Kwento: Using a Participatory Approach to Design a Family Storytelling Application for Domestic Helpers

Kakit Cheong, Alex Mitchell

Kwento: Using a Participatory Approach to Design a Family Storytelling Application for Domestic Helpers

Kakit Cheong and Alex Mitchell

Department of Communications and New Media
National University of Singapore, Singapore
kakit@nus.edu.sg, alexm@nus.edu.sg

Abstract. The recording and sharing of family stories remains an important part of what it means to be a "family". While there is prior research into supporting storytelling for families living apart, there remains a gap in understanding and supporting family storytelling for migrant workers. To address this gap, we explored how technologies could be designed for domestic helpers. Nine domestic helpers were recruited and divided into three design teams. The participatory design sessions and cultural probe findings led to the design of *Kwento*, a prototype mobile application that uses prompts to encourage helpers to reflect upon their personal experiences.

Keywords: Family storytelling, migrant workers, participatory design, cultural probes

1.   Introduction

There are various reasons for families, especially families living apart, to share stories. In addition to maintaining close bonds and helping family members to make sense of difficult or traumatic experiences, stories are also a key way for family members to share significant personal experiences that they hope will be remembered and retold. Traditionally, these stories have been shared face-to-face. However, in recent times, more families are geographically distributed for a variety of reasons.

For example, in Singapore, many families with two working parents employ female domestic helpers to perform duties such as cleaning the house, taking care of children or elderly family members, cooking and grocery shopping [1]. Unlike other migrant workers who are employed in the construction or manufacturing industries, these women work as "live-in" maids and are required to stay with their employers. As a result, these women often spend many years working in challenging environments. Prior research shows that such helpers are typically restricted in terms of access to information and communication technologies [2]. Most helpers are also only given one "rest-day" every week or fortnight, and are discouraged from taking part in social activities outside of the house. Given these conditions, these women may not have sufficient opportunities to share about their lives with their families.

This raises the question: how can technologies be designed to help families living apart to share significant personal experiences? To address that, our paper focuses on the design of a mobile application that supports family storytelling for a specific group: migrant domestic helpers in Singapore.

2.   Related Work

Related work includes the use of technologies by migrant families, and the design of systems to support family storytelling. We now briefly survey this work.

2.1   Use of technologies by migrant families

There has been a considerable amount of research that investigates how migrant families make use of information and communication technologies (ICTs) to stay in touch. A study by Wong-Villacres and Bardzell examined the role that technologies play in supporting long-distant relations between migrant parents and left-behind children in developing countries like Ecuador. They found that due to their separation, such families lacked common experiences resulting in children desiring a "private channel for communication" [3].

Lu Pan et al. also sought to uncover how migrant workers in China made use of ICTs to communicate with their left-behind children. Their study revealed that the mobile phone remains as the primary communicative device for such families. Additionally, the study also showed that both parents and children expressed a strong desire for more in-depth interactions, for example, more than half of the children interviewed said they wanted to share about events at school or at home [4]. As a final example, Odour et al. present an exploratory qualitative study on how technology supports family communication in different parts of Kenya. Similar to the other papers, they found that communication for such families typically revolves around "economic support, life advice and the everyday coordination of activities", leaving such families with limited opportunities for the sharing of personal experiences [5].

2.2   Systems supporting family storytelling

There is also existing research on family storytelling systems that can be categorized into two groups: synchronous storytelling systems and asynchronous systems.

Studies in the first group often focus on supporting synchronous storytelling over video-chats. An advantage of such systems lies in how video communication is currently able to replicate the experience of face-to-face communication to a large extent. For example, a study by Ames et al., found that video-chat allows users to express themselves with facial emotions, hand gestures and other non-verbal cues. In addition, the study showed that video-chats were often set up in such a way that the screen was broadcast into a room, allowing different family members to enter or leave the conversation [6].

The second group of studies focuses on supporting asynchronous family storytelling. These studies typically acknowledge that coordinating a time for both parties may prove challenging. For example, one study observed a tension between generations as grandparents claimed they were reluctant to share stories with their children as they did not want to bother them. In response, the study proposed a system that allowed for grandparent to record their stories, which their children or grandchildren could view at their own convenience [7].

