THE FUTURE ACADEMIC WORKSPACE

A literature review
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Front cover image: EcoSciences Precinct, Brisbane, Queensland, Australia. Photography by Christopher Frederick Jones.

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01 Introduction

Open plan or cellular offices for the academic workplace? The debate has moved beyond the either/or argument to the more nuanced and realistic approach of offering staff a variety of spaces that support different styles of working. The conventional wisdom of balance applies, but the relevance of this approach to the academic workplace depends on the nature of the institution and its work styles and culture.

The academic workplace is undergoing a slow but distinct transformation. With an increased focus on the commercialisation of research and the globalisation of the tertiary education workforce, there is growing pressure to adopt commercial workplace practices, including open plan and activity based work environments.

This report summarises research exploring the challenges of designing workplaces that support both solitary and team work. It proposes that a design that provides a range of spaces for individual focus, informal communication, and collaboration is more likely to provide an effective and satisfying workplace than one that adheres doggedly to an office-based or open plan layout. The combination of spaces should reflect the desired outcomes of the various stakeholders – client, project manager, and end user.
The complex interaction of these benefits and challenges has provided ample material for the debate to continue since production of workstations began decades ago. 1

The table below lists the various advantages of open, hybrid and enclosed workspaces, with the corresponding references to supporting material from academic and other studies (see Section 6 for full list of references).

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Figure 1. Advantages of workspace models
See Chapter 4 for summaries of selected research

Today’s Work Spaces and Open Plan Design, DEGW 3

‘In most industry sectors the workplace design debate has long since moved beyond the binary argument for or against open plan environments.’

Benefits and disadvantages
Open plan offices have been found to have both positive and negative effects on employees. Further to this, some studies reach conflicting conclusions on the relative importance of these effects on productivity.

While the inconsistencies may be a product of differing research methodologies, there is also an element of incomparability between workplaces, due to variables in workplace practices, culture and human behaviour.

Figure 1. Advantages of workspace models
See Chapter 4 for summaries of selected research
03 From cellular offices to flexible working

The debate moves on...

As indicated in Figure 1, much of the research to date has focussed on the individual comfort of open plan workspaces, and how this might affect individual productivity.

Privacy (both visual and acoustic) is the most commonly cited problem in open plan workspaces. It has also been found that an individual’s ability to control their working environment (through personalisation, temperature, ventilation, lighting etc.) significantly enhances job satisfaction. But this is not the whole story.

Environmental influences on productivity are defined differently depending on whether individual task performance or collaborative work is the focus of the research. For example, light levels, thermal comfort and other ambient conditions affect individual performance, but furniture configuration, acoustic conditions and the convenience of group workspaces affect team performance and collaborative tasks.²

With this in mind, the debate has more recently shifted to examine the effect of openness on collective productivity; that is, the benefit to the team or business, as well as the individual.³,⁴ While employees may value the quiet of an enclosed office, the organisation may need to increase collaboration in the workplace due to the changing nature of work.

This distinction between stakeholder priorities gives rise to the crucial challenge in workplace design.

In the higher education sector, the stakeholders in any new workplace project (university management, property department, and end user) may have significantly different objectives. Considerations include productivity, workplace culture, job satisfaction or more pragmatic issues such as costs, or the number of publications produced per department.

These competing objectives are typified in the simplistic cellular office versus open plan workspace conundrum. The university management may be seeking a diverse, collaborative environment that supports greater integration with industry on short term projects, while the facilities management team may prefer an open plan design to increase density and maximise space efficiencies. Conversely, the academics may prefer to maintain private offices in which to analyse their research to maximise their publication output.

Alignment of the design with the desired outcomes of various stakeholders is a delicate process. Well managed consultation and involvement is more likely to result in a positive outcome than simply adopting a position and demanding adherence from all parties.
The nature of the debate has changed due to a confluence of factors that has seen business cost rationalisation move away from workplace density and building costs towards optimising employee effectiveness, at both individual and group levels. The evolution of the knowledge economy, advances in technology, demand for organisational agility and increased employee mobility, both within and outside an organisation or campus are changing the workplace.

