Collaborative Intergenerational Appropriation: Designing for Distance-separated Grandparents and Young Grandchildren

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Abstract

Grandparents and young grandchildren naturally like to communicate using technology when they are separated by distance. Parents usually have a great role in this communication by providing some level of scaffolding. In order to design a communication system for this demographic that can be easily adapted and adopted by all the parties involved in this communication, we conducted a study to understand their communication practices. Then, we proposed a system based on everyone's needs and desires. Our ultimate goal is designing a system in a way that all family members involved in this communication can easily appropriate and make use of as part of their domestic routines.

The Importance of Appropriation

Due to new advances in communication technologies over the last several decades, many researchers in the CHI and CSCW communities have focused on exploring different ways in which family members appropriate and make use of technology as part of their domestic life [4,5,7,10]. A key to design for collaborative appropriation is gaining knowledge about all of the

groups of people involved in using the proposed technology along with their interests, routines, desires and expectations.

There are several studies focusing on understanding families and friends' relationships and practices in order to explore how to design technology to fit within and extend the routines of friends and family members [2,4,8,10]. The goal is to design a new technology that can be more easily adopted by the users and as a result can increase the chance of users' acceptance of the proposed technology.

Statement of Interest

Advances in communication technologies make it easier for distance separated family members to accommodate separation in their daily lives, however, the constant changes in their needs, expectations and life style would require the designers of future communication technologies to be aware of these changes to design systems that would be easier adapted and adopted by family members.

There are several systems designed to support the need of being connected while separated for family members in general or for several specific demographic such as young children and their remote parents (in divorced families), long distance couples or grandparents and grandchildren [3,4,9,11].

We are focusing on designing technology to connect grandparents and their young grandchildren over distance. Our main focus is to enable distance-separated grandparents and grandchildren to build their relationship in a way that is similar to how collocated grandparents and grandchildren can build it by

supporting easier and flexible communication platforms that consider the needs and desires of both parties.

We are interested in participating in this workshop to discuss how to design communication technology for distance-separated grandparents and their young grandchildren (between age of 5 to 12) that can be adopted and used by all involved parties including grandparents, parents and grandchildren. We believe that designing for this demographic is challenging due to the differences in age, motivations and life style.

Our First Study

Several systems have been designed for grandparents and young grandchildren, mainly focused on communication through shared activities such as book reading or playing games to engage young children in communication with their remote grandparents [3,9]. In contrast, we wanted to design a prototype that focuses on providing awareness and supporting direct conversation—where grandparents and grandchildren might share their personal stories, achievements and experiences—and enables them to be more involved in each other's daily life through conversation and awareness.

However, we realized that we did not have enough knowledge about distance-separated grandparents and grandchildren's communication routines in order to design such a system. We also did not know enough about grandparents, parents and grandchildren's desires, expectations, needs and any challenges that they might face in order to communicate over distance. This lack of knowledge about challenges motivated us to run a study to learn about design requirements for a system that can be adopted and adapted by all parties

involved in this communication. For this purpose, we conducted a semi-structured interview and diary study that explored the communication routines, needs and expectations of all involved parties in grandparent-grandchild communication.

We recruited 20 participants including 10 grandparents and 10 parents of children between 3 and 10 years old who were living in different locations than their grandparents. Our study was largely focused in Vancouver, Canada but we also had participants from other countries, e.g., United States, Iran and Australia. Some of those who lived in Canada had other cultural backgrounds and had migrated from other countries, e.g., Italy, Albany, Iran, India, Ukraine and Brazil. Some grandparents and grandchildren in our study were living in different cities and some were living in different countries. Full description of the study as well as the results could be found in [1].

Lesson Learned from the First Study
Through this study we found that limited awareness and lack of truly knowing one's grandchild is one of the major issues stated by the majority of grandparents who had been geographically separated from their grandchildren. This makes it challenging for them to communicate using computer-mediated communication. In the following we will talk about some of these challenges.

Lack of Awareness
We realized that children are not good at verbalizing their daily events and they usually talk about very recent and immediate happenings that occurred just before the communication. As this communication might not be very frequent, many updates might be missed. On the other hand, grandparents are interested to know almost every detail about the children's lives but they are not confident to ask questions and fear that they might annoy their grandchildren or the parents.

Communication Frequency and Timing
We learned that grandparents desire to communicate with their grandchildren on a weekly basis or a couple of times a week. This is not surprising as grandparents usually have more spare time and like to be involved in their grandchildren's daily life and development. However, this frequency might not be always desired by young children or parents due to a lack of motivation or their busy schedule. In terms of timing, we found that young children get bored after a short time when communicating due to their limited attention span. They also do not like to be distracted and be asked to join conversations while they are playing. As a result, somewhat random and long communication exchanges are, at times, annoying for them.

