A Scenario-Based Design Method with Photo Diaries and Photo Essays

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Abstract. In this paper, we propose a requirements elicitation method called Scenarios, Photographic Essays and Diaries as User Probes (SPED-UP). In SPED-UP participants create photographic diaries and photographic essays themselves. Each participant creates photographic diaries to capture a day in their own life. They reflect upon their personal experiences and create photographic essays based upon this reflection. This approach enables designers to collect user data conveniently. Designers, who might be participants themselves in a participatory approach, can then analyze these experiences by forming design concepts, envision scenarios by imagining contexts of use, and create artifacts by sketching these scenarios. We also describe an exemplary workshop using the SPED-UP approach.

Keywords: user research, photographic diary, photographic essay, probe, requirements inquiry, scenario.

1 Introduction

User research is the basis of user-centered design (UCD). User research is usually conducted in a marketing department in a company, which is often an independent division. Consequently, user data from user research is not fully exploited in the design process because of organizational and communication problems [11] and the representation problem of user data [12]. A more direct approach to user research might be participatory design, in which actual users of target products participate in design activities. Thereby, they can contribute directly in requirements elicitation and continuous evaluation.

However, user research is typically very expensive. It requires investments of time and money and is sometimes wasted. In addition, conducting appropriate user research requires high levels of skill and experience. User research in UCD is easily demanded, but hard to execute effectively, especially for designers. It is much harder if designers work on consumer products than if they work on products developed on request because potential users and their tasks and activities are not easily identified for consumer products to be designed. Consequently, designers of consumer products can move into a situation in which they create designs based on sheer intuition. Alternatively, they can use user data only as a guide of design: no rational relationship exists between user data and the produced products.

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We propose a design approach using lightweight user research for designers and create design ideas from the user data to address this issue. Our approach, Scenarios, Photo Essays and Diaries as User Probes (SPED-UP), is a scenario-based design using participants' self-produced photographic essays and photographic diaries. In this paper, we describe an overview of the SPED-UP approach; this paper specifically examines photographic diaries and photographic essays as representations of user research.

2 User Research to Elicit Requirements

Four goals of the early stage of design for human-computer interaction are the following.

- Elicit potential desires and requirements.
- Envision novel scenarios of use.
- Create designs reflecting the material of user research.
- Bring actual users into design activities.

Several efforts have been made to study user research for design. Researchers and practitioners transferred research methods for field work to the design of human-computer interaction. For example, in the contextual inquiry technique [1], researchers visit users' work settings and ask questions during the actual activities. This technique is useful to record and understand actual users' tasks and activities to elicit their potential wants and requirements.

Gaver, Dunne and Pacenti [3] created cultural probes, which is a package of devices such as post cards, disposable cameras, notebooks, and so forth. Each device is designed to encourage potential users to keep a diary themselves as the instruction and messages from the designers are printed on it. The packages are distributed to potential users; they in turn keep a diary using the devices and send the package back to the designers. The designers browse the materials. Consequently, the materials provide the designers with a clue for design.

As in the cultural probe technique, photographs taken by actual users often play a central role in user research. Frost and Smith [2] used photographs taken by patients with diabetes themselves for self-management training. In the marketing research field, Holbrook and Kuwahara proposed a data collection method using collective stereographic essays to probe consumption experiences. Holbrook and Kuwahara's approach inspired us to develop the Participatory Requirements Elicitation using Scenarios and Photo Essays (PRESPE) approach [6, 7]. Based on experiences using the PRESPE approach, we created the SPED-UP approach. With devices such as photographs and writings created by potential users, we intend to deal with the above four issues in the early stage of the design process.

3 SPED-UP: Scenarios, Photo Essays and Diaries as User Probe

Our approach on user research for design employs three key devices: scenarios, photographic essays and photographic diaries. The approach is called *Scenarios, Photo Essays and Diaries as User Probe (SPED-UP).* Fig. 1 depicts an overview of the SPED-UP approach.

