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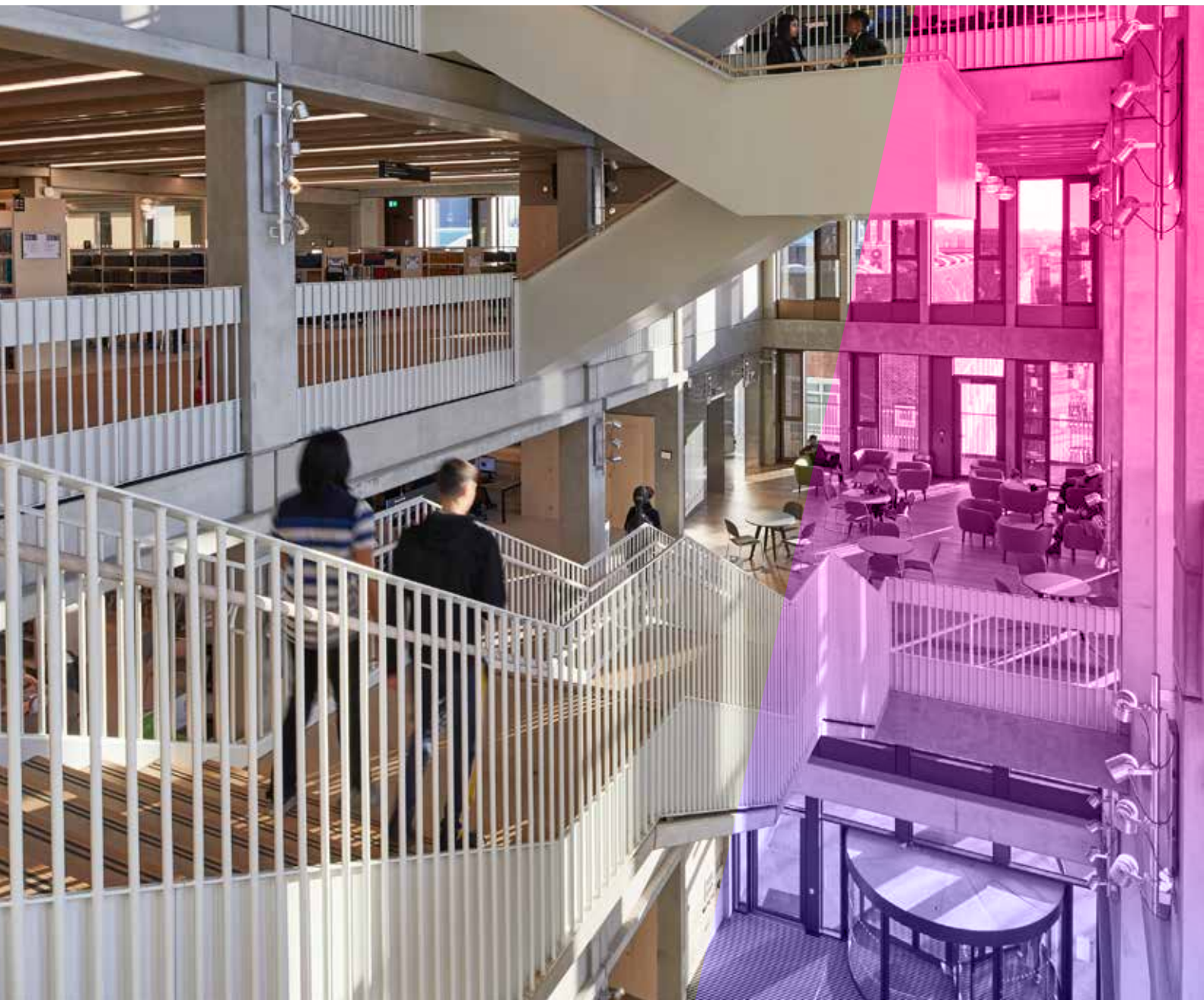
Together, for excellent university estates & facilities

The postgraduate research spatial experience

Discussion Paper

CAMPUS INTUITION

How can universities provide well utilised space to postgraduate research students, whilst also ensuring a positive student experience? This is a topic that Estate Directors and teams raised at a workshop run by the Space Planning Special Interest Group (SIG) for the Association of University Directors of Estates (AUDE) in 2019.

Campus Intuition undertook research on this topic to better understand the spatial experience of PGRs and what immediate actions can be undertaken to improve their work environments.

To complete this work we:

- Interviewed representatives from universities in the UK and Australia to understand the critical space issues .

- Reviewed international literature on the topic

- Engaged with PGRs through social media and an experience mapping exercise

- Spoke with workplace experts to draw in lessons from sectors

- Reviewed PGR space survey data from a Russell Group University

We are grateful to the following interviewees for their expertise, time and contributions to this paper:

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Campus Intuition is a global higher education design-research consultancy. We work with universities to actively engage with staff and students about their campus environments. Deep insights gained help ensure campus planning is focused, and spending is targeted. We do this through ethnographic research with students and staff across campuses, academic workplaces, and student accommodation.

Executive Summary

Covid-19 is resulting in transformational shifts to campus space planning and academic work environments. This presents a tremendous opportunity to reconsider how space is designed and allocated for those undertaking a PhD. This cohort have often fallen between space strategies designed for staff or students, with their needs never quite fully understood. This undermines their potential contribution to institutional research outcomes, and also exacerbates growing mental health issues. Through a focus on their spatial needs, estates teams have the power to positively influence better outcomes for current and future PhDs.

Covid-19 brought opportune time to pause and reflect on how space is used within campuses. An area that has been poorly understood, and the focus for this paper, is the collection of spaces used by postgraduate researchers. This highly autonomous cohort have unusual patterns of use on campuses. Space teams have noted the low utilisation of their work areas and have been responding with changes such as shared open plan spaces or no allocated desk. Yet it is unclear what these students really want, or need, to accomplish their work. We investigated this topic through interviews with university staff, workplace experts and postgraduate researchers themselves.

These researchers sit between staff and student, towards the bottom of a culturally entrenched hierarchy. Although efforts are being made to modernise the academic culture, space still represents status. Space allocated to postgraduate researchers will often be taken over to accommodate new academics or research activities which deliver higher rankings. These space changes are reinforcing signals to the postgraduates on their place in the hierarchy. Particularly impacted are independent non-STEM researchers, those not part of an organised research group.

Whilst some institutions are moving towards hybrid work settings for staff, this mode is not necessarily suitable for postgraduate researchers and it is vital that their needs are considered at the forefront of planning. Factors such as access to PCs, seamless IT integration, and co-location near colleagues have a significant impact on their ability to work productively.

Having a physical space on campus helps this group stay motivated. The office provides a sense of identity as well as much needed structure, in a largely unstructured period of their career. Additionally, some researchers do not have a suitable home environment in which they can work. Like staff, they do need flexibility, and will unlikely be at a desk 5 days a week due to the nature of their work. Spatial needs also change as they progress through their research stages.

A core component to their career path is the network they create. This network provides friendship and support, as well as professional opportunities. It is built through both facilitated and serendipitous interactions. Covid-19 has resulted in a documented decline to this network establishment and growth. For researchers who have no allocated desk, this is even more challenging. They feel less visible, and therefore disadvantaged, compared to other groups. For a cohort already suffering from higher-than-average mental health issues, in particular loneliness, physical interaction and network-building are critical.

Many strategic space changes are being based primarily upon space utilisation. This is a risky metric on which to lead the discussion. If space utilisation is low, it doesn't mean students don't want to be on campus. A poor-quality space it can make them feel de-valued, uncomfortable, or unproductive, and they aren't going to use that space. Here starts a vicious cycle, where space slowly deteriorates in quality over time and students attend campus less. Personally, it can impact their well-being, their career progression and network building, but also it can impact the formation of innovative collaborations and partnerships, timely completions and publications, all consequential to institutional KPIs.

Space efficiency shouldn't come at the expense of making a space less effective or engaging. There is much hidden value within well designed physical space. Institutions addressing this will unlock greater potential in their postgraduate researchers. The solutions will vary across disciplines depending on the type of work, in particular STEM vs. non-STEM disciplines (the latter tending to have more independent researchers, the former more structured teams).

