

## Tools for creativity in co-design workshop – Applying participatory design methodology to support the workplace design process

Piia MARKKANEN (1), Aulikki HERNEOJA (2)

(1) Oulu School of Architecture, Faculty of Technology, University of Oulu, Finland

(2) Oulu School of Architecture, Faculty of Technology, University of Oulu, Finland

**Abstract:** Interior design is an important yet elusive dimension of workplace design research. It is the part of the office design with site-specific features that impact workplace satisfaction and, if overlooked, influences the comparison of typologically similar offices. Our approach builds upon workplace satisfaction and the need-supply fit theories. In addition, we apply the multidimensional framework of instrumental, symbolic, and aesthetic dimensions to communicate the user needs in the workplace design process. In this paper, we present the participatory design workshop method and discuss how its facilitation impacts the outcome of the participant activity and design thinking. This research was done in a multidisciplinary research project and a workplace design intervention study. Our research provides a novel approach to combining participatory design knowledge production and transfer of generated design data into a design process and an academic workplace design research.

**Keywords:** workplace design, participatory design, workplace satisfaction.

### 1. Introduction

Health and well-being-focused reviews have acknowledged the importance of interior office design (Colenberg et al., 2020; Colenberg & Jylhä, 2021). However, the analytical understanding of how interior design impacts employees lacks a shared theoretical framework that would support communication of spatial features beyond office typologies and the level of privacy different workspaces offer. Typical research approaches include studying existing work environments (Brunia et al., 2016; Budie et al., 2018), relocation studies (Rolfö, 2018; Sirola et al., 2021), or typological studies (Bodin Danielsson & Bodin, 2008). There is a gap in work environment research concerning workplace design and its processes (Colenberg et al., 2020; Gjerland et al., 2019). In addition, co-design and participatory design methods are often used in organisational change and office relocation processes, yet their documentation for research purposes is rare (Rolfö et al., 2017).

We apply the design research approach to understand work environments and their design better. We previously implemented participatory design methods to explore user needs in a small knowledge work environment (Markkanen et al., 2022). Participatory design is a collaborative approach that brings together the designers, users and stakeholders in a co-creation event to work on suitable design solutions (Drain & Sanders, 2019; Holmlid, 2009). We studied our research and design process to find applicable theoretical frameworks for follow-up studies (Markkanen et al., 2022). Following theories and frameworks were selected: 1) the need-supply fit theory (Kristof-Brown et al., 2005), 2) the affordance theory (Gibson, 1977), and 3) the multidimensional

design framework of instrumental, symbolic, and aesthetic dimensions (Rafaeli & Vilnai-Yavetz, 2004). We have linked these theories and frameworks to the design process, from design aims and affordance design to site-specific design. We argue that the participatory design approach can guide and inspire the design proposals at different stages of the design process. Employee satisfaction, e.g. how the physical work environment meets employees' needs (van der Voordt, 2004), has been addressed in several studies, such as (Bodin Danielsson & Bodin, 2008; Brunia et al., 2016; Hoendervanger et al., 2019). Brunia et al. (2016) showed in their study that although the interior design and spatial qualities, such as openness, subdivision, and diversity of spaces, are essential in creating workplace satisfaction, the lack of quantitative methods retains the research on an explorative level. Our design research approach includes understanding the need-supply fit formation, a sub-theory of the person-environment fit theory (Edwards et al., 1998), and it describes how employees' needs and supplies of the work environment pair (Kristof-Brown et al., 2005). In activity-based offices, the need-supply fit formation has been shown to increase work environment satisfaction (Gerdenitsch et al., 2017). We build our workplace design framework on a combination of factors that have been shown to impact need-supply fit formation, such as task complexity, the personal need for privacy and work setting (Hoendervanger et al., 2019). Our design-supporting model includes task complexity, the need for privacy and interaction, and the atmosphere to understand the need-supply fit model (Markkanen et al., 2022). In addition, on the level of site-specific design, our design framework also includes the instrumental, symbolic, and aesthetic dimensions.

We present our participatory design workshop method in detail in this paper. Such research methods, especially in more extensive research projects, are often described briefly, thus lacking the critical reflection of the method and its success. The intention of this paper is not to present the generated data but to discuss how participants of the study were facilitated in their design thinking that supported collecting rich design data.

## **2. Participatory design method**

### **2.1 Organising an online participatory workshop**

The study participants were recruited through HR management and an online event, during which they were informed of the study and its requirements. The research approach was a multi-method, and overall, it consisted of three phases: 1) participatory design phase, 2) intervention study phase, and 3) participatory lighting design. This paper focuses on the study's participatory design phase through the workshop methodology and its preliminary results. The results of the workshops and intervention study will be presented elsewhere by Markkanen et al.

