

An alternative use of space in government office accommodation

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Office layout, Spatial management

Abstract

Discusses how the traditional office design has become inappropriate for new ways of working and the changing nature of work. Drivers for change, in the office environment, are discussed in the context of the UK Government's "Modernising Government" agenda. Provides a longitudinal study over 18 months of user reactions to a prototype "new" work space. Data was collected from a questionnaire, observation and electronically in an attempt to validate findings through triangulation. Results show that where the cultural shift required was largest uptake of new space was slowest.

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Introduction

As part of the UK Government's "Modernising Government" agenda, The Department for Education and Employment embarked on a pilot project, in late 1999, to construct a new workgroup area, embracing "new ways of working" concepts which had been observed in a series of benchmarking visits to major innovative organisations in the private sector. It was recognised that the public sector was moving away from the traditional management hierarchies which had characterised the way in which office work was performed for most of the twentieth century. A new culture was emerging in which knowledge and intellectual capital were becoming increasingly important, linked to team and group working, and project based activities. Additional powerful drivers for change were brought about by new integrated information and communications technology (ICT) developments allowing staff access to the corporate intranet from almost any location. Little movement had however taken place in the approach to office design to reflect these changing dynamics, and it was clear that a new flexible environment was needed to support a plethora of working preferences, where staff would feel valued and well motivated. There was a further requirement to improve the efficiency of space usage, in view of continuing pressure on space resulting from increased staffing numbers.

Development of the design strategy

A lead consultant in conjunction with the FM team, and the staff who were to occupy the area developed the design brief. The brief included a number of key requirements:

- To provide each member of staff with immediate access to a variety of work environments suited to the type of work they were doing – working collaboratively with colleagues both formally and informally, working quietly on their own, and space for relaxation and unwinding.
- Making leaders more visible and accessible in open plan space, and

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removing team boundaries to provide a more fluid and transparent workgroup area.

- Bringing staff and external partners together in a choice of working spaces, and providing an environment in which teams could be created and disbanded easily to meet changing business requirements.

These concepts produced an agreed open plan design which reduced total space requirements by approximately 20 per cent when compared to the space previously occupied by the workgroup. This was achieved by reducing the standard workstation for all staff from 1,800 to 1,600mm in length, substantially reducing the capacity for paper storage, and introducing flat screen monitors and DECT telephones to reduce the footprint of ICT equipment on the workstations.

The space savings in the workstation area were used to create a variety of team and individual meeting spaces, using glazed partitions to maintain a light and open environment. A coffee lounge for informal meetings was provided, together with a touchdown space with ICT network access points for those using laptop computers. A number of mobile pedestals for personal property were included, to promote workstation sharing for part-time staff, and printing, photocopying, and stationery facilities were brought together in a central hub.

Office space and design considerations

The design of office accommodation has evolved slowly from the influences of Frederick Taylor and Frank Lloyd Wright in the early part of the twentieth century, through the Scandinavian and German designs of the 1960s, to the ideas of Frank Duffy and others, and the impact of information technology in the 1990s. Duffy (1992) suggests it is sanest to try to design buildings which permit all possible behaviours to coexist without coming into conflict. In practice this would be impossible to achieve, and most FM practitioners would settle on satisfying the majority of needs.

Marmot and Eley (1995) recognise that offices cannot be designed equally well for all

functions, but recommend the concept of spaces for particular tasks, moving away from individual allowances based on status to one based on need. They accept the complexity of creating a range of workplace settings which will be used by people for different tasks, at different times, and in a variety of combinations. This points to the need to undertake a detailed study of working preferences in order to provide the best match. Similarly Becker (1990) and Gibson (1998) indicate that space efficiency can be achieved by sharing office space, and producing a profile of uses and activities, so that staff go to a location where at any given time it makes most sense to work, because it may be quieter, or there may be others there with whom they wish to interact. Such designs cannot remain fixed in time. McGregor (2000) advises that all successful enterprises should have "living" workspace strategies that can evolve as the organisation evolves.