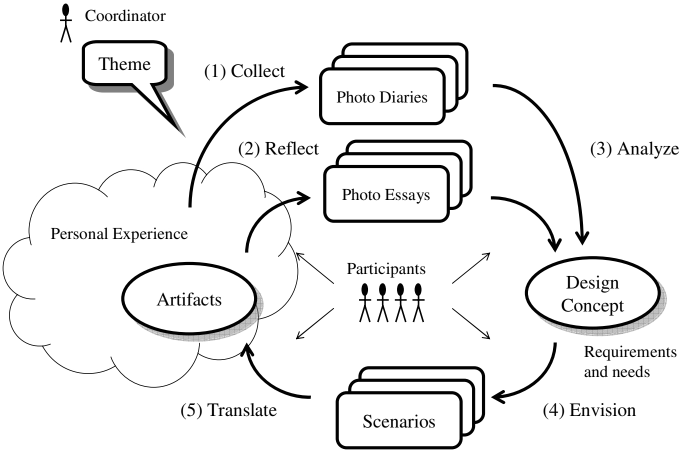


Fig. 1. Overview of the Scenarios, Photo Essays and Diaries as User Probes (SPED-UP) approach

3.1 SPED-UP Overview

As a participatory design approach, SPED-UP sets a group of major stakeholders (including designers and real users) working together to produce and evaluate product designs [11]. The SPED-UP approach encompasses two roles: coordinators and participants. The coordinators assign a project theme and provide ongoing support for the participants' activities. Five main activities are (1) collection, (2) reflection, (3) analysis, (4) envisioning, and (5) translation. Participants collect their own personal photographic diaries. For the assigned theme, participants create photo-essays to reflect their personal experiences using existing artifacts.

The participants are divided into several groups; the remaining SPED-UP activities are conducted as group work. By comparing the individual photographic essays, the participants can analyze shared ideas, identify the concepts behind them, and then develop design concepts. The participants can then use these design concepts as inspiration for future uses of the relevant technology when they envision use scenarios and contexts. This activity, called scenario exploration, is a structured brainstorming session with role-playing using scenarios and questions. The participants then translate scenes described in the scenarios into artifacts by making sketches of the scenes [4].

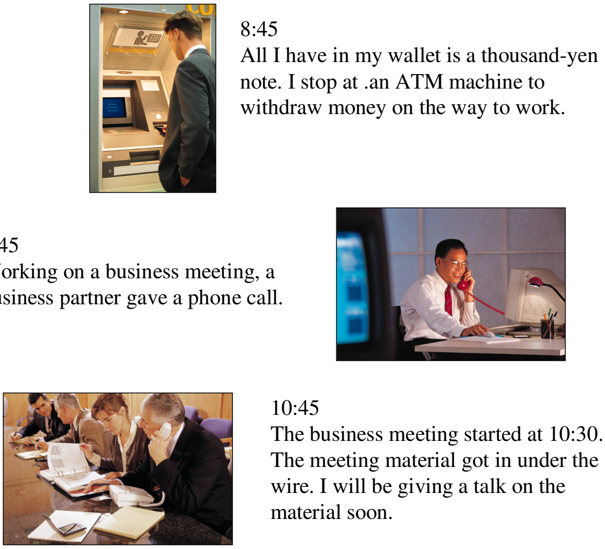
Three devices area used for SPED-UP: photographic diaries, photographic essays, and scenarios.

3.2 Photo Diaries

A photographic diary comprises a series of photographs and their descriptions. Fig. 2 shows an example of a photographic diary. A participant takes a photograph at specified time intervals and describes an activity at the time the photograph is taken.

In Fig. 2 the participant took a photograph and wrote a diary at one-hour intervals. Each photograph and description represents a scene from a day in the participant's life.

The purpose of collecting photographic diaries of users is to capture actual scenes of life from the users. The final outcome from the design process is design ideas or designed products relating to information and communications technologies. Therefore, we are interested in finding opportunities for information processing and communication from their daily lives.



