How to cope with dilemmas in activity based work environments: results from user-centred research

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ABSTRACT

Purpose: The aim of this research is to identify factors that can further explain the benefits and draw backs of activity based office concepts, resulting in practical recommendations for addressing and preventing issues. *Theory:* Nowadays a lot of organisations shift to working in a more flexible and activity based manner. When it comes to the experience of employees, the activity based office concept often gives rise to long-standing issues such as lack of privacy, concentration problems and insufficient supporting facilities. *Method:* In 20 case studies both a questionnaire and group interviews were conducted, resulting in 2733 survey respondents and 57 group interviews with 271 participants. *Findings:* Results show that respondents appreciate the light and colourful environment and that the openness of the work environment can lead to more communication in general and between different colleagues and departments. However, this openness is also mentioned as a downside, since people feel like there is not enough privacy for personal conversations and communication with direct colleagues seem to decrease. While people value the different types of workspaces provided, they are not always available in practice. Explanations for problems with concentration and privacy are mainly related to the openness and transparency of the work environment. Among others, behaviour of both employees and managers seems to be important in addressing the issues. *Value:* The results are based on a large number of cases in which both quantitative and qualitative data was collected, leading to extensive and solid explanations regarding main experienced positives and negatives.

Keywords

New Ways of Working, work environment, facility management, office, activity based working

1　　INTRODUCTION

Over the last decades several studies about the implementation, development and influence of the office environment have been performed (Voordt, 2004; Veitch et al., 2007). This has shown various implications and obvious benefits and drawbacks of several types of office designs and concepts. The development of new office environments is often based on the expectation that the

effectiveness of the work environment will increase and productivity will grow. For example, it can provide benefits like saving office space, a reduction of general and technical service costs and an increase in the flexibility of office use (Meulen, 2014; De Croon et al., 2005). Another reason which is mentioned often by Dutch employers, is the aim to be an attractive employer to future employees. Some organisations are afraid that when they do not have a popular and competitive work environment, they might lose the 'war on talent' in the future (Rieck & Kelter, 2005). Research has shown that the office has an influence on job satisfaction and productivity (Carlopio, 1996; Veitch et al., 2003). This stresses the importance of studies in which attention has been paid to the influence of the office environment on end-user experience (De Croon et al., 2005; Bodin-Danielsson & Bodin, 2008).

Nowadays, due to rapid developments in the field of information technology, people are much more flexible when it comes to the time and place of working. These developments also allow employees to have communication and access to information and knowledge at any time on every desired place (Lee and Brand, 2005). Many European organisations have already made a shift towards a much more flexible and dynamic office concept. In the Netherlands, this resulted mainly in so called activity based office concepts, also referred to as a flexible office or combi office concept. One of the main principles of the activity based office is that people can choose the type of workplace that best fits their activities. This usually results in a great variety of open, half open and enclosed workplace types. Besides, many possibilities are provided for informal and formal meetings in order to stimulate communication and knowledge sharing. The activity based office has similarities with the open plan office due to a large amount of openness and transparency. Nevertheless, in contrast to the open plan office, the activity based office offers open and enclosed workspaces and does not have assigned desks, which means that all employees are sharing the available places. Therefore, flexibility (working at anytime, anywhere) is one of the key ingredients of the concept. Often a clean desk policy has been implemented to ensure that a sufficient number of workplaces are available at all times: employees are expected to clear their desk when they plan to leave it for more than two or three hours.

Since the development of the activity based office environment, several positive and negative points came forward. Some of these issues can be directly related to the physical work environment (e.g. openness) and the behaviour of the end-users of the building, such as a lack of privacy and concentration problems (De Been and Beijer, 2014; De Croon et al., 2005; Banbury and Berry, 2005; Haynes, 2008; Ferguson and Weisman, 1986). Others key issues are mainly linked to supporting facilities, like IT facilities, which are not always fully suitable (yet) for sharing workplaces (Sellen and Harper, 2005; De Been and Beijer, 2014). Research on open offices often show positive results regarding communication and social interaction (Banbury and Berry, 2005; Wineman, 1986). However, a recent study did not find this positive effect when comparing satisfaction with communication in activity based offices versus traditional cellular offices (De Been and Beijer, 2014).

The goal of this research is to identify the factors that can further explain the positives and negatives of the activity based office concept, based on lessons learned from existing practices. This should lead to practical tips and interventions for managers with which common problems can be addressed or even prevented in existing and future activity based office environments.