Mismatched Life Schedule
In addition, our results showed that grandparents and young children have a different life style and schedule. Grandparents have more free time but also might not be always available or in the mood to talk because of physical issues or age-related problems. Young children have less free time because of school work and their leisure activities. They may also not be in the mood to talk when they are asked to communicate with their grandparents.
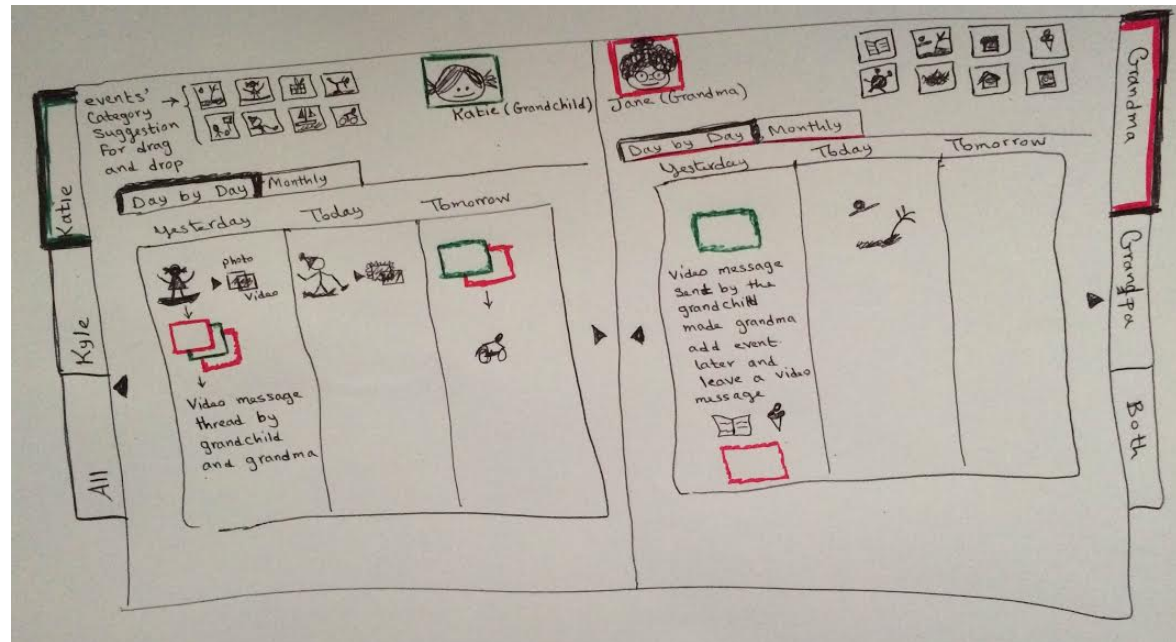
Figure 1. Initial sketch of User Interface

In current communication episodes, grandparent-grandchild communication usually happens as part of parent-grandparent communication and, if not, parents are mainly needed for scaffolding. As a consequence, parents also need to be ready and available. So, finding a time that works for everybody might be difficult.

Engagement
Young children have a difficult time engaging in direct conversation. In distance-separated grandparent-grandchild relationships, grandparents have less awareness of their grandchildren's daily life. So,

grandparents have a harder time coming up with topics to talk about with their young grandchildren. In order to engage grandchildren to talk, remote grandparents actively try to learn about their grandchildren's interests and routines and then focus on these during the conversations. However, on the other hand, distance-separation made some grandparents feel apprehensive and self-conscious when they interacted with their grandchildren and they did not want to bother their grandchildren or their parents by asking too many questions or reminding them about any unpleasant experience.

Our Proposed Prototype

Based on our findings and in order to address some of the challenges in the current communication patterns mentioned above, we decided to design a personalized event-sharing, video messaging communication system for grandparents and young grandchildren with the goal of providing awareness information and support for more flexible and asynchronous communication.

Figure 1 illustrates one of our first sketches of the user interface. At the most basic level, it is a shared calendar that includes asynchronous video messaging and photos viewing and sharing features.

As illustrated in the figure, the interface is divided into two separate spaces: one for the child(ren) (Figure 1, left) and one for the grandparent(s) (Figure 1, right) where different life events can be added in different views. Events are shown with symbols that are small drawings representing them. These are intended to appear like stickers in order to help make the system fun to use. They are also somewhat ambiguous where the goal is to try to spark further conversation about the events. The system will be running on a dedicated touch tablet. The tablet can be used as a digital frame hanging on a fixed location in a child's room, placed in a common area such as living room or kitchen, or installed and setup on a movable stand. Users will use a touch screen to interact with the system. The system could be used by grandparents, parents and multiple children in the family. The system has two main functionalities.

