CO-DESIGNING MOOD BOARDS: CREATING DIALOGUE WITH PEOPLE

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ABSTRACT
A growing number of researchers and designers have understood the importance of involving users in the creation of future designs. As a result, several authors have introduced 'design labs', discussing their benefits. However, these studies fail to give a detailed account of how they support co-creation between the research (or development) team and users. In this paper we introduce 'dialogue-labs' to support the co-design of novel interactions for a specific task (i.e. ways of creating and communicating mood boards), and for a specific user group (i.e. industrial designers). We discuss how different types of locations, tasks, and materials allowed us to spark dialogue between researchers and participants. We present a comparison of the materials used and the quality of the ideas that emerged during the sessions that can help researchers and designers create dialogue with people.

KEY WORDS
Formal methods in HCI, co-design, workshops

1. Introduction

Practitioners from different fields of research and design have understood the importance of involving diverse groups of users in the generation phase of novel artifacts, and thus facilitating participation has become one of the cornerstones of designing [1]. Researchers have started to see 'everyday people' not only as the recipients of the artifacts of the design process, but as active participants in the design and production process itself, capable of adapting products to better meet their own needs [2]. As a result, new methods and approaches aiming at bringing design (and research) teams together with relevant stakeholders to work collaboratively throughout the design and development process arise continuously [3,4,5,6,7]. While various articles discuss the benefits of

using these methods, there is lack of studies that concentrate on what is actually going on in the co-design situations. This paper discusses how we set up co-design activities in workshops, which we call 'dialogue-lab' in order to develop future ways of creating and communicating the mood-boards together with practicing designers (Figure 1). The dialogue-lab allowed us to generate novel design concepts as well as study the dialogue created between researchers and participants by means of introducing visual and tangible materials. Based on video documentations from four dialogue-labs we present here some of our early findings from our project.

2. Background

The ID-MIX project [8] tries to assess the relevance and impact of augmented reality systems in work practice. The question the project tries to answer is if professional users (i.e. industrial designers) would change their current work practice favouring the use of an augmented reality system that supports their work. We aimed at understanding design practice by systematically involving designers in user studies applying various methods. In the first user study with ten industrial designers we used cultural probes [9] that allowed us to identify a relevant task: making mood boards. Since the probe study, we have conducted two further studies, contextual inquiries [10] with Dutch industrial designers (n=4), and 'mood board interviews' with Finnish fashion and textile designers (n=10) to get a better understanding of why designers use mood boards and how they create them. From our previous user studies with Dutch and Finnish mood-board makers, we have learned that the process of making mood boards takes place in different contexts both in and outside of the design studio. For example, in the beginning of the process, designers can spend a

Figure 1. Participants gathered around a coffee table creating an 'ideal design studio' to support mood-board making.

considerable amount of time looking for images. Designers prefer going through their large collections of magazines in a comfortable place where they can freely start creating ad-hoc piles of magazines and pictures [11]. The process of making mood boards also goes beyond the activities and the time spent collecting and arranging images on a table. Mood-board making is a dynamic and iterative process in which designers constantly switch between searching and making (i.e. layout, gluing), then going back again to find the missing image that fits. New interactive systems that aim to support the process of making mood boards should closely consider these two aspects, namely addressing the different contexts of use, as well as its dynamic and iterative nature.

Based on these findings we have come up with the vision of a new design studio, a comfortable space for creativity that helps designers keep a good attitude. This space would create a positive effect [12] that facilitates creative thinking in designers. Within this larger context, the process of making mood boards would be supported by different *'design spaces'* or tools that are interconnected and stimulate designers to move around their design studios. These *'design spaces'* should encourage breaking the rhythm and doing activities away from their desks [13]. To test our hypothesis related to the notion of *'design spaces'* we invited practicing designers to co-design these spaces with us. Thus we organised dialogue-labs with two objectives in mind. First we wanted to present 'space scenarios' that are mapped to the different stages of the mood-board making process, obtain feedback, and develop them further. As such our first research question is *"how can these 'design spaces' support the creation of mood boards for designers?"* The second objective was to study how different materials can support the dialogue between people when co-designing novel concepts. Therefore, our second research question is *"how do different materials affect the dialogue and idea generation during co-design sessions?"*

3. Related Work

Several authors have explored ways of actively involving real users and other stakeholders in the design process by inviting them to different labs to shape future artefacts. Some studies have also emphasized envisioning future opportunities with potential users in real context and on the move while users perform their everyday activities in order to see both *what is* and *what could be* [14]. However, the two main areas within this related work are co-design labs set up in real and artificial contexts.