The research was organised from April 2021 to January 2022 in a company that provides smart technology solutions for its customers. The participatory design workshop was organised during the first phase of the study. Originally the workshops were intended to be organised on-site, but due to COVID-19 pandemic-induced restrictions, they were organised online through the Zoom platform. It is important to note that during the study's first phase, the participants partook in an online survey concerning how the current work environment supported their well-being (Haapakangas et al., unpublished results). Also, prior workshop, the participants were invited to online semi-structured interviews to gain a detailed understanding of their job roles, daily tasks and the needs related to activities (such as privacy, interaction, or online work) in addition to their perception of the current office design. Subsequently, the participants were introduced to different research question areas and concepts before participating in the workshop.

Participatory design workshops should be facilitated in a manner that supports ideation. A handy tool for such events is post-it notes that enable easy idea-sharing with a low threshold to write down ideas and post notes on the available surface, such as walls. Due to the pandemic, the workshops in our study were organised online via the Zoom platform. As the ethical guidelines

to this project enforced strict data safety protocols, collaborative design platforms such as Miro and Mural were unavailable for workshop facilitation. Therefore, to facilitate and provide an alternative solution, we designed the researcher's and participant's versions of PowerPoint files to facilitate the workshop. The files were screen-shared during the workshop when necessary. Workshop files were considered artefacts that influence the participant engagement and outcome of the workshop; thus, care was taken in designing their visual look. The workshop files enabled participants to make notes on the files. The role of these files was to serve as visual cues for thinking and discussions. The final research data consisted of the discussions during the workshop, i.e., the PowerPoint files were a tool to share information. The workshops were recorded via the Zoom platform. The workshops were transcribed verbatim and thematically analysed for a more detailed research analysis.

## **2.2 Participatory design workshop for workplace design intervention study**

Altogether 15 employees participated in the interviews and workshops. The interviews were organised with individual participants, but the workshops were organised with 3 or 6 participants. The first connection between the workshop organiser and study participants occurred during the semi-structured interviews; thus, the organiser had an in-depth understanding of the participants' job descriptions, daily tasks, and needs. The intervention area for the second phase of the study was predetermined to include a multifunctional workspace (for quick meetings and individual work), formal meeting room (for board meetings and on-site visitors), informal meetings room (for team meetings, product development, and brainstorming), and a breakout area (for lunches and coffee breaks, and weekly hybrid meetings with remote offices and teams). The participatory design workshop was modified based on a previously planned workshop (Markkanen et al., 2022), and it included three tasks as follows:

During the first task, the participants were given an individual assignment to explore their favourite place, their activities, and their companion. To inspire the participants for the task, they were shown a presentation consisting of photographs from different seasons (e.g., summer, winter), contexts (e.g., nature, urban), cultural events (e.g., concerts, stand-up, museums, outdoor installations), and different atmospheres through natural light and scenery. The participants were asked to explore how they feel and what kind of atmosphere the place has. The preliminary data (Markkanen et al., manuscript in preparation) revealed that most of the favourite locations were in nature: in summer cabins, outdoors, in the forest, or by water. The participants often considered these locations as calming and their feelings as relaxed.

The second task in the workshop considered individual participants' workday. Participants filled out a form with four available slots for daily situations: the situations were explored through time, place, companion, activity, and how participants felt during the situations. Participants were encouraged to think about the workday in a context of a good workday with supporting surroundings. The preliminary analysis of the explored activities revealed typical daily work situations: individual focused and routine work, participants' meetings related to their job activities, and recovery situations.

The first and second tasks were intended to support participants' design thinking before proceeding to the next task. The third task intended to collect design knowledge for work environment research purposes and, given the project set up, support the intervention study's design process. The third task focused on understanding the spatial qualities that support different daily activities and situations. The organiser and participants selected three situations from the second task for the participants to explore and discuss together. As the intervention area for the following research phase had been decided previously, the situations were chosen to fit the design area. Altogether 15 situations were explored in workshops. They were categorised into focused individual work, ideation and brainstorming, technical problem solving, a hybrid meeting, and recovery together and alone. The participants were instructed to forget about their current work

environment and its limitations. Participants discussed the situations by exploring how they feel during the situation, what the space is like, and what the atmosphere is like in the space. After exploring the situations, the participants were encouraged to think about which spatial, functional, and material properties would support the situation. Participants were shown a short presentation of different spaces, lighting, materials, and colours to support the thinking process. The workshop organiser facilitated this freeform discussion and aimed to gain knowledge of participants' needs and preferences in explored situations.

The workshop data were combined into similar situations, and then the discussion dataset was categorised according to questions presented in the third task: feelings, spatial characteristics, and atmosphere to support the intervention design process. Also, the workspace, atmospheric preferences, and the data from the follow-up discussion were combined and categorised into instrumental, aesthetic, and symbolic properties. The aesthetic properties of the space were further categorised into lighting, soundscape, and materials and colours.