While there is a general acceptance that changes in methods of office working, and the impact of ICT must be reflected in a change in office design, some degree of caution needs to be applied. Brill *et al.* (2000) put forward a view based on a large sampling exercise of office workers in the USA, that "the really groovy, wide open office, with folks interacting informally all day" is "a visually seductive myth". They claim that this type of design does not support work very well, and that in reality only up to a third of time is spent interacting with colleagues, and much of that takes place at the employee's own workstation.

People and barriers to change

In any new ways of working design the human resource element needs careful attention.

Leaman (1995) states that buildings seem to work best where the integration between physical and human systems is well developed. The presence or absence of a strong champion can be important to the success or failure of a new ways of working project. Champions can be an effective way of helping people learn new behavioural patterns, and move away from territorial thinking, by creating solutions tailored to the working needs of their group as a whole (Becker *et al.*, 1994).

Change is an inevitable facet of an organisation's life. However, imagining change is difficult and it requires strong commitment from senior management to drive forward the concept of new ways of working. Many of the issues which managers feel are barriers to implementing innovative working conditions are perceived rather than real barriers. Observing leaders embracing the changes themselves can speak volumes (Heath *et al.*, 1996). Robertson (2000) suggests that managers should ensure that the overall vision for the future is not diluted through over sensitivity to ingrained habits and prejudices.

Research methods

In order to measure the effectiveness of the pilot project, it was decided to use multiple data sources in order to compare reality with the theoretical model of new ways of working. The principle source of data was the use of a post occupancy survey questionnaire, to evaluate the benefits and disadvantages of the new ways of working design, as perceived by the staff using the facilities. In addition to the questionnaire, direct timed observations were made hourly over a one week period of each of the shared facilities in use, in order to produce a behavioural map. This allowed a comparison to be made between the staff perceptions of their use of the new facilities and the actual reality. Finally a daily check of desktop PCs in use was undertaken remotely, using network software, to establish workstation utilisation. This was conducted without the knowledge of the staff to ensure the validity of the information.

Questionnaire design

The list of questions was carefully structured and piloted with a small group, to ensure participants would be clear about the response needed. They included a small number of open ended questions to elicit a broad range of views. The length of the questionnaire was limited so that it did not take too much time to complete, and staff were advised that comments would remain confidential and would be averaged so that no individual response could be identified. The questionnaire was divided into three sections covering the most important elements of the pilot project – the new design features; the

office environment; and the new ICT features.

Limitations of the research questions on the design and working environment

Finch (1999) and Horgen and Sheridan (1996) caution the use of questionnaires for staff who are not “educated” users of their space, and the ability of users to guide the development of new ideas, which may be limited by their experience and ability to imagine and describe novel workplace innovations. In order to reduce any possible problem, staff were briefed by the design consultant prior to taking up occupation on the design features which would be incorporated in the facility, and the ways in which they could be used. The questionnaire was issued after staff had been in occupation for three months, giving them time to become accustomed to the full range of facilities.

Limitations of the research on workstation utilisation

Almost all staff in the department need to use their desktop PC as their principal work tool. Recording log-in data is therefore likely to give a very accurate picture of workstation utilisation. However further research is needed to establish how any spare workstation capacity identified in this way could be managed and used effectively. In order to reveal the potential for sharing workstations, the data was gathered over an eight-week period to remove any short term daily anomalies, such as staff being off-site for team meetings. The measurement took place during January and February when few staff were on leave, and occupancy levels were likely to be at their maximum.

Research survey findings

Space density

The effective use of space improved significantly in the workgroup area, compared with the average net internal area (NIA) for the two buildings where the staff were previously accommodated (Table I). This suggests that changing the balance between the space allocated to workstations and group space can be achieved, where traditional layouts are currently employed, and overall space density can be improved.

Table I Comparison of space density between the pilot project and the previous accommodation

NIA – pilot project	11.9m ²
Net workspace area – excluding group space	7.1m ²
NIA per head – Building 1	6.5m ²
NIA per head – Building 2	16.5m ²
Improvement in NIA utilisation	13.8% – 27.9%

Workstation utilisation

Table II records the log-in data for the 47 staff who were in continuous occupation of the workgroup area throughout the eight-week measurement period. The figures show a higher utilisation rate than the average of 80 per cent suggested by Marmot and Eley (2000), for office workers generally. However by taking annual holidays into account, and averaging these across the whole year, the notional annual figure moves closer to the predicted rates.

