Family Connect: Bridging the gap between Grandparents and Grandchildren through an Interactive Story builder

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ABSTRACT

There is limited research on older adults with grandchildren's relationships and on large-scale samples. At the same time, the connection or their relationship is very short as well as limited. We are focused on older adults above the age of 65 years of age acting as grandparents, and grandchildren between ages 7 to 15 years. FamilyConnect is a visionary creative tool that might provide a solution for the problems between those who are staying separately from each other. It works like an interactive story builder; where both of them can create a game by telling a story. The aim of this paper is to show that there is a lack of research towards supporting the experience between grandparents and their grandchildren, and to provide what we believe can be a solution that realizes their experience.

Author Keywords

Older Adults; Elderly People; Grandparents; Grandchildren's; Interactive Story builder; Games; Interactive Games.

INTRODUCTION

Western countries in the recent decades have seen inferior fertility rates and higher life expectancy[1]. Individuals living with members of third and fourth generation families are increasing, as is the percentage of grandparents[2]. Besides there is raise in dual-working households and higher rates of parental separation and divorce. Therefore, grandparents are playing an increasing role in their grandchildren's lives as playmates, caregivers, advisers, financial supporters, and other roles[3][4]. The relationship between grandparent-grandchild is a potential importance for the development of the grandchild is increasingly documented[5]. On the other hand, it seems ties multigenerational family are more important than research on family, which is acknowledged till date[1].

Older adults are an assorted group, but one thing that they may nevertheless have in common is some life experiences, such as, becoming a grandparent, retiring or growing up with certain technologies[6]. In this project, we look to the

experiences that grandparents above the age of 65 years who are staying separately from their grandchildren may share as a starting point towards designing technologies for them.

FamilyConnect is an interactive story building tablet application for grandparents and their grandchildren where either one of them can create a story or pick a preloaded story and then tailor it by adding their own picture using camera, as the main character of the story. The application can record their environment and automatically creates levels and scenes from that recording. Also, they can add their voice recordings where they can provide guides, hints and explanations throughout the story. Finally, the game can be shared and the journey or the performance of the game can be followed through the recorded sessions (See **Figure 1**).

Figure 1. FamilyConnect main screen where users i.e., grandparents and their grandkids can create games by telling stories.

In the coming years, the use of wide range of technologies by grandparents[7] and grandchildren[8] will increase compared from past years. The technological solutions to strengthen their relationship are relatively less compared to parent and children. We can find new ways to strengthen their ties and provide them with joyful memories and valuable life lessons.

BACKGROUND

The recent research is driven towards planning for elderly people by the impression that the population of the world is ageing[9]. Within Sweden, 18% of the residents are seniors age 65 or older. Analysts predict that, by 2050, the country will have 2.3 million people in that age group[10]. Conversely, there are a numerous ways in thinking about what elderly age actually means, and how could it be identified.

Internet has been providing exceptional prospects for extended families and generations to stay in close contact, even when separated geographically. Seniors could be teachers, great models and influencers along with promoters of their cultural heritage and family history. Equally, grandparents or elderly people can be benefitted i.e., staying engaged and more active, a continuing sense of value and purpose and learning to use the internet and technology more in ways from their grandchildren[11].

Majority of the older adults prefer their home environment to perform activities[12], and technology could support ageing in this place[13]. A report by AARP[14] proves that older adults are ready to use broad range of technologies to remain independent as long as they maintain social connections to gather information, be safe at home, and promote their personal health and wellness.

On the other side, young children or grandchildren are been introduced to the field of technology at very early stage in their life. Nearly every school is now equipped with computers and two-thirds of the children in the world have access in their homes. Behrman et al., clarifies use of computers are helping children physically, intellectually, socially and psychologically[15].

Characteristics of Grandparent:
The maternal (i.e., relation to a mother) grandparents are more likely to be involved and to have better influential, supportive and authority-oriented relationships with grandchildren. Studies also prove that grandchildren are closer to have more contact with grandmother than their grandfather[16].

However, some studies show that long-distance relationship between grandparent and grandchildren could still be satisfied along with emotions. This is achieved by interacting through direct phone calls, correspondence and straight forward contact through face-to-face contact in youth years[17].

Characteristics of Grandchildren:
The literature proves that gender is not one of the variables for interactions between grandparent-grandchild[18]. Some studies also show that granddaughters are more emotionally attached with their grandparents than their grandsons[19][20]. Elder et al., shows grandparents are more likely to be involved in their grandchildren's life only if they are not doing well in school[21]. This might raise a

question what if the grandchildren are embodied within strong family ties can do well in school. Grandparents may signify protective factor when their grandchildren might be struggling in their career[22].

A study released in Feb. 2012 by **Microsoft** and **AARP** (**American Association of Retired Persons**) titled, **Connecting Generations**, found that teens are actually communicating more with their parents and grandparents, and vice-versa, due to the use of social media tools and other online tools that enable cross-generational interactions and richly rewarding connections. Learning how families are encouraging these cross generational interactions can help provide a richer online and offline experience for your family. Today, about 50% of seniors use the internet at least to do some basic things, but many are very tech savvy having been on the cutting edge of internet development during their careers[11].

The **Microsoft** and the **AARP** (**American Association of Retired Persons**) titled, **Connecting Generations (in United States alone)**, found out[11]:

- 83% of parents, grandparents and teens consider going online to be helpful forms of communication

- 30% of grandparents, and 29% of teens say connecting online helps them better understand each other

- 40% of teens help their grandparents go online

- 25% of teens communicate with their grandparents several times each week through social media

- 68% of those older than 39 have a page on social networking site

- 70% of teen say the computer increases the quantity of their communication with family members living far away, and (67%) say it increases the quality of those communications

RELATED WORK

Wayve
Wayve is a messaging device used within house. It was developed collaborating with F-Map, and stimulated with other positioned displays, specifically HomeNote and TxtBoard[23].