3. Research Focus

While there has been extensive research on how migrant families use ICTs to communicate, these studies do not focus specifically on how such families use ICTs to share stories. At the same time, while there have been prior studies on supporting family storytelling, these systems do not consider the specific circumstances faced by migrant domestic helpers. This paper therefore poses the following question: how can we design a family storytelling system that addresses the needs of domestic helpers?

4. Methodology

For this study, nine domestic helpers were recruited via snowball sampling from two local churches. We made use of snowball sampling, as it is a useful technique for reaching difficult to locate participants like migrant workers. In addition, given the sensitive nature of some personal experiences, it was important for the researchers to build rapport with the community before the women would agree to the study. All of the participants were females, 26-39 years old, and from the Philippines. In terms of working experience, some had worked in Singapore for a few months while others had worked for 10 years.

We divided the participants into three design teams, each consisting of three participants. Collaboration with the participants took place over three sessions, each lasting between an hour and ninety minutes: 1) a focus group, 2) a design session and 3) an evaluation session. The entire study took place over a period of four months.

As none of our participants had any design experience, we began the focus group with an explanation of the concept of participatory design. Drawing upon prior research, our study defines participatory design as "a democratic approach to design by creating a platform for active end-user participation in the design process" [8]. To encourage active participation, we stressed that all aspects of the proposed solution would be open to the participants' suggestions and feedback. Following this, participants were asked to share how they currently made use of technology to share stories with their families, and any problems they faced. They were then asked to discuss their initial ideas for possible solutions. Finally, the participants were provided with a cultural probe pack consisting of a Polaroid camera and writing material and given between two weeks to capture significant personal experiences for discussion in the design session. As Gaver explains, cultural probes are designed to provoke inspirational responses and provide fragmentary clues about their lives making them valuable in inspiring design ideas that could enrich people's lives [9]. More importantly, given the participants' work environment, we felt that probes would allow us to gather tacit information in an unobtrusive manner. We shared suggestions for use of the camera, such as capturing significant people, places or events in their lives. At the same time, we stressed that such suggestions were for inspiration only and that the women could be as creative as they wanted.

During the design session, participants were asked to present the photos and the stories they recorded using the probes. Next, they were asked to group their photos to uncover dominant themes. We also paid attention to the intended audiences of the

stories and how the women hoped to share their experiences. After this, the participants were shown three existing storytelling applications[1] to familiarize them with common features and interfaces. The remainder of the session was devoted to coming up with usage scenarios and features for the proposed solution. With the exception of the first group, the other two groups were presented with the design ideas proposed by the previous groups and asked to critique and build upon these designs. It is important to note that this critique was done only after each team had finished proposing their ideas. We chose to adopt this "mixing ideas" technique as it remains a useful way of merging individual ideas into larger, collaborative ideas [10].

Between the second and third session, a low-fi mockup of the prototype was put together by the researcher, which was then evaluated by the design teams in the final session. During the evaluation session, participants interacted with the mock-up and provided feedback on the system. For example, to evaluate the usefulness of the reflective prompts, participants were asked to create a story using one of the prompts. Prompts that were deemed unsatisfactory were then removed.

Following the sessions, the researchers carried out inductive coding on the researcher notes taken during the sessions, as well as on the probe pack materials gathered by participants. As Seidman points out, inductive coding is useful for condensing raw textual data into a brief summary format and to establish clear links between research objectives and the summary findings from the raw data [11]. From this, we were able to sort low-level codes into broader themes. For instance, *suggestion, topic, inspiration* were grouped into the theme of *prompts or triggers*.

Having described our study procedures, in the following sections we will present the key findings from the focus group, followed by the results of the design and evaluation sessions.

5.   Challenges Faced by Domestic Helpers

The focus group was intended to introduce participatory design to the helpers. In addition, we wanted to examine the specific challenges faced by such women when trying to share stories about their lives and explore possible technological solutions.

First, participants shared that their current working conditions did play a role in preventing them from sharing stories with their families. For example, helpers said that they were expected to work an average of ten to fourteen hours a day, making it difficult to communicate with their families. Some helpers were also restricted in their access to technology, with employers choosing not to provide them with access to the household Wi-Fi.

Next, the focus group findings support prior literature which point out that migrant workers tend to prioritize hearing updates about their families [5]. As such, they often

---

[1] Storehouse (https://www.storehouse.co/)
  Touch & Tell (http://www.touchandtell.net/)
  Storyworth (https://www.storyworth.com/)

have limited opportunities to share about their own experiences, despite the fact that they have a strong desire to.