3.1 Design labs in real context

The 'Design Collaboratorium' [3] emerged as a way to overcome the limited notion of usability labs. They emphasize on workshops as a vehicle for collaboration in which the real *use context* is addressed, the *emergence of use* is studied, and where different stakeholders work together in an *integrated design setting*. However, because its main goal is to bring together the development team, user involvement varies greatly across projects, and in some cases users are not involved at all. Design:lab [4] is a collaborative space of designerly exploration that takes advantage of a *controlled* environment and uses *experimentation* to go beyond observation in the real context towards prototyping possible changes. Design:lab takes place in real context (e.g. factory), combining the existing work environment (e.g. production room) with more controlled areas (e.g. factory cantina). In Design:lab authorship is shared meaning that lab partners have equal rights authoring the design work. The lab provides a setting for exploring the design space with the people involved, and thus its outcome is not the final design but rather the ground to start the actual design.

3.2 Design labs in artificial contexts

In the 'Design Lab' [5] users and other stakeholders engage in a 'conversational' design practice based on a series of design events focusing on collaborative inquiry and participatory design. During the sessions, data from field studies (i.e. video ethnography and probing [4]) is fed in the form of design artefacts (i.e. ethnographic video-snippets in the form of cards) to bridge the gap between the lives and experiences of the different stakeholders. The sessions are driven by events, working with the design notions of 'staging, evoking, and enacting'. Johansson [6] takes a similar approach feeding workshops with data from probing as well as video snippets that are used as sketching material in collaborative design sessions where designers and future users build future scenarios. In the 'Co-Experience Environment' [7] users were invited to co-design a physical environment for co-experience. A small group of users with shared expertise were recruited to allow the research to evolve as an activity of equitable collaboration. Participants previously worked on a probe package that later helped the designer create two spaces. Users were invited to experience these spaces and give feedback on the overall experience. As such, users were not actively involved in the design of the first two spaces but provided inspiration for the design of future co-experience environments.

In our dialogue-lab we brought participants into a controlled environment that mimicked a design studio. This allowed us to test our hypothesis of different *'design spaces'*, without confining ideas to preconceptions of what a design studio is supposed to be like or leading them to think of their current design studio spaces. We encouraged them to think of *'an ideal design studio'* that could be large enough to home these different *'design spaces'*. Although we understand and stress the importance of context when studying the work of designers [15], we felt that we had enough contextual information from the previous phases of the study.

Figure 2: The dialogue-lab was arranged to look and feel as much as possible like a real design studio.
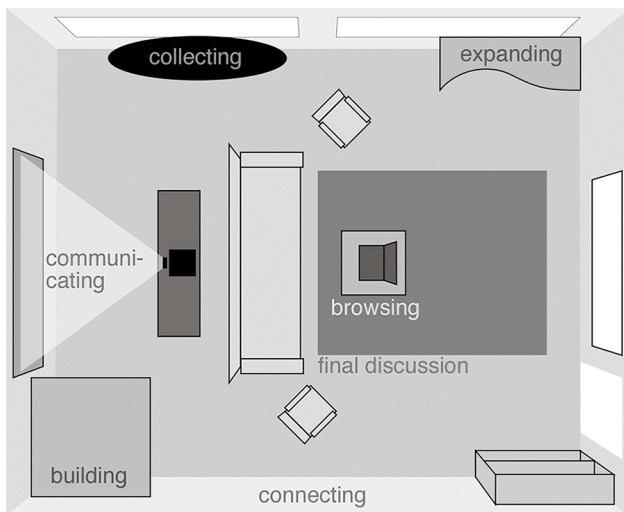

Figure 3: Dialogue-lab setup divided into the six 'stages' of the mood-board making process.