Isis story builder
Isis is a software authoring tool specifically for children where they create complex time-space combination stories by arranging and stacking "time boxes" on screen. Time boxes are electronic building blocks with drawings, cartoons, sounds, texts, photos and videos[24].

OUR VISION
We frequently hear that people have different priorities, dissimilar tastes, hobbies, styles, personalities and were taught that a decent solution is based on a comprehensive

study of a specific target group. By studying this group, interviewing, collecting data, scenarios and personas, we attempt to cultivate a solution that fits that targeted group as much as possible.

The mentioned method is not incorrect; it remained indeed as our initial approach, until we through that approach realized that our solution and target group is not necessarily specified. We came to conclusion that our solution is for a specific experience rather than a limited target group.

There is an experience that is shared and in common with most people. Most of us remember how exciting it was to hear stories from our parents and grandparents when we were younger. It was an engaging experience, mostly because the stories were tailored for us where the hero in that story was us. Even when we played for example board games, it was in a way or another customized for us, either by changing the rules or they letting us win.

Physical availability as a requirement being the key thwart can be sourced from different causes such as being in another country, health issues and so on. No matter the cause, the parts should be able to engage in that specific experience if they want to be linked to each other through that activity. Concomitancy limitations are eliminated for the current generation with the help of internet activity, yet not all activities are included within that subset.

That experience itself has one major limitation, which is physical availability. The persons involved in the experience must be available in order for the experience to occur. The availability of applications and solutions that try to realize this specific experience are limited; either by technology or by execution.

What we envision is the elimination of physical availability as a requirement in order for the child to enjoy that experience with their grandparents or parents.

The following scenario will attempt to offer a clearer depiction of what we are suggesting as a solution. Mr Gunnar is a 76 years-old retiree that used to work in the service sector. Since his retirement, Gunnar has been traveling around the world and visiting countries that he wanted to explore in his earlier days because of being full time employee. When he travels around, he still wants to be in contact with his remaining family members, which consists of his only daughter and his two grandsons, 10 and 12 years old.

Gunnar, as most of his generation, is not technologically perceptive; his daughter bought him a smartphone and a tablet. This helps him to communicate with voice, video and text with his family. However, when he video chats with his daughter and two grandsons, the grandsons do not really find the video calls as engaging and funny as when their grandfather is around and playing with them. Therefore, his communication and contact with his grandsons become somewhat limited.

The grandsons enjoy, when Gunnar is telling them tailored stories. At the same time, Gunnar will be filled with joy and love by the connection that he gets with them.

In order for this experience to take place even when Gunnar is not physically available, the solution must be created in a way that still promotes this connection without the traditional requirements. With FamilyConnect, Gunnar can create an interactive story for his grandchildren (See **Figure 2**). The way it works is that Gunnar can choose a story from the application and then tailor it by adding a picture of himself or his grandsons to be the main character of the story, or even customize the story line. He also has the freedom to create a story from scratch. Also, by using the camera of the tablet, Gunnar can record his environment and the application creates levels and scenes from that (See **Figure 3**).

Figure 2. The user can create a character from the character design menu.

Figure 3. The finished character can then be added to the level/scene.

Gunnar can then add his voice recordings where he guides and annotates for the children throughout the story. He can also add hints in the interactive story for children to benefit from. The interactive story can then be shared to his grandsons, and he can follow their journey either live or afterwards from the recorded session.

Technology

For all of this to happen, FamilyConnect must be intuitive and easy to use by the less technologically perceptive. Even if we take into account that future generations of the seniors are most likely to be more technologically perceptive, the creation of such experience is no easy task. Moreover, the other main users of this solution are children. Therefore no matter how technologically advanced future senior generation are going to be, the children still needs this solution to be as intuitive as possible.

Today, if we are to create such an experience, we would need concept artists, animators, technical artists etc. Even if we create an application today that is easy to use, the technological limitations would be a hinder for this solution. We cannot simply wave around the tablet camera and automatically create a game or story level where we also put our customized characters that automatically are being animated.

There is however very good progress within this field, where 3D-scanning software are getting better and more widespread[25][26]. There are 3D-scanning applications for e.g. Android phones, iPads and the Xbox Kinect [27][28][29]. The users of Android software can create a 3D image with the built in camera of a smartphone, but that is where it stops today. The next step in order for our vision to be realized is for the 3D scan too easily be turned into a game level with characters (without knowledge of animation or 3D design).

CONCLUSION

As engineers, we tend to have technology as a starting point for our problem solving. We also try to see everything as functions, equations etc.

Old habits die hard, and being relatively new to this field, we started our journey as engineers. Instead of having the experience or the people as a starting point, we jumped into technology and tried to customize a solution for the technology, and not customize the technology for the solution. What we have to realize is that aging does not align the interests and habits of people. It might change the way they perform these activities, but the interests of these activities stay the same. The feelings of independency are still appreciated, as well as the intuitive solutions for keeping their interests.

Presenting a "solution for elderly" is rather a problem because the solution is based on and seen from the wrong perspective. We discovered the experience to be the center of this research and vision. From the experience, we can explore different possibilities in order to make this experience possible in different situations.

Current technologies are advancing but not developed enough to be used practically for helping to realize the experience. We feel FamilyConnect will help in bridging the gap that exists today.

LIMITATIONS

The FamilyConnect solution is a concept that we believe can be available in the near future depending on the progress within technological fields mentioned earlier.

The solution itself is focused on both the grandparent and the grandchild; however, during our limited research time we did not get as much input from the grandchild part of the solution as we wanted.

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