non-stop, day and night. With each of the 10 automated production lines being checked and monitored by just three employees, and the computer control system monitored by a handful more, the factory now employs just 60 staff where previously there were 650, and the manager says this figure is likely to drop to 20 in two years' time. It's not just manufacturing jobs being lost to automation, service industries are losing jobs too, and they're increasing profits as a result. After it installed 14,000 self-service kiosks in place of cashiers, McDonalds' revenue is reported to have gone up by 5-7%. It seems the algorithm never forgets to ask if you'd "like to go large?"

Of course, automation's threat to the labour market isn't a new phenomenon. When William Lee invented a mechanical knitting machine in the late 1500s, Queen Elizabeth I refused to grant him a patent, fearing the impact of the device on the hand-knitting industry. More than two centuries later, fearful of losing their jobs, Luddites (organised bands of English workers) destroyed more sophisticated versions of Lee's machines.

Obsolescence, retraining, redeployment… The employment landscape seems increasingly bleak, especially as we humans face an ever-mounting retirement age. Our educational system therefore needs to prepare young people for the new reality of the employment market, and ensure their focus isn't just on short-term goals.

How they'll acquire the skills they're going to need is a source of some debate. The *Deloitte* Global Millennial Survey shows 30% of them believe business has the greatest responsibility for preparing workers, while 25% believe that it's the responsibility of educational institutions. Perhaps because many iGen respondents are still in school or have only recently graduated, the younger generation see things rather differently: 36% of them put the onus on colleges, universities and secondary schools, and 25% on employers. There's a clear disconnect among employers and young employees regarding business' role in developing talent for 'Industry 4.0'; a difference of opinion that needs to be resolved for the good of everyone.



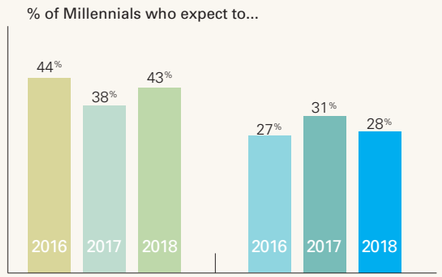
In "Robot-Proof: Higher Education in the Age of Artificial Intelligence" Joseph E. Aoun, the president of Northeastern University in Boston, outlines a new learning model he calls 'humantics'.

Humantics blends technical and social skills, and in the process develops 'higher-order mental skills' in students, which will allow them as workers to easily toggle between various jobs and tasks. Humantics, Aoun says, "is the purposeful integration of technical literacies such as coding and data analytics with uniquely human literacies such as creativity, entrepreneurship, ethics, cultural agility, and the ability to work in diverse teams."

For too long, he believes, higher education has "debated a false dichotomy" that pits the liberal arts against the sciences and technology (and, lately, the liberal arts have been losing as science and technology majors have become more popular). "Machines are not original or flexible thinkers," Aoun said, so, "the jobs that only humans can do will also require judgment, ethics and critical thinking."

The goalposts are also moving in the minds of the new generation: in 1997, 44% of young people had a Saturday job, but by 2015 this had fallen to just 18% because of the new focus on gaining academic qualifications.

While we all understand that a 'job for life' is no longer a thing, organisations are finding the rapid turnover of young employees alarming. *Deloitte* surveyed 10,455 Millennials born between 1983 and December 1994, from 36 countries, and found that 43% of them plan to leave their current jobs within two years, while only 28% plan to stay beyond five years. In the USA, Millennial job-hopping is said to cost the economy $30bn every year. And that's just Millennials: what of the iGens?



iGen workers are arguably adopting the same attitudes… According to Punit Renjen, the CEO of *Deloitte Global*, "These cohorts feel business leaders have placed too high a premium on their companies' agendas without considering their contributions to society at large. Businesses need to identify ways in which they can positively impact the communities they work in and focus on issues like diversity, inclusion and flexibility if they want to earn the trust and loyalty of Millennial and iGen workers."

In the USA, more than 60 million iGens (born between 1996 and 2004) will soon flood the workforce, and their expectations for their jobs are high. A recent survey from The National Society of High School Honors found that more than 75% of respondents anticipate going to university, and want to be working in a related and meaningful field within six months of graduation. They prioritise a healthy work-life balance and want to be fulfilled at work. The study warns that employers might find it difficult to realise these ideals in the office.

Deloitte's annual Millennial and iGen survey has pulled into sharp focus the priorities and aspirations of our young people. Priorities have evolved, or at least been delayed by financial or other constraints: having children, buying homes, and other traditional adult "success markers" no longer top the list of ambitions. (Figure 1) Instead, travel and seeing the world tops the list (57%) of aspirations, while slightly fewer than half said they wanted to own a home (49%). They were also more attracted to making a positive impact in their communities or society at large.

So that's the expectations of graduates on the verge of flooding the labour force: what about those of employers? The 2018 *CBI* Survey found over three quarters (79%) of businesses expect to increase their number of high-skilled roles over the coming years, and two thirds (66%) are concerned that there'll be a lack of sufficiently skilled people to fill them. Now, more than ever, the UK needs a world-class academic and technical education system to prepare young people for a rapidly changing world and labour market.

Levels of satisfaction with the digital and IT skills of young people are high, with 70% businesses satisfied or very satisfied. The biggest concern is that around two in five businesses are not satisfied with the aptitude/readiness for work of applicants (44%), or with broader skills such as communicating and problem solving (38%).

The businesses that flourish in future markets will be those that consider the desires or preferences of their graduates. While you can't solely focus on these young individuals, how your business behaves in order to attract, harness and develop Gen I is going to be vital to your success.

A number of developments are skewing the young labour market, and will soon re-shape how we attract and retain talent. The *Switch* jobs app is designed to let you quickly and easily browse through job postings, and works much like *Tinder*: swipe right to like, left to pass. Hiring managers do the same, browsing through candidates' anonymised profiles and scanning information about their professional backgrounds and credentials. When an employer 'likes' your professional profile, notifications are sent right to your phone, and when there's a match you and the recruiter are placed in direct contact.

These instantaneous apps for talent scouting use the same cognitive manipulation as dating profiles or video games, feeding us dopamine and keeping us stimulated and coming back for more. Inevitably, they're going to dramatically change the way iGens think about a career. In fact it's likely that job-hopping every six months will become a thing, making the lives of Internal Culture and HR managers a misery.

In 'Tinderization of Feeling', a report for *The New Inquiry*, Alicia Eler and Eve Peyser explore the concept that *Tinder* teaches 'emotional disassociation.' According to the authors, *Tinder* users – mostly Millennials – are required to make decisions so fast when using the app that it almost turns the process into a game. The authors see *Tinder* as a "metaphor for speeding up and mechanising decision-making" – a process that makes humans robotic.

"Swipe right, match, date, f**k, unmatch, rematch, repeat." We may be in danger of this happening with the labour market. Industries including recruitment may shortly suffer from change that comes, 'Slowly, slowly, then all at once' – with default settings being flipped. While this gamification is likely to be bad for businesses looking to nurture talent for the future, what about business looking to fulfil short-term gigs?

Labour Xchange, an app supported by *Community* (a trade union), seeks to link workers with employers who need temporary workers, who will be paid at least the living wage (£10.55 an hour in London and £9 an hour elsewhere in the UK). Workers signing up to the app indicate their skills and when they are available, and then wait for employers to contact them.

It's not only graduates or younger generations using these types of tools. Last year *Tinder* launched a business equivalent called *Ripple*, aimed at expanding users' professional lives through the discovery of like-minded professionals and the maintenance of existing networks. The service is already being used by millions of people.

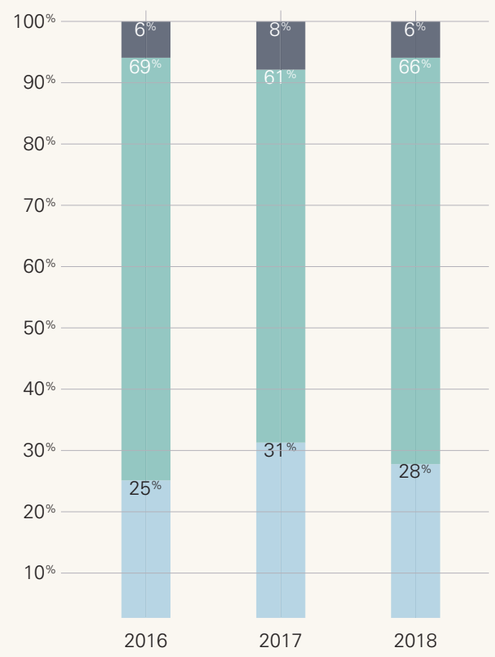
What does all this mean for future workers? Jean-Philippe Michel, a Canadian career coach, says, "They need to shift from thinking about jobs and careers to think about challenges and problems." While this may be easier said than done for, say, Gen X or for the older Millennials, younger people, who are already narrowing down their university studies, will probably find this way of thinking more intuitive.

To future-proof against the hungry algorithms nibbling away at our purpose, we need to rethink, says Michel. Rather than encouraging each person to choose a profession – say, architect or engineer – he works backwards from the skills that they want to acquire. So instead of them saying, 'I want to be a doctor', he'll aim to get them talking about a goal – in this case using empathy in a medical setting. Ultimately, developing precise goals will help teenagers plan for a 'portfolio career' made up of disparate projects, roles and industries.

As a result, businesses that are able to adapt and make their organisational structure more open and flexible and their approach to project teams more fluid, are going to be more appealing to iGens.

How many businesses are using spatial design to attract and retain iGens? Perhaps creating a space that blurs the lines between work and personal life? Making an environment 'sticky' is a challenge shared equally by Hi-Ed and the workplace. An environment that's rich in hospitality design cues and innately softer and more approachable will go a long way in attracting talent.

Employer confidence about accessing high-skilled employees in the future (%)



The Campus in the Community

ch. 08

> “Is the university in the city, or part of the city? ...We make the case for the civic university working with others in the leadership of the city in order to ensure that its universities are both globally competitive and locally engaged.”
>
> Goddard, Kempton and Vallance, authors of The Civic University, at Newcastle University 2013

The idea that the university campus can play a key role in the health of a city or community isn’t new, but it has a growing importance for all in society, young and old. The campus is a unique spatial typology characterised by a mix of features, including learning environments, workplaces, sports facilities, public and cultural spaces and R&D centres. As our learning becomes more networked, individual and digitized, it makes sense to harness these features for the benefit of the entire community.