2   METHOD

In this research, the results of twenty post occupancy evaluations were analysed. The case studies consisted of an online post occupancy evaluation complemented with one or several group interviews. Post occupancy evaluations were executed with the Work Environment Diagnosis Instrument (WODI questionnaire; Maarleveld et al., 2009), developed by the Center for People and Buildings in order to gain insight into the perceived positive and negative aspects of the work environment. The evaluations took place in 20 different activity based work environments from 4 (semi-)public organisations in the Netherlands. The measurements were conducted to collect generic data about the experience of the office environment as well as to provide the organisations with possible points of departure for optimisation of their office concept. Some cases were meant as a pilot environment for a relatively small group of people whereas other cases involved complete office buildings. The population in these cases varied from 31 to 806 employees with an average of 256. The job descriptions of the employees include manager, administrative worker and knowledge worker.

2.1 Outcomes WODI quick scan

All building users (5128) were invited via e-mail to participate in the WODI questionnaire. From the 5128 building users in the 20 different cases who were invited to participate in the research, 2377 respondents filled out the questionnaire (46% response rate). 18 items were used to analyse the satisfaction with several aspects of the work environment, varying from technical aspects like indoor climate, acoustics and IT to psychological aspects such as concentration possibilities and privacy. The items were scored on a 5 point Likert scale, ranging from very dissatisfied (1) to very satisfied (5). The average percentage of (very) satisfied, neutral and (very) dissatisfied respondents were calculated in order to gain insight into the main perceived benefits and disadvantages of the work environment.

2.2 Group interviews

To get in-depth insight into the positive aspects and negative aspects of results from the WODI questionnaire, qualitative data was gathered by conducting semi-structured group interviews. In all, 57 different group interviews were conducted with 271 employees in total. The semi-structured interviews were conducted in order to explain the results of the corresponding post occupancy evaluation with the WODI questionnaire. People were asked to further explain the positives and negatives of the work environment and to elaborate on how problems could be solved. The participants could also comment on other issues regarding the work environment. During the interviews, two researchers were present. While one of the researchers led the semi-structured interview, the other researcher drew up the interview report on a laptop. The interview reports were analysed one by one. The key outcomes of each interview were classified by subject, followed by the actual positive or negative remarks or explanations. The outcomes of all interviews were added up and totalized, resulting in an overview with explanations for the key positive and negative aspects of the work environment.

3   RESULTS

3.1 Satisfaction scores

Figure 1 shows that many respondents are satisfied with the architecture of the building, communication possibilities, lighting, possibilities for remote working and IT facilities. The most salient negative aspects seem to be the indoor climate, privacy, concentration possibilities and archive and storage facilities (figure 1).

Figure 1. The average percentage of (dis)satisfied respondents per WODI item, scored on a 5-point Likert scale.
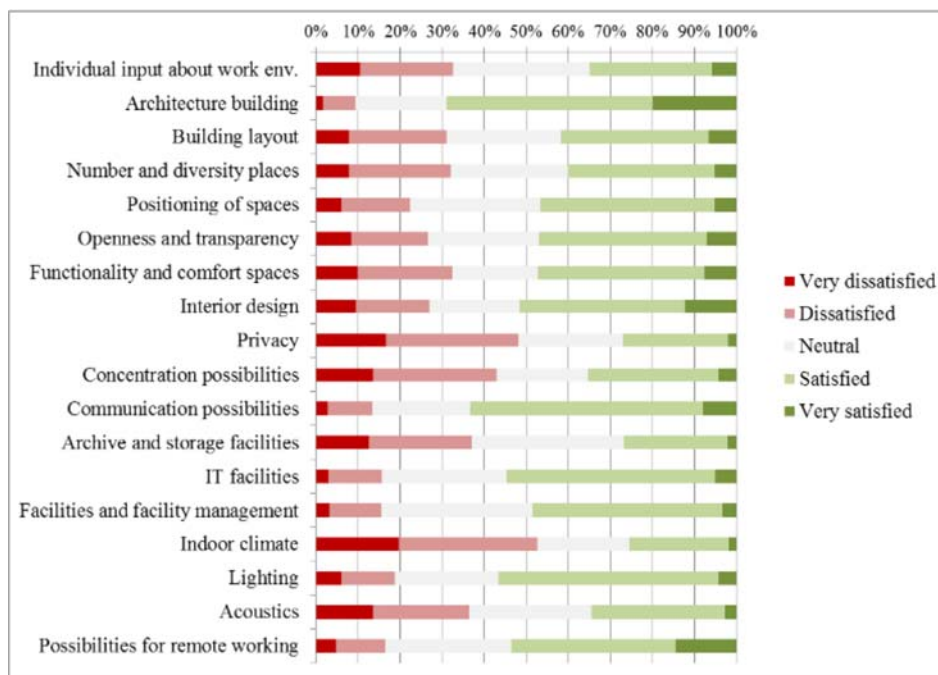
3.2 Positive aspects