New workplace design needs to maximise the benefits of more interaction for the team while preserving the opportunity for individual focus. But providing a more open space does not necessarily increase collaboration and communication.

Researchers from the Polytechnic Institute of New York University and IMD in Lausanne contend that the level of interaction depends on how a space balances three dimensions that have both social and physical aspects:
1. Proximity, where designs drive traffic to shared spaces and give people reasons to remain.
2. Privacy, where people feel confident that they can converse without being interrupted or overheard.
3. Permission, where company leadership and culture, as well as the space itself, conveys that casual conversation is encouraged.

In the commercial sector, these ideas, overlaid with non-territorial and distributed working modes, are reflected in the rise of flexible, or activity based working. In the academic sector, it may simply mean providing a diverse range of spaces (including individual territories) that allow users to choose between quiet, focused work, collaborative team work and social interaction as the need arises.
Higher education sector

The higher education sector is facing overwhelming technological, budgetary and organisational pressures. As higher education budgets are squeezed, space efficiencies become crucial. According to a United Kingdom government report on changes in government work practices: “When the annual cost of providing an office workplace can exceed the purchase price of a small car, the issue of value for money and stakeholder choice jumps sharply into focus. As issues of economy and design as well as environmental sustainability loom larger, alternatives to the traditional office with a dedicated desk for everyone will look increasingly attractive.”

Partnerships with industry and other institutions are transforming the nature of research, as well as the mobility and tenure of employees. The ubiquity of mobile technologies has enhanced communication and access to information in a very short space of time. As a result, more effective workspaces for academic staff are becoming a priority for many institutions.

A significant shift is already apparent in student facilities; collaborative learning spaces and social hubs are increasingly common on campus to cater for the changing teaching and learning practices that have come with technological advancement. Space allocation per student in the United Kingdom has decreased in recent years, but as yet, the allocation for academics has not shifted as much.

Knowledge work

High cognitive skills combined with social interaction are the basis of knowledge work. Knowledge workers need time to work alone to think, analyse and reflect, and time to interact with others so that ideas can be generated and evaluated. It follows then, that academics and researchers - knowledge workers by definition - need a combination of workspaces to optimise their productivity, with the right levels of proximity and privacy, coupled with the ability to converse.

Academia is one of the last bastions of cellular office working styles, lingering in many institutions in the early stages of the evolution to flexible working, where employees have between 15 and 20 sqm of allocated space (see Figure 2). This is due to a number of factors, including hierarchical institutional structures, privacy and status concerns, work practices (varied tasks including teaching, researching, meetings and assessment) and the legacies of existing facilities. Resistance to the instigation of more open working environments in academia is based on both real and perceived issues and, while academic work practices have some specific differences, there are many similarities to the commercial workplace.
The future academic workspace
A literature review

04 Workplace diversity in academia

‘Academics themselves are becoming more internationalised, entrepreneurial and professionalised...’

The Changing Academic Profession in the UK, Universities UK

The academic profession

Universities UK has undertaken an extensive review of the changes in the academic profession in the United Kingdom in response to the expansion of higher education generally. With internationalisation comes greater mobility of students and staff, and collaboration with industry. The relevance of academic research is increasingly scrutinised, both in the outputs and the processes by which it is produced. Cross disciplinary collaboration is highly desired by the industry partners that are providing funding and translational research opportunities for universities.

These partnerships, while valuable, bring with them inherent changeability in the size and nature of teams, projects, and funding. This in turn requires the universities to be more agile than ever before.

But changes to academic practices and workplaces are not easy, and are resisted in some instances. The cellular office is a coveted and fiercely guarded territory. Universities that have trialled innovative spaces that move staff out of cellular offices have had mixed success.

HUB Melbourne, Australia. Photography by Diana Snape.

“Academics themselves are becoming more internationalised, entrepreneurial and professionalised and their roles have diversified and often taken them away from the original disciplines towards new forms of identity and loyalty.”

The Changing Academic Profession in the UK, Universities UK

HUB Melbourne, Australia. Photography by Diana Snape.
Studies into academic workspaces

A study conducted by Loughborough University in the United Kingdom examined various academic spaces, from individual office facilities to open plan and more innovative group centred research environments, to explore the potential for improved work environments for academics.

