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The case for new academic workspace

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The case for new academic workspaces



The case for new academic workspaces

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Executive summary

This report draws upon the combined efforts of a number of estates professionals, architects, academics, designers, and senior managers involved in the planning of new university buildings for the 21st century. Across these perspectives, all would agree – although perhaps for different reasons - that this planning is difficult and that a number of particular considerations apply in the design of academic workspaces. Despite these difficulties, they will also agree that when this planning goes well, 'good' buildings are truly transformational – for both the university as a whole and the people who work and study in them. The value of well-designed buildings goes far beyond their material costs, and endures long after those costs have been forgotten.

The report is the product of an 18-month study of new academic workspaces in the UK aiming to distil lessons learned from them (both positive and negative) and to offer guidelines for future implementation. It describes the challenges of academic workspace design in the 21st century and various strategies and spatial arrangements that can help achieve the goals of a higher education institution and its academic members. The principal finding is that this is a complex issue without simple or generic answers. However, some common and important issues beyond the usual issues of design and procurement can be highlighted:

Academic workspaces are changing due to changing academic practices and priorities, new information technologies, financial pressures and environmental considerations.

The most successful buildings are part of wider organisational change. New buildings are often aspirational, being associated with new goals and new practices. But buildings alone do not change people or organisations. Essential elements in planning new buildings are: to determine their relationship to organisational development; to recognise the opportunity they represent to facilitate wider change; and to ensure 'joined-up thinking' in the development of UK HE estate development.

The most successful projects keep all stakeholders enthusiastically engaged. The success of projects is directly linked to the organisation's ability to keep all stakeholders enthusiastically engaged and its willingness to recognise and meet the costs of doing so. In particular, the role of 'space champions' – individuals empowered to represent the ultimate users of buildings and to engage with all professionals in the planning and construction stages – is paramount.

In other words, the key to a successful project is to understand the particular circumstances, what the workspace is trying to achieve, and how best to go through the process. This report argues that these are greater considerations than might previously have been thought and deserve greater vigilance than they currently receive. Each comes with additional costs to a project but, as context to the resolution of the complex issues in planning academic buildings, they point to processes that significantly increase the likelihood of a successful outcome.

1 Introduction

In recent years there has been growing interest in the issue of office space design, with workspace being heralded as an important strategic investment for public and private sector organisations.

One sector that has seen considerable expenditure is higher education, with universities investing significantly in creating new work environments for their academics[1]. Yet, to date, there has been little debate about what type of office environments higher education institutions should provide to best support their lecturers and researchers, and to help maintain the UK's position as one of the world's leading knowledge economies.

For the most part, conversations about new academic workspaces have been driven by the suppliers of space (estates professionals and architects) rather than its academic consumers. Attempts by some institutions to move away from their traditional provision of individually allocated, cellular offices for their teaching and research staff have often engendered strong reactions, with some academics asserting that it reflects, and is part of, a challenge to the very definition of academia[2]. As a brief search of publications such as Times Higher Education will attest, the issue of academic office space provision remains a sensitive and contentious subject.

The purpose of this report is to inform the ongoing debate about academic workspace design in the UK higher education sector. We examine the reasons why academic workspaces are changing, the benefits that higher education institutions are seeking through their investment in new workspaces, and the factors that make new academic workspace projects successful (Figure 1). We intend this briefing paper to be of particular interest to higher education institution senior managers, as well as academics, estates professionals and designers who are involved in the design and development of new academic workspaces.

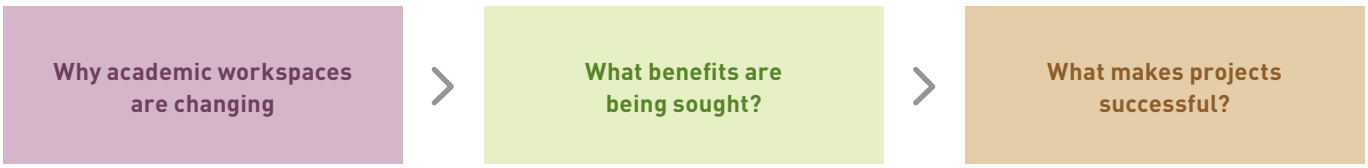


Figure 1: Structure of this report

This briefing paper is based on the findings of an 18-month study of new academic workspaces in the UK higher education sector, which encompassed a wide range of institutions, subject disciplines and building types. As part of this study we visited academic work environments at higher education institutions across the UK and talked to a wide range of academics, researchers, support staff, senior managers and estates directors. We also engaged with architects, designers, project managers and other professionals involved in the design and delivery of academic workspaces. In addition to this, we collected data from exemplar work environments at academic institutions overseas.

We would like to express our gratitude to those people who contributed to our study and the creation of this briefing paper, including:

- The Higher Education Funding Council for England (HEFCE), for funding the project
- Members of the project steering group[i]
- The representatives of the higher education institutions and other organisations that participated in our project[ii]

The last are not least, because without their engagement we would have limited data and the crux of our research has been to move beyond rhetoric to evidence of how innovations have worked out in practice. The higher education community should be indebted to those institutions and individuals who have tried something different, and been prepared to share their experiences.

Our approach has been to learn from evidence and hence our frank, case study approach. However, we have chosen not to reference a specific institution in the case of learning that might be construed as saying something negative about them or their project. This would be to distort the overall picture, which is undoubtedly one where all the projects have had successful outcomes, although some less so; this is almost inevitably the case in building projects involving significant uncertainty and innovation. Nonetheless, there remains scope for improving outcomes further and we believe that we have uncovered (or confirmed) some important lessons that will enable this.

As you read this paper we would like you to keep three ideas in your mind:

Do not expect simple, generic solutions that are both efficient (in space use) and effective (in supporting activity) – there is considerable variety of endeavour within the academic community and it is necessary to understand each situation and its context. Thus we do not present our findings as a set of specific spatial solutions, but as useful aides to your decision-making.

Do challenge users to think hard about how they might work in the future, but also listen and be open-minded – engaging users in this dialogue will strengthen the briefing process and increase buy-in.

And lastly, we believe that in order to learn, **it is important to reflect on those aspects of projects that have not worked as well as hoped**, in addition to those that have – most post-occupancy information in the public domain is sanitised – and there is something particularly positive about the attitude of those who have been open and honest for the benefit of us all.

Further information about our project can be found online at www.academicworkspace.com

i A list of our steering group members is given at the end of this document.
ii See Acknowledgements for a full list of collaborating institutions.

2 Why academic workspaces are changing

The last decade has seen significant capital investment and widespread moves by UK higher education institutions to create new office spaces for their research and other academic activities.

During the course of our study we encountered a wide range of academic workspace designs (Figure 2), from single-occupancy cellular offices through to non-territorial office environments, in which people occupy workspaces as and when they need them.

We found that many new academic workspaces are still designed as single-occupancy cellular offices, although smaller cellular offices or multi-occupancy cellular offices have become more common. A variant is the combi-office, in which occupants are provided with a small cellular office and adjacent shared informal meetings spaces. However, this design is still a rarity in the UK higher education sector[3].

A number of the work environments that we visited during our study were open-plan, although these were often designed for research institutes, in which the staff have little or no face-to-face student contact[4]. One very discernable trend that we observed was the move towards the provision of non-territorial open-plan working environments for doctoral researchers[5]. In these environments researchers are not allocated a permanent desk, but instead are expected to share a variety of work settings.

Some institutions have taken the non-territorial workspace concept a step further by providing shared collaborative research spaces that are not 'owned' or occupied by any one particular academic faculty or department[6]. Such spaces nevertheless remain few and far between. For the most part, the picture that emerges from our study is one of incremental, rather than transformational, change in academic office space design in the UK higher education sector.

Our study suggests that there are a number of reasons why academic workspaces in the UK are changing. These reasons include:

- Changing space demands
- New information and communications technologies
- Financial pressures
- Carbon reduction commitments
- Developments in other sectors

Each of these issues is discussed in further detail below.

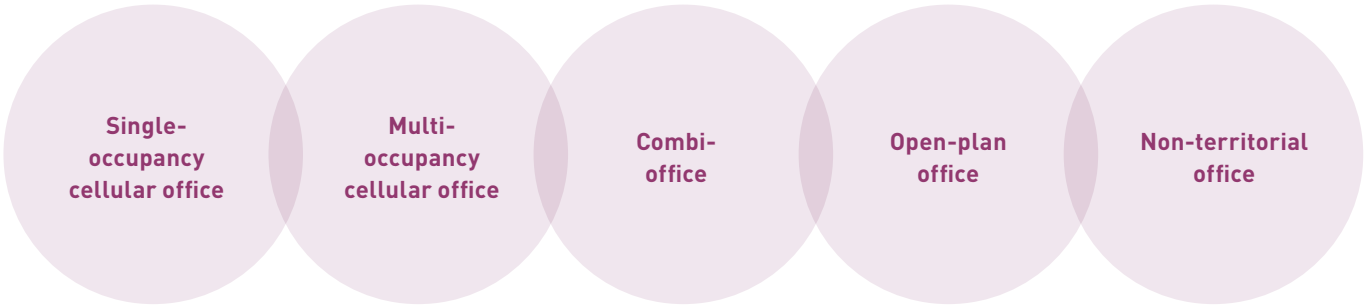


Figure 2: Types of academic workspaces in the UK higher education sector

2.1 Changing space demands

The UK higher education sector has undergone important changes in recent years, which in turn have created demands for new academic workspaces. Many of these changes have been driven by government policies and the strategic challenges laid down by funding bodies, such as the higher education funding councils and research councils (for example, see Table 1, below).

Amongst the significant changes are:

- Demands for more collaborative and inter-disciplinary research, focused around strategic issues, such as climate change and the digital economy
- Rising student expectations following the introduction of variable rate tuition fees in England and Wales
- An increasing focus on knowledge exchange between academia and industry and the need for researchers to demonstrate the impact of their activities
- Attracting, retaining and developing talented people in an increasingly competitive and globalised higher education market

Some of these changes were explicitly reflected in the design aims of the buildings we case studied. For instance, the Devonshire and Paul O'Gorman buildings at Newcastle University were both designed to encourage inter-disciplinary working and collaboration between groups of researchers that had previously worked apart (Figure 3). Part of the reason for the redevelopment and extension of the Sir Frank Gibb building at Loughborough University was to help support the recruitment and retention of talented academics and post-graduate researchers.