When analysing the interviews, several aspects came to the fore as frequently mentioned positives in an activity based work environment (see appendix 1). In accordance with the WODI results, one of the most frequently mentioned positive aspects is the architecture and interior design of the office (referred to in 39 out of 57 interviews). Most people say that the colour scheme is pleasant and that the design of the interior contributes to a warm and pleasant atmosphere. The work environment is perceived as cleaner and tidier, especially compared to more traditional work environments. People also appreciate the large amount of light, due to the use of transparent materials and the generally open layout of the building.

The possibility for knowledge sharing is the second aspect which is mentioned frequently as a positive. Knowledge sharing has been mentioned in 16 cases (34 interviews). People experience more communication and knowledge exchange in general. They also seem to come across more different colleagues because of the openness of the work environment. Moreover, more interaction is experienced between different departments. This could explain the high percentage of satisfied respondents on communication possibilities, as found in the WODI results.

While the WODI satisfaction scores regarding the number and diversity of places is not outstanding, people do appreciate the diversity of workspaces which is provided in the activity based environment (named in 15 cases, 29 interviews). Employees mentioned the informal pantry area as very pleasant and useful. As for the mix of workspaces, having the possibility to work in a concentration space was explicitly mentioned as a positive.

Subsequently, the openness of the work environment has specifically been mentioned as one of the positive aspects (mentioned in 10 cases). People find it more easy to see each other and to meet (new) employees. This also leads to a more dynamic vibe, according to some employees.

The furniture is one of the others factors which was also regularly described as an advantage (mentioned in 6 cases, 7 interviews). The furniture, which is often renewed, can be adjusted according to the needs of the individual employee. In some cases, the design of the furniture is particularly valued as well. Besides, employees appreciate acoustic materials being applied in the work environment in order to keep the noise levels down.

Whereas over 50% of the WODI respondents is satisfied with the IT facilities, this aspect was not often mentioned as one of the main positives during the interviews. The same applies to the possibilities for remote working, which is mentioned in some interviews as a positive aspect, but not as often as one might expect when looking at the WODI results.

3.3 Negative aspects

Several key negative issues came forward in the group interviews with employees (see appendix 2). The most important downsides of the activity based office environment are being described. Consistent with the WODI data, one of the major perceived weaknesses of the concept is the lack of possibilities to concentrate. This issue has been mentioned in 16 out of the 20 research cases (46 interviews). The explanation that was brought up most often, is the disturbance by other people because of the open character of the work environment. In particular, making telephone calls in open space seem to cause a considerable amount of disturbance. In some cases, respondents specifically complained about the acoustics. Some people feel like the more open work areas are uncomfortably crowded. Others explanations for the dissatisfaction regard distraction by the noise as well as by movement of others, which is perceived as rather stressful.

One of the other negatively perceived aspects is the lack of privacy (referred to in 16 cases, 43 interviews) which is in accordance with the negative WODI results on this aspect. Many participants explained feeling uncomfortable having a confidential conversation or a telephone call in the open space, not only because of their own privacy but also because they fear bothering others. The lack of visual privacy due to the openness and transparency, is also an issue to some of the employees. This applies especially to the smaller meeting spaces in which confidential conversations should take place.

In line with the negative WODI results, the indoor climate came up in 17 of 20 research cases as one of the main shortcomings (44 interviews). People mostly complain about the temperature (in 12 of the 20 cases) or an uncomfortable air flow. In 5 of the cases a poor indoor climate in the enclosed spaces, such as the cockpits, came forward. Another area of concern is the lack of personal control over the indoor climate due to sharing spaces.

The provided mix of workspaces was brought up as a positive aspect but even more frequently as a negative one (in 16 cases, 45 interviews). This could explain the mediocre WODI results. One

of the main reasons for the great number of complaints, is that some of the workplace types are more popular than others and as a consequence, not always available if needed. Some respondents stated that people who arrive at the office late in the morning often do not get the opportunity to select the workspace which is most suitable for their activities. In a situation in which the less popular spaces are barely used, people feel like this is a waste of valuable and sometimes scarce office space.