The study concluded that the trend for open plan work environments is slowly emerging. To some extent this reflects pressure on building costs, but perhaps more significantly it also reflects growing recognition of the value of interaction and collaboration between researchers.

The study examined work spaces that challenge the stubborn under-utilisation of space in research facilities – “the average office desk is occupied for only 45 per cent of office hours.”

In the more traditional individually centred environments, staff spent 30 per cent of work time in their offices, mostly engaged in individual activities. Sixty per cent of staff expressed overall satisfaction with their spaces, particularly with the level of natural light (from windows), privacy and noise levels. However, they expressed dissatisfaction with the availability of informal and formal meeting areas, as well as temperature control and air quality. Research staff spent a quarter of their time away from their desks, and research students almost half. Only half of the researchers were satisfied with their workspace predominantly because of noise and a lack of privacy.

There was widespread agreement among the researchers in the group centred environments that informal interaction with their colleagues is extremely valuable for their work. In these environments, various workspace options were available to staff – hot-desking, quiet booths, informal meeting areas, and open plan workstations.

A number of people identified a friendly atmosphere and high level of integration between occupants. Overall, these group spaces were viewed positively, despite some concerns about privacy, noise and, in particular, hot-desking. Senior researchers were more likely to be concerned about disruption, which may have reflected their previous lack of experience in open plan spaces, but also a tendency for junior researchers to interrupt them more often.

At the Faculty of Architecture, Delft University in the Netherlands, a post occupancy evaluation examined the response of academic staff to a new open plan workspace. The results were similar to many other open plan workplace surveys – employees were dissatisfied with storage space, privacy, security and noise.

The conclusion that the space was overall a success, is tempered by the fact that occupancy is still low at just under 30 per cent, and more people work from home more often (27 percent, up from 16 percent). This points to a lack of quality and diversity in the space – if the worker cannot find the right conditions to work, the temptation is to work elsewhere (at home), undermining the provision of collaborative space.

Both of these studies indicate that despite the common downsides to more open, group focussed workspaces, the overall experience is generally considered to be positive. With prototypes to work from, these universities are well placed to advance the ideas of diversity in academic workspaces, and to readily identify where along the spectrum of workspace typologies they belong for any given building project.

A recent study of academic space at the University of Melbourne, Australia discovered that occupancy rates across four different faculties rarely rose above 40 per cent, and that office infrastructure is too valuable to sustain such low utilisation. It also concluded that neither open plan nor enclosed offices are suitable for academic workspace. While suggesting that academic space should not follow the commercial model, the study concluded that universities should reconceptualise academic work culture. This ambiguous conclusion would seem to support the contention that a faculty’s work practices may be best served by activity based work settings tailored to suit its individual culture.

‘The average office desk is occupied for only 45 per cent of office hours’

Research Environments for Higher Education, Parker et al ⁹
Advantages of open plan working spaces

The following summaries and edited extracts from academic, corporate and media sources explain the specific advantages of open plan working spaces:

Knoll Inc.¹
Many studies show better business performance for organisations that change from cellular offices to open plan environments. Acoustic and privacy issues can be overcome in open plan areas with careful product selection and space planning. Investment in change management to understand employee expectations at the point of transition from one environment to the other is crucial to an effective fitout.

DEGW ³
Effective workplace design relies on achieving a balance between the benefits to the organisation and the impact on employees. Studies into workplace design should be based on contemporary organisations and demographics, because technology has altered the way we work. The emphasis is now on knowledge sharing, which is enabled in part by the removal of physical barriers. To date, most research has focussed on individual comfort (acoustics, privacy, Indoor environmental quality, light) rather than organisational effectiveness.

Fayard and Weeks ⁵
Casual interactions among employees promote trust, cooperation and innovation. Spaces invite interaction only if they properly balance three affordances: Proximity, Privacy and Permission.

Pinder et al ⁹
Academic workplaces are undergoing incremental change due to shifting practices, environmental considerations, new technologies and financial pressures. The inclusion of non-territorial open plan work spaces for doctoral researchers is a growing trend, but can be challenging to academics with entrenched work practices.