As demands on the higher education sector continue to change over time there will be a growing need for new academic workspaces that are flexible enough to cope with changing organisational needs and to support new ways of working. Adding to these pressures is the need to update the sector's aging building stock: more than two-thirds of the current UK higher education estate is over 30 years old, with the majority of the buildings having been constructed during the 1960s and 1970s and designed with different user needs in mind (Figure 4). Historic underinvestment means that such buildings are more likely to be in poor physical condition and functionally obsolete.

Table 1: Examples of strategic challenges affecting academic workspace design in the UK HE sector

Strategic outcomes/goals of the Engineering and Physical Sciences Research Council [7]
Stimulating creativity and adventure in research and research processes.
Attracting, nurturing and supporting the most talented people at every stage of their career for the benefit of the UK.
Building collaborations that achieve a two-way flow of knowledge between the research base and industry.
Encouraging and supporting research that crosses the borders between disciplines, research councils and universities.
Developing a shared vision of tomorrow's major challenges and opportunities with stakeholders; society, industry, universities and other partners.
Building a better understanding of where we should focus our effort to benefit both UK society and the UK economy and increase its global competitiveness.
Creating and sustaining research scientists and engineers in the UK so that they are recognised worldwide as leaders in their field.



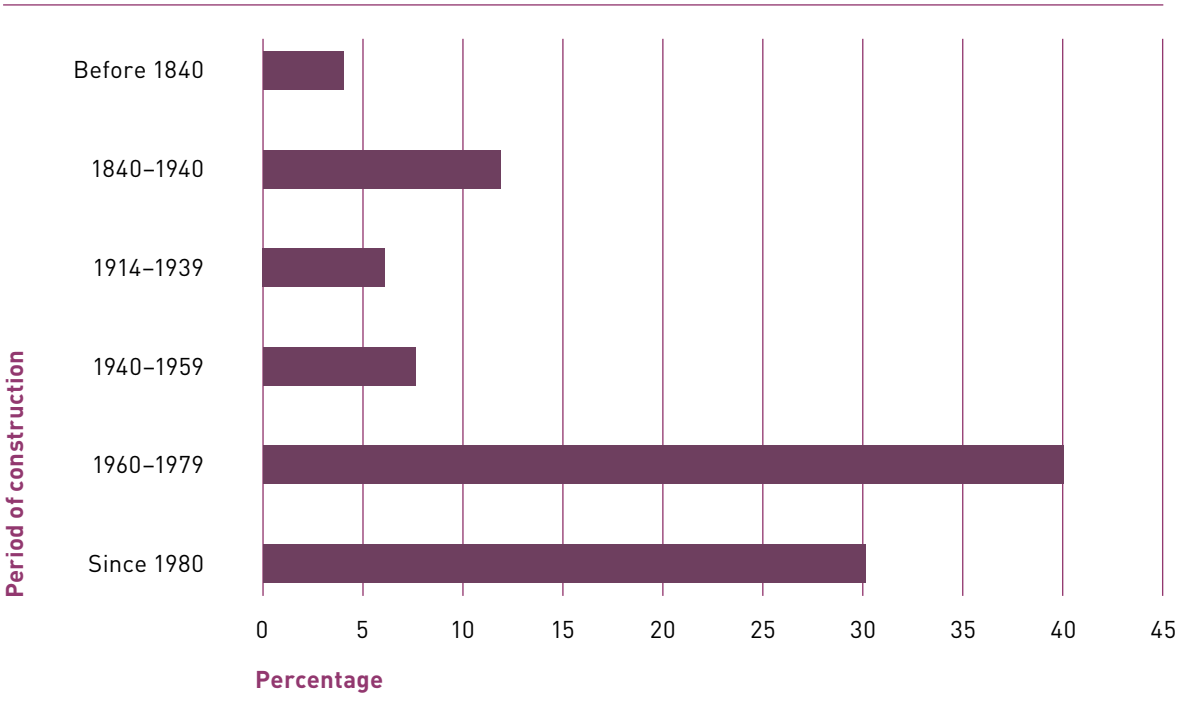


Figure 3: Designed for collaboration – the Devonshire building (left) at Newcastle University and the Jennie Lee building (right) at the Open University

2.2 New information and communication technologies

New information and communications technologies (ICT) have been both a reason and an enabler for developing new academic workspaces over the past three decades. The fundamental driver behind developments in ICT is the ability of humans to communicate and collaborate. A useful classification of collaboration modes is the two-by-two grid, given in Figure 5, where collaborators are in the same/different places and in the same/different times, supported by a number of different technologies.

Figure 4: Period of construction of the UK's non-residential HE estate[8]



	Same time	Different times
Same place	**Face-to-face collaboration** Everything from PowerPoint and projector to interactive workspaces with interactive whiteboards	**Asynchronous collaboration** Leaving post-it notes for colleagues who share our workspace
Different places	**Synchronous distributed collaboration** – Smart phones – 3G broadband – VOIP – Video conferencing – Remote Desktop Connection	**Asynchronous distributed collaboration** – Email – Shared virtual workspaces such as SharePoint and Huddle

Figure 5: Examples of technologies that have had an impact on academic workspace design[9]

Technologies, such as "smart" phones and 3G broadband, together with new software applications, mean that academics and researchers can now work and collaborate more flexibly across different locations. This has, in turn, had a dramatic impact on workspace requirements, changing the role that the campus-based office plays in supporting day to day working. Wireless technologies have also influenced the physical environment, enabling new and existing buildings to be configured more flexibly to adapt to evolving work settings and working practices. Laptops and the rapidly decreasing size of most computer hardware add further flexibility to workspace configurations. This flexibility is crucial in a sector that is subject to increasing change and uncertainty.

The need for occupants to collaborate with colleagues within the building also impacts on the form of the work environment. The top row of Figure 5 (and particularly the top left quadrant) usually receives less attention from ICT users and researchers. The impact of ICT on academic workspace design is likely to increase in the future as new technologies emerge and higher education institutions begin to develop a better understanding of how to manage the interface between their physical and virtual working environments. This in turn may lead to the development of "technology-rich" academic workspaces, comparable to those that some institutions have created for their learning and teaching activities[10].

2.3 Financial pressures

Higher education institutions in the UK collectively occupy around 17 million m^2 of floorspace, approximately 15% of which is occupied by academics and researchers as office space[11]. Over the last decade institutions have been under increasing pressure to use their space more efficiently, with initiatives such as the UK Higher Education Space Management Group[12] being setup to support them in achieving this goal. However, while the amount of space per student has declined across the sector in recent years, the ratio of office space per academic member of staff has stayed largely the same[13]. Institutions' utilisation of academic office space remains poor, and arguably has not adapted to changing circumstances.

In addition to the low occupant densities found across the sector, the effective utilisation of academic office space (the degree to which it is occupied over time) also tends to be poor. Utilisation studies have repeatedly shown that academics and researchers typically occupy their workspaces for only 30-40% of the working day (Figure 6), because they are teaching, in meetings, away on business, on annual leave, working from home or engaged in some other activities away from their desk.

The issue of workspace utilisation is intrinsically linked with the costs of space provision. Higher education institutions in the UK spent more than £2 billion on property in 2007-08, equating to around 10% of total institutional income or expenditure for the sector[14]. Any 'public sector recession' and the budget cuts associated with this will mean that institutions are increasingly under pressure to reduce their estates costs by rethinking the way that space is utilised.

For higher education institutions, the cost of providing workspace for academics or researchers is still relatively small compared with the cost of employing them (institutions spent £13.1 billion on staff salaries in 2007-08[15]) and the income (and non-monetary value) that those people can generate for their institutions. If, for example, efforts to reduce occupancy costs by ten percent result in even a one percent reduction in the income generating potential of an academic (through lost productivity and motivation), then the benefits of the space efficiencies will be lost. Although this is a somewhat crude example and the relative values will vary from individual to individual, it still serves to illustrate a point: efforts to reduce workspace costs will be counter-productive if they have a negative impact on the ability of lecturers and researchers to work effectively.

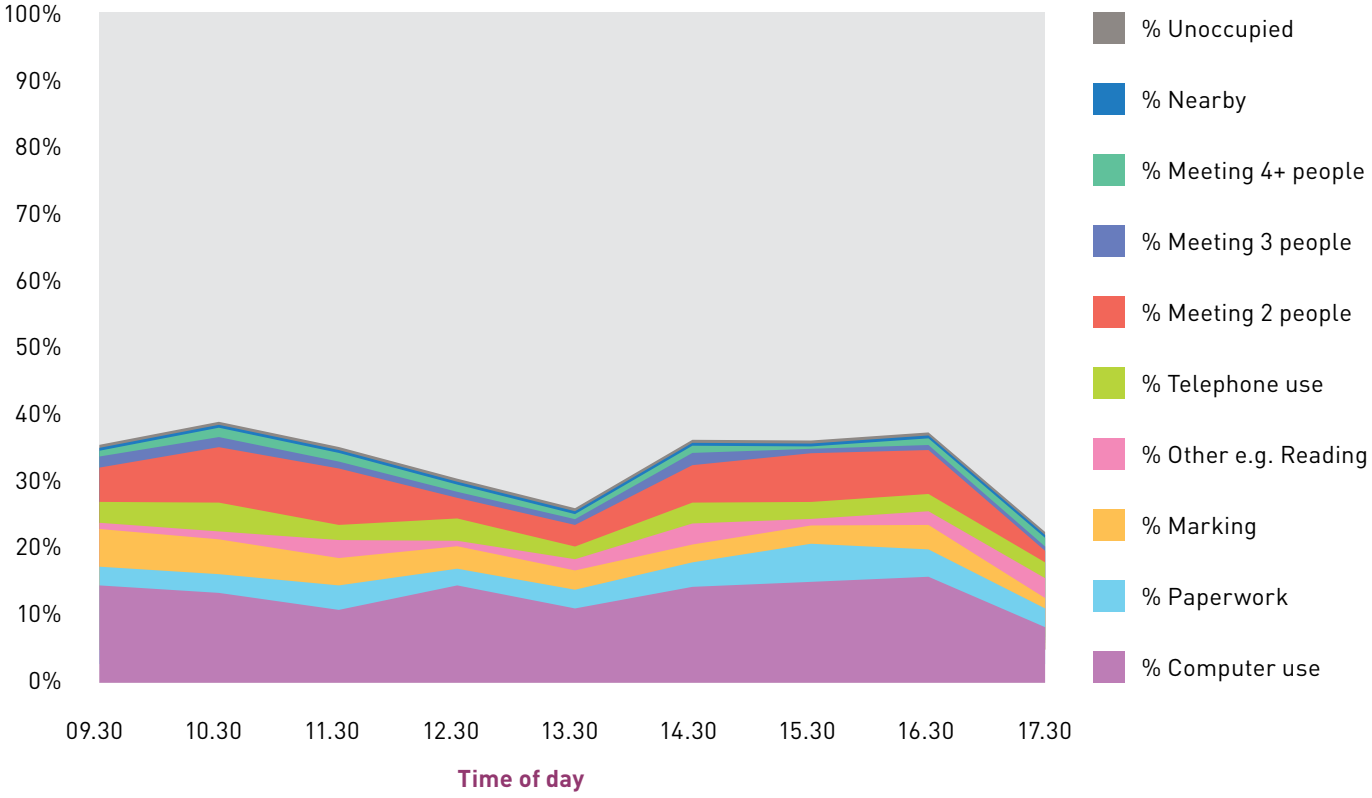


Figure 6: Example of a space utilisation profile for a group of academic occupants[16]

2.4 Carbon reduction commitments

Pressure to reduce the carbon footprint of the higher education estate will become an increasingly important reason to rethink the design and utilisation of academic workspaces. In 2007-08, higher education institutions in the UK emitted more than two million tonnes of CO_2 emissions from their buildings, mainly due to space heating and lighting. The total energy costs for the higher education sector exceeded £350 million in 2007-08,[17] a figure that is likely to increase for 2008-09 due to rising energy prices.

