Living in a Pod: The Impact of Tiny Spaces on a Dutch University Campus

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ABSTRACT

Background and aim – In practice, phone pods and office booths, hereafter referred to as pods, have proven their added value and popularity in open-plan offices. How would that work in another context, such as in higher education? This study explores use and user perceptions of these pods in an atrium on a Dutch university campus.
Methods / Methodology – After placing nine pods, the effects were studied through document analysis, guest journey, direct observation (behaviour, indoor climate, bacteria, fungus), interview, and survey.
Results – Students use the pods mainly for seven activities: meeting, project work, noise-free work, study, phone call, relaxation, or hang out. Students report a positive general experience of the pod, a very positive experience when entering the pod, and hardly any negative experiences. They feel at ease and the pods ensure better concentration. Finally, pod users reported to be a little less nervous than other atrium users.
Originality – The studied pods are mostly applied in open-plan offices. By placing them in an atrium at a Dutch university campus the pods are exposed to different users, generating new user-related findings.
Practical or social implications – In order to perform well, students need a variety of places on campus. An atrium is normally crowded, loud, and noisy. Pods provide an extra option, a space within a space, that students use and appreciate. By adding these tiny spaces to their repertoire, universities seem to be better aligned with user needs. Facility managers and researchers could consider experimenting with pods in other lively contexts.
Type of paper – Research paper

KEYWORDS

Acoustic privacy, noise reduction, pod, students, tiny spaces, university campus, workplace.

INTRODUCTION

Noise and noise control are common challenges in many settings and for many organizations. Indoor noise in residential, school, work and commuting settings influences human health and behaviour, e.g. blood pressure and cortisol levels (Park & Evans, 2016). In open-plan offices noise is a recurrent problem. Workspaces within 10 feet of co-workers receive higher noise ratings, whereas enclosed areas are rated less noisy (Sundstrom, Burt, & Kamp, 1980). In such settings, noise levels are associated with increased distraction, reduced privacy, increased concentration difficulties, increased use of coping strategies, self-rated loss of work performance, and noise distraction of cognitively demanding work and phone conversations (Kaarlela-Tuomaala, Helenius, Keskinen, & Hongisto, 2009).

People can respond very differently to unwanted ambient noise, such as knocking it out with i-pods (Greene & Myerson, 2011) and/or mental seclusion (Zijlstra, Hagedoorn, Lechner, van der Schans, & Mobach, 2020). Architecture and interior design may also be viable options to exclude noise from work. The introduction of tiny spaces, a space with a space, may provide facility managers with new options to respond to complaints of their building users about unwanted noise. In practice, phone pods and office booths, hereafter referred to as pods, have proven their added value and popularity in open-plan

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offices. But how would that work in another context, such as in higher education? This study explores use and user perceptions of these soundproof spaces in an atrium on a Dutch university campus.

THEORY

Many organizations ensure that sound can actually be heard, such as in concert halls and in classrooms or at busy reception desks or counters in atria with a lot of noise. It is interwoven with the primary process. Basically, sound allows workers to do their job. However, an important property of sound is that it can also spread undesirably. Most relevant is an unwanted sound or noise at the receiver. Acoustic privacy depends on the strength of the sound source, the decrease in sound from source to receiver, and the ambient noise or the noise at the receiver (Cavenaugh, Farrell, Hirtle, & Waters, 1962). The sound decrease is, for instance, related to the sound absorption of the floor, ceiling, and interior (Watson, 1928).