Boutellier et al ¹²
Workers communicated three times more often in open plan spaces, but the length of time of communication decreased, which in turn increased the amount of time available for working and thinking on their own. Most communication occurred in the workplaces, not in the more informal sitting areas specifically included for communication.

Rasila and Rothe, ¹⁸
Generation Y employees like open plan offices, and perceive the problems associated with them (noise, lack of privacy etc.) as trade offs for the greater good.

Maxwell ¹⁹
People increasingly work in two quite different ways. The first is undertaking individual tasks wherever they can: checking emails at home and using mobile technology in cafes or while commuting. The second takes place in a workplace setting, where the majority of time is spent collaborating in formal meetings or through informal interaction. In response to this, companies are devoting less floor space to individual workstations, and are providing a variety of group spaces, from communal tables to lounge seating to cafe style break areas.

GSA Public Building Services ²⁴
Good acoustics are a key contributor to work performance and wellbeing. High partition cubicles do not necessarily provide better acoustic performance than low partitions, and closed offices are not always the answer either, due to the changing workplace. Results from a 24,000 worker survey showed there was no statistical difference between worker satisfaction in high or low cubicle partition situations. In fact, workstations no partitions scored better.
Disadvantages of open plan working spaces

In contrast, the following studies have identified considerable benefits to providing enclosed offices for employees:

Gensler

The Workplace Performance Index's unexpected conclusion is that the most significant factor in workplace effectiveness is not collaboration, but individual focus work. Focus work occupied more time in the day and was the activity people considered most critical to their job. Those findings are surprising given the emphasis on collaboration by many businesses, but when consideration is given to work factors that have changed since 2007 (less space, less privacy, more time at work and more distractions) focus work is more important and time consuming.

Haynes

While not overtly contending that enclosed offices are superior to open plan, this research asserts that office environments should achieve maximum interaction without affecting concentrated individual work, and that spaces that are able to be enclosed most readily achieve this. Quiet individual work and frequent informal interactions are the two most common activities in an office, and also have the strongest links to performance and satisfaction.

Jahncke

Different tasks need different settings – open plan environments have been shown to be detrimental to complex cognitive tasks (information search, recall, writing etc.) so it is important to consider which work environments are best for each kind of task.

Kim and de Dear

Enclosed private offices clearly outperformed open plan layouts in most aspects of Indoor Environment Quality, particularly acoustics, privacy and proxemics. Benefits of enhanced ease of interaction were smaller than the penalties of increased noise levels and decreased privacy.

Oommen et al

This literature review advises caution for managers of healthcare services looking to introduce open plan work spaces to gain space and achieve cost efficiencies. It suggests there may be unintended negative consequences for job satisfaction and productivity due to overstimulation, health issues and a loss of privacy and individual identity for staff.

Yildirim et al

Open plan office occupants may experience a lack of both visual and acoustic privacy in addition to an increase in the amount of unwanted distractions and interruptions. Proximity to a window affected employee satisfaction, somehow buffering or compensating for the negative aspects of open plan offices. Employees were most satisfied when their workstation had a partition height of 1400mm and was near a window. Males responded more positively to open plan offices than females.

Baldry

Academics' social identity is based on an acceptance of the professional values of autonomy, collegiality and the tutor/student relationship. Universities have previously been characterised by a high trust organisational culture. Many academics now feel university governance is moving from high trust collegiality to low trust managerialism, and that this is reflected in the change from cellular offices to open plan workspaces.
The results of studies into academic spaces are in many ways similar to those conducted for the commercial sector. While academics may require a higher proportion of enclosed spaces for private interaction with students and undertaking complex cognitive tasks and reflection, the benefits and disadvantages of the open plan office appear to be universal.

As the landscape of higher education continues to transform, those universities willing to embrace a flexible approach to workplace design will be better equipped to meet the needs of their academic staff. Providing a variety of spaces that support a more efficient and productive style of working, will not only boost employee satisfaction and retention, but will also give universities the competitive edge in attracting the world’s best academic minds.


9. Parker, Austin and Lansdale, 2006. Research Environments for Higher Education, Department of Civil and Building Engineering and Human Sciences, Loughborough University, UK. Website accessed 6 November 2013 at www.lboro.ac.uk