8:45
All I have in my wallet is a thousand-yen note. I stop at .an ATM machine to withdraw money on the way to work.

9:45
Working on a business meeting, a business partner gave a phone call.

10:45
The business meeting started at 10:30. The meeting material got in under the wire. I will be giving a talk on the material soon.

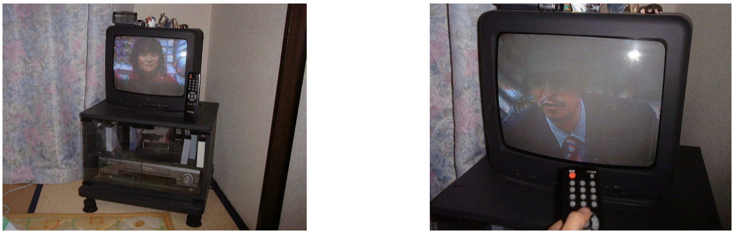
Fig. 2. An example of a photographic diary

A timer or prompter is useful to prompt taking a photograph by users to create photographic diaries. However, using a self-timer to take photographs might not be appropriate for our approach because it might capture unintended scenes and cause privacy and security concerns. For this reason, we ask users to take photographs themselves so that the users can choose what they capture as a scene of daily life. Instead of taking photographs automatically, we ask users to capture a scene that represents their actions, tasks, or activities as well as the environment surrounding them. In fact, we ask them to appear themselves in photographs to represent clearly what they are doing in what situation.

Current technologies such as small portable digital cameras, mobile telephones with digital cameras, and personal digital assistants (PDAs) with digital cameras provide us opportunities to create photographic diaries without too much trouble. In addition, self production of photographic diaries by the participants enables designers to collect user data in a short period of time.

3.3 Photo Essays

A photographic essay contains representative photographs on an assigned theme and an essay explaining why the participant thinks the photographs fit the theme. Photos might be stereograms to increase the viewer's sense of reality [8]. Fig. 3 shows an example of a photographic essay.



I live alone. The first thing I do is turn on the TV when I get back home. I guess I might be feeling lonely. I try to find an entertaining program. I watch many kinds of programs, such as variety shows, dramas, and comedies. Because I live alone, I have a habit of channel surfing. Because I do not subscribe to a newspaper, I do not know what TV programs are currently on the air. So after turning on the TV, I start channel surfing and stop when I find an entertaining program. During commercial breaks, I start channel surfing again because I do not want to miss any entertaining programs that might be airing simultaneously on a different channel. Another reason for this habit is that I am not disturbing anyone because I live by myself. I think that this habit might change depending on my environment.

Fig. 3. An example of a photographic essay: Channel surfing [7]. The theme assigned to the participant is "something I usually do with an IT product." In the essay, the author assumed that the television is an IT product.

The purpose of collecting photographic essays of users is to elicit potential hidden needs. This is achieved by users' deep introspection based on the assigned theme.

The photographic diaries and photographic essays are key user data in the SPED-UP approach. We expect from the user data that users' needs or requirements that emerge from photographic essays might be incorporated into opportunities of information processing or communication found in photographic diaries. Toward this end, designers analyzed the collected photographic diaries and essays. The obtained ideas from the data are summarized and listed as Design Concepts shown in Fig. 1. The next step in the SPED-UP approach is to create scenarios.

3.3 Scenarios

Scenarios in the SPED-UP approach have two aspects: as a tool to support idea generation and as a representation of design ideas based on user data. At the idea generation stage from the design concept produced from the photographic diary and photographic essay analysis, designers conduct brainstorming sessions using an affinity diagram. In this activity, scenarios might be a textual narrative form. During the SPED-UP brainstorming session, participants create short scenarios that include usage situations. The participants ask 5W1H (What, Why, Who, When, Where and How) and what-if questions to identify concrete details of various use situations. The answers to the questions are represented as scenarios with detailed information.