We would stress before moving towards latest trends, like Activity Based Work layouts, inter-disciplinary hubs, or bookable/ shared desks, that institutes take the time to understand the needs of their cohorts. Towards the end of this paper we have supplied frameworks which can be used to gather such data.
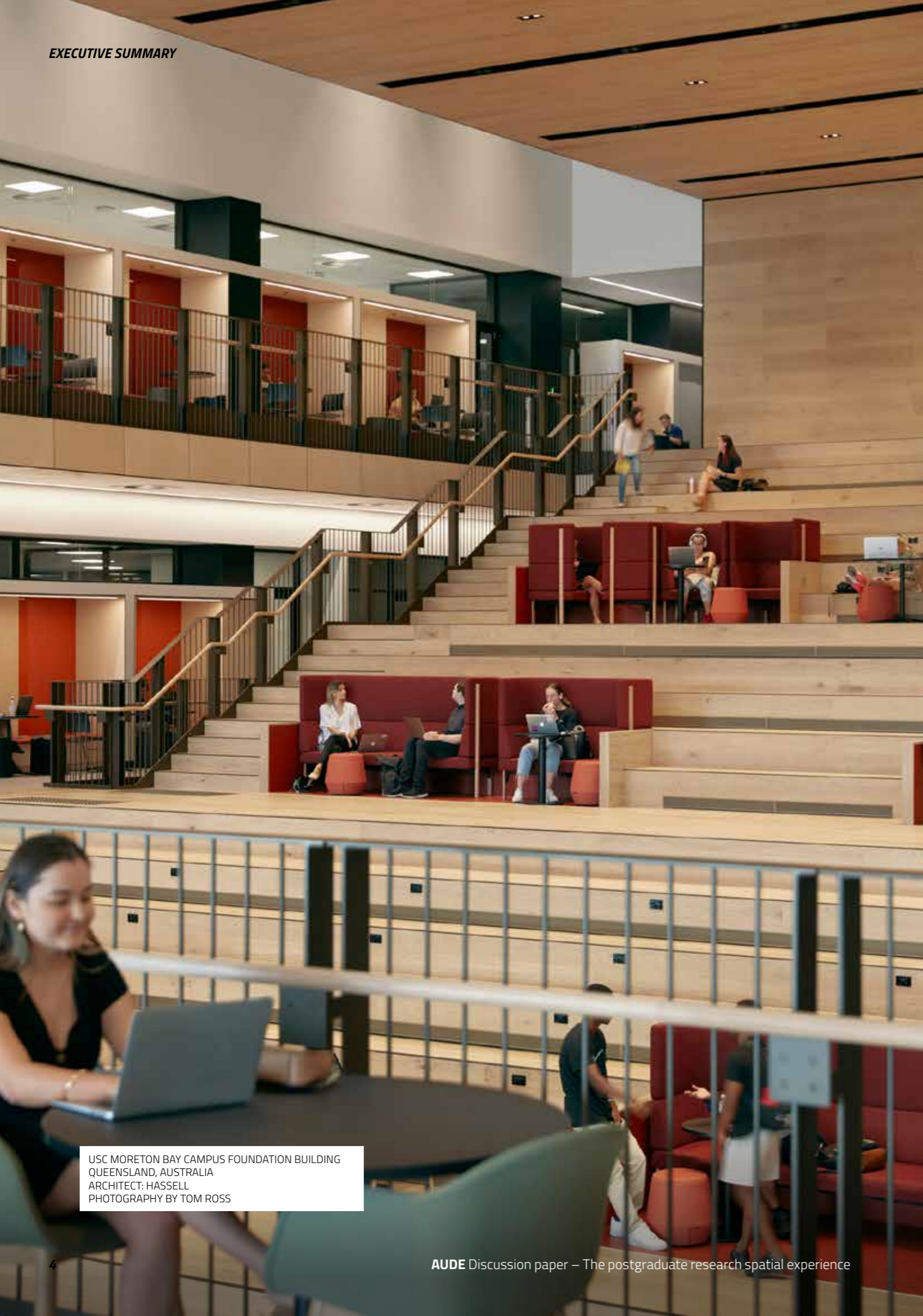
USC MORETON BAY CAMPUS FOUNDATION BUILDING
QUEENSLAND, AUSTRALIA
ARCHITECT: HASSELL
PHOTOGRAPHY BY TOM ROSS

IN SUMMARY

The Problem

- Physical space provides structure and motivation for this group

- Their space is often sub-optimal, not designed to maximise comfort or productivity

- The Academic space-culture hierarchy is reinforced when PhDs are moved out in place of more valuable staff

- PhD spaces often have low utilisation, resulting in shared desk or no desk allocation models

- There is a missing link between the value of PhD completions to institutions, and the benefits that come from high quality space

- Covid-19 lockdowns and lack of campus attendance is eroding the development of professional networks, integral for career progression

The Solution

- This group should be at the heart of Covid-19 academic workplace transformation, with a greater focus on mental health and building of networks and communities

- There is no single model that solves all spatial issues, but there are creative opportunities, such as moving students to different spaces as they progress through research

- A stronger focus on community management will enable spaces to work more effectively. PhDs should not just be allocated to a desk without more consideration to their surrounding professional ecosystems

- Details, such as seamless IT, kitchen facilities, daylight and meeting rooms, will make a significant impact to comfort and satisfaction

"I very often go and work in cafes, neither home nor the uni is good. At the uni we are asked to do hot desking…. We don't have good enough computers in the PhD studio… We have 10 seats and only 3 of them have computers. However we are 25 people. So if I go to uni for working I need to sit in a small room which is poorly designed and always cold…. If I need computer power I need to be at home with my computer. But if I am just going to write an essay, then I would go to the students centre because it is open until late (cafes closes early)."

"This is the "write-up area" we each have our own desks & laptops (with docking stations). Having a space like this really does make all the difference. Not only can I sit and work between experiments but also provides a place that is mine, a sense of belonging. It's so important as science now is mostly data analysis so having a proper designated area reduces the stress of finding a place to work."

"There's my bench in the lab. A place that's usually in disarray and a true representation of my life as a PhD student in the lab. It's great, I have loads of space, and it's where I feel at home as a scientist!"

Contents

Postgraduate researcher workspace – the key challenges

A space typology that has become increasingly difficult to manage across higher education campuses is that of postgraduate researchers. Low space utilisation amongst this group leads to questions on how much space should be allocated and how this space should be designed.

For estates teams, this cohort has historically been one of the most difficult to manage as the needs and use profiles are so varied. Responsibility of the space is often devolved to schools or colleges. Whilst this enables better control of space allocation based on immediate school/college needs, it has resulted in a proliferation of space types and quality. Should PGR space be an extension of specialist space? Or should it, along with other office space, be managed centrally?

Whilst high-quality space can improve well-being and productivity, it is a finite resource, especially when desks aren't being used. What is the right balance? What does the future PGR workplace look like? These are questions we will be exploring.

Technology, low space utilisation and space inequity were some of the themes raised by estate teams and doctoral college leaders in our interviews.

- PGRs are the first forced out of their space for incoming academics. The drive for talent and rankings makes this difficult to alleviate (and will always trump space utilisation data)

- Technology is a significant obstacle to better ways of working

- Faculties that are well funded or more vocal are likely to get more, and higher-quality, spaces. It becomes a competition between schools/colleges rather than a consideration of PGRs as a whole cohort

- Decisions about PGR space are led based on what infrastructure is available, rather than what PGRs need to do their best work

- Teams acknowledge much PGR space is sub-optimal, yet spaces are also under-utilised. Teams are unsure how to fix this in a way that will be sustainable over the long run

- Shared desk models are being used more, but often lacking quality support infrastructure like meeting rooms, kitchens, and social spaces

- There is a movement towards interdisciplinary hubs, but teams are unsure if this is the right model. Distance from supervisors, labs and other PGRs makes this challenging

- Data on PGR space is fickle and hard to track. Some HEIs are unsure of the volume or space allocated to PGRs. The lack of data makes decision-making difficult

PGRS ARE UNDERVALUED, AND HAVE HISTORICALLY FALLEN BETWEEN THE CRACKS OF STUDENT AND STAFF

The term 'Postgraduate Researchers' used in this paper refers to those undertaking a PhD. They can also be referred to as Higher Degree by Research students (HDRs), PhD students, PhD candidates or doctoral students . In most cases they are not yet considered Early Career Researchers (ECRs).