Acoustics and architecture are important factors to control noise. For most building users, depending on the task at hand speech intelligibility and noise reduction are critical factors to perform well. Noise has important effects, for instance, it can negatively influence workers' health (Schneider, Paoli, & Brun, 2005). A more nuanced, but nevertheless influential, impact can be found in other sectors. For instance, in food courts the taking of orders can be compromised by abundant noise (Navarro & Pimentel, 2007), in class rooms noise may interfere with the lessons (Brink, Mobach, Loomans, & Kort, 2020) and coincide with heart rates of teachers (Tielser & Oberdörster, 2006), and in hospitals, noise from snorers, doors, and infusion alarms can disturb patients' sleep and mitigate recovery (Roos-Mink & Mobach, 2016). Moreover, noise levels also decrease face-to-face social interaction, particularly when interrupting others and/or communicating information that a person would rather others not hear (Park & Evans, 2016).

In open spaces, noise can create an imbalance between communication and concentration tasks of users. Well-known problems in offices are noise that distracts others from doing their work or conversations that may not be overheard by others (Wang and Bradley, 2002). On a university campus, similar patterns were expected. Some students may want to focus and concentrate. Conversations of other students may hinder them from doing so. Such an unwanted distraction, in which noise is a source of nuisance, can interfere with their need to do focus work. This imbalance can create tension at those who have to concentrate. It may even prevent them from doing what they need to do.

Bending the acoustics in a desired direction is a complex issue. Numerous variables play a role. As a baseline, we can safely argue that a thick wall from floor to ceiling works best, and by doing so, creating acoustic separation (Mobach, 2009a). However, in practice facility managers frequently apply more nuanced noise-reducing measures if complaints emerge. In healthcare sound absorbing tiles have shown positive effects, for instance, on the working environment (Blomkvist, Eriksen, Theorell, Ulrich, & Rasmanis, 2005) and on the rehabilitation of patients (Hagerman et al., 2005). Moreover, low-noise floors and doors, soundproofing (conversations, footsteps), single rooms (coughing, sighing), and even the right trash can promote recovery the recovery of patients (Roos-Mink & Mobach, 2016). And an approach with soft materials creating absorption in the counter area of a community-based pharmacy combined with hard materials and an increase of ambient noise at the queue improved perceived privacy (Mobach, 2009b). In offices, the combination of a high absorption ceiling and a sufficiently high screen in open-plan offices with cubicles proofed essential to achieve adequate speech privacy (Wang & Bradly, 2002).

In this respect, tiny spaces are relatively new. We will explore how students actually use these pods and how they perceive them in a lively context and a lot of ambient noise.

METHODS

Six concise studies were carried out. A total of nine pods from the Finnish producer Framery were delivered at Hanze University of Applied Sciences (UAS) Groningen in September 2019. Pods included three O-pods, three Q-pods, and three 2Q-pods (Figure 1). All pods were placed in the atrium (Figures 2 and 3). Most pods were placed at the centre of the atrium, where it is very busy most of the time.

Framery O Framery Q Framery 2Q

Figure 1 The three types of pods.

Figure 2 Picture of atrium with several pods visible.