As a representation of design ideas, designers create scenarios that represent scenes of a task or activity. Scenarios at this stage are much longer descriptions than those in the brainstorming session.

4 Example

We conducted a two-day workshop of the SPED-UP approach at the Ergo-Design Division, Japan Ergonomics Society. This section describes an overview of the workshop as an example. Other reports on the workshop can be found at [9, 10, 16]. The workshop was intended to create design specifications of a ubiquitous computing system for a university campus. Specifically, we designed the system not only for traditional usability aspects but also for emotional aspects; in this sense, we intended to incorporate the aspect of happiness into the system.

The workshop participants are from several companies and universities in Japan. They have various backgrounds and experiences in industrial and product design but have no experience using the SPED-UP approach. Box 1 and Box 2 show the assignment given to the participants. Following our SPED-UP approach, we asked them to address a theme – “Something I feel happy about” – by taking a representative photograph and writing a brief vignette indicating the significance of the photo.

We provided assignments to the participants of the workshop beforehand. They created the photographic diaries and photographic essays prior to the workshop. Fig. 4 shows the first two hours of a photographic diary created by a participant. She is a supporting staff member of a university field hockey team, and she describes her day during spring break. The photographic diaries provided by the participants enable the workshop members to share and understand the individual’s daily life.

Photo Diary Project Description

Do the following.

- Take a photograph every thirty-minute interval from morning to night (one-hour interval may be acceptable if you think thirty-minute interval is too busy).
- Write a short diary that explains the scene captured in the photograph.
- Construct a summary document (a PowerPoint presentation or a poster) that contains the photographs and diary.

Notes

- Consider what the theme means to you.
- Describe the scene in the photographs; explain why you selected that particular scene.

Box 1. Photo diary assignment given to the participants

Photo Essay Project Description

For the theme below, do the following.

- Take a pair of photographs (overview and close-up) that describes the theme.
- Write a short essay that explains the meaning of the scene captured in the photographs.
- Construct a summary document (a PowerPoint slide) that contains the photographs and essay.

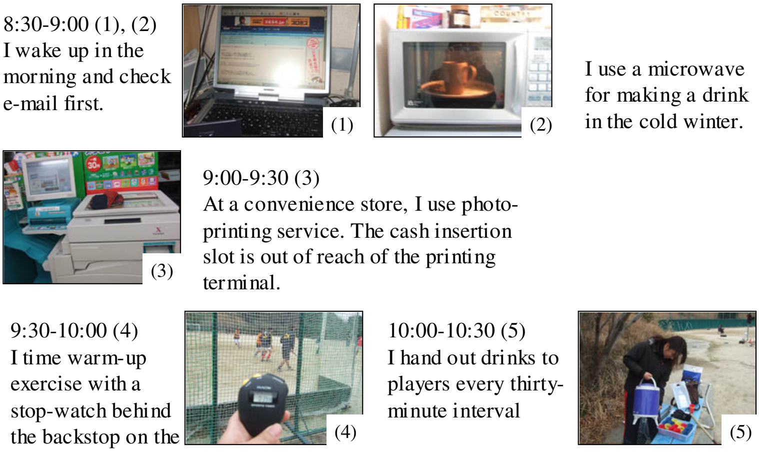
Theme

- Something I feel happy about

Notes

- Consider what the theme means to you.
- Describe the scene in the photographs, and explain why you selected that particular scene.

Box 2. Photo essay assignment given to the participants



8:30-9:00 (1), (2)
I wake up in the morning and check e-mail first.

I use a microwave for making a drink in the cold winter.

9:00-9:30 (3)
At a convenience store, I use photo-printing service. The cash insertion slot is out of reach of the printing terminal.

