

Ageing and Connection:

What are the issues and challenges faced by the elderly in their adoption of technology?

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ABSTRACT

This study explores how older users apply technology in their daily life, and what issues and challenges may prevent them from using certain technologies. This research examines existing studies in the field, and approaching older users as part of several studies. Research methods include survey, focus group and card-sorting activity. The research participants are divided into three categories, namely i) independently living individuals, ii) nursing home residents and iii) Brisbane Seniors Online (BSOL) members. These, along with the existing literature examined, provide insight into the issues involved. The findings show that while all three groups differ with the use of technology and challenges faced, the use of technology decreases as age increases. Other barriers to the adoption of technology such as physical, mental conditions, cost and memory are also found.

Keywords

Ageing; gerotechnology; contextual study; user research; technology; challenges of ageing.

INTRODUCTION

Global statistics

For the first time in human history, declining fertility rates and increased life expectancy will mean that by 2045 there will be more people in the world over the age of 60 than under the age of 15 (United Nations, 2009). The implications of this vary, spread across several fields including health and economics. Technology and its usability will be a key area; with a larger percentage of the population being over the age of 60, they will form an increasingly large segment of the market for technological devices.

Physical barriers

Certain technologies will stand to improve the quality of life for older adults with a user-centred design approach. Modern technology as such a mobile phone benefits many users today by providing a convenient and portable way of contacting family, friends or emergency services at short notice. However, as users face various physical and mental changes in the process of ageing, which their younger counterparts do not share, their experiences with technology may be affected as a result. The effects of ageing varies between individuals due to a number of factors, but tend to be centred around the following areas (Pattison, M., & Stedmon, A. W., 2006):

Vision - Influences how well a user is able to use graphical user interfaces, from ability to see the screen to identifying

specific details. Visual impairment may range from partial loss to full blindness. Visual abilities tend to decline at varying ages, ranging from childhood to midlife, depending on the specific aspect of vision.

Hearing - Affects interaction with audio-based notifications and feedback, not to mention applications that use two-way voice communication. As with vision, ageing can lead to changes to or loss of hearing, with factors such as work exposure, diet and genetics having an effect either way. Generally, by age 50, there is frequently sufficient loss of hearing to cause some level of impairment.

Motor Functions - An important consideration for most forms of user input, particularly where touchscreens, buttons and other potentially high dexterity input is required. Ageing usually leads to a decrease in strength, dexterity, endurance and range.

Cognition - Diversely affects technology use, particularly in remembering how to use it (and, in some cases, to use it in the first place). Memory decline actually varies between different types; typically, working memory capacity remains the same (while its efficiency declines), long-term memory declines, semantic memory is maintained and procedural memory may decline (depending on complexity of memorized procedures). While reaction time declines with age, language faculties and the ability to learn is retained.

With effects of ageing being quite diverse, potentially affecting several aspects of technology use, it is important to consider this older user group in design. But there are other factors at play, such as psychological and social aspects of ageing.

Mental barriers

Stigma and social identity are also barriers that prevent some older users from using assistive technology such as home monitoring systems, wearable tracking/emergency pendants and emergency buttons (Rodeschini, 2011). The challenge here is sociopsychological and involves accepting the need for assistance as well as the social expectation of the lack of participation in technology from the older demographic.

Research finds that while technology is commonly used for medical and behavioural monitoring purposes in the care of the elderly, it does not decrease the level of isolation often experienced by the ageing population (Blythe, Monk & Doughty, 2005). This presents a need for technology that not

only assists older people medically, but also socially, which is shown to improve the long-term well-being of older individuals living independently (Bennett, 2009).

Ecology of Ageing

The Ecology model of Ageing (DiSalvo, Forlizzi & Gemperle, 2004) suggests that the experience of ageing depends on the interactions between people, products and activities which are set in the environment of home and the local community, thus highlighting that changes in one component results in changes in all other components to an extent due to their complex interdependence. The map in Figure 1 shows an example of the model, which visually demonstrates the relationships between a user's interactions with various products, people and environments.

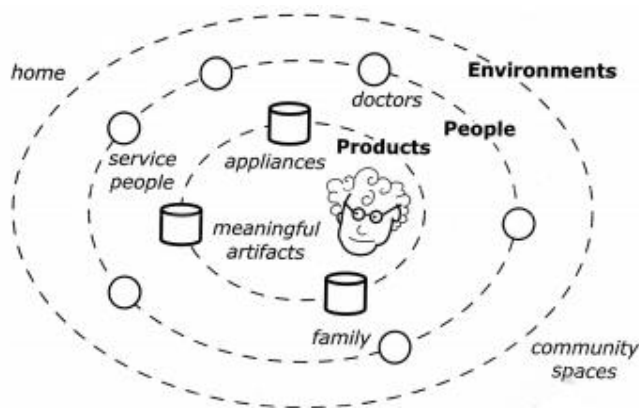


Figure 1: Example of ecology of ageing map (DiSalvo, Forlizzi & Gemperle, 2004)

This report will focus on the aspect of products from the ecology model of ageing and explore the existing technological products used by older people as well as its impacts on their daily lives. Ultimately, the report aims to understand the motivations and barriers to older people using certain technology while avoiding others, thus the research question: “What are the issues and challenges faced by the elderly in their adoption of technology?”