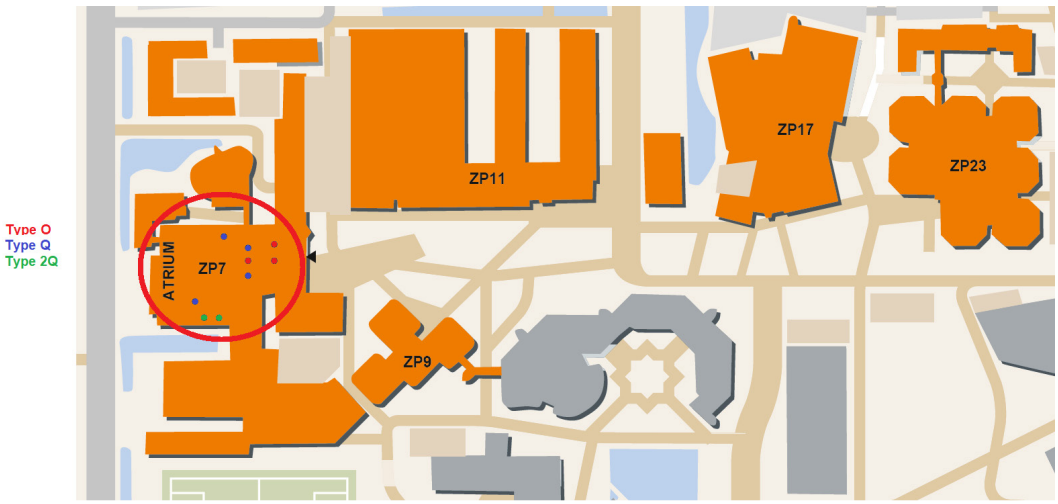

Figure 3 Campus map including atrium and positions of pods.

The research was carried out by first-year bachelor students of the School of Facility Management (FM) of Hanze UAS. Students participated in the study as part of an introductory bachelor research course. Research was performed in September and October 2019. Students were supervised by honours students and three researchers of the research group FM.

Each study was carried out by a project group of approximately five students. Each of the six groups focused on different themes and aspects regarding the pods. Consequently, the study was organized around six research questions: 1) Who use the pods and what for? (Type of user / Gender / Personality / Type of pod), 2) How are the pods being used and experienced? (Type of pod / Hospitality), 3) How are pods left behind? (Trash / Interior Climate), 4) How much are the pods used? (Duration / Occupation / Frequency, repeated use), 5) How do atrium users versus pod users feel about the pods? 6) To what extent are atrium users versus pod users stressed?

Data were gathered using guest journeys, direct observations, interviews, interior climate measures (temperature, humidity, and CO_2-level), samples of bacteria and fungus, surveys (N = 59 + 49 + 43 + 62 + 93 + 70 = 376), and document analysis / literature study (on extraversion, workplace trends, interior climate norms, hospitality criteria, and stress definitions).

RESULTS

Students use the pods mainly for seven activities: meeting, project work, noise-free work, study, phone call, relaxation, or hang out. The single –person pods O were used less than the multiple person pods Q and 2Q. Students report a positive general experience of the pod, a very positive experience when entering the pod, and hardly any negative experiences. They feel at ease and the pods ensure better concentration. However, pod users do feel that they are being watched. They report a lack a visual privacy. Moreover, atrium users would also like more information about the pods, for instance, how do they work, what are they for, possible rules, and developments.

Survey results showed positive perception scores of building users (Table 1). Moreover, many users were very positive about the pods. The location (atrium centre) and number (nine) of the pods elicit the least amount of enthusiasm.

Table 1 Mean evaluations of the pods; overall (N=90), users (N=21), and non-users (N=69).

Question	Overall	Users	Non-Users	Diff.
I am satisfied with the exterior	4.04	4.10	4.03	0.07
I find the pods functional	3.94	4.43	3.80	0.63*
My first impression of the pods was positive	3.83	4.24	3.71	0.53*
I think the pods fit into the atrium	3.67	4.00	3.57	0.43
I find the pods pleasant	3.66	4.10	3.52	0.58*
I would like to make use of the pod	3.56	4.29	3.33	0.96*
I think the pods add value to the atrium	3.50	3.76	3.42	0.34
I think they are on the right spots	3.18	3.52	3.07	0.45
I feel the number of pods in the atrium is sufficient	3.11	2.62	3.26	0.64*
I am bothered by the pods in the atrium	1.49	1.29	1.55	0.26

*$p < .05$.

On all aspects, users are more positive about the pods than non-users. T-tests for independent samples show that the five largest differences are significant at the .05 level. The largest difference was found for wanting to (re)use the pod, followed by whether there are enough pods, and functionality. Regarding the exterior, the difference is negligibly small, which makes sense.

Finally, pod users reported to be a little less nervous than other atrium users (Figure 4).