4. The Dialogue-Lab

The setting for the dialogue-lab was a large room (4m85 x 5m95 x 3m70) in UIAH, which has been arranged to look and feel as much as possible like a real design studio including working tables, magazines, drawing materials, chairs and sofa (Figure 2).

4.1 'Stages' to align activity and process

The space is set based on the six stages of the mood-board making process we previously identified, namely 1) Image collecting, 2) Image browsing, 3) Image piling, 4) Building mood boards, 5) Expanding mood boards, and 6) Communicating mood boards (Figure 3). The aim was to obtain feedback from designers for this division, but also to provide a basic structure for the co-design sessions in order to encourage discussion around the specific areas. The overall task was *"imagine new scenarios or future ways of creating and communicating mood boards."* Each 'stage' had a corresponding location within the room, materials, and task that was formulated in an abstract-enough way so that designers could feel inspired to think beyond how mood boards are now made and used, and to

think of novel ways of making them. In each 'stage' there were cards available to indicate the situation, the materials, and the task.

4.2 The six 'stages' of the mood-board making process

Collecting: Designers now mainly use magazines to find contents for their mood boards. However, sometimes they also need to collect other materials to express a given mood or atmosphere in their mood boards, for example sound, video, smells, textures, or colors. We encouraged the team to think about these new possibilities for novel content for a mood board. This 'stage' was set by an open window with a view on the sea to help them transport themselves beyond the physical space of the design lab. We used the idea of *'going on a hunt to collect different sensations'*. Magazines were lying on the table illustrating the current situation, while more ambiguous material was used to evoke future possibilities. Abstract physical materials aiming to stimulate creating new devices or interactions included an explorer-like vest with pockets, glass containers with a cork similar to those used in chemistry class to keep the captured sensations, and a set of Make Tools (i.e. Velcro modelling) that allow people to embody and express their ideas [16]. The task given was *"what types of new sensations could be collected for a mood board, and how could they be collected?"*

Browsing: Designers now browse through their magazines searching for images for mood boards. They may look for images at a table, in a coffee corner, or while seated on a couch. Two magazines were lying on a coffee table to introduce how designers now browse magazines when searching for images. Additionally, we presented a video of a digital system that allows browsing images on a coffee table [6]. The video itself was shown in a 'coffee corner' context: the laptop on which the video was shown was set on a coffee table and participants were seated on a couch. The video is presented without sound to inspire by showing an example of browsing, but we encouraged the teams to explore beyond the contents of the video. The task was *"how could different types of contents or sensations for a mood board be browsed?"*

Connecting: This 'stage' refers to the process when designers select, group, pile, and make relations between different images to later include them in their mood boards. In an attempt to inspire designers to think of similar situations in which people connect things, we created a 'connecting' cube. The cube measures 20 cm on each side and represents the following situations: 1) A DJ browsing different sounds, deciding which tracks make for a better mix, 2) a naturalist (i.e. Charles Darwin) adding a new specimen to his collection, 3) a cook with a rack full of different spices and flavours, 4) dancers and the set of movements that make a dance piece, 5) a tailor touching different fabrics for his latest design, and 6) a librarian visually keeping track of the available books.

Figure 4: Participants engaged in making a collage.

The purpose of the cube was to trigger discussions based on the examples contained on its six sides. This 'stage' was set on a wall that was covered with white paper and Post-it Notes that varied in color and shape. The task was *"how would you keep track and make connections with the different contents you have for a mood board?"*

Building: Designers have different ways to handle a collection of images prior to start building their mood boards. For example, they may have images torn from magazines, or thumbnails of images downloaded from the Internet. This 'stage' was set by a table in a corner of the room on which we placed different ways to handle a collection of images: a set of A6 cards, an A3 contact sheet with smaller pictures, and an image booklet that designers can browse by sliding images. Using the images and materials found on the table, we asked them to create a collage of different ways how designers could build a mood board. We expected the different types of collections and the task of creating the collage to inspire designers to think of new solutions. The task was *"how could designers put together new and different types of contents in a mood board?"*