### **3. Participant facilitation before and during the workshop support co-creating design data**

We argue that the following factors were critical to the successful outcome of this participatory design workshop: First, the workplace survey and the semi-structured interviews were organised before the workshop. This made the participants more aware of their current work environment and activities, including their specific needs, such as privacy, collaboration, and interaction. Second, the first two workshop tasks guided participants to think about how they feel in different situations and what kind of atmosphere the place has. Third, after the participants were facilitated towards sharing their thoughts, they had the opportunity to collaborate in co-designing the spaces for the explored activities and discussing the activities and experiences or preferences of different spaces through both personal perspectives and as a work community, giving participants the ability to engage into thinking of work environments that are diverse and support different needs.

As the workshop organiser was also responsible for the intervention design, the discussion concerning detailed spatial features was facilitated with the design process in mind. Importantly, participants were given a tool for more detailed thinking through a brief visual presentation with a joint explanation of different features of, for example, materials and colours. This, in addition to the semi-structured interviews, provided a shared language between the participants and the workshop organiser/designer. The workshop was modified to match our design framework (e.g. need-supply fit formation through affordance design and instrumental, aesthetic and symbolic dimensions on a site-specific design level). Applying the framework supported the quick analysis process for the intervention design purposes, thus testing the method for its practical purposes. The limitation of this study is the relatively small participant number and the organisation's specific needs towards the intervention design process. In addition, the workshop was limited to research purposes and needs. However, combining the participatory design workshop method and the design framework has the potential to bridge the workplace design research and practice.

The preliminary results revealed distinct differences in interior design preferences for situations. While the results are expected, the participatory design workshop results are rarely reported and subjected to academic study. Here, the participants' atmospheric preferences are already a good indicator for a designer to define design aims for different spaces: e.g., preferences for brainstorming were defined through words such as stimulating, energising, inspiring, inviting to move and touch, while the preferences for technical problem solving were described as relaxed, creative non-distractive, collaboration supporting, non-hierarchical. Suppose a designer is given only this data: In that case, the outcome of the design may not support the aesthetic preferences of the future users of the space: for example, in this study, the participants defined their material and colour preferences for brainstorming as light, green, colourful, natural with wooden surfaces;

and for technical problem solving with neutral and reduced colour palette, but not white. Altogether, the participatory design workshop generated a rich dataset that was used to design a workplace intervention study.

#### **4. Discussion**

It is important to discuss different workshop methods in the context of workplace design, as the method itself, the analysis of its outcome, and the knowledge transfer from employees to workshop organiser to designers may support or hinder the design proposal formation of well-being and workplace satisfaction supporting knowledge work environments. In this case study, we organised an online participatory workshop and collected design data according to the design framework developed (Markkanen et al., 2022). Altogether, the workshop supported the following intervention design process and subsequently evaluated how participants experienced the changes implemented in their work environment during the intervention.

It should be noted that in the participatory design workshop, the participants and the organiser have different knowledge backgrounds: the participants of the study, the future users, provide their tacit understanding of their daily activities, preferences, and needs. Designers participating in the workshop, on the other hand, provide a domain-specific understanding of design concepts, solutions, and techniques, in addition to the domain-independent process knowledge that enables them to work towards the solution together with users with only incomplete information of the context. (Drain & Sanders, 2019)

The design research and its methods, such as participatory design workshop, provides valuable opportunities to share information between workplace design practitioners and researchers. However, this requires a methodological setup that enables combining design data from multiple case studies and appropriate frameworks and theories to link the design data into the research. In this case study, the research project aimed to understand how knowledge work environments support workplace satisfaction and need-supply fit formation. The survey methods used to study the work environment features that impact workplace satisfaction and need-supply fit formation do not consider the interior design of the individual spaces. Although participatory design study can be considered a speculative approach, it outlines the connections between interior design, affordances, and aesthetic experience with workplace satisfaction.

#### **5. Conclusions**

The connection between the interior office space and employees' workplace satisfaction and well-being has become increasingly important due to the COVID-19 pandemic. For the time being, the companies and organisations are adjusting to the hybrid work culture, and the current and future needs for the office design are yet to be determined. Recent surveys have revealed that while some employees prefer to continue work remotely and, in addition to individual work activities, also collaborate online (Appel-Meulenbroek et al., 2022), the offices are still preferred for activities such as formal and work meetings, socialising, and training (Yang et al., 2021). One of the aspects of the post-pandemic design is the need to strengthen the social cohesion and work culture after remote work (Pataki-Bittó & Kapusy, 2021). We propose applying the participatory design approaches to understanding the evolving needs at workplaces: which spatial features are inviting enough to relocate from home to offices, which changes are needed to respond to hybrid work-induced privacy needs, and how can design increase workplace satisfaction to give a positive impact in employee well-being and work engagement.

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