In 2019/20 there were 101,350 enrolled doctoral students across the UK, a 10% increase since 2015/16[1]. Around 24,000 students are completing their degree each year. Some contributing factors[2] towards higher retention and completion include the volume of scholarship or financial support (especially for students supporting families), mentorship and helpful supervision, diversity in faculty, support staff, and size of the programme group. In addition, strong peer networks and opportunities for formal and informal learning are important[3].

As a PGR, students are typically entering an entrenched hierarchy which they must climb as a passage to a stable academic career. Historically, PGRs have fallen between the classification of staff and student. The University College and Union is lobbying for further workplace rights for this cohort, arguing for better recognition of their, often unpaid, contributions[4]. Not surprisingly, PGRs suffer from higher-than-average mental health issues[5], in particular loneliness and isolation, which has been further exacerbated by Covid-19.

The annual Advance HE Postgraduate Research Survey (PRES) continually shows that research culture is an area of low satisfaction, falling 5% from 2019 to 2021[6]. The pandemic has exacerbated this further; the open comments from the 2020 PRES survey were dominated by students commenting on the need for connection and more organised facilitation of community during Covid-19. The 2021 survey results showed the largest decrease in satisfaction to be in professional development. Building networks has been made much more difficult by Covid-19 limiting access to the campus.

HOW PGRS WORK AND HOW THEY ARE SUPERVISED PLAY A ROLE IN SPACE USE

Supervision styles vary enormously, even within the same school. Some supervisors equate physical presence of students ('command and control' leadership) with productivity and prefer students to be nearby. On the opposite spectrum, some supervisors trust students to work at their own pace and prefer physical distance.

PGRs can be in organised research-intensive groups or work as independent researchers, the former more dominant in STEM fields. Visibility is still instrumental to academic progression. Students generally want to be in relatively close physical proximity to their supervisor and colleagues as that is how they build a network taking them into their next publication, project or position.

PGR space is generally divided into 3 groups:

- Lab based (wet and dry)

- Desktop / office based

- Specialist based (requiring specialist equipment)

In addition to their own research, PGRs are typically undertaking other tasks including teaching, research assistance on multiple projects and writing for publications and grants. Their role often continues after they have submitted, finishing papers and projects.

The way PGRs work across spaces varies over the course of their study, from establishing their research area and writing a candidacy in the first year, conducting their research in the second and third year through to writing up their thesis or publications. Throughout this 3-4 year period they have differing space needs. Some will require access to labs and be on campus most days others might be out on external placements, studying artefacts in a library or doing field work.

The type of space PhD students have varies across institutions. It can be shared offices, shared or allocated desks in open plan, desks in hallways, permanently allocated desks in some type of office environment or dedicated PGR hubs. Some students have multiple spaces if they also use a lab. There is a growing trend following Covid-19 of moving away from allocated desks to bookable spaces.

Students who conducted research in one of the University's priority research areas and who had experienced, research-intensive, supervisors had significantly better outcomes from their PhD in terms of number of manuscripts published, citations, average impact factor of journals published in, and reduced attrition rates.

Article: Do succesful PhD outcomes reflect the research environment rather than academic ability?[7]

PGRS OPERATE IN AN UNSTRUCTURED ENVIRONMENT; PHYSICAL SPACE FILLS THIS VOID

Unlike taught students, PGRs do not have a syllabus to follow. The research experience is highly entrepreneurial and emotional. Without a structured work flow, space often helps fill the void, being a place they can come to during working hours to motivate themselves to focus.

Dowling & Mantai (2017)[8] explored the spatial experience of 64 Australian PhD students. They found:

- PhDs see the campus as a workplace, helping them adopt structure and discipline to conduct research productively

- Having a place (or 'home') at the university distinguishes them from an undergraduate student and elevates their place in the hierarchy, they feel seen and this helps motivation

- If they are located separately from faculty it diminishes their importance

- Being around, and visible to, others helps actively builds networks and collaborations, important to their research as well as skills for the future. If they aren't physically present, not as many opportunities for projects and collaborations occur

- Working from home has a role, especially when requiring complete solitude, but more often presents issues of interruption and distraction. Home can foster disconnection, loneliness and procrastination

THE PANDEMIC HAS SHOWN THAT UP TO HALF OF STUDENTS MAY NOT HAVE THE RIGHT HOME ENVIRONMENT FOR WORK

Students, especially those in a write up phase, will have adopted new patterns, with many working from home due to Covid-19 closures. This doesn't necessarily mean students want to be at home. A survey of over 15,000 graduates at US universities[9] during the pandemic showed that the top obstacle for completing on time was "the lack of access to an appropriate study space or distracting home environment" (52%).

Students who are caregivers, from lower socio-economic class or have a disability reported this as more of an issue. Graduates also struggled with similar issues[10] to undergraduates working from home, being a lack of motivation (56%) and a lack of interaction with other students (55%), both factors influenced by space provision. The lack of access to an appropriate space was broken down in the study across disciplines, below.

Percentage of students without access to an appropriate WFH set up
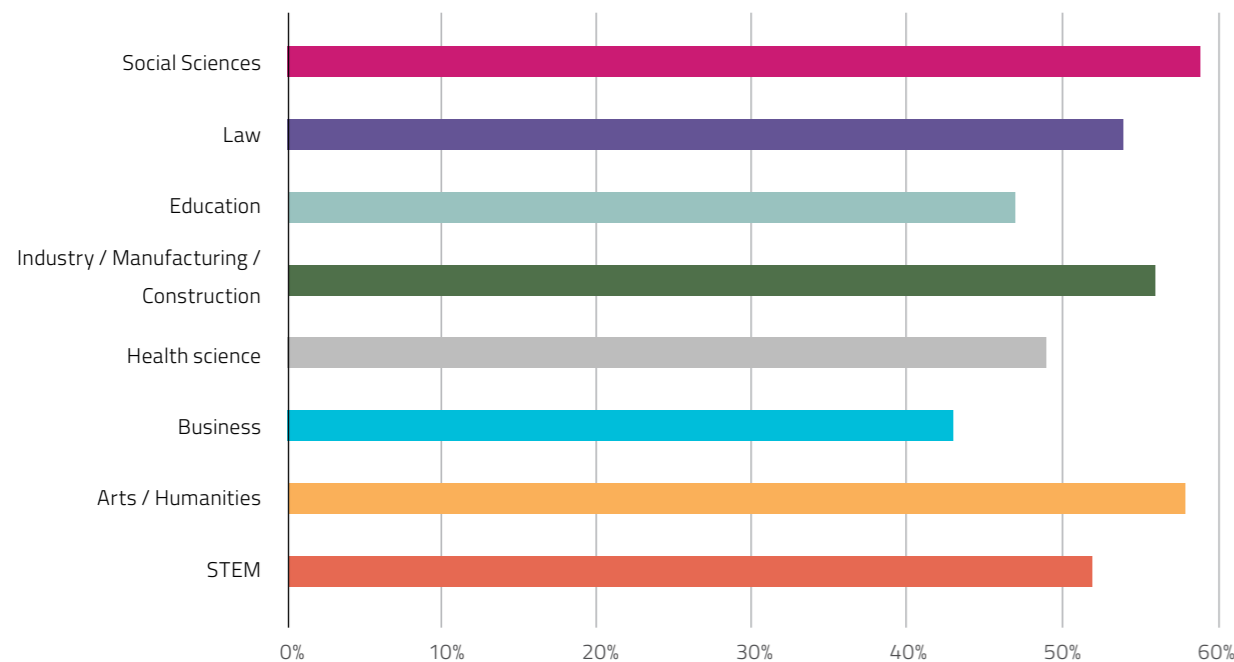
We asked students to tell us what they like or dislike about their work environment

Given the lack of research into spatial experience, we put a call out on social media. People responded telling us about their current or past PhD workspace. We have summarised some of the insights to help us understand what space factors support or inhibit a positive experience. In addition we reviewed a Russell Group space survey conducted on PGR space, referenced in this section, and we had a small group of PGRs conduct an experience mapping exercise at their institute.