Under the UK Government's forthcoming Carbon Reduction Commitment Energy Efficient scheme around half of higher education institutions, along with other large public and private sector organisations, will be required to purchase credits equivalent to their CO_2 emissions each year. The revenue generated will be redistributed to members of the scheme based on their performance in reducing emissions, with the best performers being rewarded financially[18].

Whilst higher education institutions have made some progress in reducing their CO_2 emissions in recent years, they will come under increasing pressure to lead by example in helping to achieve the Government's long-term target of ensuring the UK's CO_2 emissions in 2050 are at least 80% lower than in 1990[19]. HEFCE has recently proposed a sector target of a 50% reduction by 2020, and 100% (achieving carbon neutrality) by 2050[20]. Rising staff and student expectations will add to this pressure. Educating lecturers and researchers on the environmental impact of their space demands will therefore become an increasingly important issue for estates departments. This has implications for both the building form and materials, as well as the way people work within it.

2.5 Developments in other sectors

Developments in other sectors have had a growing influence on academic workspace design in the UK, as institutions have looked beyond their peer group for examples of learning and good practice. During the course of our study, design trends in other sectors were commonly cited by workspace designers and higher education estates professionals as exemplars that could be replicated in an academic setting. A key challenge for the higher education sector is to determine which design concepts are applicable in an academic setting, something that is likely to vary from project to project and institution to institution.

Commercial organisations have tended to be at the forefront of developing new office environments, with public sector organisations, such as government departments and local authorities, following their lead[21]. Although the design of new workspaces can vary significantly, generally speaking there has

Cost focus	People focus
Physical workspace is a costly resource	Physical workspace is an enabler
The emphasis should be on reducing property costs	The emphasis should be on supporting working practices
Offices should be designed to be efficient	Offices should be designed to be effective
The needs of occupants are secondary	The needs of occupants are paramount

Table 2: Contrasting approaches to workspace provision

been a move towards the development of office environments that are:

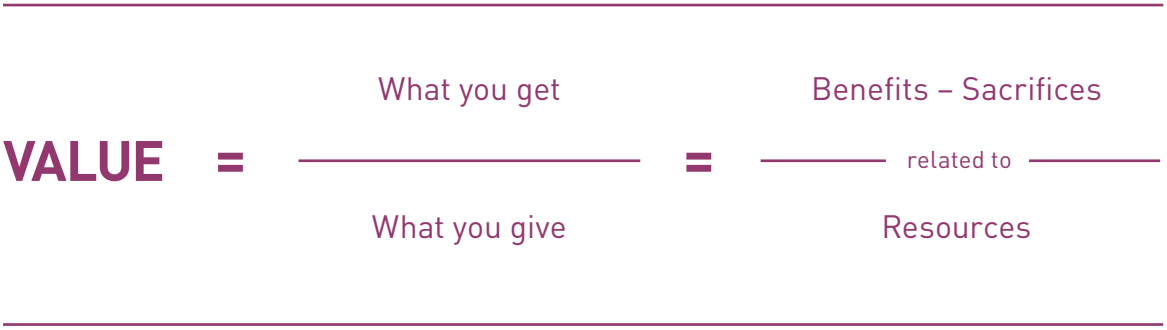
- Reflective of more open and transparent organisational cultures
- Less hierarchical, with space allocated based on functional need rather than status
- Flexible enough to accommodate changing individual and organisational needs
- Utilised more efficiently due to higher occupant densities and new ways of working, such as desk sharing
- Integrated with cutting-edge information and communications technologies
- Aligned with corporate branding

For some public and private sector organisations, the main reason for developing new office environments has been financial; new workspaces provide an opportunity to reduce property costs by increasing space utilisation. However, for other organisations the primary motive for developing new workspaces has been a desire to develop more effective working environments that support and encourage creativity, interaction and the sharing of knowledge and ideas between colleagues. These two contrasting approaches to workspace provision, which need not be mutually exclusive, are summarised in Table 2.

In recent years, however, there has been a shift towards thinking about capital projects in terms of value – driven by publications such as CABE's 'The Value of Good Design'[22] and Constructing Excellence's 'Be Valuable'[23]. Value is defined in the latter as the balance between 'What you get' and 'What you give' (Figure 7). This definition is one of output versus input and also makes explicit that value is in the eye of the beholder (the 'you' emphasis) and is different for each stakeholder. We believe this distinction is important because it forces a multi-lateral perspective of what a project is about. For example, users tend to be less concerned with the costs of building construction and operation, and more concerned with how the building supports them in their day-to-day work, compared to say an estates director.

If we unpack this value definition a little further we can think of the 'gives' as the time, effort, money and materials consumed (resources). On the other hand, the 'gets' are the benefits desired by a party, moderated by any sacrifices (anticipated or otherwise) required. In this way we recognise the trade-offs that are inevitable (particularly when resources are limited) for at least some stakeholders[24]. The following section examines in more detail the nature of these benefits in academic environments.

Figure 7: Unpacking the meaning of value in workspace design



3 What benefits are being sought?

Traditionally there has been a lack of evidence concerning the impact of office environments on people and organisations.

Whilst the evidence base remains small, research and literature on the subject has increased in recent years. In the UK, public and private organisations that have invested in new workspaces have reported a wide range of benefits, including increases in perceived productivity, greater interaction and collaborative working, more efficient and flexible utilisation of space, and improved recruitment and retention of staff[25].

To date, there has been little or no evidence published concerning the impact of new academic workspaces on lecturers and researchers[26], despite many higher education institutions in the UK undertaking post-occupancy evaluations after capital projects. However, our study suggests that higher education institutions in the UK are seeking, and in some cases realising, a variety of benefits from their new academic workspaces, including

- Improved organisational outcomes
- Increased user satisfaction
- Effective working
- Cultural change
- Flexibility
- Better space utilisation
- A raised organisational profile

Each of these benefits is discussed in further detail below. We would emphasise, in line with the definition of value described in the previous section, that these benefits are not sought by every stakeholder, and may not be experienced in the same way.

3.1 Improved organisational outcomes

Establishing a link between office space design and organisational outcomes has long been the holy grail of those involved in the development of new workspaces. This is often difficult because of the problems involved in:

- Accurately measuring the outcomes of knowledge-based organisations, such as universities
- Establishing cause and effect, due to the influence of other factors

This latter point is illustrated by Nottingham Trent University's Psychology department's move to the newly refurbished Chaucer building in spring 2008 (see Figure 8). One of the drivers for the move was the poor condition of the department's existing accommodation, which was considered to be less than impressive on open days. Since the move, the department has performed extremely well against its targets for student recruitment. Both the Psychology senior admissions tutor and the head of department hold that the estate has played an important role in this success, but agree that it is difficult to quantify its contribution given the impact of other factors, such as the recent increase in applications to taught courses across the higher education sector as a whole.

Figure 8: Before and after – informal seating areas in York House and the Chaucer building at Nottingham Trent University





Despite these difficulties, the ultimate goal of most new workspace projects is to have a positive impact on organisational outcomes, in some form or another. A number of the project briefs that we examined as part of our study did make reference to the anticipated impacts that new academic workspaces would have on organisational outcomes. For instance, the design brief for the Devonshire building at Newcastle University determined that the new workspace should result in:

- Additional research grants
- Less experienced staff developing and improving their profile and research experience
- An increase in research activity grading, in the form of higher Research Assessment Exercise (RAE) scores

The Devonshire building is now home to the University's Institute for Research on Environment and Sustainability, a virtual institute that was established in the new building and that brings together researchers from different subject groups who would not have previously collaborated with each other. Anecdotal evidence from interviews with academics in the Institute suggests that the new workspace has had a positive impact on research outputs. Professor David Manning, Director of the Institute, suggested that the building has also played a role, albeit one that is unquantifiable, in attracting funding, commenting that:

"There's no way that we can capture evidence to support any claims in any direction, but the presence of the facilities that are here has been vital, and has enabled us to win significant funding. But the question then would be well what would have happened if we hadn't got the building? I would think the building has probably accelerated what would have happened otherwise – it has made it easier to get the funding".

3.2 Increased user satisfaction

Research linking employees' satisfaction with their work environment to their performance and self-rated productivity, as well as to their overall job satisfaction[27], is generally translated as meaning that happy workers are more productive workers who are also more likely to continue working for an organisation. Given the difficulties in measuring organisational outcomes, it is therefore unsurprising that increased user satisfaction is frequently used as a measure of success in academic workspace projects.

In our discussions with estates personnel and other professionals involved in delivery, we found a widely held view that user satisfaction is more important in academia than in many other sectors. Particularly at research intensive universities, academics' individual expertise means that they are considered to be less replaceable than professionals in other sectors. If an academic leaves their host institution, not only are they able to take their research grants with them but the department may also lose a specialism from their research and teaching offering. The drive to keep particular 'big fish' happy was evident within some of our case studies, perhaps the most extreme example being the inclusion of a single cellular office within an otherwise entirely open-plan environment.