Expanding: Some designers experiment with their mood boards by including other senses in them such as using simple sounds or animation. We presented a real scenario proposed by a Finnish participant during the 'mood board interviews'. The scenario shows the situation of a designer who runs his own small company and creates mood boards as part of his daily work. At night, he works as a DJ and uses his hands now to select the best bits of music. He wonders how he could add some of his musical creations to his mood boards to help him better convey some of the feelings he has in mind. This scenario is presented as an A2 print on a table. We provide pens and paper so participants can draw on top of the proposed scenario, thinking of new solutions to add music or sound to mood boards as a starting point. However, other types of contents or sensations could also be added to mood boards (i.e. video, smell, animation, textures, etc.) The task was *"what other novel elements or contents could be added to a mood board to better convey a feeling or an atmosphere, and how could they be added?"*

Communicating: Usually designers directly present their mood boards to their clients. However, sometimes mood boards stand alone as part of a PowerPoint presentation in an Intranet and the designer is unable to convey the story behind it. For this 'stage', we presented another video of a digital system that allows communicating the story behind a mood board. Once again, the video itself was shown in a similar context as the one portrayed in the video: the video was projected on a wall. Sound was also omitted to prevent the team from going directly towards the proposed solution. We provided a pair of gloves to invite the team to explore and act out different types of interaction using their hands and/or body. We asked participants to watch the video (with no sound) and try to assign (new) meaning to it. The task was *"how could the story of a mood board be communicated differently?"*

5. Conducting Sessions

Four co-design sessions were conducted in August 2007 at the University of Art and Design Helsinki (UIAH). The sessions were planned for a total of two hours.

5.1 Participants

Each session included four participants: two practicing designers were invited to work together with the two authors who acted in a double role of researcher/designer. We primarily contacted experienced mood-board makers who were familiar with the ongoing research as they had previously been involved in 'Mood Board Interviews'.

5.2 Schedule of Events

Introduction – Sensitizing – Consent Forms (15 min.): To create a comfortable and relaxed atmosphere, participants were greeted and introduced to each other as they arrived as if they were coming to our home [7]. We began by reading together a definition of mood boards that summarizes the main findings from our Dutch and Finnish studies, followed by a short discussion to build a common understanding of the main theme of the session. We later explained the two main purposes of the session, namely studying how co-design sessions should be conducted, and obtaining ideas for future designs. We suggested them to think of technologies they could expect to be common in five years time to avoid both having wide sci-fi ideas, or ideas that are limited to current possibilities. Finally, all participants (including the researchers) read together and signed a consent form.

First Co-Design Session in Pairs (45 min.): We formed pairs consisting of one designer and one researcher/designer, also taking into account diversity of expertise with mood boards so that highly experienced mood board designers would be paired with the second author whose primary expertise was on co-design. Based on these six stages of the mood board making process,

each pair was asked to think of new scenarios or novel ways of interacting with a system that supports the creation of mood boards. Participants could focus their exploration on functionality, space, or whatever came to mind. We suggested starting from the most critical stage for mood boards, or the one that requires more dedication or time. Each pair spent on average 15 minutes in each of the three 'places' they visited.

Share and Discuss Outcomes (15 min.): Participants were called together as a group to share some of the ideas that emerged from the first round of discussion in pairs.

Second Co-Design Session Together (20 min.): The complete design team elaborated upon and evaluated some of the proposed ideas.

Closing Discussion (15 min.): To round up the discussion, the complete group sat together around the coffee table for a final activity on how an 'ideal design studio' could support the entire process of making mood boards. A scale model of the current design studio situation using Playmobil was laid on the coffee table to stimulate playfulness with physical elements. Participants could choose to adapt the current configuration to suit their dreams, or start a new design studio from scratch.

Debriefing – Questionnaires (10 min.): Finally, we asked them to fill-in two separate questionnaires. In the first one, we tried to assess the quality of the ideas that emerged from the session by asking participants (including the researchers/designers) to rate each idea from every 'stage' on a 7-point Likert scale (where -3 is 'very bad', 3 is 'very good', and 0 is 'neutral'). Before they could give a rating, we collectively agreed on the idea that would be rated per 'stage' by writing down the name of the idea on the questionnaire. In most cases, each pair went through different stations as the other pair. The second questionnaire consisted of assessing the helpfulness of the material by asking participants (including researchers / designers) to rate the different materials that were available for the team on a 7-point Likert scale (where -3 is 'not helpful', 3 is 'very helpful', and 0 is 'neutral'). In this case, the team members had to rate only the 'stages' they had worked in, including the 'closing discussion' area.