The majority of respondents on social media had some form of shared office, the most popular being either a small (under 4 people) or medium (5-10 people) space. A noticeable number of participants said they had no desk at all, the UK and Latin America being cited specifically as this becoming the norm. Of those with a dedicated space, 70% had their own desk, (the remainder some form of desk sharing), although half of these respondents said desks were intended to be shared but usually ended up being taken over. Those without a desk used cafés, libraries or home. Home was not typically the first choice, but liked by those with a good set up.

70%
of those with a dedicated space had their own desk, the remainder some form of desk sharing

A RUSSELL GROUP UNIVERSITY RECENTLY SURVEYED PGRS ON THEIR SPACE EXPERIENCE.

Some results are shown below

What PGRs see as good about their workspace on campus

#1 Having a place to work
#2 Spacious desk, good furniture
#3 Quiet area, privacy
#4 Comfortable space (good lighting, temperature, windows)
#5 Technology (screens, wifi etc)
#6 Storage and other resources

What PGRs see as bad about their workspace on campus

#1 No assigned desk / hard to find a place to work
#2 Having to book or share desks
#3 Inadequate technology set-up
#4 Uncomfortable (lighting, temperature, noise etc)
#5 Poorly designed space (eg open plan, located near noisy areas)
#6 Unable to store items or access resources like printing

What would be beneficial to your PGR space?
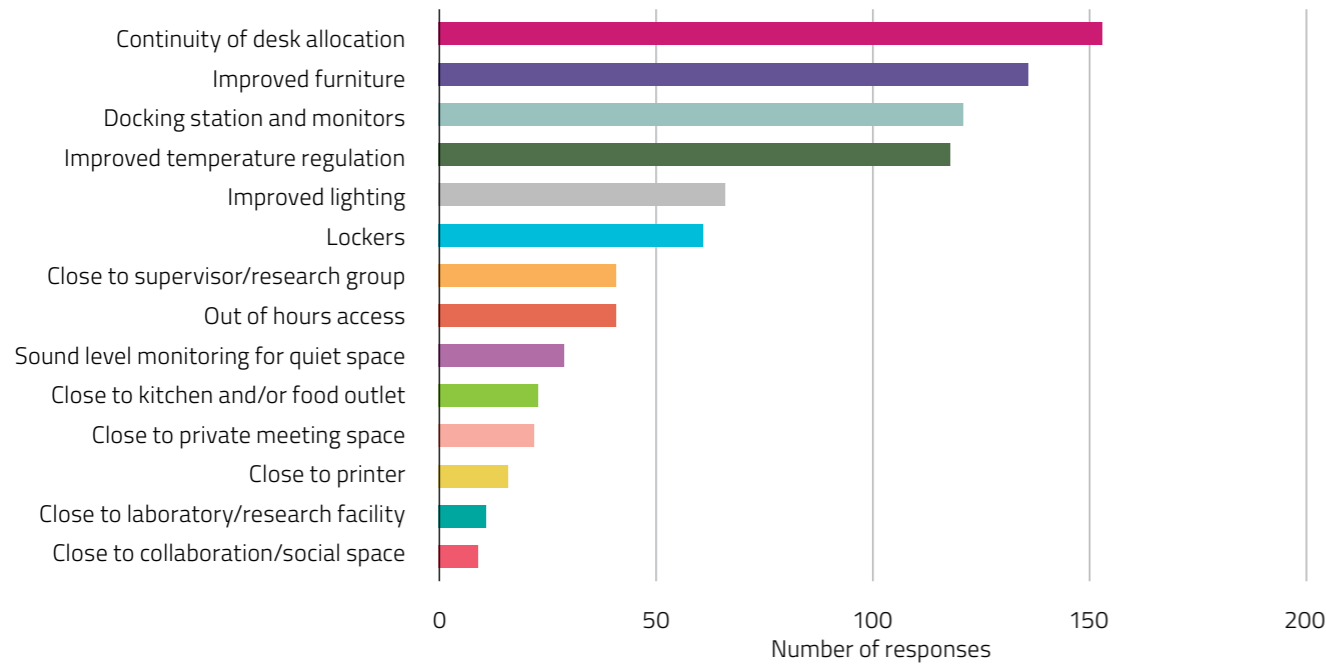
Why do you access the campus?
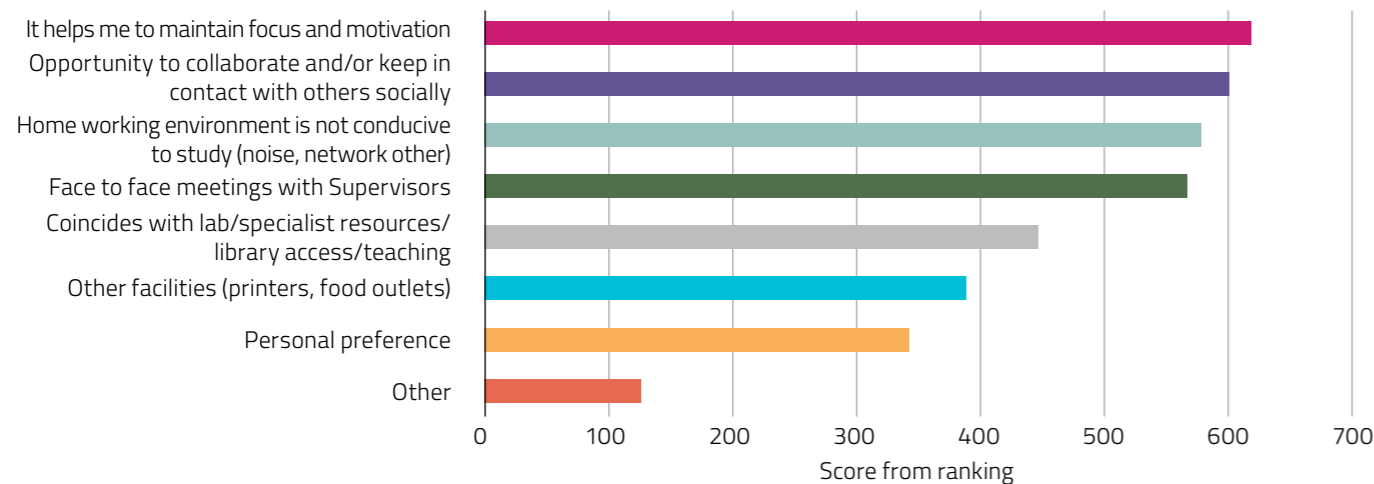
STUDENTS PERCEIVE THE TYPE AND QUALITY OF SPACE THEY ARE GIVEN AS A REFLECTION OF THEIR IMPORTANCE AND VALUE

Beyond an area to do work, space helps create a home, a sense of belonging to a community and connection to others. Students without a desk (or part-time) feel particularly de-valued, using descriptions like "I wouldn't expect better"…"I felt undervalued"…"they forgot about us". Many commenting on moving around due to refurbishments or space changes, and that this was typically unsettling as they were rarely moved to a better space.

"As a part time candidate, my university deemed I was not worthy of a desk or space on campus. I spent many weekends in common use computer labs, with headphones and my PhD playlists and often a bag of crisps."

"We had only just moved to a shiny new building when I started my PhD and they just hadn't thought about PhD study space. So we ended up shoved along the corridor."