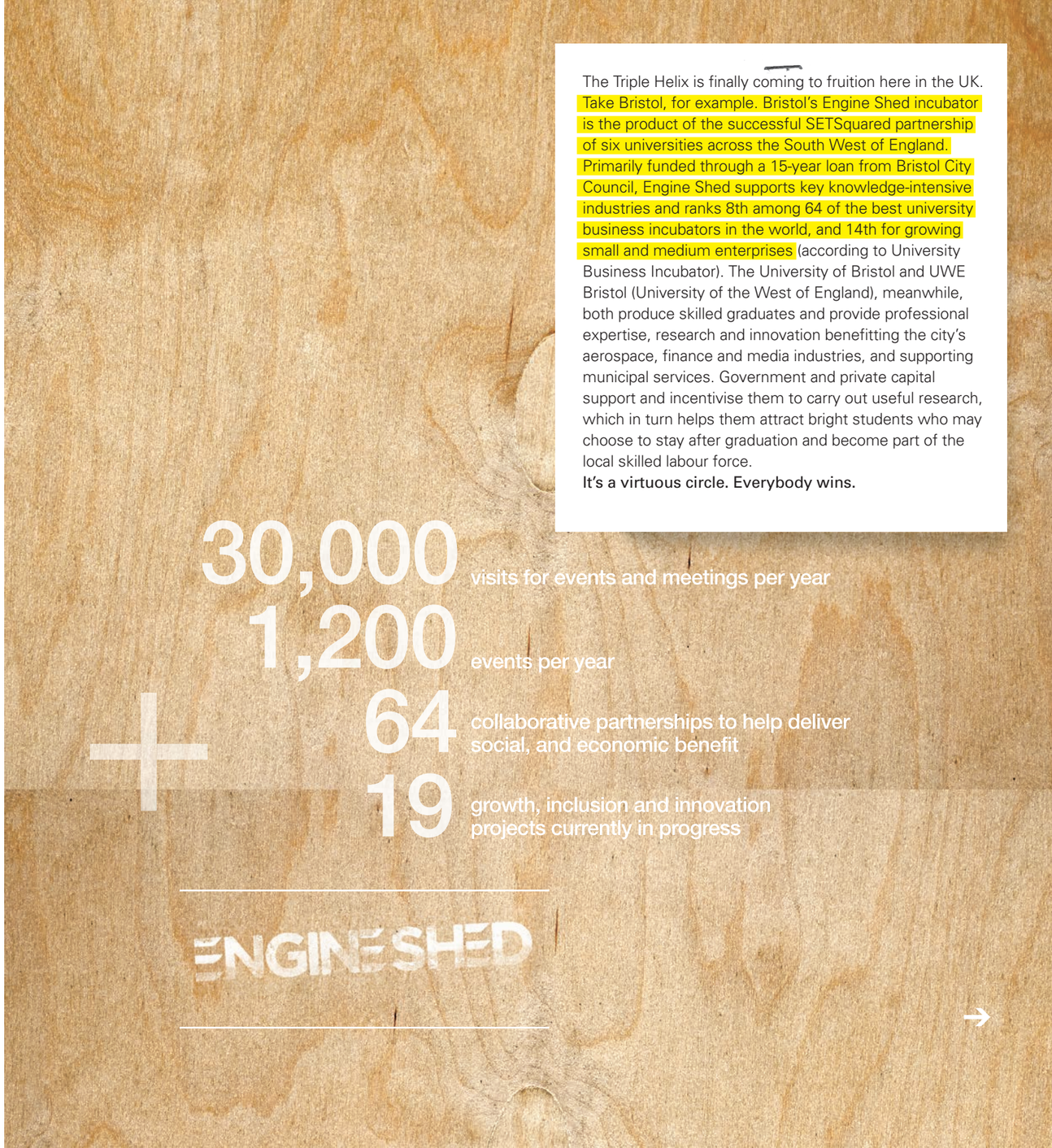
This ‘caring is sharing’ approach is something we’re becoming familiar with in the business world. Over the last decade, the rise of the co-working space has empowered small businesses to leave the kitchen table and become part of a thriving community of support and acceleration. Inspired by this bottom-up approach, corporations (companies with 1,000+ employees) are now joining the flood of those using co-working spaces. Commercial property and facilities management company Cushman & Wakefield now leases 240,000 square metres across London, making it the capital’s largest office occupier after the UK Government. (As we go to print, this is being challenged by WeWork, who claim to be the largest.)

From 2017-2018, WeWork saw the number of corporations using its services double to more than 1,000, generating, according to Recode, around 25% of its annual revenue. “*WeWork* is not a real estate company, it’s a community company – a platform for small businesses and now larger ones that really recognise the need for people to be part of a community. “ says Eugen Miropolski, European Managing Director of *WeWork*.

Universities are increasingly looking to cooperate with others to fund and build impressive shared facilities. The Sugden Sports Centre was jointly funded by a trust set up in 1997 by Manchester Metropolitan University and what was then the University of Manchester Institute for Science and Technology (now part of the University of Manchester). Rather than building a sports centre each, the institutions decided to create one that could serve the needs of both.

The University of Worcester has taken the idea of sharing one step further, partnering with Worcestershire County Council to create The Hive – said to be Europe’s first fully integrated, jointly funded university and public library. The Hive is home to libraries, council customer services, meeting rooms, study areas and a café: “Public library non-fiction is shelved alongside university texts; study spaces and computers are shared; teenagers and children do homework alongside university students writing assignments,” explains a spokeswoman for Worcester. The Chair of the Office for Students, Michael Barber, said, “We’ve got to make sure we hang on to that social purpose. It is absolutely vital. We are there as a public good.”

This social purpose reflects a societal shift known as the ‘Triple Helix’, a term coined in the ‘90s by Professor Henry Etzkowitz of Stanford University, relating to the shift from the industrial society’s dominant industry-government dyad to the knowledge society’s university-industry-government triad.

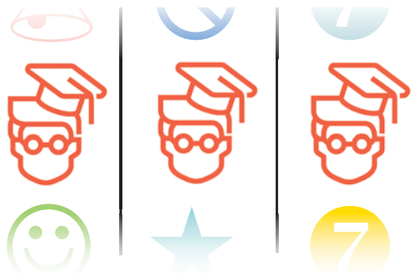


Lincoln University, like many other universities, now has an open campus. A public footpath to the city centre passes through it, encouraging non-students to interact with and engage with the university (they can even take a guided tour) to the commercial benefit of the cafés, shops and restaurants on campus. Lincoln's Vice-Chancellor, Professor Mary Stuart, suggests that to be fully integrated into your community you need to branch out. The university holds a pop-up social science park on a different local housing estate each year, and also offers a regular law clinic (something Stuart says is hugely important following government legal aid cuts), where parents can get advice on dealing with their children's schools. Locals are encouraged to pop into the law clinic at the university to follow up. "Doing these things in community settings helps break down barriers in a way that trying to force people to come onto campus wouldn't," Stuart says. "Growth in an area is great, but if it's not inclusive growth, then you create greater disparity, and we all know what that's done to our world at the moment."

Lincoln University has worked with many local companies to help them set up new graduate training schemes, and runs innovation centres providing opportunities for graduates to work in new businesses. Stuart says around 45% of graduates stay on and work locally – and that many who move away do so with regret. "It is difficult because we are having to create those graduate jobs," she explains.

City universities, which are proven to improve social mobility, healthcare provision and a nation's economic strength, will play an increasingly important role in supplying talent for mass urbanisation. The number of cities in the world has skyrocketed, and by 2025 it will be common to find previously littleknown cities whose economies equal that of a country. Take Tianjin in China, for instance. In 2010 its GDP was $130 billion, about the same as Stockholm's, but by 2025 McKinsey estimates that it will be $625 billion, roughly that of Sweden.

Many studies point to the link between a more educated populace and higher national productivity, while the Italian-born American economist Professor Enrico Moretti has found that an increase in the supply of university graduates within an area results in higher wages for workers of all education levels. Moretti noted that areas given land grants for universities by the US government over a century ago still have a more educated workforce today. Universities UK found that for every 100 jobs at a university, 117 are created in the local economy. A city with a thriving student population and university investment tends to fair better than one without them.



Many metropolises around the world aren't just home to one Hi-Ed institution, however, and where a number of universities are in competition their community spirit is sometimes dampened; they become reluctant to share. Richard Leese, Leader of Manchester City Council, has noted a, "very significant change in culture at universities over the past decade," adding that previously, "Manchester Metropolitan and the University of Manchester had a fortress mentality; if they could have built walls around themselves and isolated themselves from each other and the rest of the city they would have done so." Hostility from the local community made it hard to get anything done, he said. "Universities were contributing to Manchester being a worse place. Now they're contributing to it being a better place." Health Innovation Manchester now regularly hosts workshops with experts from Manchester Metropolitan University and the Universities of Salford, Bolton and Manchester, to explore innovative ways to increase digital literacy skills throughout the city.

Our buoyant Hi-Ed sector appears to be successful at building strong community links by offering extended services and sharing facilities. Increasing numbers of institutions take their responsibility as civic actors seriously, participating in community initiatives, contributing to economic development, supporting local schools, and offering research and other services (such as opening up their libraries).

Liz Barnes, vice-chancellor and chief executive of Staffordshire University, says our universities should be "intellectual hubs" in their city, citing Staffordshire's on-campus Meet the Professor lecture series, which is open to the general public: "You get people from all walks of life, including people who live on the street." Such initiatives, together with the volunteering work (such as law clinics) done by students, and open access to campus infrastructure like cycle paths, gymnasiums and parks, make an important contribution to community life.

> "Our ambition is that local people refer to us as 'our university' – not just the students, but everybody in our area."
>
> Liz Barnes, Vice-Chancellor and Chief Executive of Staffordshire University

In 2019, Amazon's announcement that it will invest $700 million to retrain a third of its US workforce (100,000 employees) in new technologies is the latest reminder that the much-heralded future of work is well underway. A recent McKinsey survey of 15,000 executives showed that they increasingly see investment in retraining and up-skilling existing workers as an urgent business priority. This offers a clear opportunity for our university and further education sector.

None of us know exactly what our future will hold. According to the World Economic Forum, 65% of children entering primary school today will be employed in jobs that don't currently exist. We do know, however, that the world is increasingly made up of knowledge-based economies, and that reskilling our workforces will inevitably be of critical importance to the success of our communities in the AI-integrated future.

To facilitate such reskilling and meet both our lifelong learning needs and the ever-changing requirements of employers, universities need to become beacons of opportunity within their cities and regions. To do so, they may need to consider new approaches.

The subscription university. The frequency with which iGens are due to change jobs and careers, coupled with changes in technology and business models, will require individuals to continuously up-skill themselves. The subscription university would re-imagine higher education by allowing students to dip in and out of the curriculum throughout their lives to gain knowledge and skills as and when needed. Such an arrangement might allow students to pay an annual subscription fee during their lifetime. The Monterrey Institute of Technology in Mexico is due to be trialling this with their alumni community.

Degree apprenticeships. An experiential university combines academic study and work experience, allowing students to mix theory and practice as part of their undergraduate experience. This not only prepares students for the needs of the workplace, it also allows employers to evaluate students for potential fit before hiring them for a full-time position.

Business sponsorships. An apprentice has full-time employment status rather than student status, and receives at least an apprentice's minimum wage. Degree apprenticeships are co-designed by employers, ensuring that apprentices are equipped with the skills that employers need, boosting their employment prospects. A 2016 KPMG report indentified deeper employee loyalty with this approach.

Universities and colleges often set the social, cultural and intellectual tone of cities and towns, making them livelier and more international. And as we enter the AI future of work those that manage to root themselves deeply into their communities will also generate social and economic benefits for all.