6. Findings

## 6.1 *'Design Spaces'* Hypothesis Proved Accurate

Regarding our first research question, participants generally agreed with the notion of *'design spaces'* that stimulate designers to move away from their desk to support the process of making mood boards. Participants emphasized the desire of having easily convertible flexible spaces to support different types of activities. For example they mentioned the need to go outdoors to find

inspiration depending on the topic of the project (e.g. market, forest, or street). In other cases such as for 'building', one participant said, "for this type of activity you should be standing up". With respect to the six 'stages' and their corresponding location in the room, in some cases participants were a bit confused, as they did not see a clear difference between, for example, 'browsing' and 'connecting'. Ultimately they proposed merging the two stages together. 'Expanding' created a different kind of confusion since, as we later learned in the dialogue-lab, it is not actually a separate stage of the process but runs across all stages through the task 'think of new ways to create and communicate mood boards'.

Different *'design spaces'* guided the dialogue: Breaking down the process of making mood boards into six physically separate places, forced participants to move about the room during the session. Participants thought these changes had been positive as they made the teams think of the whole process from different perspectives, without breaking the overall creative flow behind the session. Moreover, participants indicated that they needed these breaks to approach a new task with a fresh mind and that they would become tired if they had stayed in the same place for 45 minutes. Thoughts that had previously come up in another stage were developed further while emphasizing on a different stage of the process.

6.2 Second Hypothesis: Quality of the Ideas

We split our findings regarding our second hypothesis in two: quality of the ideas and usefulness of the materials. After analyzing the data from the questionnaires, we found out that participants gave a high mean rating to the ideas we collectively agreed to rate for each 'stage'. Participant mean ratings fluctuated between 1.67 and 2.06 on a on a 7-point Likert scale where -3 is 'very bad', 3 is 'very good', and 0 is neutral as can be seen in graph 1. The ideas that originated during the final discussion received the highest rating (2.25). The standard deviations were low and fluctuated between 0.77 and 1.11.
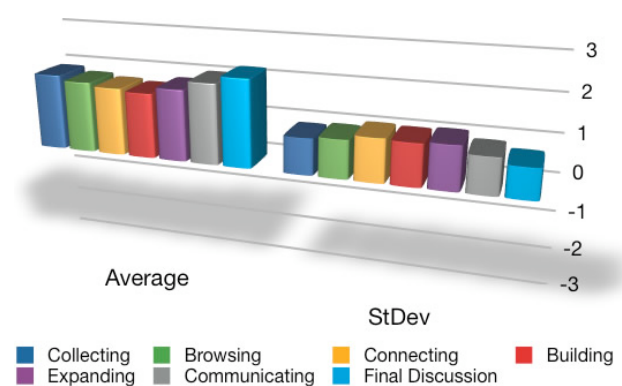
Graph 1: Mean ratings and standard deviation for the quality of the ideas for each 'stage'.
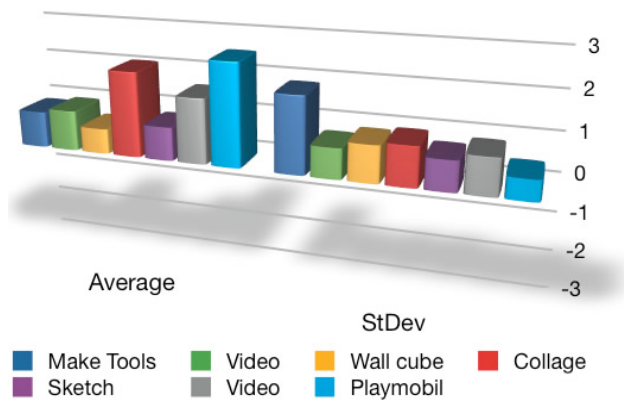
Graph 2: Mean ratings and standard deviation for the usefulness of the materials for each 'stage'.

Every session brought up something new: On average we obtained 14 different ideas from each session. After the first two sessions, we did see some recurring topics starting to emerge (e.g. inspiration spaces, flexible work and presentation areas). However, until the very last session new topics were revealed.