"There used to be some office space for PhD students, but due to investments in lab infrastructure, it was designated to other activities. Now only postdocs get to have their own desk. I guess having personal space gives a sense of belonging and importance to one's work"

HOME HAS SOME VALUE, BUT DOESN'T REPLACE A DEDICATED WORKSPACE ON CAMPUS

Students, especially those in a write up phase, will have For students in highly structured groups, Covid-19 has enabled greater flexibility and this is appreciated. They can work from home, as one participant put it, "without judgement". However, the preference for home was more the exception than the norm in those we engaged with. This reflectsDowling and Mantai's (2017) findings pre-Covid, with many finding home difficult due to distraction, motivation, poor set-up or isolation. Sometimes they are forced to be at home due to a poor set up at the university, such as no desk provision, not enough computers, or the space is too noisy, dark or uncomfortable.

The Russell Group space survey showed desk allocation as a key pinch-point to student satisfaction

Almost 30% of comments related to not having an assigned desk. The lack of such a space is shaping how and where they study. They would prefer to not have to book a desk, or share a desk.

"I do not have a specific desk where I can leave my stuff and return to a set up environment the next day"

"Without having any reliability or predictability of my own work or in study area, I default to not depending on a study space even when working on campus would be more ideal then working at home."

"I would much prefer a permanent desk, one that I can leave my computer/keyboard/mouse/mousepad/essential books on. I would really love a small area where PGRs working in similar research groups could get permanent desks together. I have no office in my shared house, so I've been predominantly working from the foot of my bed for the last 18 months. It would be great to have a permanent presence on campus."
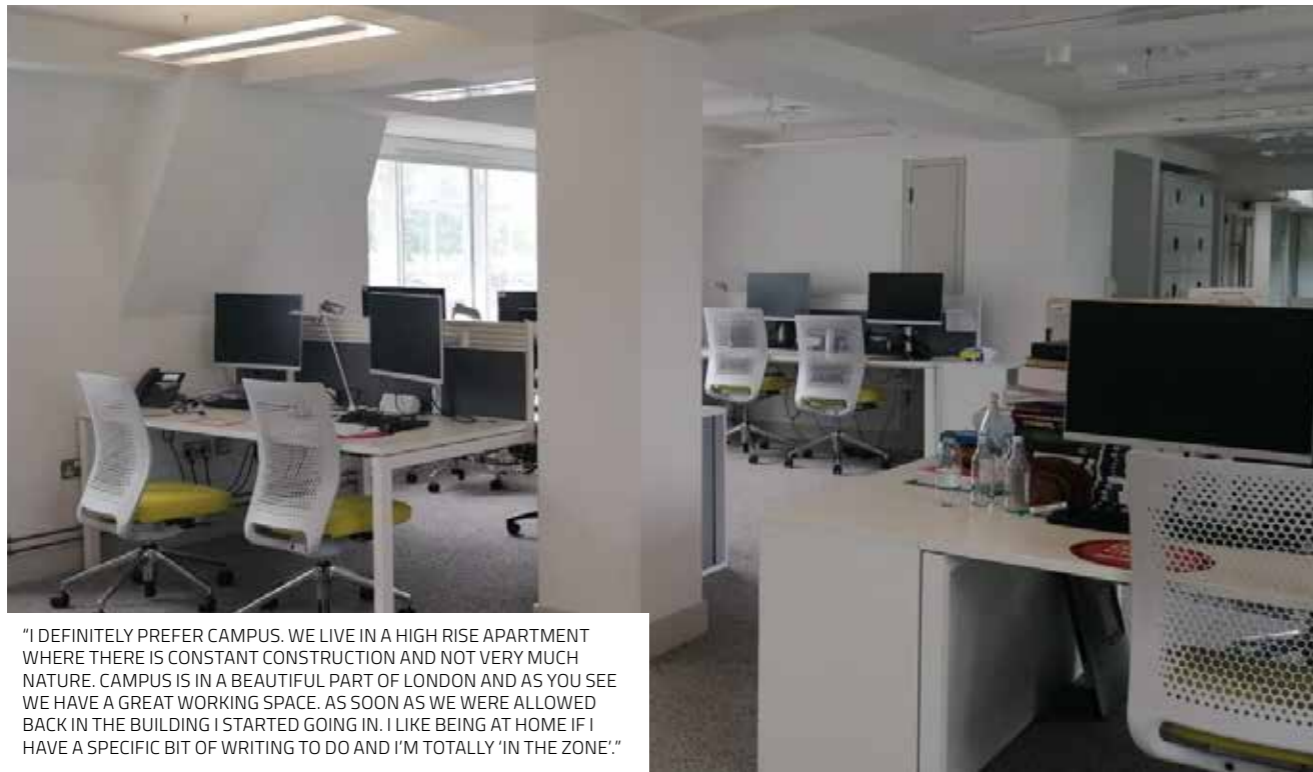
"I DEFINITELY PREFER CAMPUS. WE LIVE IN A HIGH RISE APARTMENT WHERE THERE IS CONSTANT CONSTRUCTION AND NOT VERY MUCH NATURE. CAMPUS IS IN A BEAUTIFUL PART OF LONDON AND AS YOU SEE WE HAVE A GREAT WORKING SPACE. AS SOON AS WE WERE ALLOWED BACK IN THE BUILDING I STARTED GOING IN. I LIKE BEING AT HOME IF I HAVE A SPECIFIC BIT OF WRITING TO DO AND I'M TOTALLY 'IN THE ZONE'."

"I have an office I share with 1 other person & love it. I have a pc, windows, kitchen, and a botanical garden next to the building for lunch break walks. Most work is done in office and not home. So I can actually relax at home. Also love decorating my office (plants, posters)."
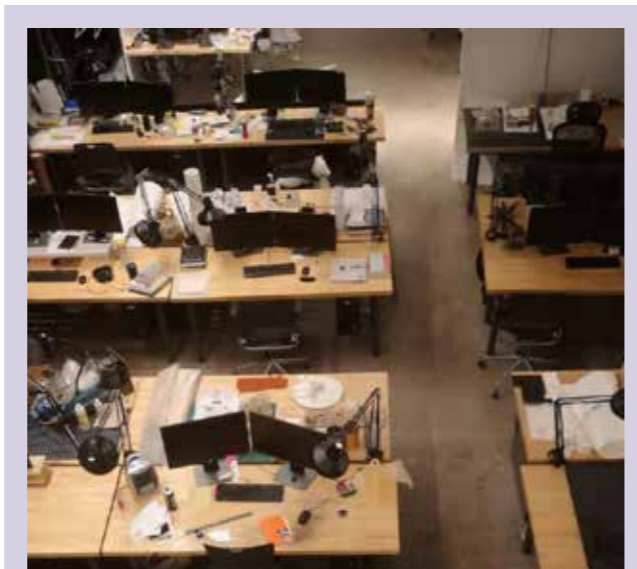
"Last year I went…on an exchange…. If the space is nice and if it gives you things you don't have at home, you really enjoy going there. At (the exchange university), every architecture student has 2 tables. One with a very good computer which has 2 screens, and the other one is behind them, empty, for them to read, write, draw and make models. The building is spacious and no-one would have big enough space to fit 2 tables at home… When I was back I noticed that having two screens rockets productivity. Therefore I set up a similar more humble setting at home. As (my university) cannot provide me that, I work from home mostly."

COMMUNITY AND NETWORK BUILDING ARE SPATIALLY INFLUENCED. STRONG NETWORKS ARE LIFELONG

The Russell Group space survey showed desk allocation as a key pinch-point to student satisfaction

Institutions should consider how to integrate doctoral researchers within the research community to improve the researcher experience, particularly for international doctoral researchers and those pursuing part-time study.

Recommendation 6 – Universities UK Promoting the UK doctorate: opportunities and challenges.[11]

One obvious impact of the pandemic has been the lack of social contact. The PGR experience is often already isolating, especially if the student is not within an organised group with assigned tasks and cooperative activities. Students need to find and create their support community.

Keeping in mind that we asked about space, it was surprising how many people mentioned relationships. Few directly mentioned supervisors but referred instead to fellow researchers, collaborators, mentors and those with whom people could share ideas, gain advice and find opportunities. The network provided two key advantages: friendship and professional networks.

Some reflected nostalgically on their time and how the networks they formed have lasted long beyond completion. For those in open-plan working environments, as expected, the level of community surrounding them would sometimes conflict with the ability to work and think deeply.

