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SUMS Consulting

Rapid Response Briefing Paper
The Impact of Covid-19 on Timetabling and Space Management

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SUMS is a membership-based higher education consultancy, a registered charity and not-for-profit organisation that provides expert consulting to universities across all professional service areas. We have been talking to university leaders about managing the Covid-19 crisis and their visions for the future. With views gathered from a series of one-to-one interviews, SUMS' Community of Practice Groups meeting virtually, along with student surveys, SUMS is able to take a service-by-service review of university operations. It has found a sector eager to change and seeing positives in adversity.

Here, Principal Consultant Claire Taylor and Associate Consultant Andrea Buttle share insight from their research into the implications of the pandemic on timetabling and space management.

Introduction

This area has been the topic of many a conversation amongst SUMS staff and colleagues in member universities and is highly interwoven with a number of other themes on which SUMS will be publishing briefing papers.

Last week saw the publication of the piece on **Digital Education and Assessment**: it's well worth a read alongside this piece on timetabling and space management, as the models of pedagogy and assessment that universities will use heavily influences academic space and the way it is managed.

This paper outlines the impact of Covid-19 on the process of timetabling, the timetable itself, and the way that academic space is used, both in transition and in the "new normal". There is a section on the impact on wider space use, including a challenge to institutions to think about space as enablers of activities, as places where people come together to co-produce something. This extends to digital space as the place people come together and links both to digital education and other work that we are doing on digital service delivery.

Here we focus on the physical: the rooms and buildings, the corridors and paths that connect them, the formal patterns of use represented by the space management and the timetabling processes and how we can support the more informal uses of our physical campuses.

So, let us start with the large-scale impacts on the estate as a whole, before looking at specific types of activity we want to support, then specifically looking at the impacts on timetabling and access.




The context of the estate

There have been large scale building works on most campuses recently as universities invest in physical infrastructure to support expanded teaching provision, open new Schools and research institutes or invest in new student services (e.g. hubs and sports buildings). Building works due to come online for September 2020 should have entered their final few months of the build process: completion of construction and handover into use.

The impact of Covid-19 has been to reduce activity across building sites and in some cases halt work altogether; Estates teams will have been working hard with contractors to mitigate risks and reschedule work. Where institutions have expected new facilities to be available for teaching in October, they might only come online in December or early 2021.

Refurbishment projects will be under review as well. Some may have been brought forward if Estates teams feel that safety can be ensured and there are advantages to completing projects whilst the campus is quiet; others scheduled for this summer may go ahead or be delayed until 2021 for safety or financial reasons.

SUMS expects financial challenges to have an impact on capital expenditure projects well into the medium to long term.

The impact of delayed handover and/or dependence on unfit space may be mitigated by institutions choosing to teach remotely in Autumn 2020. There may also be a reduced demand for space based on reduced student numbers should teaching remain face to face as well as change in demand for space where broadcast teaching activities remain online in an acceleration of the flipped classroom movement.

Impacts

- Uncertain space availability for timetablers and space managers
- Financial penalties for Universities if they chose unilaterally to postpone capital projects
- Poor student and staff experience if using unfit space
- Increased demand for high quality, flexible, small group teaching space over the medium-term (see below)
- Significant pressure on specialist space in Spring 2021 potentially leading to longer teaching weeks and increased evening/weekend building operation.

Remaining uncertainties

- Extent of delay to new-build handover
- Whether scheduled refurbishment (summer 2020) can go ahead
- Impact of delays to capital projects.

Opportunities

- Potential financial savings could be made by deferring refurbishment projects to 2021 or later
- Refurbishment projects could focus on conversion of office space to agile space
- Revisit Estates Masterplans in the light of reduced demand for large lecture space.

Academic space use

This time of year is usually very busy for timetabling teams. They will be producing draft timetables based on last year's timetable, updated with information on new courses, changes to the estate and student option choice collected in April. Data on returning students is generally stable and progression forecasts will be fairly accurate.

There is significant volatility for timetablers now: let us take student numbers for starters. Forecasting incoming student numbers has been harder in recent years: underlying changes in demographics are the easy bit, whilst marketisation, changing conversion rates and the impact of clearing, more difficult. Whilst some institutions, with good information management, have brought together number projections and timetabling data improving clearing tactics; at others, timetablers have been scrambling to fit large cohorts resulting from "success" in specific areas at clearing.

Now, in the midst of Covid-19, we expect uncertainty in student numbers to be fourfold:

1. Variance in international & EU student numbers (this will be clearer come June 2020)
2. Variance in numbers of UK applicants seeking to defer entry
3. Variance in numbers of current students seeking to "pause" their studies
4. Variance in mode of study (students choosing to study online due to shielding).

This is of course on top of low numbers of 18-year olds in the UK home market and the impact of Brexit on EU students.

