

Practice oriented Content Co-creation Support Systems

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Abstract

People's intellectual activities are held in actual practices, not only in human brains. Support systems for such activities should be designed totally within practices. Our purpose in this research is to support creative activities of ordinary people focusing on practices and collaborations. In this paper, we introduce and analyze our two workshops: photo-attached acrostic workshop, and mobile video workshop.

1. Introduction

Nowadays, we people are living in rapidly increasing numbers of information and feeling difficulties in managing them. Because we cannot stop information flooding, new types of relationships between people and information should be designed. Our approach is to change people to create information by themselves more actively. With this paradoxical approach, we aim to break out one-way communications from limited numbers of “creators” to ordinary people. Thus we are studying on support methods for expressing activities of ordinary – non-professional – people.

In many cases, expressing processes are more important for ordinary people than final expressions, while results are more important for professional artists. Through expressing activities, people think over, understand, and accept surrounding information [1].

In creativity support research field, many information systems to help people were developed [2, 3], while several idea generation techniques without systems have been developed long before [4, 5]. This research stands on a creativity support perspective, but we don't develop a technique or a support system for idea generation. We aim to totally redesign a way of expression for ordinary people. Boden distinguished two sorts of creativity: H-creativity, which indicates historically new idea/concept formation, and P-creativity, psychologically one in human minds [6]. In our research, we aim P-creativity support rather than H-creativity support. For

ordinary people, what they express is more important than how they express. In psychology field, Guilford made a distinction between convergent and divergent thinking [7]. Our approach emphasizes neither of them specially, but if daring to say, it matches divergent one. One of our aims is to support expressing activities, which seem convergent; but widening people's views and unsticking people's stuck thinking are more important. For this purpose, we focus on collaborative creation (or co-creation).

It is said that collaborations and interactions contribute people's creativity [8]. Especially, they suit on divergent creation, Ueda and Niwa pointed out [9]. Gathering several people's knowledge and discussing against each other seem to help widening people's views. Oppositely, for convergent creation, which is similar to professional expression, it seems better to create, revise, and finish a work independently.

As a platform for collaborative creation, we employ a style of practice called *workshop*. We regard a workshop itself as a creativity support system [10]. A workshop is a participatory and experiential group work-based practice for learning and creation. Workshops are held in various fields – arts, citizen-participatory town planning, and learning. A workshop is arranged and organized by *facilitators*. Facilitators develop a workshop program, establish a task and prepare a place. Participants work together for tasks there. Shared place and tasks enhance to form opinions and output expressions. In some phase participants collaborate and in some phase they compete.

Lave discussed a process of learning, creation, and consensus formation in a group called *Community of Practice* [11], where people share techniques, interests, or concerns. Commitment to a Community of Practice is activated by roles, which participants are required to play, such as a master and an apprentice [12]. This theory, *Legitimate Peripheral Participation*, explains participatory workshops gain participants' active commitments. A person, who plays a participant role, is requested to carry tasks out based on a program prepared by facilitators.

For these reasons, we designed workshops and developed systems for the purpose of supporting practical



Figure 1. Example of Photo-attached Acrostics

co-creation. In this research, we aim not to develop fundamental technologies for creation, but to design practices supported by applied information technologies. This is not a social experiment. Not technology first, but society first. We developed systems depending on social situations. One of contributions of this research is to present ways of practice oriented system development. In this paper, we show our two workshops, then compare and analyze them.

2. Practice oriented content co-creation

When designing a practice, we need to consider the following two directions of extent: temporal axis, and spatial axis. Temporal design of a practice is a design of a workshop program, and spatial one is a design of a place. Based on these two axes, we compare two practices – photo-attached acrostic workshop [10] (practice 1) and mobile video workshop [13] (practice 2).

Both workshops are kinds of storytelling workshops. Storytelling or narrative approaches are getting widely accepted in several fields such as psychology, folklore, education, and therapeutics. It is said that people articulate their temporal experience by telling stories [14]. Storytelling helps people to understand and manage their experiences. Bruner asserted that a story is a product from a joint act of a storyteller and hearers [15].

Practice 1 was a two day workshop in which participants expressed their stories based on a format called *photo-attached acrostics*. In this practice, participants gathered in a place and directly collaborated. Every participant spent comparatively long time for expressing. Practice 2 was a participatory exhibition which participants freely join in and add their stories to. In practice 2, an expression was made in a collaboration of a single participant and facilitators. A system connects expressions and shows a collective story. Here participants indirectly collaborated for a larger expression. Time spent by a single participant for an expression is shorter. Participants could join the workshop¹ at the venue and around the venue. Table 1 shows differences between two workshops.

¹ Perhaps there are some researchers who don't call this practice a workshop due to their definitions of a term "workshop." We, however, call a workshop of this participatory and experiential practice of expression in this paper.