6.3 Second Hypothesis: Usefulness of the Materials

Regarding the second part of our second hypothesis, we again looked into participants' mean ratings. Data from the questionnaires revealed that the most useful materials were the Playmobil scale model (2.56), followed by the collage (2.13), and the two videos (1.63 and 1.00) on a 7-point Likert scale where -3 is 'not helpful', 3 is 'very helpful', and 0 is neutral as can be seen in graph 2. The least useful materials were the scenario cube with paper wall (0.63), followed by sketching (0.83), and make tools (0.90), although the participants rated them all positively. Again, the standard deviations were low and fluctuated between 0.51 and 0.99, except for the 'Make Tools that had a high standard deviation of 1.91. Participants had strong divergent opinions about the use of 'Make Tools'. For some participants the make tools were used as props, gaining new meanings. For example, in one session the vest was used as a vest, but also as a scarf. For other participants, the vest, glasses, and make tools were intimidating and did not know what to do with them.

Supporting the dialogue through materials: In line with [17], we discovered the need to begin the co-design sessions with a warm-up task to 'break the ice', which also allow participants to move from easier tasks to more challenging ones. Our notions from this exercise are similar in the sense that we noticed that it took some time for participants to get familiar to each other and the situation. After going for pairs and starting the 'co-design', it took some time for the teams to reach the comfortable creative mood. In this respect, collages were chosen by participants who initially were less willing to open up and start designing. They went for an activity that

was familiar to them and which made them feel more at ease.

From all the materials used to start the dialogue, videos seemed to work quite well by providing a clear and simple starting point for discussion by mutually observing what happens in the video. Participants would ask each other "what do you think is happening?", thus helping build up on the spirit of collaboration. The idea with the videos was not to give restrictions but instead trigger thinking. E.g. in one session the video presented in the 'communicating' stage triggered them to think beyond user interface aspects, thinking how to focus on only one part of the mood board at a time when presenting it.

7. Discussion

7.1 Co-Designing with Designers vs. 'Everyday People'

As contrast to the co-design studies presented in the related work section, in our case the potential users were skilled designers, which partially reduced the need for facilitation and guiding during the dialogue. However, having designers as co-design partners challenged our work as researchers/designers. At first designers 'played along' with us, listening attentively and roughly doing what was asked from them. However as the session progressed, they gradually started to analyze the sessions from different perspectives and reflect on some of our decisions: "why did you formulate this task like this?", "why did you make this separation?", "I like this material". The setting, tasks and materials presented to the designers triggered different thoughts.

We also experienced a situation in which our participants had not recently used mood boards for their work. In such cases we had to facilitate more, using our personal experiences with mood boards as well as the cumulative experience from previous sessions to feed the discussion. In addition being researcher and designer simultaneously made it possible for us to grasp issues not mentioned before, and moreover bring our own ideas into the discussion for evaluation and further development. The challenge was to stay in the same level with the design partner and not push the situation or stand aside too much.

7.2 Motivating Participants to Get Started

It is the researcher/designer's role to use their own creativity to amplify the creativity of 'everyday people' [18]. As such, we used a layered approach to inspire and trigger people's creativity. Our strategy consisted first of reading together the instruction cards (description), and second, talking within the team (explanation). At this stage, most teams had enough information to begin working on the task. If they still needed to build a better understanding of the task, the third step consisted of 'playing around' using the objects available on the table

(the material). Having things to play with and touch helped many participants enter the fourth step that was to engage and start performing the task itself (the action). After a few minutes discussing ideas, the teams sometimes would forget the content of the task or feel they were a bit off track. In these situations, the teams naturally went back to the cards and thus restart the inspiration procedure.

7.3 Having Diverse Materials for Inspiration

Since different things inspire people, it is important to have diverse and flexible materials inspiration that allow a wide range of uses and expressions. Therefore, ambiguous materials such as simple geometric shapes (e.g. make tools [16]) that are open for many interpretations can evoke unexpected ideas. Simple models seem to open up solution space whereas more detailed models narrow it [19]. On the other hand, our notion of props getting new meanings during the sessions based on the need of the team and regardless of how established meanings they had in everyday life (e.g. postcards interpreted as material samples) shows that it is not always the open-ended form of the prop that enables many interpretations.