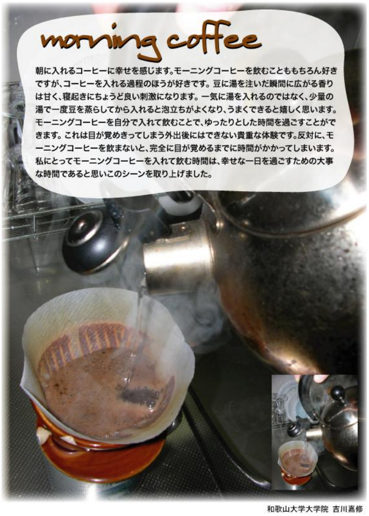
9:30-10:00 (4)
I time warm-up exercise with a stop-watch behind the backstop on the field hockey field

10:00-10:30 (5)
I hand out drinks to players every thirty-minute interval

Fig. 4. A photographic diary created by a participant. She is a supporting staff member of a university field hockey team (excerpt from her poster and translated by the author).

Fig. 5 shows a photographic essay created by a participant. He explains in the photographic essay why self-made coffee in the morning is important for him.

At the workshop we started explaining the photographic diaries and photographic essays that were brought. Then we divided the workshop members into three groups. Each group reviewed all the photographic diaries and photographic essays and find common ideas and opportunities behind them. They created design keywords through this activity. All materials had been posted on the wall of the workshop room so that the participants were able to review them anytime.



morning coffee

朝に入れるコーヒーに幸せを感じます。モーニングコーヒーを飲むことももちろん好きですが、コーヒーを入れる過程のほうが好きです。豆に湯を注いだ瞬間に広がる香りは甘く、寝起きにちょうど良い刺激になります。一気に湯を入れるのではなく、少量の湯で一度豆を蒸らしてから入れると泡立ちがよくなり、うまくできると嬉しく思います。モーニングコーヒーを自分で入れて飲むことで、ゆったりとした時間を過ごすことができます。これは目が覚めきってしまう外出後にはできない貴重な体験です。反対に、モーニングコーヒーを飲まないと、完全に目が覚めるまでに時間がかかってしまいます。私にとってモーニングコーヒーを入れて飲む時間は、幸せな一日を過ごすための大事な時間であると思いこのシーンを取り上げました。

和歌山大学大学院 吉川嘉修

Fig. 5. A photographic essay created by a participant. He explains why self made coffee in the morning is important for him to spend a happy day.

During the analysis phase of photographic diaries and photographic essays, the participants created keyword descriptions. Box 3 shows an example of the keyword descriptions created by a participant group.

Based on those keywords, the participants conducted scenario-based brainstorming sessions. Finally, they created design ideas about restructuring the concept of a lecture on campus. They proposed the “learning like a pot-luck party” concept, a student-led learning environment where anyone comes and leaves anytime and shares knowledge and experience.

Keyword descriptions:

Relativity: The degree of happiness is perceived in a relative manner. The same life event can be experienced differently from person to person.

Rhythm: Series of events in daily life create a harmony of happiness.

Box 3. Keyword description by the participant group

5 Conclusions

In this paper, we introduced a user research and design method using a scenario-based approach with photographic diaries and photographic essays. The Scenarios, Photo Essays and Diaries as User Probes (SPED-UP) approach enables designers to collect user data at the beginning of design process in lightweight manner. In this paper, we specifically addressed representation of photographic diaries and photographic essays.

We introduced the SPED-UP approach at a workshop held by the Ergo-Design Division, Japan Ergonomics Society in February, 2006. The participants at the workshop quickly acquire the approach; then they started using it at design departments of several companies and universities in Japan including Fujitsu Co. Ltd., Canon Inc., Ricoh Company, Ltd., Chiba University, Musashi Institute of Technology, Kurashiki University of Science and The Arts, and University of Yamanashi. The Ergo-Design Division is now considering using it as a basic design approach for ubiquitous services, applications, and products. Ueda and Watanabe [15] reported that the SPED-UP approach enables design students to center their creative efforts specifically on their design target, which suggests the potential value of SPED-UP for use in design education.

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