Finally, the findings suggest that these women currently perceive themselves to be unable to **"do more"**. As one participant shares, "*every day we do the same things, clean the house and take care of the children. If we go out, it's to church or to send money, so quite hard to think of stories to share*" (Participant 2). Interestingly, the cultural probes strongly suggest that this perception may not always be accurate. For example, after using the probes, the same participant shared that the activity was able to motivate her to reflect and find significance in some of her daily activities. For instance, she showed us a picture of a bus, explaining: "*when I first come here, I always lost and I will get very scared. Now I know this bus go where and I am happy that I learnt to be strong… when my daughter wants to work overseas, I will share such experiences to teach her*".

6.   Design Requirements

Beyond the challenges faced by such women in the focus group, the participatory design and evaluation sessions uncovering requirements for our proposed design solution. Two themes emerged from the coding process: the need for a system that is both safe and suitable for use in the participants' working environment, and the need for prompts or triggers to encourage reflection and storytelling. We now discuss the design requirements implied by these two themes.

6.1 Systems that are "safe and suitable for work"

The first requirement that emerged from the design sessions was for the proposed solution to be both practical and suitable for their work environments. Therefore, taking into consideration that they have limit access to technology, the design teams suggested a mobile application. As previously mentioned, the mobile phone remains the primary and often, only communication device for such workers. The participants also pointed out that most helpers are reliant on pre-paid data cards that they have to purchase every month. As such, they are not willing to use applications or services which required them to be online all the time. Participants also acknowledged that given their working hours, they would only be able to spend between fifteen to thirty minutes a day to record their personal experiences. This suggests that the system should reduce the time taken to record a story.

The participants also expressed that it was important that they would have complete control over the audience of the recorded stories. As one participant shares, "*I used to share on Facebook, but one day, I see my employer there also. After that I change my account name and don't post anymore*" (participant 8). Another woman added, "*Facebook all that is too open, I am not happy to share about my problems with everyone, just my sister and some close friends*" (participant 5). As a result, the mobile application the participants proposed allows users to share their stories with a closed network of family members and confidants.

6.2 Prompts or triggers

Another theme we identified was the difficulty of thinking of what personal experiences to record. To address this, the design teams suggested a system that could prompt or guide the users on possible stories to record and save. Based on the design sessions, we propose two types of prompts to aid users: 1) reflective prompts and 2) meta-cognitive prompts.

Our participants shared that when using the cultural probes, some were initially unsure of what to record. In response, they would speak with other members of the team to "*be inspired*". Additionally, we noticed that the participants often relied on asking one another questions to determine what experiences would be worth sharing. Examples of such reflective prompts include questions like "What was the first meal you had in Singapore?" and "What is something you wish you had known about Singapore before leaving the Philippines?" Apart from these text prompts, participants suggested that previously taken photos could also be used to encourage reflection. For example, a participant mentioned how she went through her entire phone media library to determine what types of stories to write. Prior studies have also shown the value of using photos to support everyday reminiscence [12].

Interestingly, a study by Nuckles et al. found that meta-cognitive prompts were effective in optimizing journal writing by students. As they explain, such prompts can be conceived of as "strategic activators" given how they encourage "learning strategies that the learners are in principle, capable of, but do not spontaneously demonstrate, or demonstrate to an unsatisfactory degree". We feel meta-cognitive prompts will help to change users' perception that they are not able to "do more" [13].

7. Proposed System: *Kwento*

We now describe our low-fi prototype that emerged from the participatory sessions. *Kwento* (Tagalog for story) is a mobile application that is specifically designed for use by helpers to create and record personal experiences without Internet connectivity. To minimize the amount of data used, users can choose to upload or download their stories on their rest days when they are able to access free public Wi-Fi. The story creation page has also been designed to reduce the amount of time needed to record a story. For example, users can choose to import or take new photos with their phones. From there, users can type out or voice-record their stories.

The main feature of the application lies in the implementation of prompts to encourage self-reflection (see Figures 1a and 1b). Each time a helper logs in she is free to choose from two types of reflective prompts: 1) a question or 2) a randomly selected image. The reflective questions were taken directly from the sessions to ensure other helpers would find such topics relevant. Acknowledging that some users prefer more open-ended prompts, users can also choose to receive a randomly selected photo taken from their phone. From there, they are encouraged to examine the photo or image and reflect if there is an interesting experience worth sharing.