Table 1. Comparison of two workshops

	Practice 1	Practice 2
Time	Long	Short
Space	Narrow	Wide

There can be two approaches for co-creation: direct approach, and indirect approach. Direct co-creation is to create expressions jointly and collaboratively by several people in a same place. Indirect co-creation is a result of collective expressions. While direct co-creation is emphasized in the former workshop and indirect in the latter, both direct and indirect co-creation processes are included in each workshop.

In the following two sections, we describe designs and systems of these workshops.

3. Practice 1: photo-attached acrostic workshop

This workshop mainly aims to widen participants' views. We designed a loop of remixing in which participants place others' (partial) expressions into their own contents and their contents are reused in others again. In the workshop, participants express their stories by themselves at first. Then they decompose expressions and recompose collective stories collaboratively. Both the workshop program and the expression format we describe below are designed to exchange their experiences, knowledge, and opinions so that they can achieve new point of views.

3.1. Design

In this workshop, participants create contents based on certain rules. We designed a new format of expression called *photo-attached acrostics* to highlight the process of decomposing and recomposing. Acrostic is a poem or other writing, in which the first letter of each sentence or paragraph spells out another message. We modified it to include a photo for each sentence. Participants take and select photos, write sentences whose first letters match a message given. Here a pair of sentence and photo should correspond and both photos and sentences should be along a theme given. An example of photo-attached acrostic is shown in Figure 1. The message of the example is "ABCDE."

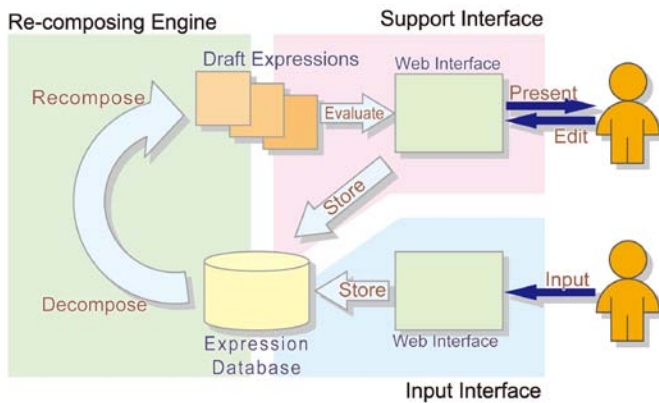


Figure 2. Architecture of Developed System

In the workshop, participants create a photo-attached acrostic using their own photos at first. Then next, they are divided into groups and collaborate to create new expressions by remixing their expressions. Collaboration with others will raise new context and stimulate participants. In the third step, they create expressions by themselves again, choosing photos from all pictures used in the former steps. Participants are requested to place others' partial expressions – photos used in others' past expressions – in their new expressions. We aim that participants form new opinions and ideas stimulated by others. In the workshop, workshop facilitators show other new remixed acrostics using an information system described below.

3.2. System

The system consists of four parts: expression input interface, expression database, expression recomposing engine, and expressing support interface (Figure 2).

Users input their works, which are created in manual and analog manner in the workshop. The expressing support interface shows draft expressions, which are generated from the expression recomposing engine (Figure 3).

The expression recomposing processes are as follows:

- Decomposition phase
 1. Analyze morphological structures of text.
 2. Calculate term relation weights and term weights. We use term dependency for term relation weights and term attractiveness for term weights [16]. Term dependency $td(t, t')$ from term t to t' is given by:

$$td(t, t') = \frac{\text{sentences}(t \cap t')}{\text{sentences}(t)} \quad (1)$$

Here $\text{sentences}(t)$ indicates the number of sentences in which term t appears, and $\text{sentences}(t \cap t')$ is the number of sentences term t and t' appear at the same time.



Figure 3. Screen Image of Photo-attached Acrostic Creation Support Interface

Term attractiveness $attr(t)$ of term t is a total of incoming term dependencies. T is the set of all appearing terms.

$$attr(t, t') = \sum_{t' \in T | t' \neq t} td(t', t) \quad (2)$$

- Recombosition phase
 1. Extract candidate terms according to their initial letters.
 2. Extract photos which include each term in 1.
 3. Evaluate photos.

We define the weight $w_i(p)$ of a photo p for term t as follows:

$$w_i(p) = \sum_{t' \in T_p | t' \neq t} td(t, t') \cdot attr(t') \quad (3)$$

For each initial letter, term candidates, their related terms, and attached photos are structured.

In the workshop, a facilitator shows semi-automatically generated expressions, which are edited in predefined rules like choosing photos with the highest weights or the lowest. With these expressions, we aim to stimulate the participants by machinery generated context.