User satisfaction is commonly gauged through post-occupancy evaluation questionnaire surveys, focus groups or interviews with occupants. However, from project to project these data collection activities tend focus on different aspects, which poses difficulties when interpreting and comparing results. Some institutions overcome this to some extent by undertaking before and after studies to establish whether there has been a change in users' attitudes and opinions following their move to a new workspace.

A number of the projects that we looked at achieved substantial increases in user satisfaction. For example, the development of the office accommodation at the Department of Civil and Building Engineering at Loughborough University 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 highly subjective, most would be happy to accept that such large increases are significant. We would emphasise the benefit of such benchmarking against a large data set in positioning these assessments but it requires consistency in the questions, and it can limit the issues you are able to explore.

User satisfaction with a new environment is not, however, a straightforward reflection of its quality and functionality, but rather it is inherently bound up with occupants' expectations of provision, which is linked to their previous space provision (both of which may relate to their identity as an academic or as a researcher, – something that is discussed further in section 4.3). When, as part of the redevelopment described above, research students at Loughborough University moved from having allocated desks in what was quite poor quality workspace, to a high quality, non-territorial work environment (Figure 9), there were a number of complaints about the inconvenience and disruption caused by hot-desking. Yet at University of Warwick's Research Exchange, which is also a non-territorial office space for researchers, hot-desking was not raised as an issue by any of the users we interviewed – presumably because they had no expectation of allocated space.

Figure 9: Before and after – research student workspaces in the Sir Frank Gibb building at Loughborough University





Our case studies also underlined the impact that users' perceptions of the project delivery process can have on their satisfaction with their new workspace. For instance, in one of the projects that we case studied, academics moved from very poor quality office accommodation into an environment that was a considerable improvement. However, their views of their new workspace were coloured by what they felt to be a lack of consultation and engagement by the designers of the project. The importance of effective user engagement is discussed later in this report.

3.3 Effective working

The issue of improved organisational outcomes is intrinsically linked with the issue of effective working, and it is therefore almost inevitable that the underlying goal of most new academic workspace projects is to provide an effective working environment.

A key point of difference that architects and designers identify in the provision of academic work environments, compared to those in other sectors, is the variety of roles that an academic carries out[28]. Depending on the teaching/ research focus of their institution, and their level of seniority, an individual academic's 'day job' typically includes that of lecturer, researcher, tutor and administrator. In many regards, the traditional cellular office may be considered the ideal academic work environment, allowing its occupant to switch between activities that require quiet concentration and reflection, such as preparing lecture notes and writing papers, and noise generating activities, such as telephone conference calls, meetings and collaborative working.

As many higher education institutions move towards the provision of more open, shared work environments for their academic staff, one of the oft-cited reasons for this shift is a desire to increase knowledge flow and collaborative working. There is considerable evidence in the research literature that an important influence on the prevalence of interaction between co-workers is the proximity and functional accessibility of their workstations, and linked to this, the likelihood of chance encounters during the working day[29].

Of the academics we interviewed who had moved into open-plan accommodation, many reported now having more opportunities for interaction with their colleagues, compared to when they were working in cellular offices, where it was not uncommon to spend the entire day in isolation. This was widely considered to have had a positive impact on the sense of community, making work a more enjoyable place to be, as well as making it easier to share knowledge.

"I do like working in open-plan – it is much easier for me if I need to talk to someone to do so over a screen and carry on – I don't have to think, 'right I need to take this and this and this, and I must ask them this question, and that I must ask them that question' – so I don't keep having to go back and forth"

However, one of the disadvantages of shared environments that occupants report is a lack of auditory privacy, which makes it difficult to hold conversations without disturbing their colleagues. This points to a distinction between environments that foster encounters and brief interactions, and those that support impromptu conversations and collaborative working.

For example, at the Paul O'Gorman building at Newcastle University, academics work in an open-plan office space next to their laboratories. The occupants manage their need for quiet concentration by imposing a policy of 'library quiet' in the main office space, limiting discussions to very short, work-related conversations that are conducted in hushed tones. Longer conversations and telephone calls are taken in the meeting rooms and corridor areas. The academics we interviewed pointed out that although the open-plan makes it easier to initiate interactions with their colleagues, the need to take longer conversations away from the office space reduces the spontaneity of the interaction, particularly as the meeting rooms tend to be booked up in advance (although discussions that don't require access to a computer can be held in the tea-room downstairs). In some regards, the open-plan space may therefore be seen as impairing communication rather than facilitating it:

"You can't suddenly think, 'oh, we should look at this protein' and have a quick chat about it, because it disturbs people"

"One problem I do find [...] is if you want to have a quick word with someone you're huddling and whispering, or you're trying to find somewhere to do that"

At another building we case studied, in which the open-plan office space is supplemented with a considerable range of breakout areas, meeting rooms and 'pods' (which occupants can use to take both noise-generating activities, such as phone calls, and concentrated individual tasks, away from their desk), many occupants reported strong dissatisfaction with the level of noise and distraction. As a result, although many occupants value the increased contact with their colleagues that the building provides, it is considered to be more suited to administrative tasks than work that requires sustained concentration, with a substantial proportion of occupants reporting that it has had a negative impact on their personal productivity. Some interviewees reported that home working is more prevalent since the move to the new building, saying that this has in effect decreased their opportunities to interact with their colleagues (although others reported that they are now more likely to come into work, because of the improved interaction).

It would appear that these difficulties may be attributed, at least in part, to a reluctance to take advantage of the auditory privacy provided by the additional work settings. The reasons for this included the lack of portable technology, which for some occupants necessitated any conversations for which they needed to access their computer to be held at their desk, and also a lack of change management (both of these issues are discussed in more detail in later sections). Another reason was the inconvenience of relocating to another workstation. As one interviewee explained, "It is easier said than done to move all your stuff".

At the Delft University of Technology's BK City building, none of the academics have assigned desks, and can instead choose to work in a number of different work-settings (which range from single offices, to large multi-occupancy offices). Although the occupants can switch their work location during the day, in order to suit the requirements of the particular tasks they are carrying out, they tend to stay at the same workstation for the whole day, with most changes of work location being to hold a meeting, or to take a break, rather than to switch between different types of office location[30]. Nor was the lack of an allocated 'base' workstation very popular, with a number of occupants making negative comments about the hot-desking policy. Overall, occupants were less satisfied with their new work environment than with their previous allocated, cellular offices.

"I don't need many workspaces, I need one good one"

Figure 10: Some of the different work settings at the Delft University of Technology's BK City building







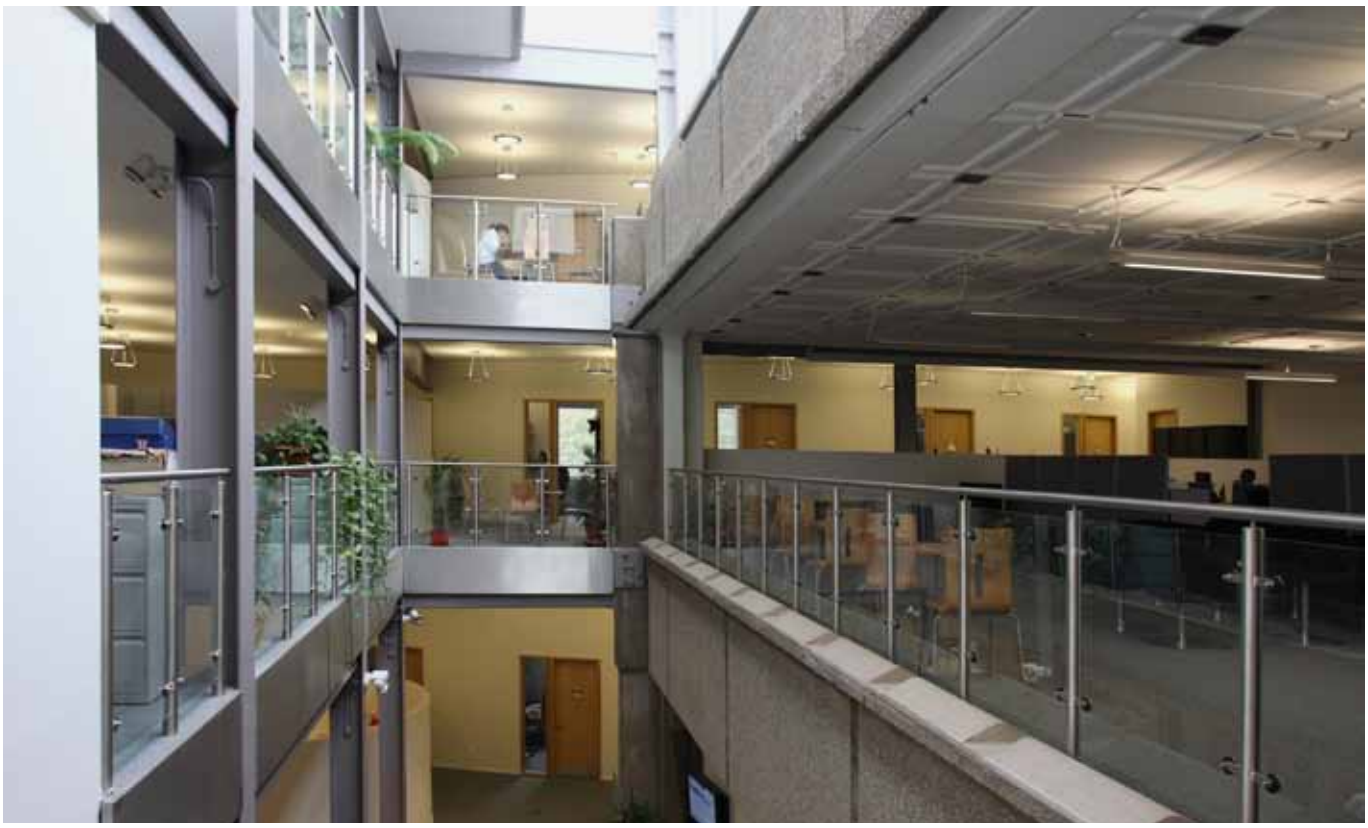






Figure 11: The Sir Frank Gibb building, which includes combi-office accommodation for academics

It would seem that one particularly effective solution to the quiet/interaction dilemma is the combi-office. At Loughborough University's Sir Frank Gibb building, each academic has their own small study, located off a shared open space that includes an array of breakout areas, additional storage, as well as a kitchen and a printer hub. In addition, there are a number of bookable meeting rooms. The occupants carry out most of their office-based activity in the studies, with the communal areas being mostly used for informal meetings. As discussed below, staff report a high level of satisfaction with their new environment, and the support it offers for conducting individual concentrated work, as well as fostering interaction.