Moving on from student numbers, there is uncertainty in modes of delivery. The sector has moved quickly to upload learning and assessment materials to VLEs and has delivered teaching activities through Teams. A number of institutions, for example Manchester, have already stated that a proportion of teaching activities in Autumn term 2020 will remain online whilst others will return to face to face.

For others, changes to modes of delivery for September are not yet clear: we may see September 2020 starts cancelled with cohorts starting in January 2021 or courses mothballed for a year (think postgraduate courses where international students make up more than 50% of cohorts). Those universities which already support large scale January and April starts will have the advantage over those with only one entry point (think year-round support for teaching throughout the summer and flexible timetabling and course approval processes).

Our paper on **digital education** talks about the clarity required to define what the timetable needs to support next year:

- Do teaching events need to be **collocated** (where people are gathered in one place as opposed to **dispersed** or dislocated: where people are not in the same place)?
- Do teaching events need to be **synchronous** (where people complete an action at the same time as opposed to **asynchronous**: where people complete an action at different times)?
- Do teaching events need to be **interactive** (where there is two-way, or more, interaction between teacher or materials and participants as opposed to **broadcast**: where there is only one-way communication)?

Thinking Out Loud

Nick Skelton has been working on a series of papers related to digital education. Let us explore some of his thought experiments to understand the impact on academic space use, starting with simple teaching events like Economics lectures before moving onto more complex things like chemistry labs or drama performances.

Large Scale Lectures

Economics 101 has 250 students attending in a tiered lecture theatre with a maximum occupancy of 280. To socially distance once inside the space, occupancy would have to reduce to 20-25% so in this case around 60 people. Reducing occupancy to under a quarter would also allow students to leave, socially distanced, in the same amount of time as a full lecture hall (based on fire standards). However, that is assuming that there's space for them to go out into, that is not already filled with students waiting for the next lecture (see section below about enabling space use). There would also have to be reductions in frequency of use if lecture spaces required cleaning between cohorts.

SUMS recommends that lectures (collocated, synchronous, broadcast) are replaced with digital, on-demand content (dispersed, asynchronous, broadcast).

Chemistry Labs

450 second year chemistry students are in labs two days a week. Cohort A is on the ground floor in Physical, cohort B on the 1st floor in Inorganic and Cohort C is on the top floor in Organic. Everyone swaps round at the end of the eight-week teaching block. Lab spacing is good, use of safety equipment and ventilation from the fume hoods reduces transmission risks.

Here the highest risk is not in the academic space, it is in the supporting spaces. Our students will need to get onto campus, into the building, use toilets, each lunch, get some fresh air. What can we do to reduce mixing of cohorts and transmission risks outside the lab spaces?

Can specialist space be utilised in a short fat block structure? This is a pattern used in many professional post graduate programmes. Each cohort has a four-week block of intense lab work (four days a week) and other activity is delivered remotely, reducing traffic on campus and in the building. Another option is to increase the working week and stagger lab start times to reduce footfall in shared spaces (changing the activity to collocated, asynchronous and interactive).

Drama and Performance

100 drama students take part in practical activities which involve acting, singing, dancing and high levels of physical interaction. Activity is collocated, synchronous and interactive. Transmission risks are high for these types of activity. Risks can be mitigated by locating activity outside or in large well-ventilated indoor spaces and spacing participants, but this won't work for all activities.

Looking outside of the sector, one solution that presents itself is clustering (think professional sports teams or care home clusters). Could students be placed into performance clusters? Could one group of students work together, live together, socialise together for a period of time? A high level of trust is required. If

unfeasible, we may have to postpone performance activity to a later semester, rescheduling performance modules and reworking progression processes.

Conclusions

- Move all lectures to digital delivery, on demand, to reduce demand on the physical estate and free up slots in the timetable to provide flexibility for other activity
- Determine what learning must be interactive (e.g. activities in drama, sports studies, dance and nursing). Postpone these activities to a later semester in the course.
- Determine what learning that is interactive and collocated but can be done asynchronously (e.g. science lab work). Construct the timetable around those. Consider distancing, ventilation, physical barriers, and personal protective equipment to reduce risk.
- Use intensive teaching weeks and intensive teaching days to reduce the number of occasions when students need to travel to the university
- Interactive teaching events such as seminars and tutorials could be delivered either digitally or physically. Provide both physical and digital access routes to the same activities so that students can choose their mode of engagement.

If teaching on campus does start again in September, we recommend timetablers are informed about trends in enrolment to understand forecast variances. Where passive broadcast activities remain online, module leaders may focus contact time on smaller group activities. This will decrease demand for large group space, increase demand for small group space and reduce event sequencing constraints.