Hourly observation of shared facilities in use

Hourly observations were taken of each of the shared facilities in use, from 09.00 to 17.00 for a one week period, at three, six, and 12 months after occupation. Table III indicates the percentage of time that each of the facilities was in use.

It is clear that staff need time to adjust to a new working environment, when they have no previous experience of using a range of workplace settings. In almost all cases there has been a slow build up from a low base, but in the case of the break-out space and laptop

down bar, the level of use does not justify the time and money invested in these facilities. This may suggest that staff still do not feel at ease with the “domestic” look of the break-out space, and retain a preference for a more standard office environment. In the case of the touchdown bar, staff prefer to plug in their laptops at their workstation, and there were few “mobile” staff in the workgroup, who only needed to log-in for short periods. Consideration will be given to opening up the touchdown bar to visiting staff generally, rather than confining it to the workgroup, which may improve the utilisation rate.

The figures suggest that there was an over supply of the shared facilities, and that the correct balance between supply and demand was not achieved. This points to the need to undertake detailed studies of individual workgroups, and thoroughly understand their working methods, and need for different workplace settings, as an essential part of the design process. Importing designs and standards from elsewhere is unlikely to be successful, and in larger organisations, different approaches are likely to be needed for each workgroup, depending on their business and operational needs.

Survey findings

Post occupational survey questionnaires were issued to 48 staff after the facility had been in occupation for three months, and 43 were returned giving a response rate of 89 per cent. Staff were asked to give their satisfaction levels with each of the three elements of the design, and to rate the facilities in order of importance. The top three facilities in order of importance are indicated in Figures 1-3 for each of the elements. They were also asked to indicate whether their working effectiveness had increased or decreased as a result of using the new facilities.

There was a high level of satisfaction with the overall facilities, with the exception of personal storage, which was anticipated given the marked reduction in storage facilities within the area. However, only 15 per cent of the staff felt that personal storage was important in their overall ratings, which suggests that the majority of staff were able to adjust to the new smaller units without difficulty. Desk top space was rated as the most important consideration by 68 per cent of the staff, and more than half the staff expressed satisfaction with the new

Table II Log-in data measured over an eight week period

Maximum daily log-in size	47
Total log-ins over eight-week period	1,665
Maximum possible log-ins over eight-week period	1,927
Percentage of possible	86.4
Notional annual percentage	74.0

Table III Utilisation rates for shared facilities over time

Shared facilities	3 months (%)	6 months (%)	12 months (%)
Meeting rooms	25	31	42
Quiet rooms	11	17	28
Break-out space	0	4	18
Café/touchdown space	25	37	33
Laptop bar	0	2	6