"I was in a shared office with others in my research group, a mix of PhDs and post-docs. The research fellow became my mentor and like a supervisor to me, was far more helpful than my actual supervisor, and everyone helped each other out and it was really useful when working on papers together."

"I was part of a cohort of a new PhD scholarship so we were all given desks in shared offices. It was fantastic, all PhDs, interdisciplinary, with desk space, kitchen, free printing and breakout spaces… I feel the interdisciplinary nature of it was hugely beneficial in creating contacts & networking and now, 10 years down the line, you can still see those connections at work."

"Pre-covid I'd share an office with two other PhD students and 5 masters. It was a really encouraging as you'd have someone to ask for help or discuss your procedures, besides having daily human interactions. We were, and still are, some sort of amazing family."

"I'm looking forward to a return to the office as it'll give more structure and ease of flitting between reading/writing and lab work, and I'm really craving those daily interactions with others going through the same experience."

"My supervisor moved me to an office with 4 other PhD students. 10 years later we are still great friends. The social aspect of the space was hugely supportive and morale-boosting."

(No assigned desk) "Looking back I missed out on aspects of networking and scholarly conversations that I have seen others benefit from."

"Others in my school were put in a new (huge) block of portacabins built just for PhD students, so while they were together in what looked like a nice new building, they felt like they were being punished by being kept away from the academics… despite it being fresh and new, it still felt temporary, which made some feel like they were just an imposition and an annoyance to the school who had to find space for them somewhere."

SMALLER SHARED OFFICES ARE A BETTER SOLUTION TO LARGE OPEN PLAN SETTINGS, IF CULTURE IS NOT ACTIVELY MANAGED

Large open-plan spaces theoretically encourage collaboration, but unfortunately are more often counter-productive in academic settings. This is not a suggestion that individual private offices are the solution, but it does show the need to better understand PGR needs in designing shared space.

Respondents have some wonderful examples of very large spaces that worked. In such spaces, people had their own desks, were co-located with others having common interests and were part of a well-managed culture. The concept of spaciousness is a space characteristic we often see in campus experience research.

"Because they are HDRs it doesn't mean they will talk and collaborate. Communities of HDRs need to built around common interests."

A/P Christhina Candido

Overall it seems that smaller offices, whilst not always perfect, allow a sub-culture to form (as long as there are ways for people to move easily if they don't get along with others). These sub-cultures make it easier for people to create rules, like no phone calls or talking during focus times.

Large open-plan spaces make more sense for a space footprint, but this should be balanced with their potential to drive people off campus and erode research relationships. This can be somewhat countered by having someone dedicated to managing the culture, inducting students and providing ongoing support. Co-working spaces achieve this with a community manager.

"We had anywhere from 70-100 people in a huge open plan office. All the PhD students, research assistants/associated, staff and academics sat in one open-plan office. Generally it was organised so we clustered around our supervisors and areas were loosely assigned for the different topics (social justice, place, health etc.). We had access to a kitchen, a collaborative workspace with sofas, whiteboards and meeting rooms as well as smaller booths. We were incredibly lucky with the facilities we had but the most amazing aspect of it was the open-plan office with everyone mixed together — people talked and consequently people genuinely collaborated on all kinds of projects."

"I was in a shared office with about 6-8 other PhD students and postdocs in similar areas of research. It was in a new building, right across from our lab. I loved it."

"Large, glass-walled room "the fishbowl" with 10 wall facing individual desks and a conference table in the center. So many great conversations with fellow doc students all at different stages in the programme."

"Found it impossible to get anything done with people coming up and down the corridor constantly, so gave mine up for someone who might've wanted it more. Did the rest of my PhD cross-legged on my bed in my tiny studio flat."

"Worked in an open office space for all students/postdocs. Was a member of a v small group so was sat in amongst another group. Didn't interact much but didn't get much work done there either. Felt more productive writing/analysing in the lab by myself."

SHARED DESKS CREATE A POWER PLAY IF THE ENVIRONMENT IS NOT WELCOMING AND INCLUSIVE

The data reflected a common issue we see across campuses, where desks designated as shared are often taken over permanently. The blame is often put on students for not following the rules, but we recommend flipping this perspective and thinking about why this occurs:

- Students like to leave their things; it gives some sense of control and enables them to pick up where they left off

- It is stressful when there are not enough desks; people want to know they have a place to work when they come in

- Technology can be prohibitively slow to set up so they want to stay on one desk

- People choose a desk based on comfort, such as ergonomics or environmental factors like temperature

- Storage systems are not well designed so the desk becomes their storage

"We had shared offices with desks (3-6 desks per room) that were supposed to be flex desks but in practice most were 'claimed' by people who were in a lot. Nice for those people (I was one of them), maybe less so for newcomers if there wasn't a space available that wasn't already 'claimed'."

"Originally there was a booking system (although unused and not enforced) then it was just a free for all with little enforcement of the "please don't claim these" rules….it created by and large a really toxic work environment where I suffered consistent bullying, threats by other students to ruin my research including threatening to pour water over my laptop if I left it when I went to make a cup of tea or to the loo."

"Really not a fan of hot-desking … it's very frustrating to find your desktop, with all your specialist software, browser setups and programmes installed, taken by someone else and also I think denying students the opportunity to take up their own space literally = less confidence of taking up space academically, and diminishes a feeling of belonging. … What worries me is institutions having to resort to hot-desking for lack of resources/space, rather than choosing it for its benefits. With higher fees in the UK, I do worry about Universities bringing in too many students for the infrastructure they have in place."

UNIQUE SPACES HELP WITH RESEARCHER IDENTITY

Spaces we have seen vary in how they are furnished from white walls and grey carpet to interesting wallpaper, daylight and artwork. Spaces do not need to be overly sterile office-like environments. Researchers shared nostalgic reflections on curious, eccentric spaces during this formative time of their careers. The lower the quality of the space, the more important surrounding amenity becomes (storage, desks, kitchens, cafés etc).

"The office for our lab was in the Wildlife building basement, with windows at one end. I used to call it the dungeon but I didn't mind as long as I could keep the light off during the day" (this respondent copied in her network on Twitter and they made comments reflecting on their experience).

"My department is in an old two-storey Victorian-style building. Me & my fellow PhD students used to pop into each other's office as well as our supervisors', chatting about our works and lives, asking for help on our project, and of course, gossiping. All great memories."

"Our 'designated workplace' was under the football stadium and like two people used it. Other people camped out in the library coffee shop (terrible for privacy). I commandeered an empty desk in the hallway of our main building & held office hours there. I could leave things there and work in more quiet/privacy than the coffee shop. Zoom over the last year has also been more private."

CAFES AND LIBRARIES ARE POPULAR, ESPECIALLY IF NOT ASSIGNED A DESK AT ALL

For those without a dedicated space, surrounding amenities like lounges, student centres, cafés and libraries were popular. Universities located in densely populated areas (like central London) have a clear advantage with such social infrastructure. These spaces have some limitations however, like opening hours and the formation of the network.

"No space in the department at my uni, but a beautiful and new allocated space in the library. However it is a silent workspace and doesn't allow for talking or getting to know anyone. Have spent my PhD at home and wish it had been otherwise. There is very little interaction in our cohort and had I been living alone I would've felt extremely isolated. I feel very cut off from the department."

"Personally, I always feel tense when I'm in the library and I prefer to work in a cafe, a university cafe is ideal because there is less pressure to spend money to earn the right to be there, and there's often no music. I like to work with other people and be able to chat with them at intervals. Otherwise, it's very lonely. Of course, some people don't like to mix work and socialising, and they can always go to the library to escape from people like me."

SMALL AMENITIES (LIKE WINDOWS, KITCHENS AND STORAGE) MAKE A SIGNIFICANT DIFFERENCE

Kitchens, storage, windows, and meeting rooms make a significant impact on the daily experience of students. These add both convenience but also health benefit, especially daylight and nature connection.

"I was part of a cohort of a new PhD scholarship so we were all given desks in shared offices in the Institute. It was fantastic, all phds, interdisciplinary, with desk space, kitchen, free printing and breakout spaces."