8. Conclusion

In this paper we introduce 'dialogue-labs' as a way to actively involve potential users to co-design in a workshop environment. We presented the results of a study in which we invited industrial designers to create new ways of creating and communicating mood boards. Regarding the quality and quantity of the ideas, the results show that participants were positive about the outcome generated during the sessions. Regarding the use of materials, videos, the making of a collage, and creating future scenarios with the help of a Playmobil scale model helped participants mostly to discuss, present, and generate new ideas. We also discovered it was important to have diverse materials and strategies to motivate participants to get started and to keep them on a creative mood throughout the session. Moreover, the experiences our participants had during the sessions show that dividing the co-design activities in physically separate tasks helps participants approach the topic from different angles and maintain a fresh mind. In summary, researchers and designers aiming at amplifying the creativity of users should provide the conditions to support dialogue between participants, and as such, we believe our findings may inform other design processes.

Acknowledgements

References

[1] E. Brandt, M. Johansson & J. Messeter, The design Lab: Re-thinking What to Design and How to Design. *In Design Spaces.* Edited by Binder and Hellström, Edita Publishing, 2005, 34-43.

[2] E. Sanders, Scaffolds for Building Everyday Creativity. *Design for Effective Communications: Creating Contexts for Clarity and Meaning*, Allworth Press, 2006.

[3] J. Buur, J. & S. Bødker, From usability lab to "design collaboratorium": reframing usability practice. *Proc. DIS '00*, ACM Press, 2000, 297-307.

[4] T. Binder, Why Design:Labs? *Proc. Design Inquiries '07*, www.nordes.org, 2007.

[5] E. Brandt, Designing Exploratory Design Games: A Framework for Participation in Participatory Design? *Proc. PDC '06*, ACM, 2006, 57-66.

[6] M. Johansson & P. Linde, Playful Collaborative Exploration: New Research Practice in Participatory Design. *Journal of Research Practice, 1*(1), 2005.

[7] M. Ivey & E. Sanders, Designing a Physical Environment for Co-experience and Assessing Participant Use. *WonderGround,* DRS, 2006, 1-17.

[8] A. Lucero & J.B. Martens, Supporting the creation of mood boards: industrial design in mixed reality. *Proc. TableTop 2006*, IEEE, 2006, 125-126.

[9] W. Gaver, T. Dunne & E. Pacenti, Cultural probes. *Interactions, 6*(1), ACM, 1999, 21-29.

[10] K. Holtzblatt, J. Burns Wendell, & S. Wood, *Rapid Contextual Design* (Morgan Kaufmann, 2004).

[11] A. Lucero, D. Aliakseyeu & J.B. Martens, Augmenting Mood Boards: Flexible and Intuitive Interaction in the Context of the Design Studio. *Proc. TableTop 2007*, IEEE, 2007, 147-154.

[12] D. Norman, *Emotional Design. Why we love (or hate) everyday things* (Basic Books, 2004).

[13] I. Keller, *For Inspiration Only: Designer interaction with informal collections of visual material* (PhD thesis, Delft University of Technology, 2005).

[14] G. Iacucci & K. Kuutti, Everyday Life as a Stage in Creating and Performing Scenarios for Wireless Devices. *Personal Ubiquitous Comput. 6*(4), 2002, 299-306.

[15] K. Vaajakallio & T. Mattelmäki, Collaborative design exploration: envisioning future practices with make tools. *Proc. DPPI '07*, ACM, 223-238.

[16] E. Sanders & C. William, Harnessing People's Creativity: Ideation and Expression through Visual Communication. *Focus Groups: Supporting Effective Product Development*, Taylor & Francis, 2001.

[17] F. Sleeswijk, P.J. Stappers, R. van der Lugt & E. Sanders, Contextmapping: experiences from practice. Sanders. *CoDesign, 1*(2), Taylor and Francis, 2005.

[18] E. Sanders, Design Serving People. In *Cumulus Working Papers*, UIAH, 2006, 28-33.

[19] E. Brandt & C. Grunnet, Evoking the future: Drama and props in user centered design. *Proc. PDC '00*, 11-20.