MK:U, Milton Keynes, UK
Case Study

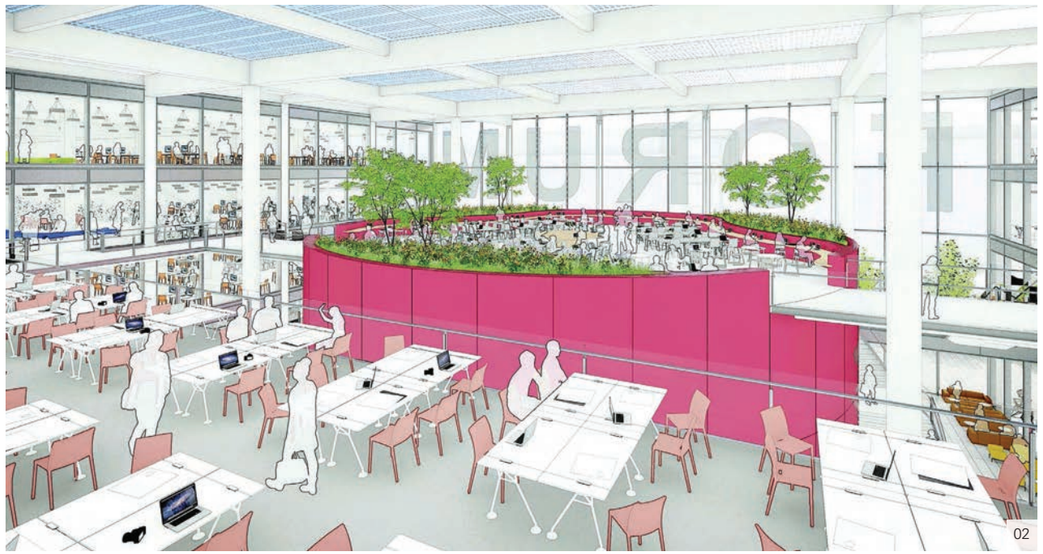
Completion date: 2023

MK:U, yet to be completed, will be Britain's first digital university, specialising in cybersecurity, robotics and artificial intelligence. Its academic partner is Cranfield University, the postgraduate science and business school based between Milton Keynes and Bedford. Through its ambitious curriculum focused on skills for the digital economy, MK:U will honour the innovative spirit of nearby Bletchley Park, the birthplace of modern computing, and will also further Milton Keynes' pioneering work in 'Big Data', transport innovation and urban design.

MK:U's distinctive undergraduate programme will include accelerated two-year degrees, intensive three-year degrees with project placements, part-time/apprenticeship pathways, and short courses/continued professional development. The university will be inclusive and promote social mobility, and will have an emphasis on experiential learning, via a flexible educational style and delivery.

MK:U has been designed to go beyond the scope of a traditional university, and will use its own University Quarter and the wider city as a 'living lab' to test out new concepts and ideas, and inspire the town's students and citizens. Headline subjects will include robotics and artificial intelligence; digital and cyber; smart cities; business and entrepreneurship; and design thinking.

01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> MK:U will be a key force in turbo-charging the economy of our region, and help realise the world-leading potential of the Oxford-Cambridge Arc. Our degrees will constantly evolve as the economy evolves through training and retraining, with our graduates being ideally placed to fill national skills gaps.

Professor Lynette Ryals, MK:U's Chief Executive, and Pro-Vice Chancellor of Cranfield

01. MK:U plans to reach 'beyond the scope of a traditional university', focusing on vocational and STEM subjects relating to digital, robotics and artificial intelligence. **02**. The forum at the heart of the scheme will feature a drum-shaped red lecture theatre within the glass entrance lobby, reminiscent of a giant friendship bead and welcoming to students, visitors and locals. **03**. Rather than an enclosed campus, the bold new urban frontage creates an open permeable quarter with strong and clear connections to its surroundings.

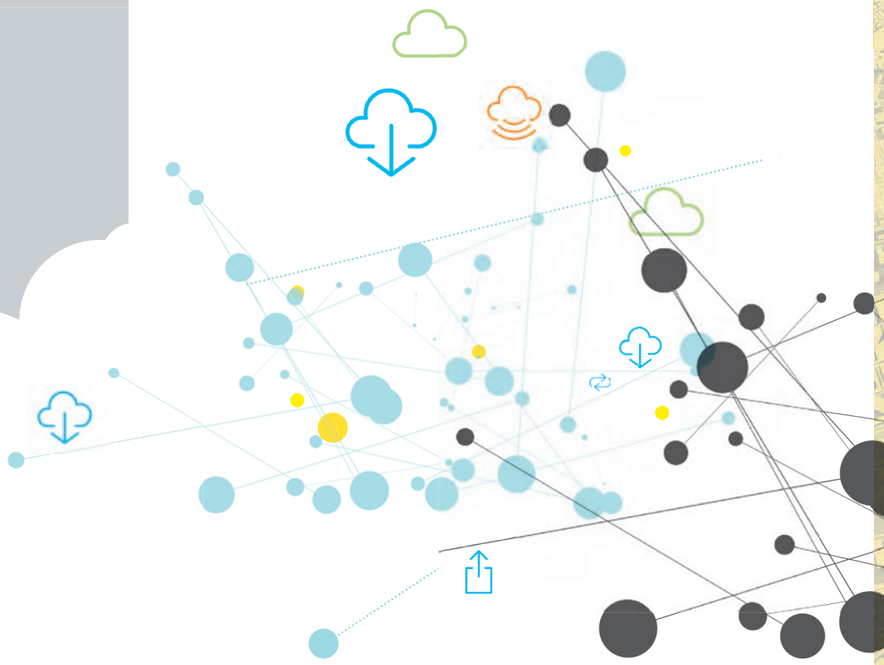

03

ch. 09

Vertical Learning & Mass Urbanisation

Today, 55% of the world's population lives in urban areas, a proportion that's expected to increase to 68% by 2050.

2018 UN DESA Report.



Vertical Learning & Mass Urbanisation

> Can we try to guess at what life will be like in the future and design for it? Or, perhaps better, can we imagine or envisage a pattern of urban development and city construction sufficiently flexible in its very nature to absorb and ride with the changes in the pattern of human life and living which will occur within the life of these massive objects that we have to build?
>
> Lord Richard Llewelyn-Davies, Professor of Architecture at The Bartlett, University College London and designer of Milton Keynes, 19 May 1965, House of Lords

Civic universities in tall multi-storey buildings have historically been rare in the west, but are becoming more common as institutions look for efficient and cost-effective ways to serve their urban students. It's likely we'll need to build upwards more in the future, so how do we get the most out of our vertical spaces?

Mass urbanisation is well underway, and humankind's seemingly unstoppable population growth is fuelling the rise of mega-cities across the world. In Nigeria the median age is just 18, and across all of Africa's 54 countries it's under 20, with the fertility rate of the continent's 500 million women standing at 4.4 births according to 2018 United Nations figures. A 1960 street map of Lagos, Nigeria's capital, shows a small western-style coastal city surrounded by a few semi-rural African villages. In just two generations its population grew 100-fold, from under 200,000 people to nearly 20 million. Today it's one of the world's top ten largest cities, sprawling across nearly 1,000 sq km. And by 2100, it's projected Lagos will be home to more people than either California or Great Britain are home to today.

This story is not unique. All over the western and developing world we can observe the mass urbanisation of our species, and the momentum shows no signs of slowing.

Mega-cities promise a buoyant job market, social mobility, and endless shared services such as energy production and seamless transport links, along with higher quality education, culture and entertainment.

Today, 55% of the world's population lives in urban areas, a proportion that's expected to increase to 68% by 2050 according to the 2018 World Urbanisation Prospects study by the UN. Our educational institutions need to prepare themselves. According to Higher Education Statistics Agency (HESA), 72 of the country's 131 universities are in our 15 largest metro areas. Even here in the UK, with mild urbanisation, the flow of graduates to our capital (and other metropolitan areas) is already striking: for every London-based graduate leaving the city for Wales, nine travel in the opposite direction; for Scotland it's 10, and Yorkshire 15.

Universities today are typically horizontal organisations of purpose-built structures, connected by their open spaces of quadrangles and courtyards. These connective out-of-class spaces are essential components of the university environment, playing a key role in creating the social connection and discourse vital to the university experience. According to research led by the London School of Economics Estates Division and the Higher Education Design Quality Forum (HEDQF), out of 1,000 students in the UK, 76% ranked campus facilities as either 'quite' or 'very' important. In the best campus examples, open space connections create neighbourhoods that enhance campus identity and character.

As our cities become more densely packed, such generous horizontal spaces are going to become a luxury. In cities like Chicago, Singapore and Tokyo, we're already starting to see vertical solutions for efficient educational learning, and many more universities are going to have to develop upwards rather than outwards in future. But such towering expansion needs to be carefully judged.

The Wabash Building for Roosevelt University, Chicago was designed by VOA Associates and completed in 2012. The domineering 32-story, 143-metre-high expansion was a response to a growth in enrolment, and the transition from a part-time commuter student base to a full-time traditional urban university. This shift demanded new thinking if they were to provide an adequate quantity of large classrooms, science laboratories and administrative spaces and a student union and residential facilities, while at the same time improving the quality of academic instruction and student life.

To create a university campus, a series of vertically connected neighbourhoods was created through atriums and social space on each floor, facilitating the out-of-class opportunities so essential to the university experience. Neighbourhood spaces begin at ground level, and include student services, a student union, academic spaces and student residential facilities.

London-based Heatherwick Studio collaborated with Singaporean firm CPG Consultants on the Learning Hub, a new eight-storey teaching facility at Nanyang Technological University. To avoid creating, "miles of corridors linking box-like lecture rooms," the building was designed as a cluster of tapered towers surrounding an expansive atrium. The idea was to combine learning facilities with social spaces including balconies, gardens and open-air corridors, providing as many opportunities for staff and student interactions as possible.

Designer Thomas Heatherwick said, "In the information age the most important commodity on a campus is social space to meet and bump into and learn from each other." The 12 towers, which each taper inwards towards the base, accommodate a total of 56 oval classrooms. According to the designers, the non-hierarchal round shape – without any corners or obvious fronts or backs – will encourage more collaborative learning. "The Learning Hub is a collection of handmade concrete towers surrounding a central space that brings everyone together, interspersed with nooks, balconies and gardens for informal collaborative learning," said Heatherwick.

NTU professor Kam Cham Hin observed, "By bringing people and their ideas together, NTU can spark future innovations and new knowledge that increasingly happen at the intersection of disciplines." Students can access the university from any one of twelve separate entrances, and the openness of the structure is an intentional metaphor for student-centred, accessible learning. The building is in effect a series of alcoves where students meet, with minimal face-to-face teaching presence (staff use the student spaces, and have no dedicated facilities of their own). Learning instead tends to be facilitated by external, technology-driven content. As the university's representative told me, "People see MOOCs as a threat: we see them as an opportunity."

The rounded shape of the external and internal structures is symbolic, representing, as Heatherwick says, "a corner-less space, where teachers and students mix on a more equal basis", with, "teachers being a partner in the voyage of learning, rather than the master executing a top-down model of pedagogy."