3.3. Practice

The theme of our first practice was “Shonan” – the name of a region along a coast near Tokyo, Japan. We called for participation to people related to – e.g., living around, working around, or was born around – Shonan area. Through the workshop, participants are expected to discuss together and get new opinions about the area.

The workshop was held at 8th and 16th December 2007 in Fujisawa city, the center of Shonan area, with nine participants. Most of their occupations were related to media activities or media literacy: information media-major students, an elementary school teacher, an art university professor, members of citizens' television at



Figure 4. Photo-attached Acrostic Workshop



Figure 5. Tripod equipped mobile phone

Shonan, and so on. While the youngest was an undergraduate student, a retired person was also included. Three were female and six were male. The participants were divided into three groups and finally they made 30 photo-attached acrostics from 259 photos. Figure 4 shows scenes in the workshop.

Through the workshop, the participants exchanged their opinions; this fact can be observed in iterative changes of the expressions. The expressions generated by the system were also accepted. After the workshop, we requested some of the participants to try the expressing support interface. They said our system was helpful to know multiple perspectives easily.

4. Practice 2: mobile video workshop

In the next workshop, we aimed to make participation easy and casual to collect more stories from more people. In this workshop, we connected people's stories by designing the expression format to be connected directly, instead of the workshop program like we did in the former workshop.

4.1. Design

We designed a workshop program called "*Keitai Trail!*". A word *Keitai* indicates a mobile phone in Japanese. In this workshop, we employ a mobile phone as a clue for people's expressions.

Our workshop is designed to be held not only at a single place but also outside space around a main venue. A main venue is a kind of base where facilitators present a progress and participants' expressions of the workshop. Facilitators go outside and ask people there to join the workshop. If one accepts, facilitators shoot a video with a mobile phone of her/him talking.

Why a mobile phone? – The reasons are as follows. First, by using a common device in an unusual way, we

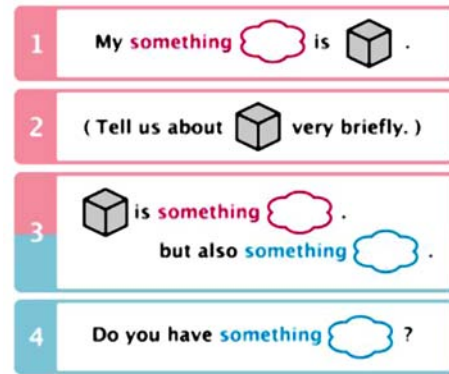


Figure 6. Talking format we used in our practice

aimed to turn participants to unusual expressing mode. Figure 5 shows a tripod equipped mobile phone, which we used in the practice of our workshop. A tripod changes a mobile phone to something different. A mobile phone originally has a video function, but we expect that a tripod makes people to focus on this function. Second, with a usual video camera, a participant will take a more formal way of expression. Even if with a tripod, a mobile phone is still a mobile phone. It is more casual than a video camera is.

Participants' stories are based on a "talking format." A format requests stories to be connected by a simple rule. A format consists of four parts: (1) An answer to a question from a former participant, (2) a short free talk, (3) a connecting phrase to the next part, and (4) a question to a next participant. A question in the fourth part will be answered in a next video's first part. This is like a question and answer game. A question from a former participant is a cue to a free talk. Figure 6 shows an example of a format. This is the format we used in our practice we describe later. A story is connected to other stories. Connected stories make a large story. This format derives people's stories and connects them.

In a main venue, connected videos are shown on a large screen by an installed support system which we describe in the following section.

4.2. System

Figure 7 illustrates a usage scenario of the installed system which consists of two phases.

In input phase, facilitators shoot videos of participants telling stories with a tripod equipped mobile phone. Facilitators store videos to a database. It is theoretically possible to post videos directly from mobile phones. But in this case, we needed to develop an input interface for PCs due to temporal technological limitations such as maximum size of uploading files and covered service in roaming area of mobile phones we used.

In output phase, we prepared two ways of viewing. At a main venue, two types of interfaces are projected on large screens. Slide show view plays recently posted two