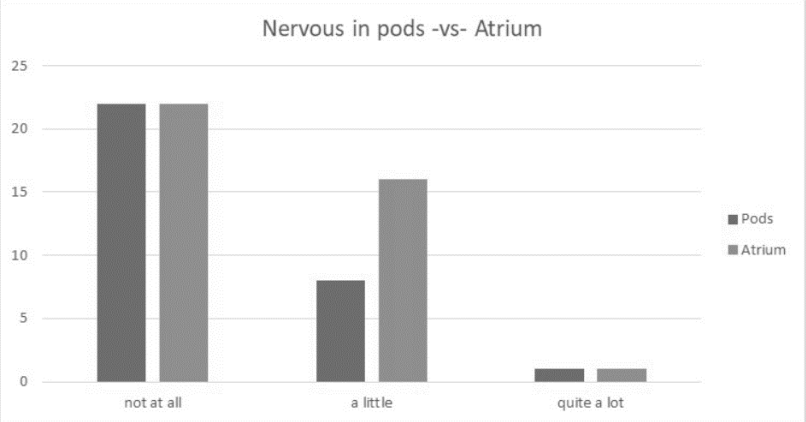

Figure 4 Users reporting nervousness in pods and atrium.

DISCUSSION AND CONCLUSION

The studied pods are mostly applied in open-plan offices. By placing them in an atrium at a Dutch university campus the pods are exposed to different users, generating new user-related findings.

The current paper must be regarded as a summary of what believed to be the best and most interesting results of the students' studies. Findings were exploratory in nature and had limitations. Representativeness of survey samples was not always checked properly. However, because of the different methods used, combined with the consistency of findings across studies, methods, and our personal observations and experiences, the sum of these exploratory studies provide an interesting sketch of the use, user, and their perceptions of the pods in the context a busy atrium in higher education.

However, pod users do feel that they are being watched and report that they are unsatisfied with the number of pods. This suggests that users want more pods and on more private locations. Be aware of the fact that an atrium may not be specifically designed as a workplace. In many cases, it is an open space to meet, have lunch, or a coffee. Consequently, it is a very lively place with a lot of users. This shows that pods contribute to the acoustic privacy, but poor positioning can have adverse effects on the visual privacy of pod users. Be reminded that in our case most pods were at the busy centre of the atrium where it is very busy most of the time.

In order to perform well, students need a variety of places on campus. An atrium is normally crowded, loud, and noisy. Pods provide an extra option, a space within a space, that students use and appreciate. By adding these tiny spaces to their repertoire, universities seem to be better aligned with user needs. Facility managers and researchers could consider experimenting with pods in other lively contexts.

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Deltapremie

The 'Deltapremie' or Delta Prize is a new leading research prize in the Netherlands focusing on practice-oriented research by professors. The prize is developed for professors who have managed to repeatedly make a special difference with the social impact of their research over the years. It shows where practice and research can come together in an innovative way. Practice-oriented research has acquired a solid place in Dutch society. Almost 700 professors and more than 3,000 teacher-researchers are currently involved. The starting point of the research is always to find solutions for practice-based problems, also by partnering with practice. In this way, practice-oriented research provides applicable solutions to societal challenges.

An independent selection committee selected the winners. The committee consisted of six experts from Erasmus University Rotterdam, Innofest, Delft University of Technology, Netherlands Study Centre for Technology Trends, and the Association of Netherlands Municipalities. In the report the selection committee tributes Mark Mobach and his research group for the impact that they have on the crossroads of various domains from public transport to mental health. Mobach: "We see the prize as enormous encouragement to continue our research into space and organisation in healthcare, education, offices, and cities together with our partners. We extend our research to areas where there are perhaps fewer financial possibilities, such as research with the arts and frailty."

Research focus area

With his research group, Prof. Mobach wants to contribute to the best buildings for people and organisations. He does so by devising better space and services in a multidisciplinary setting together with students, lecturer-researchers, Ph.D.-students, and postdocs. Better spaces and services for education, offices, and even cities that stimulate healthy behaviour, better healthcare buildings that reduce stress, but also prisons and stations that better meet the needs of society.