Figure 1 Mean satisfaction with the office facilities

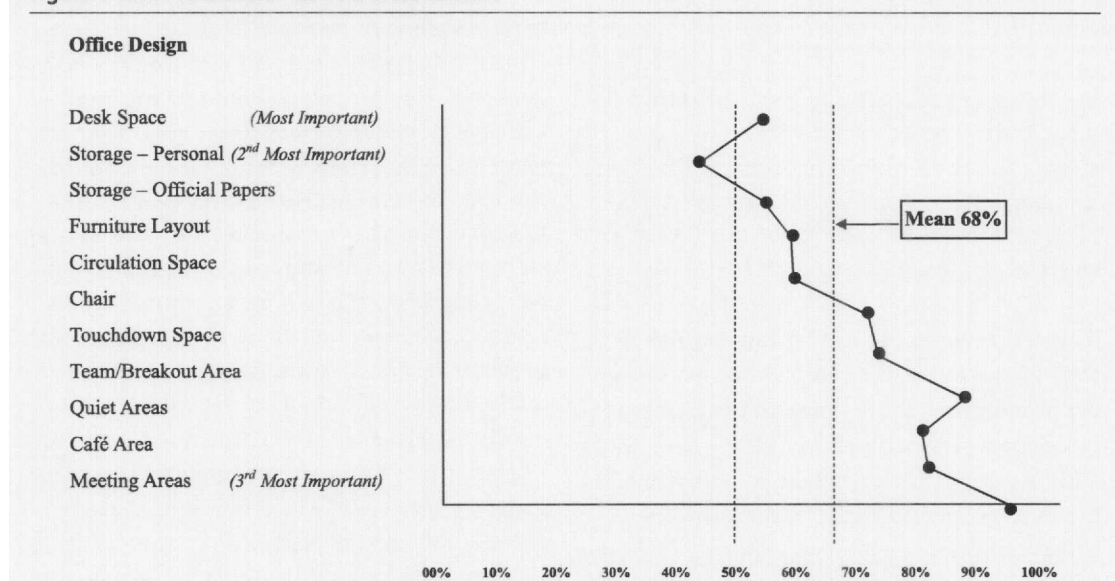


Figure 2 Mean satisfaction with the environmental conditions

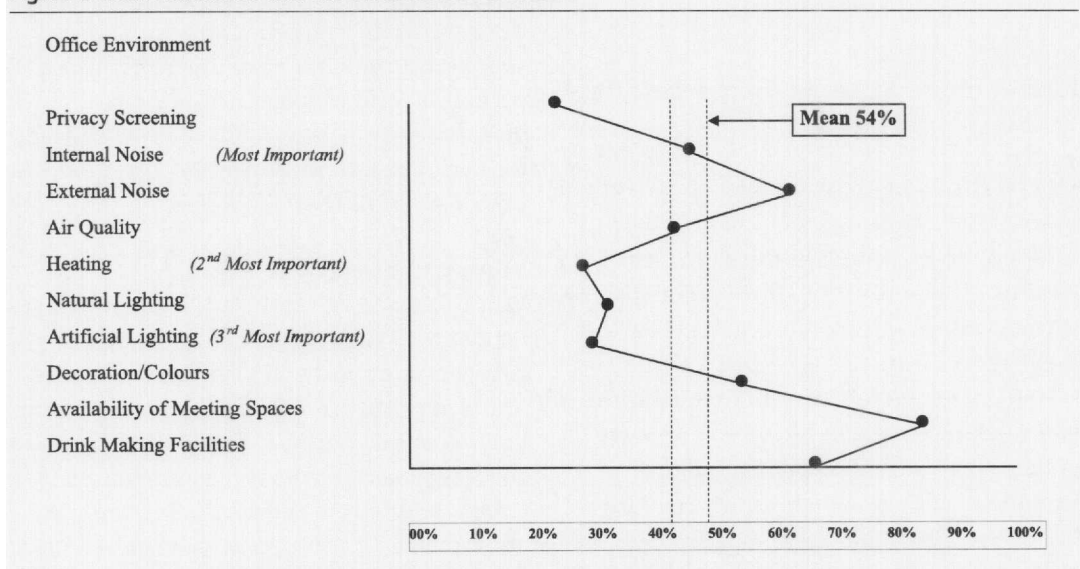
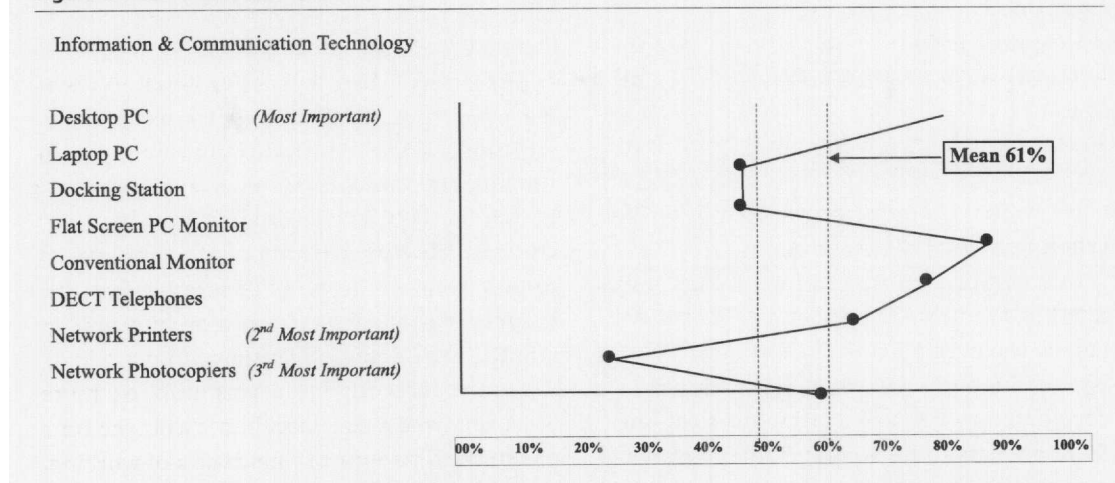