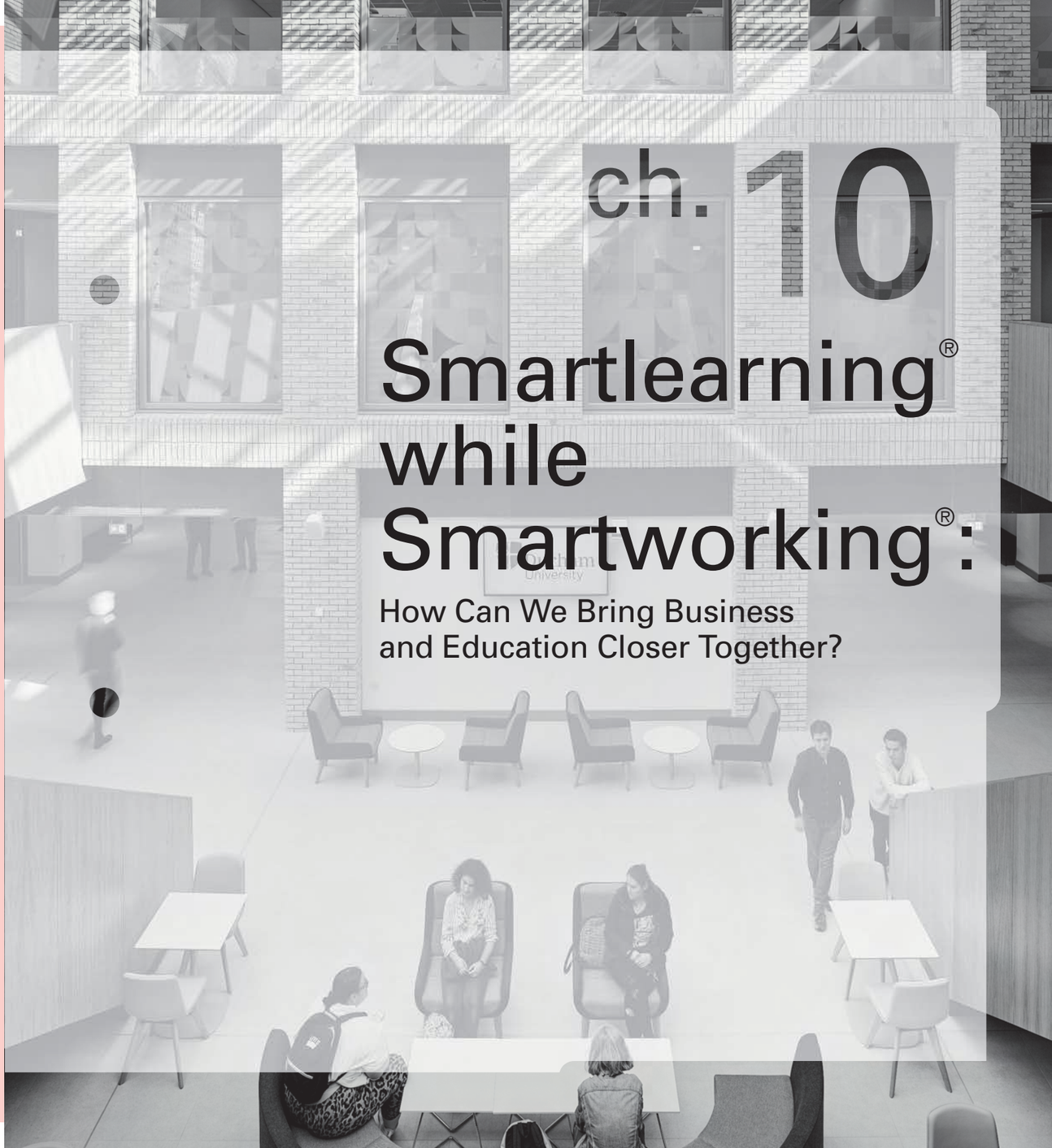
Heatherwick's Learning Hub – Singapore Mode Gakuen Cocoon Tower is located in Tokyo's distinctive Nishi-Shinjuku high-rise district. It contains three different schools: Tokyo Mode Gakuen (fashion), HAL Tokyo (IT and digital contents) and Shuto Iko (medical treatments and care). The building's innovative shape embodies a unique "cocoon" concept. Architects Tange Associates say, "Embraced within this incubating form, students are inspired to create, grow and transform." "… Unlike a traditional, horizontally laid out school, we have designed a high-rise vertical campus that can hold approximately 10,000 students. We believe that a school structure should be more than just classrooms. It should also incorporate multi-purpose corridors and a schoolyard-like space, or atrium, where communication can flourish naturally. With this in mind, we have designed three-storey-high atriums, which we call the student lounge."

"Vertical architecture will continue," Tange said. "Fifty years ago nobody thought a vertical school could function. Today, we have that."

We need to become better at connecting people in our tall buildings: there's plenty of anecdotal evidence denouncing the performance of tall workplace buildings, alluding to poor colleague connectivity and collaboration. The lessons we're starting to learn from these vertical campuses will surely aid us in the development of living and learning environments that are fit for the rapidly approaching future.

While vertical campuses will inevitably challenge planning norms and some cities' default settings, we see them as catalysts (and templates) for cosmopolitan urban regeneration. Living within an ever-decreasing footprint is going to present a challenge to urban populations, and we need to design vertical spaces that promote community, in which users/residents don't feel as though they're living on top of each other, even though they technically are.

From the educational examples we've highlighted, success seems to lie in the creation of spaces that are seamless and human, featuring large atriums with shared tables, alongside pockets of privacy in secluded corners. Such spaces make it easy for people to encounter and collaborate with each other, while allowing them room to breathe and be on their own.



ch. 10

Smartlearning® while Smartworking®:

How Can We Bring Business and Education Closer Together?

Smartlearning® while Smartworking®: How Can We Bring Business and Education Closer Together?

The work landscape is about to change radically. *McKinsey* predicts that AI will replace up to 800 million jobs by 2030, and, as previously noted, according to the *CBI* 65% of children entering primary school today will end up working in roles that don't yet exist. So how are our universities and corporations meeting the challenge of preparing students for this new world of work?

In the West, our prestigious universities and colleges are in danger of creating a surplus of graduates armed with dinosaur degrees – qualifications that may have little or no relevance or practical application in the AI-centred workplace. A 2017 report by the *US Chamber of Commerce Foundation* (USCCF) Center for Education and Workforce found that while 96% of chief academic officers at universities say they're effectively preparing students for work, just 11% of business leaders strongly agree. This is a monumental gulf.

A 2018 *Ernst & Young* University study showed that only 36% of those who studied humanities, culture and social sciences and 41% of those studying science and maths felt their degree was relevant to their current job, compared to 87% of nursing and 80% of education students. It's of course to be expected that graduates on vocational courses gain skills and knowledge that make them more resilient to technological revolutions in the labour market, but even their skills are falling short in the eyes of potential employers.

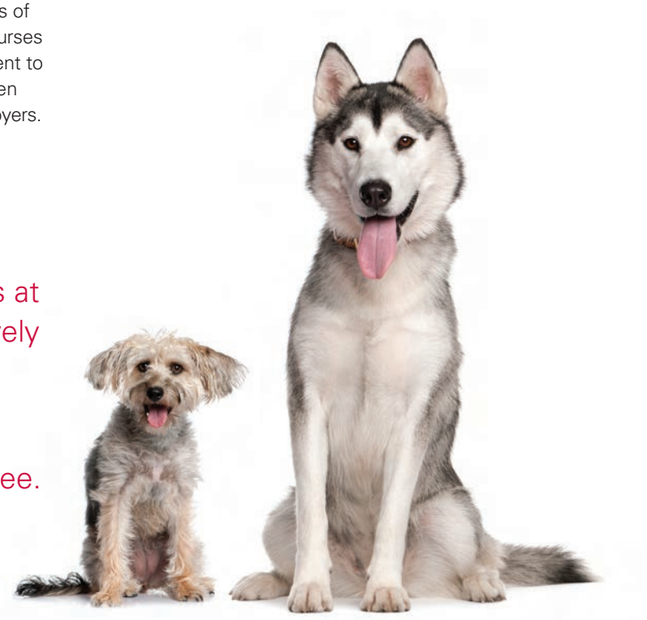
> "Australian universities are coming under increasing threat from changing learner preferences, new competitive models and international competition...
>
> ...they need to move now to ensure they meet the needs of a changing society and changing economy. To succeed, they will need to deconstruct the higher education value chain, offering new formats such as unbundled degree programmes, continuous subscription-based learning and just-in-time learning options."
>
> Catherine Friday, Ernst & Young
> Oceania Education Leader

This begs a question: do the modules and curricula we're offering now have too short a sell-by date? While Universities UK claims that with each cohort of graduates Hi-Ed institutions are adding over £60bn worth of skills annually to the UK economy, what value are they equipped to add to the economy that emerges after the 'perfect storm' caused by AI?

96% of chief academic officers at US universities say they're effectively preparing students for work,

just **11%** of business leaders agree.

A 2017 US Chamber of Commerce Foundation (USCCF) Center for Education and Workforce report



Some universities already offer world-class AI and technology programmes. Those that don't need to start developing them now. While iGens and subsequent generations may find they're most likely to thrive if they equip themselves to do the things that machines cannot, a sound education in artificial intelligence and familiarity with working with machines is likely to benefit everyone. AI will inevitably lead to the creation of previously unknown jobs, such as machine regulators and emotion engineers, and to succeed and move forward into industry 4.0, students may need to understand, at some level, how machines perform. Those specifically interested in working in AI could pursue a wide range of exciting new career possibilities focused on data science, machine learning or advanced statistics.

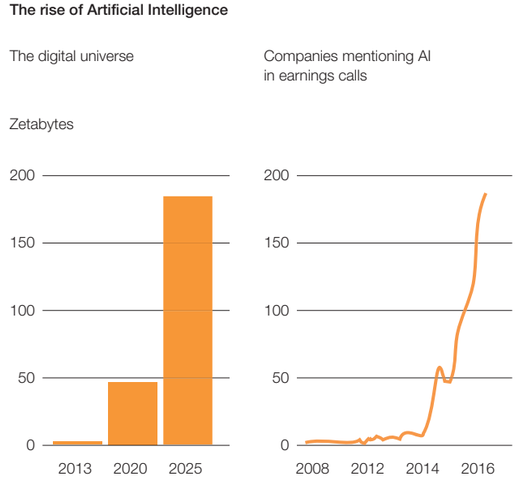
The market disruption caused by AI, coupled with the yawning gap between graduates' skills and the skills (both hard and soft) potential employers are looking for, means that in future more businesses may need to consider developing their own universities or working with institutions to develop tailored courses to meet their needs.

If students can be exposed to and become more sympathetic towards industry, and gain a better grasp of business culture, working practices and new technologies, their transition into work should be more seamless, helping them become effective more quickly. "There will most likely be much more work-integrated learning in tertiary courses, which is not necessarily students doing work experience but firms co-developing the curriculum and actually getting students to work through complex real-life problems under the mentorship of academic and industry leaders." says Catherine Friday of *Ernst & Young*.

But it's not just students who need to be educated more effectively for the new world of work. A labour skills market in flux and an ever-retreating retirement age mean that we all need to rethink what we mean by education, training and skill acquisition. According to the *World Economic Forum*, more than half the global labour force will need to start reskilling and reinventing how they earn a living in the next five years. That's a drastic reshaping of the workforce; one that universities, if they're to remain relevant, could and should help businesses prepare for. *Amazon*'s use of advanced warehouse technologies illustrates how robotics, cognitive computing, and flexible human workforce strategies can combine to maximise efficiencies and productivity, while creating new temporary and permanent jobs.