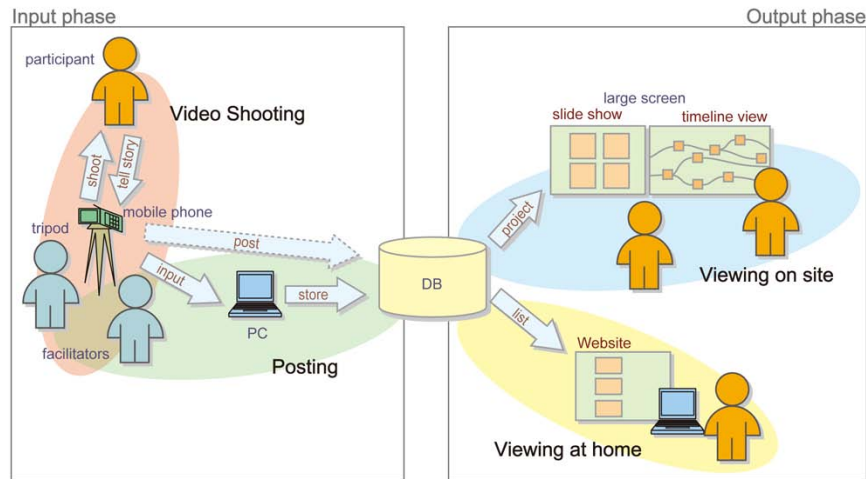


Figure 7. Usage scenario of the system



Figure 8. Screenshot of timeline view

and randomly selected two videos at a same time. Timeline view is designed to show whole connections of videos (Figure 8). In the view, nodes represent videos and arcs represent connections. The x-axis direction stands for time and the view can be scrolled in this direction. A participant can trace whole stories and can add her story. Participants who joined outside the venue have two options to see their own videos. They can visit the venue of course. In addition, we provide a Website which lists videos. They can browse stories at home.

4.3. Practice

We held the proposed workshop in conjunction with Ars Electronica festival² during 4th to 9th September 2008 in Linz, Austria.

In this practice, we set the theme as “mobile items.” Facilitators asked for telling stories about mobile items – things they had with. Asking questions from former participants as triggers, facilitators collected stories. Our aim here was to let people know that they can express

² Ars Electronica festival is one of the most popular media art festival held in Linz annually. See <http://www.aec.at/>.



Figure 9. Mobile video workshop

everything they experienced by letting them focus on mobile, i.e., common and usual things. This is also one of the reasons why we used a mobile phone.

To emphasize the theme, we coordinated the workshop with a motif of traditional Japanese travelers. When we travel, we bring a lot of things with us. In a past age like Edo era, traveling was much larger event for people. Ordinary travelers needed to bring everything without any conveyances on their journeys, so their items had to be light and compact. We regarded traditional Japanese travelers as mobile specialists. Facilitators wore costumes of travelers (Figure 9, left). With the costumes we also aimed to attract people to our workshop. We decorated the venue like a traditional teahouse; we served tea to participants so that they could visit and join freely and casually. The right picture of Figure 9 shows the venue. The systems were projected on screens on the walls.

The workshop was a participatory activity in the festival. Visitors could come in to and go out from the venue freely. We presented and explained our practice their and asked visitors to join. We also collected stories from ordinary people outside the venue; they were usually not included in the festival. Our practice was also a trial to connect citizens and the festival. In this workshop, we collected 218 videos.

This workshop cannot be conducted without the system. The relations among stories can only be seen through the system. Some of the participants outside visited the venue to see their contents and the whole connected stories.

5. Analyses and discussions

Through the first workshop, we aimed that participants exchanged their knowledge and got new ideas through collaboration and competition. Most of the works from the latter steps were created by remixing others' former works. Several photos are used repeatedly by many participants; the fact shows spreads of expressions inside the community. One participant, however, didn't change his mind finally. He preferred creating by himself rather than through collaboration. Our method cannot be applied to all the people; this seems quite natural.

Our purpose in the second workshop was to make participation easy and casual. As we described above, we collected 218 videos (218 participants) in six days. Perhaps this number seems small, compared to numbers of posts in some popular user-contributed Web sites. In an actual place, there are non-active people unlike in some Web sites, where only active users gather. In the workshop additionally, many interesting stories were drawn from conversations during participations, only parts of which were captured in videos. We could collect and connect stories not only from visitors to the Ars Electronica festival but also from citizens in Linz city. Some participants taken outside the venue visited the venue later to see whole stories. From these points, we think that the workshop was opened to some extent.

The detailed analyses on these workshops are described in past papers [10, 13] and will be in future papers. The systems used in these workshops worked properly for the respective purposes. The ways of connecting contents in the system differed according to orientations of the practices. In the first workshop where participants collaborated in an introversive community, contents were connected by shared partial expressions. In the second practice, the system visualized extroversive relations among contents to connect participants. In other words, while activities in the first workshop had extension in temporal direction and ones in the second did in spatial direction, contents in the first had synchronic connections and contents in the second had diachronic connections, paradoxically. This result is not by design. We designed the systems just based on the programs of practices. Our future work includes the opposite approach; we will design a system to connect contents both in introversive and extroversive ways and install it into a workshop. We expect that we can realize deeper and wider collaboration.

6. Conclusion

For the purpose of supporting ordinary people to express their stories, we designed two types of participatory workshops and developed the systems for them. In this paper, we introduced our practices and analyzed them.

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