Methods for exploring workplace activities and user contexts employing intermediate objects
- self-photos, personal view records, and skit performance

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Abstract

In this paper, we describe an outline and features of three methods we have developed for understanding user's work practices and their contexts. In the first method, we use self-photographs of users to share the context of the workplace between users and designers. In the second method, we use video records of the user's personal view to share user experiences. In the third method, we use skit performance as a prototype for evoking future activities and experiences. Although these three methods support different phases in the design process, their common focus is creation and use of effective intermediate objects among users and designers for the purpose of understanding user contexts.

1 Introduction

Users organize their practical activities using various resources in their workplaces. Their activities and usage of resources/artifacts in the workplace depend on their own context. These practices are sometimes beyond the designer's assumptions. In a particular situation, artifacts are used for aims other than those designers have assumed, are used unexpected way and combination with other artifacts. Therefore, In the design of a new system, designers should consider the broad range of activities that exists in the target workplaces.

Based on such recognition, we have explored methodologies for observing the work practices of users, for analysing current user experiences, and for prototyping future user experiences, in order to design a new artifact. Our focus is also to enhance communications in the design process, which includes both communications between users and designers as well as that among design team members. In our methods, we use self-photographs, users’ personal view records, and skit performance, as mediums to help designers and users understand how users behave, the resources used, and the actual role of artifacts in a workplace.

2 Methods for exploring users and the contexts

2.1 Self-photo Study

Self-photo study is an observation method that employs the users' self-photos as a medium for understanding their backgrounds, workplaces, and practical activities (Tamaru et al., 2002).
In self-photo study, we give each participant a disposable camera and ask him/her to take some photographs during the course of his/her typical workday. They are instructed to take photos as records of their activities. These photos include their workplaces, environments, people they meet, and artifacts they use.

An on-site interview is conducted with each participant after film development. The questions are about places they were, activities they did, tools and documents they used, the way they use these artifacts, people they communicate, the means for that communication, and so on.

Interviewing with the aid of self-photos makes it easier to ask the appropriate questions and to earn rich interview data. Self-photos function as tools for remembering the contexts of activities and for mediating the interaction between users and designers.

Self-photographs and interview data are arranged on workplace data sheets. The format of this sheet has fields for self-photograph, place, time, activity, people, artifact, communication, and so on (Figure 1). Then an interaction map is created based on data sheets (Figure 2). This map visualizes the relationships among workplaces, workers, artifacts and activities. After the interviews, subjects and members of a design team hold a workshop to discuss their activities through the workplace data sheets and the interaction map.

### 2.2 Interaction Analysis Employing the User's Personal View

In direct observation, video records are commonly used to view and re-view user behavior. In our method, we use video records from user personal sight for exploring what user actually interacts, and what user actually experiences (Hasuike et al., 2001).

This method aims to observe user activity and experience through the user’s personal view. An essential instrument for this is a small CCD camera located on a cap. Participants simply go about...
their usual activities while wearing this cap, and personal view video data is transmitted to a video recorder. We also record whole system view, audio, and describe observation notes.

On-site interviews are conducted with each participant after the observation. One of the most important objectives of this interview is to highlight which resources are effective in the sequence of a user's activities, and how they feel about these. In this interview, interviewers and participants communicate by sharing personal view records.

Information gathered from video/audio records and interview notes is integrated in an interaction analysis sheet (Figure 3). The format contains fields for scenes, places, situations, activities, personal views and system views captured from video, and interview protocols and notes. With this sheet, designers can realize the relation among user activities, personal views, and the resources used for user's actual activities.

<table>
<thead>
<tr>
<th>Index</th>
<th>Sce nes</th>
<th>Place</th>
<th>Ruati on/ment</th>
<th>User's Activity</th>
<th>System View</th>
<th>User Personal View</th>
<th>Interacted Design Element</th>
<th>Interviewer Protocol</th>
<th>Participants Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>In the Copy Area</td>
<td>Put the file on the table.</td>
<td>Table, File, Over all view of the copier, Location/Layo ut.</td>
<td>Did you select the copier in advance?</td>
<td>Did you know the machine by the location?</td>
<td>For stapling, I usually use another monochrome copier for more simple jobs not need staples.</td>
<td>Yes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Copy Area</td>
<td>Walking toward the target copier.</td>
<td>Indicator for Power On</td>
<td>What did you think about in this view?</td>
<td>How did you know?</td>
<td>Power is on or not.</td>
<td>By the backlight of LCD panel.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>In front of the Copier</td>
<td>LCD panel,ADF, Document</td>
<td>Now you put the removed staples at the clip Tray?</td>
<td>Unconsciousness.</td>
<td>Always.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 3. Example of an interaction analysis sheet**