To meet increased demand during the holiday season, *Amazon* expands its workforce by roughly 40%, with around 120,000 temporary hires who can be trained quickly because of robotic and cognitive technologies. These tools, such as automated training screens, "smart" tape dispensers, and robotic pallets, reduce new hire training from six weeks to as little as two days according to the 2017 *Deloitte* Global Human Capital Trends report.

The rise of Artificial Intelligence



Adapted from *The Economist*

Despite the fact that half of the entire planet's labour market is going to need to retrain, the world's largest tech education platform has yet to emerge. "By 2030, the largest company on the internet, larger than *Google*, *Apple* and *Facebook*, will be an education-based company that we haven't heard of yet. Education remains the largest online opportunity that nobody has cracked the code for yet," says the DaVinci Institute's Thomas Frey. "The average person entering the workforce in 2030 will have to plan to reboot their skills eight to ten times throughout their working life. Reskilling needs to become super-efficient."

Employment in the age of rapid automation relies heavily on continual skills development, especially as more traditional roles become augmented by new tech. "The individual has to be willing to take the first step and embrace change. If workers want to future-proof their careers, they need to evolve," says Chris Gray, Brand Leader at *Manpower UK*. Jobs for life are, for the vast majority of us, a thing of the past. We face a future where we may have to change expertise multiple times over the course of a multi-role career. As Robin Chase, former CEO and founder of *ZipCar*, puts it, "Our parents had one job, I will have seven jobs, and our children will do seven jobs at one time."

Where our expectation used to be that our employers/the government/our universities would equip us for employment, the demands of the new world of work are going to require us to take the responsibility for reskilling and remaining relevant into our own hands. Education/Qualifications will no longer be a brief section on a CV, to be skim-read before heading to the all-important Work Experience section, but will instead be integrated within Skills and poured over in order to evaluate a candidate's ongoing commitment to reskilling and adapting to meet the demands of the new workplace.

> We are entering a new paradigm where people are now in charge of their own employability; that's a huge disruption...
>
> ... we used to think employers, unions or government were in charge of reskilling. It no longer works that way.
>
> Jean-Marc Tassetto, ex-head of Google France and co-founder of Coorpacademy

Employee learning and development is set to become (if it isn't already) the most pressing issue facing organisations. According to *Deloitte*, in 2013 23% of US employees left their jobs citing the lack of opportunities for professional development and training. The very best organisations already understand the need for reskilling, and are implementing strategies on continual learning development.

> Employers must prepare themselves for changes in the world of work by putting learning and development.
>
> Lizzie Crowley, Chartered Institute of Personnel and Development (CIPD)

By thinking ahead, anticipating what's coming and pumping money into training today, employers will drive a return on investment tomorrow.

"The pace of change and product cycles and skills demand in the economy are moving more quickly than traditional university processes and program development can keep up," said Northeastern University's Dr Sean Gallagher. Organisations taking this issue seriously and looking for the most efficient and effective way to upskill their workforce may therefore decide to either bring the continual learning 'university' in-house, or partner with an institution and design their own curriculum.

In-house Universities

Corporate universities are nothing new. Two of the earliest examples are Hamburger University, established by *McDonald*'s in 1962, and *GE*'s Crotonville, founded in 1956 (the oldest corporate university in the US). A survey by the *Boston Consulting Group* (*BCG*) found that the number of formal corporate universities in North America doubled between 1997 and 2007, to around 2,000. Since then, *BCG* believes, they have continued to spread globally, with more than 4,000 corporate universities now in existence.

Corporate universities these days maintain a focus on company culture and history, while also aiming to equip graduates with the creativity, flexibility, innovation and adaptability demanded by industry. Their distinguishing features are, firstly, a dedicated facility or platform (whether built of bricks or housed online), and, secondly, a curriculum tailored precisely to the company's overarching strategy.

"The world is changing quickly," says Rainer Strack of *Boston Consulting Group*. "Each firm has specific challenges, be it financial crises, the rise of digital or artificial intelligence, or increasing globalisation." Business schools can, he says, "be too standardised." Having training and development under the auspice of a central, in-house facility makes it easier to focus on a firm's distinct needs.

The activities of corporate universities run by high profile, cutting-edge companies tend to grab the headlines. *Apple*, for instance, has poached renowned thinkers such as philosopher and author Joshua Cohen to be part of the faculty at its employee university, while *Pixar* is renowned for offering an eclectic list of free classes includes sculpting, painting, ballet and liveaction filmmaking. Meanwhile more mainstream corporate universities, such as *Deloitte University* and *General Motors Institute*, confirm the concept's breadth of appeal.

... corporations are investing in groundbreaking institutions to ensure that their workforce has the skills their businesses require.

... a curriculum tailored precisely to the company's overarching strategy.

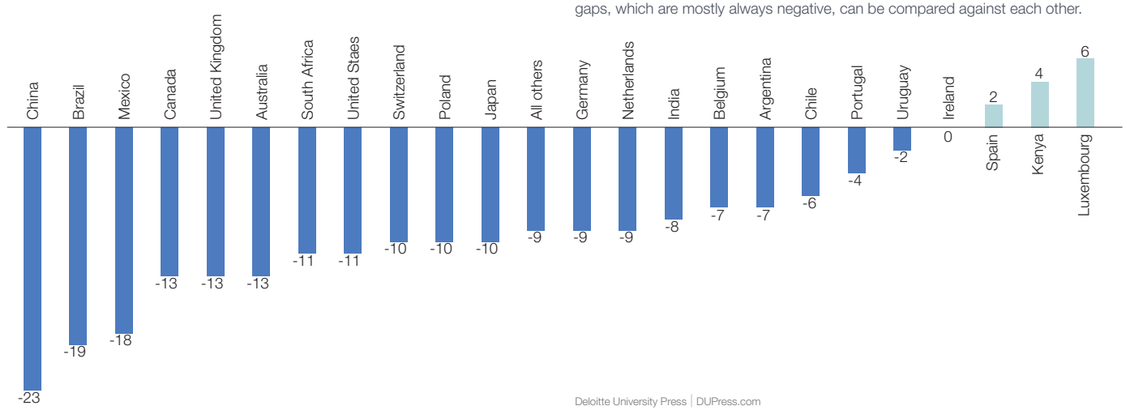
Other corporations are investing in groundbreaking institutions to ensure that their workforce has the skills their businesses require. In 2013, recognising that its legacy businesses were fast becoming obsolete, *AT&T* launched a massive programme aimed at rapidly reskilling its staff with skills in cloud-based computing, coding, data science and other technical capabilities. The new programme featured strong incentives, linking learning to performance reviews and offering employees $8,000 tuition grants. Half of the 280,000 employees at *AT&T*, where the average tenure is between 12-22 years, opted to take the company up on its training for newly created roles, and from January to May 2016 employees who'd been retrained had moved into half of all technology management jobs at the company and received 47% of all promotions. Within three years of adopting the programme *AT&T* had reduced its product development cycle time by 40%, getting projects to market more rapidly and starting earning revenue 32% earlier than previously.

Sir James Dyson of *Dyson Ltd* says that the fact the UK requires 10 times as many engineers as it did 10 years ago means the private sector needs to help plug the engineering skills gap. "We are competing globally with Korea, Japan, Taiwan and Singapore. It's all the major technology nations and we have got to be better than them."

Over the next five years *Dyson*, which is seeking to double its engineering workforce to 6,000 by 2020, is investing £15m into the brand new *Dyson Institute of Technology* at its campus in Wiltshire. The institute took its first 25 students in September 2018. The students – who don't pay any fees – will earn a salary and work alongside *Dyson* engineers on upcoming products. The degrees will initially be awarded by Warwick University, but *Dyson* is applying for powers from the Department of Education to create its own, fully-fledged university.

Urgency versus Readiness: Who is leading, who is lagging?

Capability Gap Index (readiness – urgency)



The Human Capital Capability Gap Index.

The *Deloitte* Human Capital Capability Gap Index is a research-based index that shows HR's relative capability gap in addressing a given talent or HR-related problem. It is computed by taking an organisation's self-rated "readiness" and subtracting its "urgency," normalised to a 0–100 scale. For example, if an organisation feels that an issue is 100% urgent and it also rates itself 100% capable and ready to address the issue, the capability gap would be zero. These gaps, which are mostly always negative, can be compared against each other.

Deloitte University Press | DUPress.com

Partnerships

In the last decade there has been an explosion in the number of partnerships and research deals between companies and universities. Back in 2015, in phase one of its campaign to bridge its skills gap, *Dyson* backed the first engineering degree for 20 years at Imperial College London. The MEng course, developed with *Dyson* engineers, is designed to offer a constantly evolving, future-proofed curriculum.

Dyson isn't the first company to collaborate with a university. In 2010 the new engineering building at the University of Lincoln was part-funded by *Siemens*. More recently, *Unipart* joined forces with Coventry University to develop the Advanced Manufacturing and Engineering Institute (AME), heralded as the UK's first 'Faculty on the Factory Floor' and bringing together the best in academia, industry and R&D in a live manufacturing environment.

In Huddersfield, just around the corner from the *Orangebox* Design Centre and Showroom, *3M* has partnered with the University of Huddersfield to create the *3M* Buckley Innovation Centre (3MBIC). The centre aims to break down the barriers between business and the university, facilitating knowledge transfer and stimulating innovation and regional regeneration.

The brand new USW (University of South Wales) Exchange, sponsored by *Barclays* – and close to the *Orangebox* HQ – is a one-stop-shop for businesses wanting to tap into talent at the university, providing business support and advice while offering a unique student experience.

Digital ties are also being created. In 2013, *Udacity* moved away from direct partnerships with universities to form the Open Education Alliance in partnership with *Google*, *AT&T*, *Nvidia* and *Intuit*, aimed at bridging the technology skills gap in today's workforce. While the effectiveness of these courses is still to be measured, *Udacity*'s partnership with leading tech companies has enabled it to brand itself as the learning content aggregation platform for STEM topics.

Future Communities

Here East, in London's Queen Elizabeth Park (or the Olympic Park, as many will know it), is right at the cutting edge of university and business integration. The transformation of the 2012 Olympic Media Centre created a multi-disciplined digital centre of excellence for London, in which shared services, cafés, restaurants and social working spaces help foster strong connections and shared values between its businesses and educational institutions. The 1,200 ft sq space sees University College London, Loughborough University and Staffordshire University collaborating on projects with business tenants including *BT Sport*, *Matches Fashion*, *Plexal*, *Scope*, and *Ford & Barrett*.

> "We can marry up companies with university syndicates to help solve any problems we are tackling...
>
> ... it's our role to know which companies are coming in and what the universities are up to so we can put people together for mutual benefit."
>
> Gavin Poole, Chief Executive Officer of Tech at Here East

Professor Liz Barnes, Vice Chancellor and Chief Executive of Staffordshire University, says: "We've been impressed with the rapid transformation of the Here East super-campus environment, which will position us alongside a diverse community of exciting business start-ups and creative industries."