Shared Awareness
Users can update each other about any of their daily activities such as family trips, school trips, sport activities, etc. They can also add some related materials such as photos or videos. Using this information, grandparents can be updated about what their grandchildren are up to and they get to know what is happening in their life.

Exchanging Video Messages
This functionality supports asynchronous communication where users can exchange a video of themselves telling the other person a story about an event or asking each other to add a story, photo or video for an event on the shared calendar.

Design for Appropriation

A key feature in our design is supporting flexibility in communication along with enabling grandparents and grandchildren to maintain awareness about each other's daily routines. We hope that by providing this flexibility, grandparents and grandchildren can adopt this event-sharing communication tool as part of their daily routine in ways that make sense to the relationship.

Having a calendar platform that each party can use to share event information could provide the awareness information that grandparents and, in turn, grandchildren want. This information could trigger conversation and promote meaningfulness in the communication.

Mismatched schedules and availability as well as time zone differences made us focus on an asynchronous communication tool instead of a synchronous one. We believe that this type of communication can be easily adopted by families since the proposed system would not aim to disrupt their current routines. In our study,

we found that there were several moments that children were asked to join a conversation, but as they were playing or were not in the mood, they rejected this request. This rejection sometimes was upsetting for grandparents who were available on the other side of the line. Exchanging video messages can be an alternative to synchronous communication where grandparents and their grandchildren could communicate based on their own schedule. Thus, our system could provide them with a platform to negotiate and choose different topics to talk about. These decisions could be triggered by the events that are shared between them on our proposed calendar.

Also, we found that grandparents usually let children direct the conversation and they typically do not have a clear understanding if their own activities might be interesting for their young grandchildren. The ability for both grandparents and grandchildren to share their life events may provide them with opportunities to learn about what interests them most over time.

Finally, we plan to evaluate the system with a small number of families to get first hand experience of how grandparents, parents and grandchildren would engage collaboratively to adopt and adapt this new technology to meet their needs and desires. In addition, through this field evaluation, we are trying to uncover the participation of parents in appropriating this technology.

References

[1]   Forghani, A. and Neustaedter, C. The Routines and Needs of Grandparents and Parents for Grandparent-grandchild Conversations over Distance, In *Proc. CHI 2014*, *ACM Press (2014)*, 4177-4186.

[2]   Forghani, A., Venolia, G. & Inkpen, K. (2014) Media2gether: Sharing Media during a Call, In Proc. GROUP 2014, ACM Press (2014).

[3]   Follmer, S., Ballagas, R., Raffle, H., Spasojevic, M., and Ishii, H., People in books: using a FlashCam to become part of an interactive book for connected reading. In *Proc. CSCW 2012, ACM Press (2012)*, 685–694.

[4]   Neustaedter, C., and Greenberg, S. Intimacy in long-distance relationships over video chat. In *Proc. CHI 2012, ACM Press (2012)*, 753-762.

[5]   Judge, T.K., Neustaedter, C. and Kurtz, A., The Family Window: The Design and Evaluation of a Domestic Media Space. *In Proc. CHI 2010, ACM Press* (2010).

[6]   Neustaedter, C., and Brush, A.J., "LINC-ing" the Family: The Participatory Design of an Inkable Family Calendar, *In Proc. CHI 2006*, *ACM Press (2006)*.

[7]   Neustaedter, C., Brush, A.J., and Greenberg, S. The Calendar is Crucial: Coordination and Awareness 4 through the Family Calendar, ToCHI, 16 (1), 2009, *ACM Press (2009)*.

[8]   Neustaedter, C., Elliot, K. and Greenberg, S., Interpersonal awareness in the domestic realm. *In Proc. OzCHI*, *ACM Press (2006)*, 15-22

[9]   Raffle, H., Ballagas, R., Revelle, G., Horii, H., Follmer, S., Go, J., Reardon, E., Mori, K., Kaye, J., and Spasojevic, Family story play: reading with young children (and elmo) . *In Proc. CHI 2010*, *ACM Press (2010)*, 1583–1592.

[10] Tee, K., Brush, A.J. and Inkpen, K. Exploring communication and sharing between extended families. International Journal of Human-Computer Studies, 67 (2), (2009), 128-138

[11] Yarosh, S. Supporting parent-child interaction in divorced families. In *Proc. IDC 2008, ACM Press (2008)*, 33-36.