One of the reasons why this design seems to work so well is that the default location (the allocated study) provides the necessary auditory privacy for occupants to carry out both noise generating and quiet work without needing to account for, or coordinate with, their colleagues' activities. Staff can hold small discussions (involving one or two others) at their desk, and easily relocate to the breakout areas just outside their study for larger conversations. As staff assume that a discussion held in a breakout area is informal, as they walk past they often stop to say hello and are drawn into the conversation, which adds to the sense of community and serendipitous knowledge sharing. Whilst the combi-design does not promote encounters and brief discussions to the same extent as an open-plan office, it does afford occupants a level of autonomy equivalent to that provided by an office, whilst also supporting interaction and collaborative working.

3.4 Cultural change

The physical workspace that an organisation or group occupies is often reflective of its culture; that is to say its shared values, beliefs, goals and practices. For instance, hierarchical role cultures tend to be associated with office environments in which space is allocated based on a person's status or power within the organisation, rather than their functional needs. A change in the design of an organisation's physical workspace can therefore necessitate a change in culture in order for it to work effectively. Indeed, some organisations have actively used their physical working environment as a means of changing or reinforcing a particular organisational culture[31].

Among our case studies, there were a number of projects in which the development of new academic workspaces has necessitated a change in organisational culture. Generally speaking, these projects have involved a move away from more cellular or enclosed workspaces, in which the focus was on individual privacy and solitary working, towards the provision of more open or shared workspaces in which there is a greater focus on collaboration and interaction amongst colleagues. For some academics such a change to long-standing cultural practices can be a difficult and challenging experience to cope with.

More often than not, the impact of a new workspace on the culture of an organisation takes time to materialise. For instance, although the Northern Institute for Cancer Research at Newcastle University moved into the Paul O'Gorman building in 2004, the change to a more collaborative organisational culture has been slow, despite this being one of the main goals of the new building. In part this slow rate of change may be due to the fact that the academic reward and career progression systems in the UK are based around individuals, rather than teams.

Buildings alone cannot change the culture of an organisation, particularly when values, beliefs and practices are deeply embedded. For instance, academics in the Faculty of Architecture at the Delft University of Technology recently moved from a more traditional academic working environment, in which they occupied cellular offices, to a more open environment in which spaces are occupied non-territorially (Figure 12). This has necessitated a number of changes in working practices. For example, rather than meeting with students in their own offices, academics are now expected to meet with them in a shared "touch-down" area away from their workspace. Academics are also expected to book desks as they need them and maintain a clean desk policy. However, while changes represent a change in working practices, the degree to which this constitutes a genuine change in culture is open to question.

Even within the same building, different groups with different cultures may interact with the physical working environment in contrasting ways. For example, one of the new buildings we case studied is occupied by staff from two departments. Whilst academics in one department have tended to struggle to grow accustomed to their new workspace, staff in the other department have generally embraced the change. This has manifested itself in quite different perceptions of the new workspace. A member of one department suggested that:

"Since moving, the number of people in the department on a daily basis has fallen steadily [...] [this has] had devastating effects on the sense of community."

Figure 12: Cultural change? The BK City building at the Delft University of Technology (left) and the Paul O'Gorman building at Newcastle University (right)





However, in contrast an interviewee from the other department argued that:

"I now feel part of a bigger team... [I would describe my office as] a happy, supportive, friendly environment [...] having everyone around doing the same things has been very useful [as it] provides quick answers for resolving issues [...] although it makes the office less quiet, it means we can keep it light hearted and have a moan together!"

3.5 Flexibility

In the context of office design, the term flexibility is generally used to refer to the capacity of workspaces to cope with changing individual and organisational needs. Flexibility has become increasingly important in the UK higher education sector in recent years as space demands have become more dynamic and institutions have looked to reduce the costs of reconfiguring their estates and extend the functional lives of their workspaces.

Most, if not all, of the new academic workspace projects that we have looked at during our study included flexibility as an explicit or implicit design aim. Strategies for achieving this vary from project to project, but generally involved either:

- Providing some form of easily reconfigurable workspace, through open-plan designs or moveable partitions
- Implementing different styles of occupation, such as desk sharing or hot desking
- Some combination of the above

Table 3 provides a summary of some of the design strategies for achieving flexibility that we encountered in our case studies.

In some projects, such as the Chaucer building at Nottingham Trent University, flexibility was seen as a way of coping with more long-term changes in demand, whereas in others, the pressures for change were more short-term and dynamic. For example, at the Department of Civil and Building Engineering at Loughborough University, the need for flexibility stemmed from the fluctuating

Table 3: Strategies for achieving flexibility in academic workspace design

Case study	Strategy
BK City at the Delft University of Technology	Cellular and open-plan offices occupied non-territorially by academics and researchers
Chaucer building at Nottingham Trent University	Cellular offices constructed with demountable partitions to reduce reconfiguration costs
Devonshire building at Newcastle University	Open-plan workspaces occupied by academics and researchers
Henley Business School building at the University of Reading	Open-plan workspace occupied non-territorially by researchers and single-sized combi offices for lecturers
Jennie Lee building at the Open University	Open-plan workspaces configured differently by individual work groups of academics
Paul O'Gorman building at Newcastle University	Open-plan workspaces occupied flexibly by researchers
Sir Frank Gibb building at Loughborough University	Open-plan workspace occupied non-territorially by researchers and a combi office for lecturers, the latter including a single size of personal study
Strand building Phase 2 at King's College London	Generic workspaces not designed around the needs of any one particular department
Wolfson Research Exchange at the University of Warwick	Common research space used by researchers from different departments

requirements of postgraduate researchers and visiting academics; the development of an open-plan Research Hub, together with hot-desking, completely alleviated this problem. Moreover the removal of a hierarchy of office size for the lecturing staff makes it easy to re-group staff, as it overcomes the otherwise almost inevitable problem of not having the right combination of room sizes to match the compliment of staff from junior lecturer through to professor.

As with any design strategy, there is a risk that flexibility is used for the wrong reasons. For instance, "we want flexibility" can often mean "we don't yet know what we want", "we'd like to keep all options open", or "we're afraid to make a decision". Ensuring that the need for flexibility is clearly articulated at the briefing stage is therefore critical.

3.6 Better space utilisation

Flexible workspaces can also be a way of achieving more efficient and effective utilisation of office space. Over the last decade occupant densities have fallen across the UK, from an average of 16.6m^2 per person in 1996[32] to 11.8m^2 per person in 2008,[33] as public and private sector organisations have made efforts to utilise their office space more efficiently. This has been achieved using a variety of measures, including:

- The increased adoption of open-plan workspaces and desk-sharing practices, such as hot-desking
- Implementation of more efficient space norms or standards for the design of new workspaces
- The use of smaller workstations, facilitated by the introduction of new technologies, such as flat-screen displays
- More efficient workstation configurations and storage solutions, including the implementation of electronic record management systems

A number of the academic workspace projects that we evaluated during our study gave rise to occupant densities that were well below the UK average figure of 11.8m^2 (Table 4). For instance, the Jennie Lee building at the Open University and the Devonshire building at Newcastle University both had occupant densities of around 9.2m^2. The Paul O'Gorman building at Newcastle University had an occupant density of 4.3m^2 for office areas, however this figure excludes laboratory and ancillary spaces. These figures should be treated with some degree of caution, since they do not reflect the relative proportion of contract researchers and academic staff, nor occupants' access to alternative workspace (many of the occupants of the Devonshire building, for example, have offices elsewhere). For more contextual information, such as this, please visit our website[34].

Building	Net internal area (m^2)	Number of occupants	Occupant density (m^2 per person)
Sir Frank Gibb building	2883	220	13.1
Paul O'Gorman building	540*	125	4.3
Jennie Lee building	2236*	242	9.2
Devonshire building	1300*	142	9.2

*excludes laboratories and ancillary spaces

Table 4: Occupant densities of some new academic workspaces

One potential risk of increasing the occupant density of a working environment is that the effective utilisation (or proportion of time that it is occupied) of the new workspace may decrease, because occupants react to the change by spending more time working elsewhere. At one of the new environments we studied, staff worked an average 27% of their time at home, compared to 16% in the previous building. It seems likely that this reflects, at least in part, the dissatisfaction of some occupants with their new environment, and the support it affords for carrying out concentrated work. Similar reactions have been observed in some of our other case studies. It is however, necessary to consider the role that a new environment may play in legitimising home working – that is to say, some staff may prefer to work from home, at least on occasion, and the new work environment may provide a convenient excuse for doing so.

3.7 Raised organisational profile

Physical space is highly symbolic and can play a key role in communicating the goals and values of an organisation. The development of new working environments can therefore provide organisations with an opportunity to raise their profile and project their brand externally.

A number of higher education institutions have sought to raise their profile and external image through their workspace. For instance, part of the brief for the Jennie Lee building at the Open University was to create a landmark building with a strong campus identity. Similarly, the brief for the Devonshire building at Newcastle University specified that "The building must enhance the university's campus and create a good image to

industry and the public". It also stated that the building must be demonstrably 'green', something that was considered imperative for a building accommodating an environmental research institute. The Devonshire building went on to win a regional award in recognition of its environmental design and was rated BREEAM 'Excellent'.

The Paul O'Gorman building (Figure 13) at Newcastle University is also perceived to have had a positive impact externally. Professor Andy Hall, Director of the Northern Institute for Cancer Research, suggested that:

"The biggest impact has been to our recruitment – it is a fantastic recruiting officer. So, you invite people to come along, and they come in and you can see them going 'wow - they take cancer research seriously in Newcastle"

Other case study buildings that have attracted external recognition include the New Academic building at the London School of Economics and Political Science (Figure 13), which has received coverage in the national press[35], and the Sir Frank Gibb building at Loughborough University, which has won a number of awards, including the ProCon Building of the Year award in 2006.

Sometimes new academic workspace projects have given rise to negative publicity for the institutions concerned (Figure 14). In most cases this is because of policies or decisions concerning the way the workspace is used, rather than the design of the physical space per se. For instance, the opening of the Arthur Lewis building at the University of Manchester gave rise to discontent amongst some humanities students because restricted access to staff offices meant that they had to arrange in advance to meet with their tutors[36].