Clearly, education and business share similar challenges, and innovative approaches such as those seen at Here East have a key role to play in forging closer ties and long-term cooperation that will benefit everyone. Companies will gain greater access to cutting-edge research and scientific talent at a time when corporate R&D budgets are increasingly under pressure. Universities will gain access to financial support and partners in research at a time when government funding is shrinking. And, just as importantly, society will benefit from a stream of previously unimaginable advances in life sciences, biomedical engineering, communications, environmental sciences, artificial intelligence, and more.

Nanyang Technological University - Learning Hub, Singapore Case Study

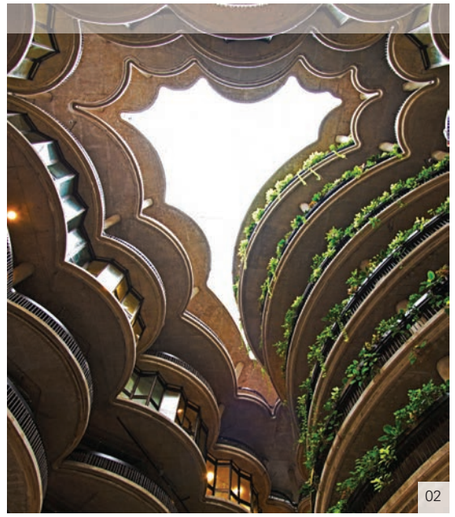
Designers: Heatherwick Studio
Project Size: 150,000 sq.ft.

Designed by Heatherwick Studio, and opened in 2015, the Learning Hub at Nanyang Technological University (NTU Singapore) is a multi-use building for 33,000 students, and a new educational landmark for Singapore. Instead of the traditional South-East Asian format for an educational building –miles of corridors linking box-like lecture rooms – the university asked for a design better suited to contemporary ways of learning. Technology now allows learning to take place almost anywhere, and the most important function of this new university building was to be a place where students and professors from various disciplines could meet and interact with one other.

The structure interweaves social and learning spaces to create a dynamic environment conducive to casual and incidental interaction between students and professors. Twelve towers, each a stack of rounded tutorial rooms, taper inwards at their base around a generous public central atrium to provide fifty-six tutorial rooms, without corners or obvious fronts or backs. The new-generation smart classrooms were conceived by NTU to support its new learning pedagogies, promoting active learning and more interactive small group teaching. The flexible format of the rooms allows professors to configure them to better engage their students, and students to collaborate with each other more easily.

NTU Professor and Senior Associate Provost, Kam Chan Hin, says, *"The new Learning Hub provides an exciting mix of learning, community and recreational spaces for NTU students, professors and researchers from various disciplines to gather and interact. By bringing people and their ideas together, NTU can spark future innovations and new knowledge that increasingly happen at the intersection of disciplines."*

01



02

03

> In the information age the most important commodity on a campus is social space to meet and bump into and learn from each other.
>
> Thomas Heatherwick, award-winning designer

01. The Hive has done away with traditional classroom layouts in its 56 curvilinear smart classrooms. The smart classrooms come with flexible clustered seating, multiple screens and wireless comms tools, facilitating small group discussions before work is shared with the wider group. **02**. Lined with lush greenery, the building also reduces solar glare and heat. Its inverted shape enables the upper floors to shade the lower levels, further cooling the interior. **03**. Rising from a central space that brings everyone together, the eight-storey learning hub is a collection of towers interspersed with nooks, balconies and gardens for informal collaborative learning.

UCL & Loughborough University at Here East, London
Case Study

Designers: Hawkins/Brown
Project Size: 775,000 sq.ft.

The 2012 London Olympic Park, now Queen Elizabeth Park, is now home to Here East, a business, technology and creative campus. In its former incarnation the vast industrial shed was the Olympic press centre, temporary home to 200 TV studios. The fact that it was one of the most well connected places in the country was a key advantage when iCity redeveloped the centre as a hub for technology.

The multi-tenanted community hub is now home to like-minded businesses, educators and entrepreneurs, all of which have innovation at their core.

Well-known names including BT Sport, Plexal, Ford, Matches Fashion and Scope are rapidly being joined by smaller start-ups and creative studios. The businesses sit alongside and potentially collaborate and share knowledge with UCL, Loughborough University, Staffordshire University London and Hackney Community College.

"Having education on-site was vital," Poole said. *"You have one university in UCL focusing on advanced robotics, and Loughborough have aligned their courses with the overall basis of the scheme, focusing on technology and innovation, including a new real estate course. They are high value uses, full of masters' and PhD students undertaking advanced research. It creates a great basis for collaboration and businesses wanting to come here."*

> "We always wanted it to be a mix of big global corporates and small start-ups looking to scale, and give all of them help in undertaking the difficult process of business transformation. We wanted to explore the possibilities of how they can collaborate and explore the intersections between each other. In that sense you have got Ford looking at the future of mobility alongside two universities looking at technology and robotics alongside several data companies."
>
> Gavin Poole, Chief Executive of Here East

01

01. Described as 'bold, brave and transformational', the award-winning "supercampus" of Here East boasts nearly one million square feet of versatile space. Adaptable working environments, large-scale studios, a collection of shops and studios and a 950-seat auditorium create the perfect places for people to get together and ideas to cross-pollinate.

Learnlab at the Humboldt University, Berlin
Case Study

There is a call to replace lecture based teaching with interactive forms of learning, yet in many places, out-of-date classroom designs are unable to evolve with this change.

The Seminar for Rural Development (SRD) at the Humboldt University in Berlin recognised at an early stage that teaching and learning success is based on participative and problem-solving approaches. The atmosphere of the austere rooms did not correspond to the image that the modern institute had of itself and did not reflect its development culture. The SRD was also restricted in its teaching by the inflexible furniture.

During a course rooms had to be changed or chairs and table laboriously carried back and forth depending on the teaching situation. This was an annoying waste of time and energy and interrupted the learning session. The implementation of participative didactic teaching methods was made considerably more difficult by the inflexible, out-of-date equipment.

To provide optimum support for students and staff, classrooms were completely re-equipped. The SRD focused on creating a learning environment that reflects and encourages participative based teaching methods while remaining functional, flexible and also sustainably produced.

The SRD in collaboration with Steelcase, which furnished the rooms as a future oriented LearnLab: with flexible furniture, integrated technology and a lounge area. Flexible furniture now allows a variety of different room layouts, and integrated technology further promotes the interaction between students and teachers. Lounge furniture, desks and standing height desks encourage students to adopt different ergonomic body postures throughout the class.

Overall, the equipment in the LearnLab promotes engagement from students which leads to improved student success. A Steelcase Education assessment researched the effects of the new environment through student and teacher ratings. The results were added to a continued study on the effectiveness of active learning spaces.

The initial results of the study confirm that the LearnLab conditions have a positive effect on engagement. All the students in the new classroom describe themselves as engaged, with 71 percent even describing themselves as highly engaged. In comparison with other learning spaces, the students particularly value the opportunity to participate in multiple activities in one room and the collaborative environment that helps them build better relationships with their peers.

01.Open and adaptable classrooms allow for a variety of learning strategies from one hour to the next. Importantly, the student, not the teacher, has control over their proximity to the class activity. **02** & **03**.Mixing table heights allows the room to be clearly divided, and, more importantly, offers students in the space ample choice to either stand or sit. **04**.Softer spaces allow students to informally work or relax. Key to activity-based learning is the teacher trusting the student to choose the space which fits their tasks best.


01


02

03


04

Smartlearning® spaces facilitate flexibility, focus and flow, making engagement effortless.

As both university and workplace estates transition from traditional hierarchies to more networked spaces, they share many of the same challenges and opportunities. Once individuals and teams are no longer tethered to a workstation, they enjoy greater freedom in how, where and when they choose to work, and this in turn necessitates work settings that are richer and more diverse.

The case studies featured throughout this report show how designers and university project teams are employing a wide range of *Orangebox* products to create highly effective, newly vibrant learning environments and workspaces. In the fictional floorplan overleaf, we have drawn on these real-life social learning environments to illustrate the variety and vitality of products that might be employed across a higher education campus.

The furniture typologies shown are designed to enhance the productivity of both staff and students as they work and learn within a range of settings; open, semi-private or fully enclosed. Within these settings, diverse *Orangebox* products provide a rich balance of furniture types and complementary adjacencies, designed to facilitate both individual study and group learning (for groups of different sizes).

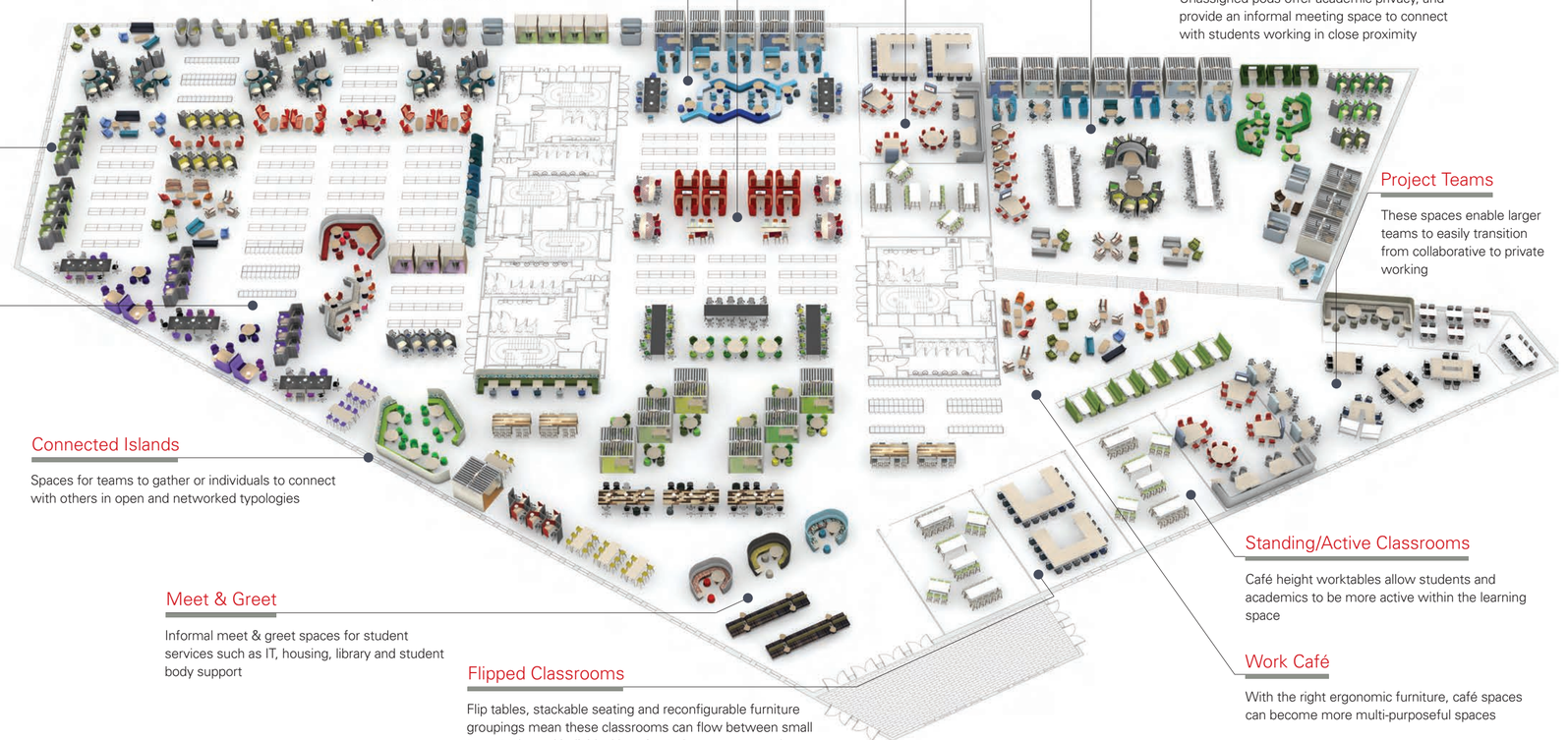
Smartlearning® spaces

The workforces of today and tomorrow need to continuously learn and constantly reskill in order to flourish in a newly peripatetic and ever-changing jobs marketplace. Society can therefore no longer afford to think of education as something that occurs primarily in our formative years.