To address the perception issue, we also included meta-cognitive prompts (see Figure 1c). As Efklides and Vauras explain, metacognition refers to the "knowledge

and awareness of one's cognitive processes and ability to actively control and manage those processes" [14]. To support this awareness, when a user saves her story the application asks her what problems she faced when writing the story, and then provides relevant suggestions when she starts writing her next story. The design teams feel that such prompts will assist the user to be aware of which aspects of the story recording and sharing they find difficult. More importantly, these prompts may guide users to think of strategies to overcome these difficulties. For example, if the user feels that her stories are too short, she can indicate this, and the application will prompt her to include more details from similar experiences in her next story.

Figure 1: Low-fi prototype showing a) text-based prompt, b) photo prompt and c) meta-cognitive prompt

8.   Conclusions and Future Work

In this paper, we have presented the findings from our study investigating the family storytelling needs of migrant domestic helpers in Singapore. The results of the focus groups strongly suggest that such women perceive themselves to be "unable to share more" as a result of their work environments, despite the fact that they do, indeed, have stories to tell. Through the participatory design sessions, we were able to collaborate with the intended end users to design a low-fi prototype. The next step will be to build the full application. Once completed, the system will be deployed with a new pool of participants to evaluate the strengths and limitations of the system.

Acknowledgements

References

1.   Quek, K.M.-T., *The Evolving Challenges of Modern-Day Parenthood in Singapore*, in *Parenting Across Cultures*. 2014, Springer. p. 145-161.
2.   Yeoh, B.S. and M.A. Soco, *The cosmopolis and the migrant domestic worker*. cultural geographies, 2014. **21**(2): p. 171-187.

3. Wong-Villacres, M. and S. Bardzell, *Technology-mediated parent-child intimacy: designing for Ecuadorian families separated by migration*, in *CHI '11 Extended Abstracts on Human Factors in Computing Systems*. 2011, ACM: Vancouver, BC, Canada. p. 2215-2220.

4. Pan, L., et al., *An exploration on long-distance communications between left-behind children and their parents in China*, in *Proceedings of the 2013 conference on Computer supported cooperative work*. 2013, ACM: San Antonio, Texas, USA. p. 1147-1156.

5. Oduor, E., et al., *How technology supports family communication in rural, suburban, and urban kenya*, in *Proceedings of the 32nd annual ACM conference on Human factors in computing systems*. 2014, ACM: Toronto, Ontario, Canada. p. 2705-2714.

6. Ames, M.G., et al., *Making love in the network closet: the benefits and work of family videochat*, in *Proceedings of the 2010 ACM conference on Computer supported cooperative work*. 2010, ACM: Savannah, Georgia, USA. p. 145-154.

7. Bentley, F.R., S. Basapur, and S.K. Chowdhury. *Promoting intergenerational communication through location-based asynchronous video communication*. in *Proceedings of the 13th international conference on Ubiquitous computing*. 2011. ACM.

8. Wakil, N. and P. Dalsgaard, *A Scandinavian Approach to Designing with Children in a Developing Country - Exploring the Applicability of Participatory Methods*, in *Human-Computer Interaction – INTERACT 2013*, P. Kotzé, et al., Editors. 2013, Springer Berlin Heidelberg. p. 754-761.

9. Gaver, B., T. Dunne, and E. Pacenti, *Design: cultural probes.* interactions, 1999. **6**(1): p. 21-29.

10. Guha, M.L., et al., *Mixing ideas: a new technique for working with young children as design partners*, in *Proceedings of the 2004 conference on Interaction design and children: building a community*. 2004, ACM: Maryland. p. 35-42.

11. Seidman, I., *Interviewing as qualitative research: A guide for researchers in education and the social sciences*. 2012: Teachers college press.

12. Peesapati, S.T., et al., *Pensieve: supporting everyday reminiscence*, in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 2010, ACM: Atlanta, Georgia, USA. p. 2027-2036.

13. Nuckles, M., et al., *Short-term versus long-term effects of cognitive and metacognitive prompts in writing-to-learn*, in *Proceedings of the 8th international conference on International conference for the learning sciences - Volume 2*. 2008, International Society of the Learning Sciences: Utrecht, The Netherlands. p. 124-131.

14. Flavell, J.H., *Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry.* American psychologist, 1979. **34**(10): p. 906.