In more than half of the research cases, the supporting facilities came forward as a drawback (15 cases, 32 interviews). Complicated and inflexible IT systems seem to reduce the flexibility of the employees. Alike, having to move personal belongings and files from one place to another is often perceived as a time consuming hassle. Both issues can be a hindrance for switching workplaces. Some people addressed the fact that it takes quite some time to get started and wrap up for the day.

Consistent with the previous issue, it was mentioned that not everyone switches workplaces during the day or even during the week (11 cases, 27 interviews), regardless of the 'flexible' intentions of the activity based concept. This is also reflected in the remarks about undesirable claiming behaviour, under which by managers, which was mentioned in 5 cases (18 interviews). Addressing disturbing or annoying behaviour among co-workers is perceived as a difficult aspect of the concept (10 cases, 19 interviews). People also complained about having to actively search for a workplace and mentioned that it is just not practical for some functions to work flexibly.

In contrast to the quite positive WODI scores, in more than half of the cases the lack of social interaction with co-workers has been mentioned as a major concern (11 cases, 20 interviews). Some people feel like they cannot have a personal conversation with colleagues because of the openness. People also mentioned less knowledge sharing and less social bonding with colleagues.

Furthermore the storage and archiving facilities came forward as a drawback (10 cases, 20 interviews). The main reason for addressing this aspect is that the shift to a digital archive was not always without problems and in some organisations the difficulties continued to exist after moving into the activity based office, with problems related to being flexible as a consequence.

3.4 Other issues and comments

Some other issues turned out to be important when it comes to the experience of the office concept. For example, the reference framework related to the former housing situation can have a positive or negative influence on the experience of the current situation (9 cases, 11 interviews). Moreover, there seems to be an in general positive effect of habituation after some time working in an activity based office concept (7 cases, 10 interviews). Some personal characteristics were mentioned in relation to being able to work in a flexible, activity based office environment, primarily the extent of extraversion and age.

4   CONCLUSION AND DISCUSSION

One of the most positively experienced aspects is the architecture and interior design. This can be explained by the generally fresh, light and colourful environment. The possibilities for communication are also evaluated rather positively in the WODI questionnaire, which is

explained by an increase in knowledge sharing and social interaction in general. This is in accordance with literature in this field (Banbury and Berry, 2005; Wineman, 1986). In contrast to this result, interview results also show substantial negative remarks about this aspect. People experience a decrease in communication with their direct colleagues as well as difficulties with discussing private issues in open space. The social bond with colleagues also seems to suffer. An explanation for this could be that the openness of the work environment makes it more difficult to share thoughts, feelings and values (Oldham and Brass, 1979). Mutual agreements on availability and findability in the office and actively organising team building activities could prevent these problems with communication and social bonding. While the survey resulted in relatively high satisfaction scores on the IT facilities, these facilities were not brought up that often as a positive aspect during the interviews. They sometimes seem to hinder working flexibly because logging in and out can take a considerable amount of time. To stimulate flexible working, it seems to be important to pay extra attention to the implementation of flexible IT systems and the digitalization of files.

As expected, the possibilities to do concentrated work and privacy received low satisfaction scores (De Been and Beijer, 2014; De Croon et al., 2005; Banbury and Berry, 2005; Haynes, 2008) and are frequently mentioned as negative aspects in the interviews. Problems arise because of rumour and distractions, mostly due to telephone calls and conversations in the open spaces. It is recommended to facilitate dedicated enclosed spaces for telephone calls to prevent this common problem. The same accounts for ad hoc conversations and meetings, which should be held in dedicated meeting areas or enclosed rooms, situated close to the open workspaces. Confidential meetings can be supported by providing small meeting rooms and enclosed rooms with acoustic and visual privacy. The behaviour of people also plays an important role in this respect. After providing appropriate spaces the employees have to use the available spaces the right way (e.g. no telephone calls in open spaces).

While people appreciate the different types of workplaces provided, it seems that these spaces are not always available to everyone in practice, due to the fact that some workplaces are more popular than others, workspaces are claimed regularly or because people do not clean up their desks. Apart from taking the use and behaviour into account, careful consideration of suitable workplace types and the variety of workplaces according to the work processes of the employees is important.