To meet the evolving needs of the marketplace requires lifelong learning programmes, and **this new reality requires a tectonic shift** in the default settings of further education institutions, private businesses and governmental bodies.

Orangebox believes that the flexible, energised Smartlearning® spaces shown opposite offer a template for how the new world of lifelong learning might start to

look, feel & function.



Team Collaboration

Media tables and booths allow teams to connect seamlessly in sufficient privacy

Light Touch Down

Students and academics can connect informally outside of traditional fixed classrooms either pre or post scheduled meets

Adaptive Classrooms

New teaching pedagogy demands spaces that can be adapted to suit a variety of tasks and learning, either alone or in teams of different sizes

Open Student/Academic Spaces

Unassigned pods offer academic privacy, and provide an informal meeting space to connect with students working in close proximity

Focussed Library

A high concentration of private workspaces allow individuals to focus while reading and writing

Project Teams

These spaces enable larger teams to easily transition from collaborative to private working

New Storage

With multiple devices per person, longer opening hours and higher occupancy, personal storage becomes vital to the performance of the space

Connected Islands

Spaces for teams to gather or individuals to connect with others in open and networked typologies

Standing/Active Classrooms

Café height worktables allow students and academics to be more active within the learning space

Meet & Greet

Informal meet & greet spaces for student services such as IT, housing, library and student body support

Work Café

With the right ergonomic furniture, café spaces can become more multi-purposeful spaces

Flipped Classrooms

Flip tables, stackable seating and reconfigurable furniture groupings mean these classrooms can flow between small team tasks and individual learning to larger group work

Smartlearning® floorplan

Summary and Key Outtakes

At the beginning of this report we posed the question, 'What impact will the educational experience of iGens have on the new workplace?' Judging by the conversations we've had, workshops we've hosted, debates we've held and reports we've read, it's going to be momentous. There's a strong probability that iGens entering the workplace will require a higher degree of 'handholding'/ mentoring, while at the same time being more demanding and 'entitled' than previous generations.

We've described elsewhere how iGens are 'adulting' later than previous generations (in part due to helicopter parenting). The fact that they're used to getting what they want, and are also paying for – and going into debt for – their higher education means that they're acting more like consumers than traditional learners.

Now, perhaps more than ever, universities appreciate the power of place making, and recognise the need to keep their 'customers' happy by providing them with the attractive contemporary environment and always-on facilities they expect. The huge rise in student numbers has led to a massive investment in university campuses over the last 10 years. There's been a considerable increase in the sq/m given to social, collaborative and library environments, and classrooms have become less rigid and more inclusive, increasing their functionality and promoting more social and less sedentary learning. Campus facilities are also, in places, beginning to be opened up to non-university individuals, communities and interest groups. The rise of MOOCs, *YouTube* and others mean that digitised learning is set to further upset the traditional significance and role of the physical university.

All this means that iGens entering the workplace are likely to expect an attractive, campus-like contemporary environment, offering flexibility in terms of where, when, how and with whom they are expected to work. Thanks to modern secondary and tertiary teaching methods, which encourage peer-to-peer collaboration and flexibility of function within the learning space, iGens taking on their first graduate role are also likely to respond best where there's an activity-based approach to work. The fact that iGens value corporate purpose and cultural wellbeing strategies more highly than any other generation means that organisations who achieve the right experiential design will gain a key competitive advantage in both their recruitment and retention.

iGen's tech fluency and dependency – and also, in all likelihood, their shortened attention spans – will inevitably present a challenge to business owners and their HR and IT Managers, while their exposure to gamified marketing strategies means they're unlikely to remain within any one organisation for long. Mapping out clear goals for iGen to move to the next 'level' in their career may mirror common UX design in their tech lives.

Increased diversity on the campus will mean increased diversity in business (and hopefully in the boardroom), and those who champion diversity in their recruitment of iGens will doubtless reap the rewards of doing so. A 2015 *McKinsey* study of more than 350 public companies in North America, Latin America and the United Kingdom showed that those in the top quartile for gender diversity were 15% more likely to produce better returns. Those in the top quartile for racial and ethnic diversity were even more likely to do better, while less diverse companies were likely to be less profitable.

The lasting impact of their experience within Hi-Ed on iGen's attitudes and behaviours carries weighty implications for unsuspecting workplaces. And all this is coming at a time when organisations are struggling to understand what a post-PC world should look like, and how best to foster productive teams within it. It's certainly likely that those who retain rigid hierarchical structures are going to struggle to attract, get the best from and hold onto talented iGens, who are most likely to be attracted to, and perform best within, fluid networked organisations. If such organisations are also able to offer a modular, digitised and flexible learning and development programme, so much the better: they're even more likely to appeal to young and hungry talent.

The future of the office has been fiercely debated, and keeping bricks and mortar spaces relevant is as critical to business as it is to education. Both spheres now need to be in a constant state of BETA – trialling and testing new design strategies to keep up with the pace of technological and societal change. Workplaces could embrace digital platforms at the advanced pace set by education. Hi-Ed could be more experiential in its designs, with faculty offices more multi-purposeful and networked, and it could also respond to increasing urbanisation by embracing the space efficiency strategies to be found within business.

iGen will be the first real generation to experience significantly elongated careers. Retraining and reskilling will become essential. Businesses that invest in learning labs, project spaces and training environments will surely flourish.

In all these areas and more, Hi-Ed and business could profit by understanding each other better and forging closer ties. Only if they succeed are we likely to see the emergence of high-performing graduates who are able to seamlessly transition into a newly sympathetic and fluid business landscape. And that will be to everyone's benefit.

Notes and References

p04 – p05
The Economist (2017). The World is going to University. Available at: https://www.economist.com/leaders/2015/03/26/the-world-is-going-to-university

p08 – p09
"iGen," by Jean M. Twenge PhD, Atria Books, August 2017.

"The Coddling of the American Mind: How Good Intentions and Bad Ideas Are Setting Up a Generation for Failure" by Greg Lukianoff & Jonathan Haidt

GHSA 2018. Curbing Distracted Drivers. https://www.adtsea.org/webfiles/fnitools/ documents/ghsa-curbing-distracted-driving-programs.pdf

Whitebook, M., McLean, C., and Austin, L.J.E. (2016). *Early Childhood Workforce Index* - 2016. Berkeley, CA: Center for the Study of Child Care Employment, University of California, Berkeley.

Marketwatch 2018. Millions of Americans are just one paycheck away from 'financial disaster'. https://www.marketwatch.com/story/half-of-americans-are-just-onepaycheck-away-from-financial-disaster-2019-05-16

Washington Post.. 2016. Banning apps won't protect kids. https:// www.washingtonpost.com/posteverything/wp/2016/02/12

NHS 2018. Young people turning their back on alcohol. https://www.nhs.uk/news/ lifestyle-and-exercise/young-people-turning-their-backs-alcohol/

NationalInstituteonAlcoholAbuseandAlcoholism(NIAAA).Underagedrinking:Whydoadolescentsdrink,whataretherisks,andhowcanunderagedrinkingbeprevented? Alcohol Alert, No. 67. Rockville.

p10 – p11
Pew Research 2019. https://www.pewresearch.org/fact-tank/2019/02/20/the-way-u-steens- spend-their-time-is-changing-but-differences-between-boys-and-girls-persist/

APA 2018. Trends in U.S. Adolescents' Media Use, https://www.apa.org/pubs/ journals/releases/ppm-ppm0000203.pdf

Royal Society of Public Health. 2018. https://www.rsph.org.uk/about-us/news/instagram-ranked-worst-for-young-people-s-mental-health.html

p12 – p13
Capita. 2017. Agents for Change. https://www.capita.com/our-thinking/people-skills/ 2017/generation-z-agents-of-change

BrightNetwork. 2018. What do graduates want?. https://www.brightnetwork.co.uk/media/files_live/public/bright_network_research_report_2018_what_do_graduates_want.pdf

p14 – p15
Ipsos Mori. Beyond Binary. 2017. https://www.ipsos.com/sites/default/files/2018-08/ ipsos_-_beyond_binary_-_the_lives_and_choices_of_gen_z.pdf

Futurecast. 2017. Getting to Know Gen Z. http://www.millennialmarketing.com/wpcontent/uploads/2016/12/FutureCast_The-Pivotal-Generation-7.pdf

MTV. 2018. CyberBullying Now. http://www.mtv.com/news/1671547/cyberbullyingsexting-mtv-ap-survey

p16 – p17
Centre for Longitudinal Studies. UCL. 2017. https://www.ucl.ac.uk/ioe/news/2017/sep/one-four-girls-depressed-age-14-new-study-reveals

The Guardian. 2017. Stress & Social Media. https://www.theguardian.com/society/2017/sep/23/stress-anxiety-fuel-mental-health-crisis-girls-young-women

KCUR. 2018. Dr Stephen Ilcardi. How Lifestyle Can Cure Depression. https:// www.kcur.org/post/how-lifestyle-changes-can-help-depression

p18 – p19
Efficiency Exchange. 2017. Jean Mutton. http://www.efficiencyexchange.ac.uk/8712/ using-service-design-techniques-to-map-the-student-journey/

The 2016 Deloitte Millennial Survey: Winning over the next generation of leaders, Deloitte, https://www2.deloitte.com /content/dam/Deloitte/global/Documents/About- Deloitte/gx-millenial-survey-2016-exec-summary.pdf.

"If adolescence now lasts until 24, what does that mean for the rest of us," by Yvonne Roberts, The Guardian, January 20, 2018.

