

The Grandtotem: Connecting Grandparents with Overseas Grandchildren

Mark Butzer, Zachary Levonian,
Yangyang Luo, Kathleen Watson, Ye Yuan

{butz0027, levon003, luo00130,
watso559, yuan0191}@umn.edu

UNIVERSITY OF MINNESOTA 

1 Motivation

When students study overseas, the grandchild-grandparent relationship is challenged. Meaningful communication is difficult! We see opportunity:

1. Reduce stress experienced by international students [1]
2. Tighten social threads with grandparents, to reduce feelings of isolation [2]

[1] Daya S. Sandhu. 1994. An examination of the psychological needs of the international students: Implications for counselling and psychotherapy. International Journal for the Advancement of Counselling 17, 4 (Dec. 1994), 229–239. <https://doi.org/10.1007/BF01407739>

[2] Azmina Karimi and Carman Neustaedter. 2012. From High Connectivity to Social Isolation: Communication Practices of Older Adults in the Digital Age. In Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work Companion (CSCW '12). ACM, New York, NY, USA, 127–130. <https://doi.org/10.1145/2141512.2141559>

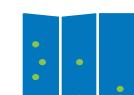
2 Formative Research



Grandchildren
Interview
& Design Activities



Grandparents
Interview
& Design Activities



Open Coding
& Affinity Mapping

3 Design Opportunities

Adapting to Technology

Communication methods affect the quality of communication.

“ Grandma? - she has been using (messaging) for the past year a lot more. So that makes it easier just to write someone quickly. - P6

Adapting to Changing Roles

Facilitators and schedules shift, abrupt lifestyle changes.

“ ...when I'm abroad, if there is communication with my grandparents [it's] through my parents. - P5

Adapting to Physical Barriers

Physical distance, time zone, changing routines.

“ So I feel like when I am there, it's really valuable, when I am distant, I don't know how valuable it (communication) is to her. - P2

4 Design Solution: Grandtotem

Notification LEDs

When new images or videos are sent to Grandtotem, white LEDs are triggered to softly pulse to unobtrusively draw the grandparent's attention to the device.

Digital Photo Frame / Video Message

The Photo Frame displays a dynamic slide show of pictures from the gallery. It also plays the selected media from the gallery. When the video camera is activated, the Photo Frame changes to Video Message view for grandparent to record and send video messages.

Base Touchbar

The grandparent can also send a lightweight “touch”, by physically touching the base of the totem, sending a low-obligation notification to the grandchild that their grandparent is thinking of them.



Video Camera

The grandparent can use the Grandtotem to record and send video messages by lifting the lid of the Grandtotem.

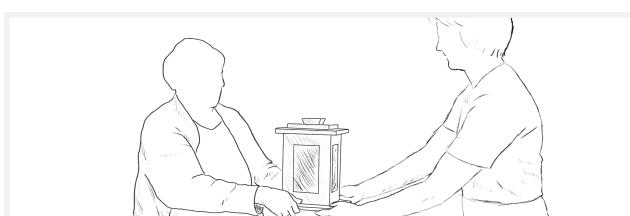
Thumbnail Gallery

The Thumbnail Gallery functions as a photo book of images received from the grandchild and a timeline of grandparent-grandchild relationship.

Mobile Interaction

Grandchild can use their mobile phones to capture videos and images, to send to the Grandtotem. They also receive notifications and messages from Grandtotem on their mobile phones.

5 How it works



Grandchild bought a Grandtotem and gave it to her grandmother as a gift before leaving home for school. When her grandmother sees it in her home she is reminded of the grandchild.



Grandmother touches the touchbar to let grandchild know that she is thinking of her. Grandchild gets a notification and uploads a video to the Grandtotem.



Grandmother sees the video on Grandtotem and decides to record a video and send to grandchild with Grandtotem.



6 Evaluation

We solicited feedback from potential users and performed demonstrations for three grandparents. We also set up mock interactions from grandchildren's perspective with international students.

- + Physical and interaction design feels intuitive and natural for grandparents to use;
- + The touchbar provides good alternative for grandparents who are not comfortable with videos to communicate with grandchildren;
- ! Notifications need to be more visible and persistent for both sides.

“ I like the fact that all this does is notify them that I'm thinking of them ... so this doesn't obligate anybody... (to respond). - G6