Figure 3 Mean satisfaction with ICT



workstations and their reduced size. Only two staff mentioned desk space as a problem in their general comments. This was particularly important, as reducing the footprint of the workstations was the key to gaining extra space for the alternative workplace facilities. The furniture layout and circulation space both received 58 per cent satisfaction ratings, suggesting that the increased density in the workstation area had not created any serious difficulties. There were no adverse comments from those staff who had previously occupied cellular offices, and were now working in open plan.

All the new design elements for shared facilities received high satisfaction ratings, suggesting that the approach to providing a wide variety of work settings was correct. Staff particularly liked the immediate availability of meeting rooms adjacent to the workstation areas. The replies indicated that staff in general only spent about 25 per cent of their time using the facilities, which confirmed the observational study, and the need to achieve a better match.

A much wider fluctuation in staff comments was received in response to questions about the environmental factors in the office. Overall the mean level in satisfaction was a disappointing 54 per cent, and comments suggested that there had been a failure to get the basics right, in particular privacy screening, heating, air quality, and artificial light. These aspects remain particularly important to staff, and must continue to receive as much attention as the new aspects of the design. Only one third of the staff were satisfied with the privacy levels, with almost half the staff being neutral in this area. It had been anticipated that the senior management team who were previously provided with their own rooms would find the most difficulty in adapting to an open plan environment. In practice, most of the concerns were raised by staff, who were not used to being within the constant sight of their managers. The cultural changes forced by the new design is likely to require further investigation.

In terms of importance, internal noise was rated as the most important environmental factor, followed by heating and lighting. Noise which disrupts work activities was considered to be particularly intrusive, but there appears to be a greater tolerance for variations in heating and lighting, and an

acknowledgement that conditions can only be set for the majority of staff.

ICT was anticipated to be one of the key enablers which would assist location free working within the workgroup area. In practice, satisfaction with the equipment showed the widest fluctuation in any of the items examined, with a mean overall rating of 61 per cent. Staff had been provided with the latest high specification PCs and flat screen plasma monitors. These received high satisfaction ratings, but in contrast the two network printers, which replaced individual desktop printers received a very poor rating. Investigations suggested that this was the result of a combination of equipment problems, and insufficient training in the use of the new equipment. The eight DECT telephones provided for the workgroup received a 65 per cent satisfaction rating, and they proved to be effective in keeping staff in touch anywhere within the area. Further work will however be needed to decide the optimum number needed, as the means of communication is increasingly moving away from voice to e-mail.

In rating the equipment in terms of importance, the majority of staff picked the desktop PC, as it is their principal work tool. It should therefore continue to receive particular attention in considerations of worktop layout, and workstation configurations.

Conclusion

Viewed holistically, the pilot project has given important pointers to the way in which the design of office space can be changed, to improve space efficiency, and provide staff with a better range of work settings, more suitable for the needs of teams and groups, in a constantly changing business environment. While the majority of staff were satisfied with the facilities as a whole, and embraced the shared working space with considerable enthusiasm, there are some important lessons to be learned from the pilot study before the design concept is rolled out more widely:

- Re-configuring office space to provide a variety of work settings can lead to a more effective use of space, but it will take time for staff to adjust to new ways of working, and fully utilise the facilities to the full.

- Advanced ICT equipment has an important part to play in allowing workstation sizes to be reduced, and maintaining communications in a location free working area.
- New ways of working designs must be accompanied by good control of the heating and lighting environment, and staff must feel comfortable with their workstation space.
- Over or under provision of shared workspace remains a risk, unless there is a thorough understanding of the working procedures of the workgroup in advance, and the facilities have sufficient flexibility to accommodate inevitable changes.
- There is unlikely to be a standard model which will fit all workgroups, and individual consideration of each workgroup's needs will be needed to establish the correct mix of individual and shared working space.

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