Obviously both the benefits and drawbacks being mentioned have been influenced by the behaviour of the building users. When people use the activity based work environment correctly they can benefit from different elements that the environment has to offer, like a great diversity of workplaces. The example set by managers plays a key role in this. Some clear rules regarding the use of the work environment can help people with bringing up behavioural issues among colleagues. It is important to keep in mind that in quite some cases people referred to the fact that their current experience has been influenced by their reference framework, sometimes literally stating that they are more (or less) positive in comparison with their former work environment. Also, habituation to the new way of working seems to take place after some time. When an organisation wants to implement an activity based office concept, the arising issues and their causes should be carefully discussed with the design team and the management.

Thanks to the large number of research cases in which both a survey and interview(s) were conducted, the research results are extensive and solid. While the WODI results mainly confirmed existing knowledge, the interview results took us a step further in explaining the

positive and negative matters occurring in activity based office concepts. However, since the results are mainly derived from Dutch research cases in (semi) public organisations, (organisational) culture could have had an influence on the results.

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APPENDIX 1. Overview of the top 5 mentioned reasons for the existing positive aspects of the activity based office concept.

Aspects	# cases (# interviews)	Main reasons				
		1	2	3	4	5
Interior design	16(39)	Cosy, nice colors, looks good, pleasant atmosphere (15/33)	Cleaned up, soothing environment (clean desk) (6/8)	Light building (4/7)	Inspiring (2/2)	Inviting/hospitable because of openness (2/2)
Knowledge sharing	16(34)	More interaction in general (9/19)	More interaction with different colleagues and people (5/6)	More interaction between different departments (4/6)	You can hear everything your colleagues are doing in open space (4/5)	Concept is positive for collaboration; no barriers to approach others (2/2)
Mix of workplaces	15(29)	Greater diversity of places available which is appreciated (8/12)	Pleasant to have informal meeting places/pantry (5/9)	Possibility to work in cockpits (5/8)	Nice multifunctional cantine (3/7)	Some places do fit the activities well (3/3)
Openness	10(12)	Meeting each other, being able to see each other (7/9)	Everyone is visible, you can see a lot of colleagues (6/9)	Dynamic because of openness (2/2)		
Furniture	6 (7)	Being able to adjust chairs and tables (3/4)	Nice furniture (2/2)	Acoustic materials on cabinets seem to work well (1/1)		
Reaction to problems	5 (5)	Quick response to problems (5/5)				
Additional facilities	4 (6)	Nice to have a 'living room' (1/2)	Good facilities in meeting spaces (1/2)	A lot of great facilities (1/1)		
Remote working	4 (6)	The ability to work from home (4/6)				
Archive	3 (4)	Good to clean up the cabinets, lot of paper seemed not necessary anyway (2/3)	Enough space (1/1)			
Implementation process	3(3)	Having a look at other activity based work environments from other organisations (3/3)	Active working group that could actively give input (1/1)	Creating a 'visual' image helps a lot in understanding how the new environment will look like (1/1)		
IT facilities	2 (3)	Spaces with large screens are pleasant/everything wireless (1/1)	Having mobile phones makes us flexible (1/1)	Pleasant to have your own telephone (1/1)		
Switching places	2 (2)	Seeing each other more often (1/1)	Nice to be able to alternate places (1/1)			
Indoor climate	2 (2)	Being able to have control over indoor climate (2/2)				
Use of work environment	2 (2)	People are clustering according to activities in open space, which works very well (1/1)	No hindrance to change places (1/1)			
Cleaning	2 (2)	Cleaning is sufficient (1/1)	Better cleaning because of clean desk policy (1/1)			
Addressing each others behavior	1 (3)	No problem to speak about behavior and rules (1/3)				
Acoustics	1 (2)	Use of acoustic materials in flooring, walls etc (1/2)				
Autonomy	1 (1)					
Daylight	1(1)					
Being able to spot the students easily	1 (1)					
Proud	1 (1)					

APPENDIX 2. Overview of the top 5 mentioned reasons for the existing negative aspects of the activity based office concept.