A level of agility is required which is counter to traditional timetabling practices. Senior leadership teams need to provide clarity in terms of when students will return to campus, which cohorts will be prioritised and which activity types will be taught face to face, but they in turn are dependent on government and advice and the future nature of the pandemic. A wicked problem indeed!

Impacts

- Changes to which semesters/terms modules are taught in
- Reduced utilisation of all space in the short term
- Potential reduction in space demand where activities are already double taught or where there are multiple small group sessions
- Reduced utilisation of and demand for large lecture space
- Increased utilisation of and demand for small group space.

Remaining Uncertainties

- Class sizes (related to student numbers volatility)
- Demand for space (related to movement of curriculum online and potential reduction in offering)
- Availability of some space (related to delayed build projects).

Opportunities

- Comprehensive clean down of the timetable, reducing no-shows and improving utilisation
- Getting timetablers involved in information sharing and subsequent decision-making
- Exploring increased agility in timetabling based on digitisation of information sharing.

General Space Management

Given the assumption that many universities will suffer revenue loss related to Covid-19, it is worth recognising that after staff, the next biggest cost for most is their estate. There are opportunities to reduce space costs in the short and medium term, but these depend on the location and context of each institution.

Information on fluctuating demand levels for research and teaching space is sparse so decisions should be delayed. However, office space is known to be an underutilised overhead for most institutions and utilisation, even before Covid-19, averaged around 50%. Given people have adapted to working from home and some will not wish to return to commuting in the short or medium term, there is an opportunity in the short-term to reduce occupancy to enable social distancing and to reduce office space in the medium term for both administrative and academic staff, probably by half.

Universities will have to prioritise which members of staff return to campus first:

- Operational staff to ensure the campus is fit for purpose
- Academic staff with research which is time-pressured or requires specialist space or equipment
- Professional services staff delivering front-office services to staff or students.

It may be that proportions of professional back office staff do not return to campus at all.

Similarly, to digital education, we can think about the advantages of digital service delivery and consider the types of activity that we want our space to support. In the longer term, we see a reduction in transaction type activity spaces and an increase in high-quality, co-productive and creative spaces. In the short-term, transaction style spaces must be screened and contact time reduced to lower transmission risks.

In order to realise cashable benefits, the university must be able to repurpose or release this space. City universities may have leases that are coming up for renewal or the opportunity to sell-off/rent out estate. It may be more difficult for campus universities: these have a fixed space envelop. They may be able to achieve savings through mothballing space for a period of time or they may be able to repurpose space use or reduce future build programmes.

Impacts

- Demand for office space will reduce in the medium term
- Space occupancy might reduce in the short term to accommodate social distancing
- Provision of study space for students who do not have such space at home
- Staff/student consultation spaces will need to be screened.

Opportunities

- Potential for fixed-cost reduction through releasing office space through an agile approach
- Digitisation of administrative processes – Go Paperless!
- Reductions in presenteeism – staff choosing physical or virtual presence depending on the situation rather than a default of “always physically present”.

Enabling Space Use

It is not just the single spaces that we must think about, it is the way that spaces are connected, how people move between them, and the services which exist to ensure that the space is useable.

Access

In the short-term many universities will be looking at controlling the number of people allowed on campus and reducing movement of people through and between buildings by reducing face to face contact. Receptions will not be staffed, and access control will be by card or key. Corridors and staircases could be made one way to reduce cross overs and where rooms have more than one door, separation between entries and exits.

In the longer term, institutions could start to think about designing in touch free access to buildings and services. Remember the first iterations of campus cards: magnetic stripes and grainy photos. Mag stripe cards are less secure, require more contact and are less hygienic than modern solutions.

Smart cards are more secure but still require contact to prove identity or approve a service or payment transaction. Proximity cards are contactless but can still be hacked. There are more secure options which enable contactless service and payment provision for example mobile credentials (e.g. Apple Pay or mobile Student IDs). Mobile credentials would reduce the queue of incoming students waiting for their smart cards in Freshers' Week and would reduce ongoing transmission risks associated with service provision and access control.

Touch Points

What are your most frequent touch points on campus? We would guess that these would be related to doors, toilets, self-service devices at the library, the buttons on water dispensers and so on. What can we do to minimise touch and therefore minimise the requirement for continual cleaning of these points?

What can universities do in the short term to restrict access to services? What can they do in the longer term to design in contactless access and service provision?

Impacts

- Increased cleaning costs associated with high volume, high touch, areas.

Opportunities

- Eliminate touch points in high volume areas such as toilets, printers, cafes, entrances
- Automate door opening at key entry and exits points.

If you are interested in finding out more about the impact of Covid-19 on timetabling and space management, consultants Claire Taylor and Andrea Buttle has been working with universities in this area. Please contact Claire at **s.c.taylor@reading.ac.uk** or Andrea at **a.buttle@reading.ac.uk**.

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