Figure 13: Positive impact - the Paul O'Gorman building (top) at Newcastle University and the New Academic building (bottom) at the London School of Economics and Political Sciences





Figure 14: Recent excerpts from Times Higher Education

Open-plan risk to collegiality

16 March 2007
Phil Baty
Sussex University's £10 million Freeman Centre was meant to be a model for collaborative research but has prompted bitter in-fighting. Phil Baty reports. Its gleaming open-plan office spaces were meant to "set a new standard for others to follow in the creation of collaborative and innovative research environments".

Say goodbye to the office

28 September 2007
Tony Tysome and Tariq Tahir
Coventry University is pioneering 'no desk' contracts while Nottingham Trent's move to open-plan working sparks complaints. Tony Tysome and Tariq Tahir report. Coventry University is pioneering a flexible working scheme in which academics agree to give up their permanent university desks and offices in return for contracts allowing them to work on the move or from home, coffee shops and bistros.

Security limits tutor access

4 January 2008
Rebecca Attwood
Students complain that swipe-card entry at Manchester's new building prevents them getting on to lecturers' floors. Rebecca Attwood reports. Students have complained that academics are locked away in a "tutor zoo" at a new £31.5 million building at Manchester University.

Staff angered by proposed open-plan site

12 June 2008
By Melanie Newman
Academics say they and students will suffer under move at Leeds Met, writes Melanie Newman. Plans to move two schools at Leeds Metropolitan University into open-plan offices have prompted staff complaints.

4 What makes projects successful?

Academic workspace projects often give rise to conflicting demands, between the needs of individual academics on the one hand and the needs of the academic group or institution on the other.

Some of the conflicting demands that we have encountered during the course of our project are shown in Figure 15. For example, when talking about their own space needs the focus of many academics tends to be on being able to undertake quiet concentrated work without distraction in the privacy of their own office. However, at an institutional level the interest is much more about encouraging collaboration and interaction between academics, and creating shared and flexible spaces that are designed around functional need, rather than hierarchical status. The challenge is that shared environments that foster knowledge flow and team working can conflict with individual occupants' ability to work autonomously. Many academics need to be able to undertake quiet concentrated tasks without distraction some of the time whilst on other occasions to participate in noise-generating activities that can distract others nearby; and ideally they need to quickly switch between these two modes.

If not managed effectively, these conflicting demands can lead to compromise design solutions that fail to satisfy either the individual or the organisation. The successful academic workspace projects that we encountered had adopted strategies for managing these conflicting demands. These strategies included:

- Pilot initiatives
- Training on the use of space
- Leadership by example
- Effective user engagement
- Workspace champions
- Good dialogue and decision-making
- Appropriate use of information and communications technology (ICT)

Each of these strategies is discussed in further detail below.

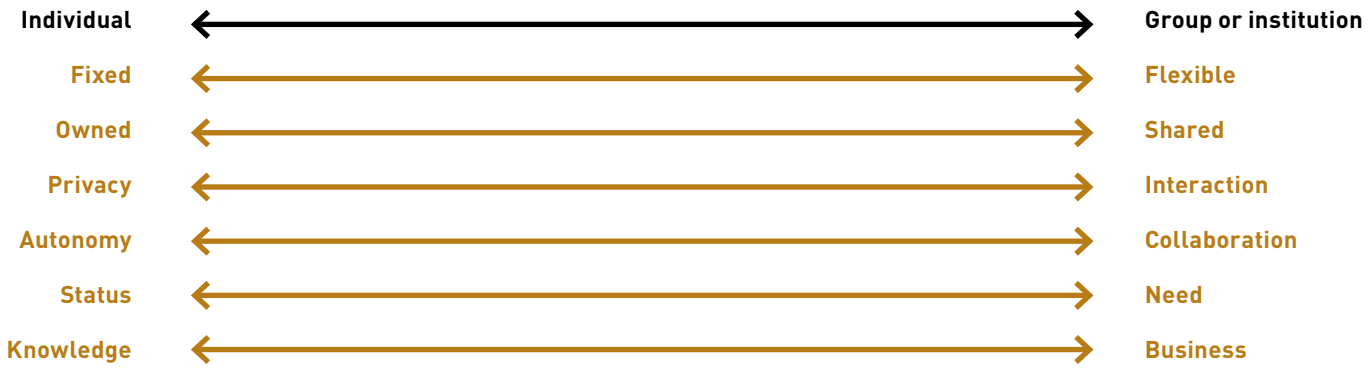


Figure 15: Conflicting demands in academic workspace design

4.1 Pilot initiatives

There is much to be said for carrying out a pilot initiative, particularly in the case of workspace projects that represent a step-change in office provision. The benefits of pilot projects include opportunities to:

- Test ideas
- Refine the brief
- Collect data
- Challenge perceptions of how the new environment will work
- Alleviate anxiety
- Develop protocols

During the redevelopment of their 10 Pulteney Street office accommodation, the University of Adelaide constructed a physical prototype of key elements of the planned work environment as a tool for user consultation. The prototype workspace (Figure 16) was constructed on-site at a cost of AU$270,000[iii], and comprised a meeting room, three closed offices and six workstations. The property services team arranged a series of opportunities for people to look around the space, with an architect on hand to talk them through the key concepts and answer any questions. These sessions were open to all stakeholders in the new environment, and the feedback they provided on issues such as visual and auditory privacy, storage and security was used to refine the brief for the redevelopment. The property services team's lead on the project, Kendra Backstrom, judged the pilot to have been a very successful exercise, commenting that it provided "a very clear way of indicating to people what they would be getting."

Both the Delft University of Technology and Loughborough University went a stage further, setting up occupied pilot work environments in order to trial new office concepts. At Loughborough, the pilot work environment (Figure 16) was created in preparation for the new Research Hub, which represented a significant change in office provision for PhD researchers in the Department of Civil and Building (moving from allocated, cubicled office space to an open,

Figure 16: Pilot initiatives - the University of Adelaide's 10 Pulteney Street pilot (left) and the Research Club Pilot at Loughborough University (right)





iii Around 155,000 GBP

non-territorial environment). The pilot office incorporated many of the principles that were proposed for the Research Hub. It was occupied by PhD students for over a year, with observational data and user-feedback being collected at intervals in order to capture a detailed understanding of how the environment functioned[37]. This was used to refine elements of the Research Hub design, and to inform the development of protocols for the use of the new space. It also began to make clear the limitations of workspace design in fostering particular behaviours, such as increased communication. In this respect, the pilot helped to manage expectations of what the new environment could achieve. It also provided a useful means of engaging users about the new environment, as well as an opportunity to get the details right for the new build, for instance by trialling new furniture.

At the Delft University of Technology, the Architecture Faculty had been trialling a non-territorial 'flex-work' concept[38] (with 10 people sharing a proto-type shared office comprising eight workstations) for just over a year when their faculty building was destroyed by a fire in May 2008. The data that they had collected from their pilot environment gave them the confidence to employ the flex-work concept on a much bigger scale, and as a result the department found alternative accommodation very quickly – moving into a building comprising 30% less space than their former accommodation.

Of course, there are limitations. Whilst a prototype does provide useful information about how a proposed environment will function, it cannot uncover issues that are inherently related to scale, such as group cohesion and privacy. Nonetheless, if we can assume that some information is invariably better than no information, then pilot initiatives can be an extremely useful aid to the design and delivery of successful environments. They take time and forethought – start experimenting early – and cost a little, but the payback in terms of improving the final project is likely to be much greater in both financial and social terms. Table 5 provides some pointers for ensuring the success of pilot initiatives.

4.2 Training on the use of space

The provision of occupant training and guidance on the use of new work spaces is often overlooked, yet it can play a critical role in enabling occupants to get the most out of their new environment as well helping to realise the design aims of the project[39].

In a number of our case studies, a considerable proportion of the difficulties that occupants reported about their work environment could be attributed, at least in part, to the absence of an appropriate etiquette for working in the new space. For example, occupants of open-plan office space in one new building reported difficulty in managing the need for concentration and the need for interaction in the space: In addition to problems with noise, there were complaints from some occupants of "getting caught between conversations" due to colleagues holding discussions across others' desks, and of office banter getting "too much". One occupant commented:

> "I've always shared with research fellows, and they're used to sharing offices. But professors who aren't used to sharing an office are particularly noisy... holding loud telephone conversations and conversations with visitors at their desks"

Occupants also reported refraining from holding discussions to avoid distracting colleagues who were working nearby, but there was some confusion about what noise level is acceptable in different areas of the building. In addition, some occupants expressed a reluctance to transfer conversations and concentrated work to more appropriate supplementary spaces such as the 'pod rooms' - in some cases this was due to concern about how this might be interpreted by colleagues.

Of course, conventions regarding the use of new spaces do emerge in the absence of any formal change management, although these can be very different from what was intended in the design

What are the aims of the pilot?	Issues to consider
Testing ideas and refining the brief	Be clear about ideas being tested, trial new furniture or technology if necessary
Collecting data	Have resources available, develop clear methodology, ask clear questions
Challenging perceptions and developing protocols	Provide opportunities for users (pilot group and others) to reflect and discuss, develop a shared understanding,
Alleviating anxiety	Ensure it has a fair chance of working! A badly run pilot can do more damage than good.

Table 5: Getting the most from a pilot initiative

brief. This is perhaps highlighted by our study of a cross-school facility for researchers that aimed to foster inter-disciplinary collaborative working. Judging by the occupancy figures, the space is undoubtedly a success with researchers. Yet, it is used primarily for individual working, and there is an established convention of keeping even work-related conversations short and sotto voce in the office areas. Some users are particularly keen to maintain low noise levels in the facility, and enforce this by asking anyone who violates these unwritten rules to be quiet. Six months since the facility opened, the university secured funding which has enabled them to actively promote a more collaborative environment, although they are finding it difficult to change the way the space is used now that a convention has already developed.

This is not, however, to advocate a predominantly top-down approach to the development of space-use protocols: user-engagement in this process is vital. At one of our case studies, the reaction of some academics to the user guide that was produced to support them in their new work environment perhaps highlights this point. The guide, which gives a protocol for working in the new space, was interpreted by some as evidence of the authoritarianism of the university administration, as well as being overly prescriptive and inappropriate in tone, with comments including "What was self-evident now becomes explicit; what was an inner value, is now degraded into an external rule[40]".