Issue	# cases (# interviews)	Negative aspects				
		Main reasons				
		1	2	3	4	5
Indoor climate	17(44)	Temperature (12/26)	Draft (7/16)	Poor climate in enclosed rooms (too ho) (5/7)	No personal control (4/7)	Bad air circulation/ventilation (4/6)
Lack of concentration possibilities	16(46)	Disturbed by others due to openness (16/26)	Bad acoustics; noise; crowded; disturbance due to telephone calls (8/17)	Open space is noisy, lots of movements and restless (7/16)	Visual distraction, too much transparency (6/6)	Acoustics not as good as expected (5/5)
Mix of workplaces in not right	16(45)	Some places more popular (e.g. enclosed) and often occupied, while others are not (8/14)	Not enough enclosed spaces (for concentrated / privacy work) (7/17)	Some places are always occupied (6/14)	Some places are never used, like library places, luxury seats or lounge places (6/8)	Not enough meeting places for ad hoc meetings/problems with reservation system (3/7)
Privacy	16(43)	Not being able to have confidential conversations / telephone calls (11/31)	Visual privacy is a problem in open space as well as in small meeting spaces (7/20)	Having a phone call in open space bothers other people (6/13)	Others can hear their conversations (6/11)	Meeting rooms are not properly sound proof (4/5)
Loggin into IT system and moving belongings and files	15(32)	Packing stuff and logging in and out hinders switching workplaces (11/21)	Takes a lot of time to pack and move stuff and log in and out (6/12)			
Switching places	11(27)	Most people just work at the same spot everyday (9/21)	No switching during the day (4/6)	For some functions, changing places is not practical (3/6)	Searching for a place, packing all stuff takes a lot of time. (2/3)	Adjusting furniture when switching places takes lot of time (2/2)
Social interaction/bonding	11(20)	Not being able to chat personally with colleagues because of openness (6/8)	Less interaction / communication within teams (direct colleagues) (5/7)	Less knowledge sharing (3/3)	Less social bonding with colleagues/no 'team' feeling (2/3)	Too much 'socializing' (e.g. in coffeecorners/open space) (2/2)
Storage / filing	10(20)	Switch to digital filing was not perfect; still difficulties (6/10)	Not enough space for filing (3/4)	Not enough place to store personal books, etc. (2/2)	Digital archive is not always trusted (1/4)	Storage too far away; hassle to drag files with you all day (1/2)
Use of workplaces	10(19)	Difficult to approach colleagues about behavior (5/14)	Places are not used as intended (4/6)	Management does not stick to the rules / no example for the employees (4/5)	Seems like people don't know how to use the different places (2/3)	People are not thinking about (not bothering) each other (2/3)
Claiming of own places	8(18)	Parts of office are claimed because of intensive collaboration (5/10)	Management claims places (4/5)	Enclosed places are claimed regularly (3/4)	Everyone claimes their own place (2/2)	People find it difficult to use a place which is claimed by a colleague (2/2)
Furniture	7(12)	Some places are not suitable for working all day (e.g. benches) (6/9)	Having to adjust chair over and over again; hassle (4/6)			
Cleaning	7(11)	Unhygienic, insufficient cleaning (6/7)	Stains on carpet and floor covering (2/4)	Sterile and too clinical atmosphere (1/1)		
Interior design	6(15)	Cool atmosphere, no personalisation, no plants (5/9)	Not enough colour (1/6)			
Findability of colleagues	6(13)	Quite difficult to find colleagues (7/13)	Findability problematic for binding new employees (1/1)	You don't know where people are and if they are present at all (1/1)		
Implementation process	5(9)	No ability to give input or it was not used (3/7)	Top down organisation, gives a lot of friction (1/1)	Not enough information supply (1/1)	Not enough involvement in process (1/1)	Not informed about the goals (1/1)
Lighting	5(5)	Lighting sensors (no personal control/sensitivity) (3/3)	Not possible to control the lighting personally (2/2)	Reflection on screen (1/1)		
Communication from organisation about environment	4(7)	Not enough feedback on complaints (2/5)	Unclear how to deal with opening doors/windows (1/1)	Very important that problems are heard and addressed (1/1)		
Telephone facilities	3(5)	Still fixed telephone lines / no flexibility (2/2)	System not practical / have to log in and out (2/2)	Accessibility of the provider is of poor quality (1/1)		
Aftercare	3(4)	No adequate reaction to problems, mainly related to IT / indoor climate (2/3)	Almost no aftercare (1/1)			
IT problems	3(3)	Problems are not being solved quickly (1/1)	Problems with IT directly after moving (1/1)	Defective IT facilities (1/1)		
Safety	1(1)	Should be careful with personal belongings (1/1)				
House-rules	1(1)	Want to be able to meet students wherever I want (1/1)	Too quiet, would like to listen to some music (1/1)	Clean-desk policy is difficult to manage (1/1)		
Binding with company	1(1)	Binding organisation must be actively organised (1/1)				