"As a PhD I can request a desk (2 students share the single desk, which doesn't have a computer in it or drawers/lockable storage) and I have to pay for a locker on campus. And in the actual lab where I do work things go missing a lot so if I want them to be there when I need them I'll have to walk to the other (connected building) to put them away. You are always dragging around a heavy backpack. I feel very insignificant and stressed from the chaos."

Recommendations: a better spatial experience will unlock greater potential for PGRs

BASELINE HOW WELL YOUR INSTITUTION'S CURRENT SPACES SUPPORT PGR EXPERIENCE

PRES currently includes one question about space satisfaction, this is a helpful benchmark but results in little detail to support major space decisions. If your institute is strategically interested in improving PGR experience, you "have to walk in the shoes of the students. Spend time, find what works, doesn't work, what they need" (Neil Usher).

Space is continually being added or changed, but it might result in low utilisation as it isn't what users need. One faculty interviewee spoke about how PGRs are allocated random empty offices when they need space. Their 'needs' (kitchen, colleagues, meeting rooms, lab access etc) are not defined as part of this allocation.

The Russell Group survey referred to in this paper was a basic questionnaire including open ended questions. Examining and weighting these comments allows one to see the space through the eyes of the user. It can give new insights and help identify space improvements, for example:

"I am in a shared office, which makes any virtual meetings (which I have regularly regardless of a pandemic) difficult to hold- I am always scrambling to find a place where I can hold the meeting without disturbing anyone"

"When only assigned a desk 1 day a week, it stops being beneficial - it would then be disruptive to my routine to come to campus for that one day. Sharing workspace is not productive for me".

In addition to space satisfaction, consider addressing areas laid out in the table on the right. This can be achieved through interviews, observations, surveys and workshops. The key is engaging directly with users rather than 'needs' being filtered through staff or heads of school.

> **"I have been to PGR rooms and they ask if we like the space, and they laugh."**
> University space manager

The type of research PGRs are doing
- How much research material do students have? Is it largely digital, print, samples, artefacts etc?
- What software and hardware do they require, and what does it need to integrate with?
- Does their research require a fixed space - i.e. running code overnight?
- What are their lab and storage needs?
- What external stress should be considered (e.g. unviable home setup for work)
- What stage of their degree are they at? What level of interaction vs quiet work will they require?

The supervisor relationships
- What is the frequency of contact with supervisors?
- Do supervisors need to locate students daily?
- What is the leadership style of supervisors?
- Are their external universities and partners requiring online meetings?

Community
- Do they work individually, or with a team?
- Are they largely international or domestic? Do they have a community through their research or require help facilitating connections?
- What are similar interests to other PGRs?

BOOKABLE? INDIVIDUAL? SHARED? WHAT IS THE RIGHT MODEL?

There is no single space model, and this is a key reason this typology has become so fragmented. PGRs work and are managed in so many different ways. However, there are some key observations from this research.

Students prefer to have a permanently allocated space rather than a booking system or desk sharing. These unallocated systems are not managed well and create tension for students. Additionally they do not do not allow students to tap into their own personal flow and productivity. Territorial behaviours create exclusive, rather than inclusive, work environments. These options are even more unattractive if they are offered without other amenities, such as break-out rooms, social areas, kitchens, storage and access to staff and colleagues.

Creative solutions are needed to achieve better utilisation, whilst also being realistic about the nature of how PGRs work. Utilisation will never be 100%, however, the physical desk and space, even when not occupied, gives students a sense of value to the organisation and helps with their motivation and completion.

Allowing PGRs access to different spaces as they progress is one way to manage low utilisation. A high-ranking Humanities faculty at an Australian university move their PGRs into different spaces based on their stage of study. At the start they are in an open plan shared space with others, at the end they are in a quiet private office with one other researcher as they write up their findings. As academic workforces transition to hybrid work, this will open opportunities to access unused offices for such models.

To be successful, models using open or shared space require the equivalent of a community manager. This is someone whose role is managing the space, facilitating introductions and ensuring space is used appropriately. Similar roles are present at commercial co-working spaces.

It is also necessary to understand if very low utilisation is being driven partly by poor workplace design (outlined in the following section).

"It is our perspective that significant local control at the department and college level is necessary to meet the needs of faculty and staff who are carrying out the missions of the University, but additional oversight and management at the campus level is needed to ensure optimal use of space and to promote the overall campus strategic plan. Neither a fully top-down nor bottom-up approach can achieve these goals"

Office of the Provost and Vice Chancellor for Academic Affairs Review of Space Utilization, University of Illinois [12]

"Currently unable to leave possessions on the desk/in the office (even for those who have a desk 5 days a week)."

"Choice is limited and has to be booked every time and cancelled when not checked in on time."

"I feel I can be more productive with a desk assigned to me. I work on data a lot so need multiple monitors and privacy screens to work effectively on campus. I can only have this with assigned desk space."

DESIGN FOR EFFECTIVENESS, NOT JUST EFFICIENCY

One interviewee, workplace strategist Neil Usher, emphasises that efficiency (or utilisation) needs to go hand in hand with effectiveness,. Low utilisation is in part an effect of poor workplace quality. We have summarised elements for effective PGR space based on best practice, and feedback from the students themselves.

"My workspace for my PhD was fantastic. I had my own desk in an office that was shared with one other person. My desk looked out a window where there were some plants and then other buildings. The office was in a corridor full of doctoral students. This environment enabled me to engage, support and be supported by my peers (door open) or knuckle down for intense thinking (door closed). As I finished my PhD, the faculty was moving to a new building with hot desks for HDRs."

Design elements of effective PGR spaces

	Description
Comfortable environment	▪ Access to daylight and external views (linked to lower stress, better concentration, productivity benefits and sleep) ▪ High ventilation rates and air quality to increase productivity ▪ Ability to control temperature ▪ Good acoustic control or ability to control noise (e.g. doors closing off to noisy areas) ▪ Sensitive design of the spaces (e.g. not in thoroughfares, low visual disturbance) ▪ Designs that understand users (eg data coders vs art historians) and their stage of study ▪ Inspiration through artwork or paint over sterile office-like finishes
Technology	▪ Supplied laptops and docking stations, a seamless IT experience ▪ Access to additional screens ▪ Ability to install custom software ▪ If no allocated space at University, funding support for technology at home
Desk and storage	▪ Allocated desks or sufficient numbers of desks for PGRs ▪ Spacious desk to spread out materials ▪ Comfortable, padded, ergonomic chairs ▪ Ability to leave items on the desk throughout the day, and sufficient storage to pack these away if desk is not allocated ▪ Sufficient storage for samples, artefacts and research material next to workspace
Amenity	▪ Nearby access to kitchen and bathrooms ▪ Nearby access to social spaces and areas to eat (e.g. cafes) ▪ High-quality, accessible and sound-proof meeting/ quiet rooms ▪ Above amenity is even more important in large open-plan spaces
Network and community	▪ Students are sensibly co-located with others sharing similar interests/ research areas, they do not want to sit next to different people every time they come to the campus ▪ For those outside an organised research group, curate sensible research nodes to facilitate community ▪ Near to other staff within their field ▪ Close proximity to supervisors and labs
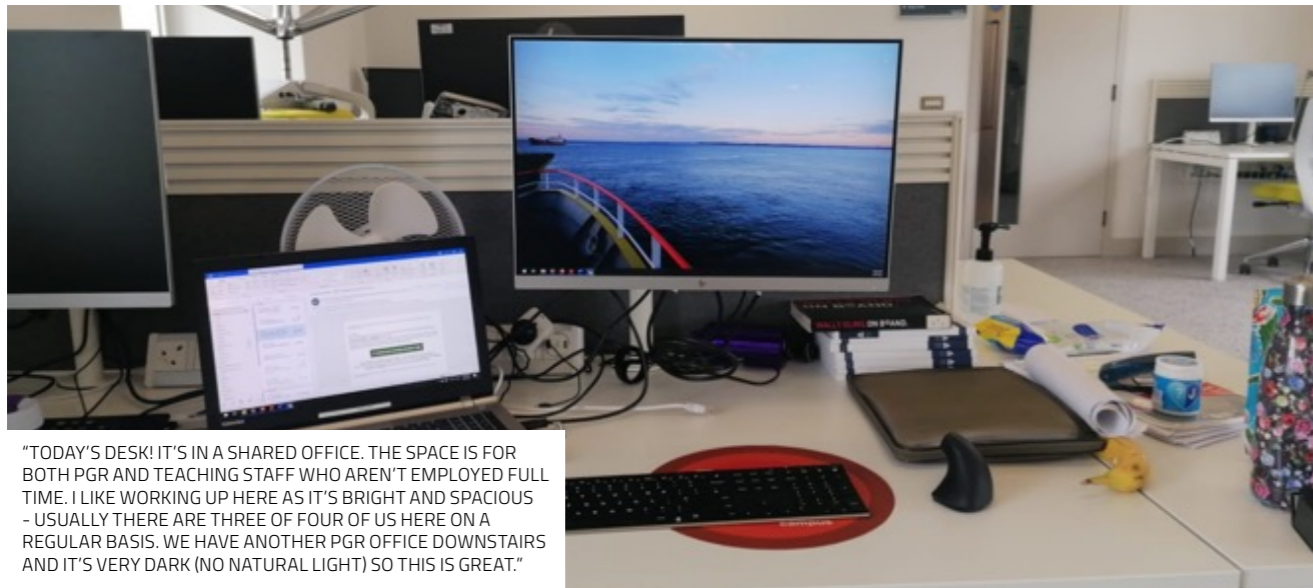
"TODAY'S DESK! IT'S IN A SHARED OFFICE. THE SPACE IS FOR BOTH PGR AND TEACHING STAFF WHO AREN'T EMPLOYED FULL TIME. I LIKE WORKING UP HERE AS IT'S BRIGHT AND SPACIOUS - USUALLY THERE ARE THREE OF FOUR OF US HERE ON A REGULAR BASIS. WE HAVE ANOTHER PGR OFFICE DOWNSTAIRS AND IT'S VERY DARK (NO NATURAL LIGHT) SO THIS IS GREAT."