Ideally, training should include facilitated discussion sessions with staff, conducted in two phases: pre-move and post-move. Around three months before the move is a good time to start the preparatory sessions, focusing on hopes and concerns of anticipated reality. The feedback sessions, conducted around three months after the move, reflect on the delights and disappointments of the actual reality. These sessions can be used to develop and revise protocols regarding the use of the space. They are also a useful way of allowing occupants to deal with issues that arise, rather than letting situations build up, and for this reason It is also worth investing in additional review sessions at intervals throughout occupancy.

4.3 Leadership by example

As discussed in section 2.1, in recent years the higher education sector as a whole has undergone, and continues to undergo, dramatic transformation[41]. In this climate of change, some of which may be seen as challenging the very definition of academia and notions of what it is to be an academic, the relationship between the work environment and the perceived values of the organisation can become an area of acute tension[42]. Linked to this, the atmosphere of hyper-vigilance that may be prompted by such organisational change and uncertainty[43], can give rise to proposed or actual changes to the physical environment being interpreted by staff as reflecting deeper, and perhaps sinister, organisational issues. For instance, a move towards more open environments may be construed as meaning staff are no longer trusted to work alone, rather than as reflecting the increasing value placed upon collaborative working.

Furthermore, the historical provision of cellular office accommodation, allocated according to status, means that for some at least, the individual office plays a key role in academic identity. Whilst some of the academics we interviewed talked about their office space in purely functional terms, and were keen to embrace new types of work environment, others were concerned about what students and visiting academics might conclude from their lack of individual office. For example, one junior lecturer commented

> "I don't know whether the students get... that lecturers share offices, they probably think, there must be something wrong, they're not high in the faculty you know."

This precedence has also shaped user expectations of what constitutes adequate space provision - although expectations will shift over time, many academics feel that an open or shared office environment is 'Not what I signed up for'[44].

Against this backdrop, leadership by example can play a vital role in the ensuring success of innovative workspace projects[45]. If senior managers are seen to relinquish their own individual offices, demonstrating a willingness to change their work practices, this serves to challenge notions of what constitutes a good academic work environment, and that space is the best evidence-tool for success. Amongst our case studies were examples of heads of department adopting new workspace concepts: at the Delft University of Technology's BK City building, the Dean of the Architecture faculty hot-desks; and at the Open University's Jennie Lee building, the head of the Computing department works in open-plan office space.

A good example of 'walking the talk' is the recent office relocation made by the senior management team at Oxford Brookes University. The team hypothesised that working in a shared, open environment would enhance communication and collaboration, enabling them to achieve their goals with greater ease and effectiveness. In a bid to test their ideas, the vice chancellor, deputy vice chancellor, registrar and pro vice chancellor for research and pro vice chancellor for student





Figure 17: The senior management team's new shared work environment at Oxford Brookes University

experience, along with four PA staff, moved into a single, open-plan office in November 2008. The move has been an undoubted success – the team holds that their new environment has provided the benefits in knowledge flow and effective working that they anticipated, as well as making the experience of being at work more enjoyable.

This is not to suggest that shared work environments are appropriate for all staff – there are significant differences between senior managers and academics in terms of their work activities and requirements, (the suitability of different work environments for academics is discussed in section 3.2 above). However, it does emphasise the importance of being open to new ways of working, and the value of embracing change.

4.4 Effective user engagement

Given that buildings are generally expected to last a long time, project leaders need to take a long-term perspective in the design of academic environments - the departments occupying a building is likely to change many times during that building's lifespan. Users, on the other hand, need to take a short to medium term perspective - the academic environment is becoming less stable, making it more difficult to predict user requirements with accuracy.

Managing both perspectives is tricky and there can be a tendency to design space that is generic rather than flexibly designed around the needs of a particular set of users. There is more at stake than simply getting user requirements right. As discussed in previous sections of this paper, occupants' satisfaction with a new work environment can be strongly influenced by their perceptions of the delivery process: in at least one of the projects we studied, occupants' satisfaction with their new workspace was considerably diminished by what they perceived to have been a lack of consultation and engagement by the designers of the project.

It is, of course, important that user expectations are managed during any engagement activity: failure to do so can also have a negative impact on subsequent user-satisfaction[46]. As discussed elsewhere in this document, the decision-making authority often lacks definition in higher education build projects, and several different stakeholders may think of themselves as the primary client based on their role as academic, department head or estates director. Decisions need to be made by those who will be accountable, with the potential involvement of different elements of the client team varying from:

- Being informed but not involved in making the decision
- Being consulted about the issues surrounding the decision
- Participating and sharing some responsibility for the decision
- Making the decision

There is still scope for engaging users, even if they have minimal decision-making authority[47]. An example of good practice in this regard is Nottingham Trent University's refurbishment of the Newton and Arkwright buildings: throughout the construction process staff have received regular email updates on progress, and a number of consultation events have been held to inform the choice of elements such as the furniture, with all staff and students receiving an invitation to come along and give their feedback on issues of comfort, style and functionality. This has proven to be an effective way of engaging users in the build project, and raising interest and excitement about its progress.

4.5 Workspace champions

Despite the perils of not engaging users, practitioners involved in the delivery of higher education office environments report that it can be particularly difficult to engage with academics. Although people are more likely to engage if they see that their input will have an impact, almost paradoxically, there is a sense that some academics want the solution to be 'a done deal' – they do not see it as being their role to contribute to planning of workspace. Appointing a workspace champion, someone who is themselves a user, and who can take overall responsibility for user involvement, has been found to be both an effective way of overcoming this problem, and a way of improving the overall delivery process and outcome.

Responsibilities of a workspace champion can include:

- Providing leadership and motivation
- Implementing the consultation process
- Representing user priorities when liaising with estates, university, design and project teams
- Implementing a change support programme to help all users prepare for their new environment

In our personal experience a workspace champion needs a passion for the endeavour and the complete trust and backing of the Head of Department (or equivalent role). Whilst engagement with the staff is critical, there is a tendency that attempts to please everyone during briefing can lead to the lowest common denominator. Innovation inevitably involves risk but if there is an agreed vision then this can be upheld by the champion who should work with the design team, relying on them to find the appropriate solutions.

Of the projects that we studied, those that had a workspace champion (such as the Chaucer building refurbishment at Nottingham Trent University, the Paul O'Gorman building at Newcastle University, and the Sir Frank Gibb building at Loughborough University) tended to attribute a substantial part of their success to the work of this individual. One of the projects that did not have a workspace champion was the University of Adelaide's 10 Pulteney Street refurbishment. However, reflecting on the project process, the Property Services lead explained they had learnt from this experience, and were planning to use space champions for future projects, suggesting that, with hindsight, champions would have enabled "a smaller, meaningful discussion about the offices and how they might work from a functional basis".

However, the role of workspace champion is extremely time-consuming. Although they are usually relieved of at least some of their teaching commitments for the duration, this tends not to make up for the time they must invest in the build project. As one interviewee commented about the role:

"Whether you like it or not, you're making an investment for the future, and for the time that you're actually doing it and for a year or so after you move in, your research productivity's going to go down."

One of the workspace champions we talked to explained that, in addition to the time demands of the role, he had also found it to be a very emotionally demanding experience: as champion he had been the focus of colleagues' anxiety about the project, and had been engaged in countless challenging conversations in which people questioned decisions that had been made.

There was suggestion that in some cases, the workspace champion's contribution to the project did not receive appropriate recognition. A senior manager involved in one case study, expressed strong disappointment at how their champion had been treated by the university, commenting that:

"When [the space champion] had finished [working on the project], his research had taken quite a knock. And we put forward that his administrative contribution was something that should be considered as part of a promotion, and that was rejected, on the basis that he'd already done it... We'd asked this guy to take time off and said, 'oh don't worry about the research, we'll cover that'. And he'd selflessly spent a great deal of time doing this, and then we went to the university and said 'this person's done this' and they said 'he's not going to do it again, is he'... The personnel people had no idea of the administrative work that's involved in a project of this sort."

So how do you convince someone to take on this role? Our research suggests that it is important to:

- Give them complete backing
- Make a significant adjustment to their academic workload
- Start early, before a project is certain
- Get them to use their research skills to gather information (on what people do and how they might want to work in the future)
- Encourage them to visit buildings elsewhere and talk to those involved
- Ensure that their colleagues support them
- Remember that their role is not to make final decisions or approvals – these are for the head of department or the estates team
- Properly recognise and reward their achievements

And ultimately, for them to know that the role can give a genuine and lasting sense of achievement: to see and live the physical and social manifestations of the project; and to leave a legacy that can be as important and durable as those from excellent teaching and research.

4.6 Good dialogue and decision-making

In our discussions with architects and other practitioners involved in the delivery of academic workspaces, one of the key challenges they identify in higher education projects is lack of clarity around who their client is. Building projects incorporate many areas of responsibility - organisational, academic, operational and financial. This means that, in academic situations, the group of stakeholders making up 'the client' tends to be large and diverse, including academics, department/faculty heads, estates, students, senior management and governing board. Where there is ambiguity in the decision-making authority, architects and other practitioners can find themselves dealing with several different 'clients'. Establishing who comprises the primary client, and their key responsibilities, helps everyone to play a more effective role.

One of the most common confusions is between estates departments that are responsible for delivering new academic office environments, and the academic departments that will occupy them. This confusion isn't helped by the lack of understanding these two clients sometimes have of each other's priorities and constraints: academics often see estates staff to be too focused on cost-savings and as lacking understanding about the nature of academic work and the physical environment that demands; estates staff often view academics as being detached from 'institutional business' and as resistant to change[48].

In any workspace project, it is almost inevitable that these two groups will have different priorities. Estates will want to keep a close eye on quality, budget and time, while users tend to be primarily focused on need and space. Academics may find they have strongly held views about what their needs are and the types of spaces required to support these needs. Where these views are seen to be in conflict with other priorities, it can be very tempting to hold onto an existing position in an entrenched rather than developmental way. When this happens all teams may need to remind themselves that the collective goal is to find an optimum fit between competing parameters. Distinguishing between real and perceived needs, clarifying priorities into essential, important and nice-to-have categories, allowing unthinkable questions to be asked - these are all ways of inviting the possibility for new insights about what the future could be.

Differences in the structure of decision-making bodies can also be an issue: estates teams tend to use project management structures (often based around PRINCE2 methodology), in which decision-making is assigned to specific roles rather than consensus. This can result in users feeling that their role as stakeholder has been overlooked, and that any engagement activity has not been meaningful. Academics, in contrast, are generally more familiar with committee structures, which favour decision-making through discourse. In this regard they can be seen as prone to becoming locked in exploration, unable to progress to decision-making and implementation.