### 2.3 Scenario and Skit Performance

This method aims to use scenarios and performance with mock-ups as techniques for communicating new design concepts, sharing future user experiences between designers and users, and to promote interaction between the user community and the design team (Hasuike et al. 2002).

With this method, scenarios are described using a format, containing fields for scenes, situations, user activities, interaction elements, and design points. This format is basically the same as that for describing observed interaction, mentioned in Section 2.2.

We use skit-performance as a base technique that enables us to prototype a situation of "artifacts-in-use" (Bannon and Bodker, 1996) and "people at work" (Kuhn, 1996) regarding future artifacts in actual user contexts. There are some prior studies concerning performance, such as "Informance"(Burns et al., 1994), "Experience Prototyping" (Buchenau and Fulton, 2000), and the playful design approaches (Brandt et al., 2000). In our method, performances should take place in actual user environments. And there are two types of props: simple non-functional mock-ups as prototypes of future artifacts, and real artifacts existing in the use environment. Actors perform skits using these props as their resources for performance.
During performing skit, the director suggests situations and facilitates user performance with prompts such as: "Now, you just got an e-mail from your colleague in the office. How would you become aware of that here?" The actor then responds to these questions by acting performance. The actor sometimes puts questions to the director. These include questions regarding the supposed situation, the features of the artifacts, and the functions and operational methods of the artifacts. Through these communications, skit is organized interactively.

Skits are observed and recorded with interaction analysis method employing users' personal views, and the results are described in the format mentioned in Section 2.2 (Figure 4). Thus the format is designed for both the design and analysis phases, and we can compare interaction scenarios considered by designers, with observed interaction sequences actually performed by user. By analyzing these differences, we can identify users' needs, ideas, and contexts, even if the users themselves are unaware of them.

3 Discussion

We have reviewed an outline of our three methods. In the first methods, we use self-photographs of users to share the context of the workplace between users and designers. In the second method, we use video records from the user's personal sight to share user experiences. In the third method, we use skit performing as a prototype for evoking future activities and experiences.

A common feature of these three methods is proactive use of visible intermediate objects, for sharing between users and designers as well as among design team members. Self-photos and users' personal view records are visual data simply captured in user workplaces. Skit performances with simple mock-ups are visible prototypes of future activities and experiences. Workplace data sheets and interaction analysis sheets are forms for arrangement of gathered data and visualization of observed activities and interviewed contexts. And an interaction map visualizes the design team's conception of the users' work practices.

In our method, there are some opportunities for communication employing these intermediate objects, on-site interviews, workshops, and skit dialogues. These communications include rich information about user themselves, user activities, backgrounds, problems, and ideas. From our
experiences of studies employing these methods, intermediate objects do promote and facilitate deeper communication and understanding. With these settings, we can capture some unexpected user behaviors, unexpected usage of artifacts, unexpected users’ assumptions for functions of future artifacts, and so on. These occurrences are resources for understanding problems and requirements in the actual context of use.

From the viewpoint of user participation, taking self-photos promotes users’ proactive involvement in exploring workplace researches and design, and performing skits promotes users’ proactive involvement in idea generation and design of the future work styles. From the viewpoint of design cycles, these visualized data can mediate the interaction between different design project teams. In a project, we utilized the work practice data of sales persons captured with self-photo method as a base for creating scenarios of future document handing system using electric-paper technology (Hasuike et al. 2002). These research-design cycles can promote deeper understanding of users work practices and can promote proper reflection of these understandings to the future design projects, from earlier phases of design process.

4 Conclusion

We have reviewed an outline of our three methods employing proactive use of visible intermediate objects. For developing effective databases of captured information with these methods, it is necessary to study more formal description method for describing workplace data sheets, interaction maps, interaction analysis sheets, and scenarios. It is also important to develop tools that support to handle these visible data.

References