"At my UK PhD institution we had a great system. First years were all put into a great big shared office, about 12-15 of us (that was my departments entire 1st year PhD cohort). Then in 2nd year we were moved into shared offices of 4-6 people. Then in the final year, shared offices of 2-3 people. This worked so well – your first year was about embedding you into the cohort, making friends, sharing those early stages of studying research degrees and getting through an the research skills training stuff. Then, getting into smaller groups and quieter spaces as you needed more thinking and writing time. In each office you had your own desk so you could store books, papers, have a PC etc."
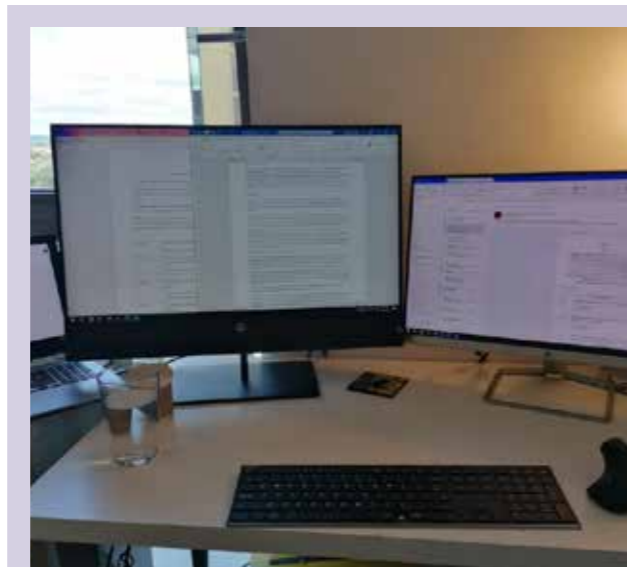

"We have been notified as close contacts of a Covid case, so working from home all week. This is where I worked through most of Covid. It's a good space but a bit cramped and I don't focus well at home. We have a research allowance that we can use for a laptop but it's quite limited in terms of which model/pricing and reduces the amount we would have for books and conferences etc I had to purchase the screens, desk, keyboard and chair because uni haven't been clear/proactive about offering us support."

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This work was also informed by:

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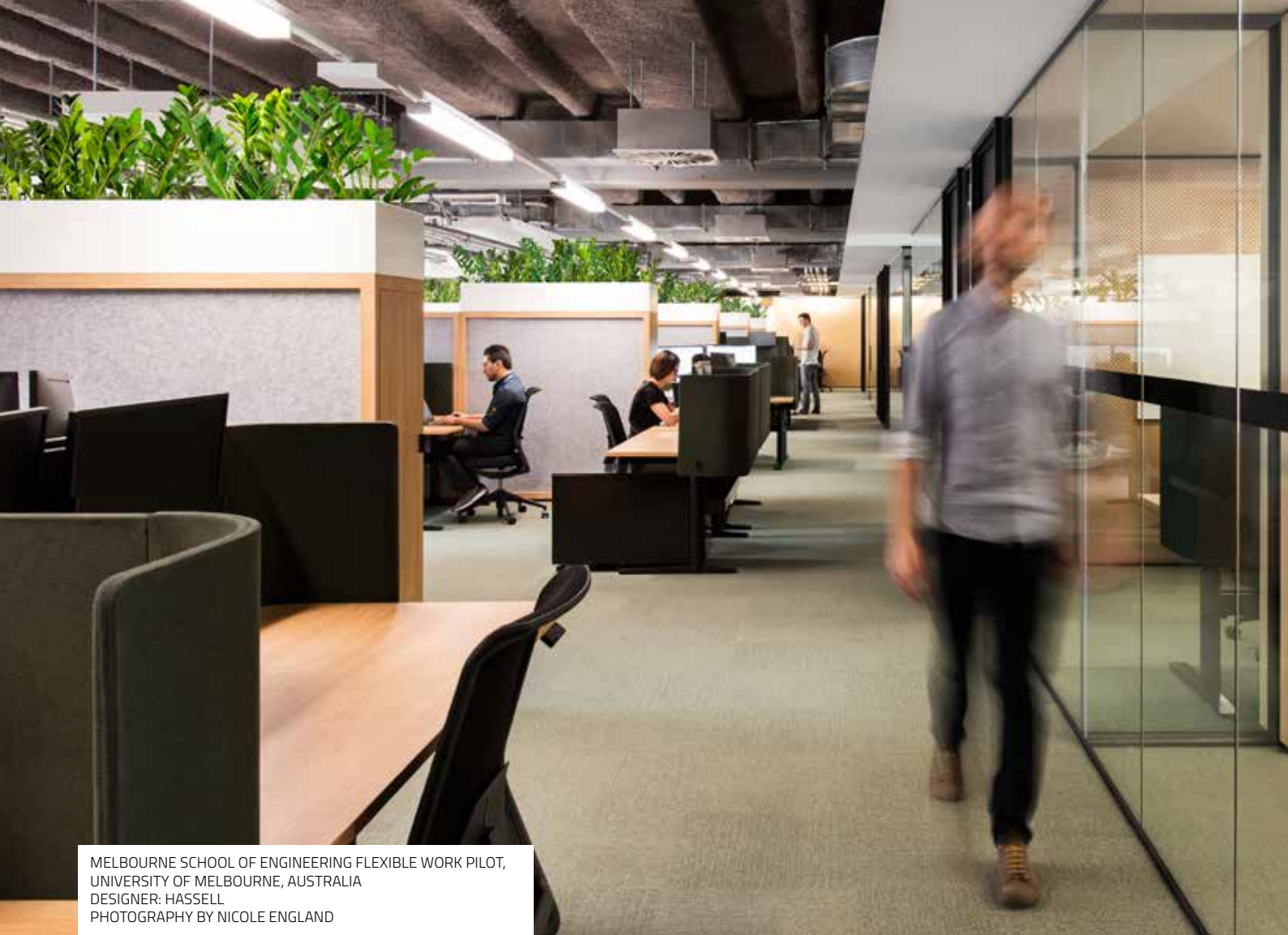
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