Responsible, effective decision-making necessitates that decisions are made by those who will be accountable for those decisions. There should also be clear sign-off points: in order to keep the project to time and budget, decision-making should not be allowed to go backwards – 'sign off and move on'. As discussed in earlier sections, It is also important that there is clarity regarding the scope of engagement activity – do participants know whether they are being asked to provide information, contribute to decisions, or to make decisions?

The sheer number of people who are involved in decision-making in an academic workspace project can itself be a challenge. It is worth bearing in mind Parkinson's "Coefficient of Inefficiency" regarding the size of decision-making boards – once they exceed around 20 individuals, their ability to reach consensus is dramatically reduced[49]. Reflecting on the delivery of the Devonshire building at Newcastle University, the Head of Estates commented that the process was complicated by the lack of an established client group, which meant that "there would be masses of people present at consultation meetings, many of whom had never worked with each other before".

Finally, it is important to be aware that language itself can be a barrier. Those who are regularly involved in building projects must bear in mind that for most users this is likely to be their first building project, and they are therefore likely to lack understanding not only of project terminology, but also knowledge of what is possible in terms of workspace design. Terms such as 'open-plan' can evoke worrying images of call centre style layouts, and tend to provoke a strong negative reaction[50]. Site visits to examples of different work environments can be extremely useful here. It is also helpful to clarify terms such as 'flexibility' and 'value', which can be a hotbed of ambiguity – for a user, flexibility may mean 'flexibility in my day to day activity', whereas for an estates director it may mean 'flexibility in the long-term use of the building'. Similarly, different stakeholder groups tend to focus on different criteria in judging the value of a design solution, with users being, for example, less concerned with construction and maintenance costs than estates personnel. It is therefore vital to engage all stakeholder groups in drawing up a project view of value, which takes into account their different perspectives[51].

4.7 Appropriate use of ICT

Information and communication technologies can play a key role in enabling new academic workspaces to operate effectively, particularly in environments where occupants are expected to utilise space flexibly. In recent years there has been a notable shift in hardware provision, with laptop computers becoming standard issue in many organisations. When coupled with wireless networks within the building, and the provision of either DECT or mobile phones, this affords a level of flexibility that desktop computers and fixed, wired telephones cannot provide. Examples of where ICT has contributed to the success of academic workspace projects include the BK City building at the Delft University of Technology, the Paul O'Gorman building at Newcastle University and the Sir Frank Gibb building at Loughborough University. In all three cases, occupants were provided with portable technology to enable them to work flexibly within their new working environment. Amongst our case studies, technology solutions tended to focus on:

- Enabling remote working, using web-based delivery systems and secure VPN networks
- Providing flexibility to 'live-in' users, in the form of telephony systems, secure wireless networks, and thoughtfully located data and power sockets
- Providing access to shared resources such as photocopiers, high quality printers and interactive whiteboards
- Supporting mobility for 'drop-in' users, in the form of open-access wireless networks and 'touchdown' desktop PCs

We did find examples where a lack of appropriate technology meant that users were unable to use the work environment as intended. For example at one of the buildings we case studied, occupants were accommodated in open plan office space, supplemented with non-bookable 'pod rooms' that were intended for occupants to use for noise-generating activities, such as telephone calls and small meetings, or for undertaking tasks requiring a high level of privacy and concentration. The intention had been to provide laptops and DECT phones throughout the building, but due to a number of reasons (including a university-wide review of telephony provision) many users were instead provided with fixed, wired telephones and desktop computers – and reported corresponding difficulty, and hence reluctance, to relocate to the pods. This in turn impacted on their ability to work effectively in the new space, and their overall satisfaction with the building.

We also encountered cases where technology had been provided but remained largely unused. For example, at one of the research environments we studied, both the physical space and the technology provided were intended to promote knowledge flow and collaboration between researchers. One of the key features of this environment is a 'collaborative wall', which occupants can use for digital projection and also as a magnetic white board. However, due to a lack of staff resource, the university did not engage in any change management to promote collaborative working in the new space, nor were users given any training in the use of the collaborative wall. None of the users we interviewed reported using the wall, or having ever seen anyone else using it. Many interviewees were unable to see the relevance of this technology to their work, as they primarily worked individually. Although the lack of training and communication as to how the wall was intended to be used undoubtedly played a part in its redundancy, the major factor appears to be a lack of fit with the way in which occupants were using the space: a convention of 'library quiet' had emerged within the facility, and occupants reported that they were reluctant to use the collaborative wall for fear of disturbing colleagues carrying out individual work nearby.

Technology provision must be seen as integral to the provision of any new academic workspace. We have seen how it can allow buildings to work effectively and realise their full potential, as well as cases where a mismatch between technology and the physical environment leave neither operating optimally. As such, the importance of engaging with ICT departments at an early stage, in order that IT provision can be developed in accord with, and help to achieve, the aims of the build project, cannot be overstated.

5 Conclusions

Over the last decade or so there has been a growing body of published literature and guidance aimed at improving the design and delivery of building projects in the UK. Much of this guidance has focused on improving client-supplier relationships and the client-side understanding of how to successfully procure buildings[52]; some of it has focused specifically on the higher education sector[53]. We hope that this report will compliment this existing body of expertise and trigger a richer and more informed debate about the future of academic workspace design and the role that different stakeholders can play in informing this debate.

We conclude by summarising our key findings and related recommendations:

1 There is no single 'best' answer; you need to **understand each situation** and articulate clearly what the organisation, at all levels, is trying to achieve and how the occupants wish and need to work in the future. Do not design from the past.

2 The cost of designing a work environment well will be repaid many times over by the benefits it delivers. **Invest in good design** and give sufficient time to the process – great solutions often take time to emerge in response to cultivating a shared understanding of the right goals.

3 All parties should think about both **efficiency and effectiveness** – doing things right (resource focus) but also doing the right things (outcomes focus). Higher education estates professionals and senior managers generally need to think more about the latter whilst academic departments and occupants should appreciate more fully the former.

4 In this way you can have a collective **understanding of the value offered** by a project to each stakeholder, which in turn can help align the priorities of individual occupants with those of the institution.

5 The provision of academic workspace is underpinned by a number of **conflicting demands**, and the success of a new build or refurbishment project is dependent on your ability to both understand and manage the tension between them. Understand that trade-offs are inevitable and then work hard to find a solution where everyone is, on balance, a winner.

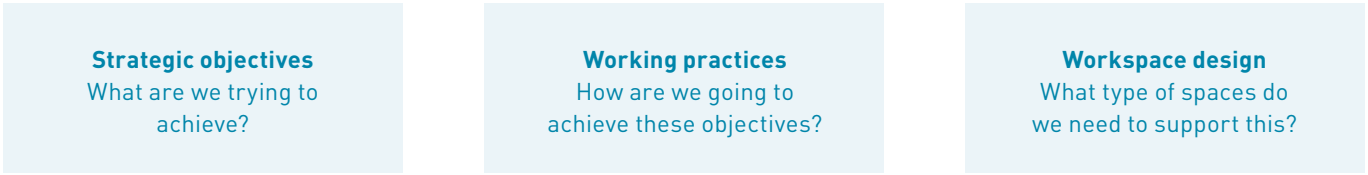


Figure 18: Reframing the discussion about academic workspace design

6 For the most part, conversations about academic workspace design have been driven by the suppliers of space (estates professionals and architects) rather than the consumers of space (academics, researchers and senior managers). We found that successful projects tended to be those that have **engaged users** fully. The cost is trivial compared to construction costs of the work environment, but the effect often fundamental to the outcome.

7 However, the user community has too often stood back from process. In particular, **academics must become more involved** in briefing, recognising that their voice is essential if 'what goes on' in the building, and how they would like to work, is to be understood.

8 Moreover, there is strong evidence that an empowered and passionate **space champion** is worth their weight in gold. But this is a very time consuming role, which should be taken into full consideration in their workload and appraisal.

9 And do not forget that despite the inevitable ups and down, being part of the creation of a successful workspace can be a very **rewarding experience** and lasting legacy.

10 At both the level of individual projects, and also the sector as a whole, there is a **need to reframe the discussion** about academic workspace - space is only one part of the solution. We need a wider conversation about the purpose of the university to realign institutional and individual goals. To often people are thinking backwards, getting hung up on solutions too early rather than debating and defining the objectives. Think strategically first, then identify the appropriate working practices and finally consider how space can support these (Figure 18).

11 Lastly, we observe that whilst increasing collaboration is frequently put forward as a reason for developing new types of academic office space, the academic **reward system** is still based primarily around individual achievement, and the starting point - doctoral research - is largely a solitary activity. Neither provides a great incentive for collaboration. If research at the interfaces of knowledge domains is the future, then the academic career model is, to some extent, history.

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- Nottingham Trent University (Chaucer building)
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- The Open University (Jennie Lee building)
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Notes and references

1 According to the Estate Management Statistics (http://www.opdems.ac.uk/) more than £8 billion has been invested in new and refurbished buildings over the past 5 years.

2 Findings from interviews conducted as part of our case study research, and the Academic Workspace Forum, 9th October 2008, Newcastle University.

3 Notable examples include the Sir Frank Gibb building at Loughborough University and the University of Reading's Henley Business School.

4 Such as the Devonshire building at Newcastle University, the Jennie Lee building at the Open University and the Copland building at the University of Westminster.

5 Such as the Paul O'Gorman building at Newcastle University, and the Sir Frank Gibb building at Loughborough University. BK City at the Delft University of Technology is one example of where this has been applied to academics.

6 Such as the University of Warwick's Wolfson Research Exchange.

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10 The Information Commons at the University of Sheffield and The Information Terraces at the University of Sunderland are two examples.

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12 See http://www.opdems.ac.uk/_files/EMS%20Annual%20Report%202007.pdf

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40 Extract from a published comment-piece on the new work environment.

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43 Janis, I.L. (1983), *Groupthink*, Houghton Mifflin, Boston, MA.

44 Drawn from our own interviews with academics, and the Academic Workspace Forum, 9th October 2008. A similar finding is observed by Price & Fortune (2008) – in one of the case studies they report, 79% of academics working in a single cellular office (incorrectly) report that they are

contractually entitled to their own office. See Price, I., & Fortune, J. (2008). Open-plan and academe: pre- and post-hoc conversations. In: Proceedings of the CIB W070 International Conference in Facilities Management, Heriot Watt University, Edinburgh, June 16-18 2008. CIB publication No. 315. Emerald.

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