Forbes. 2018. How Generation Z will impact your workplace. https:// www.forbes.com/sites/janicegassam/2018/12/26/how-the-newest-generationgeneration- z-will-impact-your-workplace/#7bb042a62af6

Rainmaker Survey. 2018. Voice of a generation. http://rainmakerthinking.com/wpcontent/ uploads/2018/09/THE-VOICE-OF-GENERATION-Z_Final.pdf

p22 – p23
The Economist (2017). The World is going to University. Available at: https:// www.economist.com/leaders/2015/03/26/the-world-is-going-to-university

Universities UK. 2017. Funding Explained. https://www.universitiesuk.ac.uk/policyandanalysis/reports/Documents/2016/university-funding-explained.pdf

p24 – p25
Inside Higher Ed. 2011. The Fall of Faculty. https://www.insidehighered.com/news/ 2011/07/14/fall-faculty

Marketing Week. 2014. How to make desirable brands. Josie Allchin. https:// www.marketingweek.com/how-to-make-your-brand-desirable/

Russell Group. 2017. Economic Impact of Russell Group Universities. https:// russellgroup.ac.uk/news/economic-impact-of-russell-group-universities/

UKRI. 2017. https://www.sciencemag.org/news/2018/03/expectations-are-high-ukriunited-kingdom-s-new-6-billion-research-behemoth

Universities UK. 2017. The Impact of Universities on the UK Economy. https:// www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2014/the-impactof-universities-on-the-uk-economy.pdf

p26 – p27
Trendence. Survey 2018. Perceptions in Value. http://trendence.co.uk/research/perceptionsinvalue

The Economist (2017). The World is going to University. Available at: https://www.economist.com/leaders/2015/03/26/the-world-is-going-to-university

p28 – p29
The Guardian. 2019. Reducing Student Fees. https://www.theguardian.com/education/2019/may/30/the-governments-tuition-fee-review-ignores-eu-students

BBC. 2019. Will Universities Go Bust. https://www.bbc.com/news/education-47204922

p30 – p31
The Printing Report. 2018. http://theprintingreport.com/2018/05/03/the-rise-inpopularity-of-printed-books-continues/

p32 – p33
BBC. 2016. Libraries Lose quarter of staff. https://www.bbc.com/news/ukengland-35707956

p34 – p35
LTS Architects. 2018. Embracing The New University Library. https://www.ltsarchitects.co.uk/embracing-the-new-university-library/

Architecture & Design. 2017. Hamilton Wilson. https://www.architectureanddesign.com.au/news/collaborative-thinking-wins-architects-$75m-bid

p36 – p37
Ejournals.BU.2017. Susan Thompson. Are Desktop Computers Still Relevant In Today's Libraries?

"Gen Z @ Work," by David Stillman and Jonah Stillman, Harper Collins Publishers, 2017.

p38 – p39
Gensler. 2016. Libraries For Studying. https://www.gensler.com/research-insight/gensler-research-institute/students-on-libraries

Bright Network UK. 2018. "What do graduates want?" – James Uffindell, Kristen Barnes, Ben Triggs

p48 – p49
Florida National University. 2019. The Impact of online. https://www.fnu.edu/impactonline-colleges-education/

McGraw-Hill Future Workforce Survey. 2019. https://www.mheducation.com/futureworkforce.html

The 2017 Higher Education Edition. NMC. EDUCAUSE. https://library.educause.edu/resources/2017/2/2017-horizon-report

p50 – p51
Harvard Gazette, Massive Study on MOOCs, 2016, http://news.harvard.edu/gazette/story/2015/04/massive-study-on-moocs/.

p52 – p53
The Harris Poll. 2018. https://theharrispoll.com/new-pearson-research-finds-youtubeand-video-are-top-learning-tools-for-generation-z/

ICEF Monitor, MOOC enrolment surpassed 35 million in 2015, 2016, http://monitor.icef.com/2016/01/mooc-enrolment-surpassed-35-million-in-2015/.

Donovan, John and Cathy Benko, "Inside AT&T's Radical Talent Overhaul", Harvard Business Review, 2016, https://hbr.org/2016/10/atts-talent-overhaul.

p54 – p55
Harvard Business Review. 2018. Can Moocs solve your Training. https://hbr.org/ 2018/01/can-moocs-solve-your-training-problem

The 2016 Deloitte Millennial Survey: Winning over the next generation of leaders, Deloitte, https://www2.deloitte.com/content/dam/Deloitte/global/Documents/About-Deloitte/gx-millenial-survey-2016-exec-summary.pdf.

Forbes. 2018. How AI is used in education. https://www.forbes.com/sites/bernardmarr/2018/07/25/how-is-ai-used-in-education-real-world-examples-of-today

p56 – p57
The Guardian. 2014. Will Coldwell. 24 Hour Library. https://www.theguardian.com/education/2013/mar/12/24-hour-library-people

p58 – p59
Association of American Colleges & Universities. 2018. Fulfilling the American Dream. https://www.aacu.org/sites/default/files/files/LEAP/2018EmployerResearchReport.pdf

"An Introduction to the Establishment of 'Net Red College' in a College in Chongqing," by Zhang Ya, Beijing Youth Daily, September 21, 2017.

p70 – p71
AUDE. Higher Education Estates Management Report 2018. Association of University Directors of Estates.

Powling, I. (2014). Open Data Opportunities in Higher Education. Efficiency Exchange. Available at: efficiencyexchange.ac.uk/5607/open-data-opportunities-inhigher-education/

The Journal. 2017. Flipped Learning. https://thejournal.com/articles/2014/03/12/flnannounces-formal-definition-and-four-pillars.aspx

p72 – p73
Flipped Learning Network 2017. https://flippedlearning.org/research-reports-studies/

McGraw-Hill Future Workforce Survey. 2019. https://www.mheducation.com/futureworkforce.html

p76 – p77
University of Salford. 2017. Clever Classrooms Report. Professor Peter Barrett. Dr Yufan Zhang. Dr Fay Davies. Dr Lucinda Barrett.

p78 – p79
Deloitte University Press. Global Human Capital Trends. 2016. https://www2.deloitte.com/content/dam/Deloitte/global/Documents/HumanCapital/gx-dupglobal-human-capital-trends-2016.pdf

p80 – p81
Harvard Business Review. 2014. GE applies Fastworks. https://hbr.org/2014/04/howge-applies-lean-startup-practices

AUDE. Higher Education Estates Management Report 2018. Association of University Directors of Estates.

Charlene Li, "Why No One Uses the Corporate Social Network," Harvard Business Review, April 7, 2015, https://hbr.org/2015/04/why-no-one-uses-the-corporate-socialnetwork).

The Economist (2017). Lifelong Learning is Becoming an Economic Imperative. Available at: economist.com/special-report/2017/01/12/lifelong-learning-isbecoming-an-economic-imperative

p82 – p83
AUDE. Higher Education Estates Management Report 2018. Association of University Directors of Estates.

Steelcase. 2018. Seeking Mindfulness. https://www.steelcase.com/asia-en/pressreleases/seeking-mindfulness-steelcase-study-reveals-help-employees-find-focuswork/

Jisc (2006) Designing spaces for effective learning: a guide to 21st century learning space design: http://www.webarchive.org.uk/wayback/archive/20140616001949/http://www.jisc.ac.uk/media/documents/publications/learningspaces.pdf

Rudd T, Gifford C, Morrison J and Facer K (2006) What if…Re-imagining learning spaces. Futurelab: www.futurelab.org.uk/resources/publications-reports-articles/opening-educationreports/Opening-Education-Report128

p90 – p91
McKinsey Global Insittute. 2017. The Future of Work.

The 2017 Deloitte Millennial Survey: Apprehensive Millenials, Deloitte, https://www2.deloitte.com/content/dam/Deloitte/global/Documents/About-Deloitte/gxmillennial-survey-2017-exec-summary.pdf

p92 - p93
The 2017 Deloitte Millennial Survey: Apprehensive Millennials, Deloitte, https://www2.deloitte.com/content/dam/Deloitte/global/Documents/About-Deloitte/gxmillennial-survey-2017-full-report.pdf

CBI/Pearson. 2018. https://www.cbi.org.uk/media-centre/articles/higher-skilled-rolesrise-as-skills-gap-grows-cbipearson-annual-report/

Tinderisation of Feeling. New Inquiry. 2018. Alicia Elder. Eve Peyser. https://thenewinquiry.com/tinderization-of-feeling/

p94 – p95
CBI/Pearson. 2018. https://www.cbi.org.uk/media-centre/articles/higher-skilled-rolesrise-as-skills-gap-grows-cbipearson-annual-report/

p96 – p97
Sciendo. 2017. Post Industrial University Towns. https://www.degruyter.com/downloadpdf/j/bog.2019.44.issue-44/bog-2019-0013/bog-2019-0013.pdf

The case for new academic workspaces: Loughborough University - By James Pinder, Jennifer Parkin, Simon Austin, Fiona Duggan, Mark Lansdale, Peter Demian, Thom Baguley and Simon Allenby. https://dspace.lboro.ac.uk/2134/6037

P98 – p99
McKinsey Global Insittute. 2017. The Future of Work.

The Verge. 2019. Amzon to Spend Retraining Third of Workforce. https://www.theverge.com/2019/7/11/20690124/amazon-retraining-upskilling-workersautomation-cost-2025

Rudd T, Gifford C, Morrison J and Facer K (2006) What if…Re-imagining learning spaces. Futurelab:www.futurelab.org.uk/resources/publications-reports-articles/opening-educationreports/Opening-Education-Report128

p104 – p105
UN DESA. 2018 Report. https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html

HESA. 2017. https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2017/the-economic-impact-of-universities.pdf

LSE. 2016. HEDQF. Buildings Matter. http://www.lse.ac.uk/website-archive/newsAndMedia/newsArchives/2013/12/New-survey-shows-university-buildingsmatter-to-students.aspx

p108 - p109
McKinsey Global Insittute. 2017. The Future of Work.

US Chamber of Commerce Foundation (USCCF) Center for Education and Workforce. 2017. https://www.uschamberfoundation.org/center-education-andworkforce/report/2017

E&Y. 2018. Can Universities of today lead learning for tomorrow?. https://cdn.ey.com/echannel/au/en/industries/government—public-sector/ey-university-ofthe-future-2030/EY-university-of-the-future-2030.pdf

World Economic Forum. 2018. Future of Jobs Report. http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf

p110 – p111
The Economist. 2015. Keeping it on the company campus. BCG. https://www.economist.com/business/2015/05/16/keeping-it-on-the-company-campus

Deloitte University Press. Global Human Capital Trends. 2016. https://www2.deloitte.com/content/dam/Deloitte/global/Documents/HumanCapital/gx-dupglobal-human-capital-trends-2016.pdf

p112 – p113
Deloitte University Press. Global Human Capital Trends. 2016. https://www2.deloitte.com/content/dam/Deloitte/global/Documents/HumanCapital/gx-dupglobal-human-capital-trends-2016.pdf

Wired. 2018. Why I built my own university. Sir James Dyson. https://www.wired.co.uk/article/james-dyson-opinion-training-engineers

Co-creation of Social Innovation: Corporate Universities as Innovative Strategies for Chinese Firms to Engage with Society: MDPI – 2019 achia Chin, Yin Yang, Pei Zhang, Xiaofen Yu, and Luying Cao.

"What successful transformations share: McKinsey Global Survey results," March 2010, McKinsey.com; and "Economic Conditions Snapshot, June 2009: McKinsey Global Survey results," June 2009, McKinsey.com.

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The Sticky Campus
and the new dynamics of
Smartlearning®

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As both university and workplace estates transition from traditional hierarchies to more networked spaces, they share many of the same challenges and opportunities. Once individuals and teams are no longer tethered to a workstation, they enjoy greater freedom in how, where and when they choose to work, and this in turn necessitates work settings that are richer and more diverse.

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