METHODS

To gather further insights from the target demographic, user studies were conducted using three different methods. The final decision for which methods to use consisted of surveys, focus group and card studies. The demographic for each study was older adults, ranging from 55 to 80 of age. The participants in this study is further divided into three sub-groups, which include nursing home residents, independently living individuals and Brisbane Seniors Online members. This allows for comparison among the different groups later on. Additionally, an interview with a former nursing home board member was conducted in order to take the carer's perspective of user needs into consideration, which the target demographic may not be aware of.

Surveys

The surveys consisted of 12 questions enquiring the participants about the technology they use most, why, how comfortable they are with it, and as well as their opinions on

various technologies. The questions range from multiple choice to rating scale and free written user input. These surveys do not provide overly qualitative data, but make up for this by being more focused on quantitative elements.

Fifteen surveys were distributed in Brisbane Seniors Online, a local group that assists and teaches older people in using technology such as computers and smartphones. Given the relevant context of this group, several questions were specifically added to the surveys surrounding how the participants have interacted with technology and their motivations. The surveys are distributed for the total period of ten days.

Focus Group

Through guided discussion, the focus group explores each participant's relationship with technology in-depth as well as the possible affirming or conflicting opinions the participants may have as a group.

Questions focus on the participants' lifestyles in order to understand the role of technology in their daily life. This approach is more qualitative and in-depth than the survey approach, since the participants could thoroughly explain their reasoning through the guided discussion. They can be pressed for more detail in their explanation when necessary, or guided back to the topic if they get off-topic. The focus group is balanced in terms of number of participants, so that sufficient data is obtained within the constraint of time.

A total of six participants partook in the focus group study over two separate sessions. Of the participants, two are currently still working, one retired and living with family (independently living participants) and three are in a nursing home (nursing home participants). The names of the participants and nursing home are kept anonymous for the purpose of privacy. With the diverse backgrounds of the participants, the collected data then can be compared and analysed against each other to identify unique user needs within the demographic.

Card Study

The card study is an interactive and engaging research method wherein the participants were provided with a set of cards. The cards are divided into three categories, which include feeling and opinion, activity and feature, and personal aspect and interaction. Each card contains a keyword from one of the categories. The categories aim to draw out the interviewee's associations between the products they use, the activities they perform and their attitude towards the products. Figure demonstrates examples of cards from each category. A series of questions are then asked, with the participants picking out or otherwise arranging cards based on how they feel or what they think about the topic of the questions. These questions are designed to accommodate the topics of the cards and to explore their priorities in various aspects relating to technology such as their most valued product, negative and positive emotions associated with certain technology and their priorities in activities. The activity was conducted immediately after the focus group and

with the participants from the first focus group (a total of 3 participants).

	Feelings and opinions	Activities	Personal aspects
Keywords	Convenient, confusing, intuitive, secure, social, private, enjoyable etc.	Reading, writing, online shopping, online banking, phone calls, video chat etc.	Memory, hearing, speaking, vision, grip, avoiding etc.

Figure 2: Card study keywords and categories

Interview with Professional

The interview with Dr Kirralie Houghton provided insights from a different perspective which is viewed from professionals who interact with and care for the older people in nursing homes. It is important to consider this aspect of user needs since the users themselves may not be aware of some of their own needs, whereas the nursing homes care for these special needs and has the experience to understand them.

RESULTS

Surveys

The surveys were collected after about a week and a half, with five of the original 15 returning filled-in. The amount of returned surveys is less than expected due to the small attendance of walk-in members who frequent to the Brisbane Seniors Online city headquarters.

The surveys gathered showed that the most used technology among the BSOL members were the computer and mobile phone. Figure 3 shows the primary areas where technology is used, including socialising (34%), personal hobbies (33%) and home use (25%).

Q8. Which of the following aspects involve the use of technology for you?

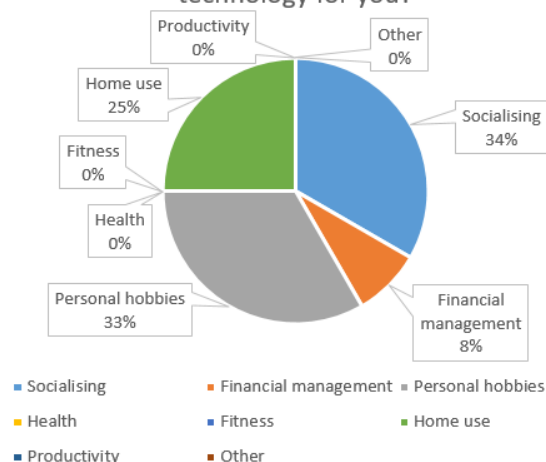


Figure 3: Use of technology daily life from survey results

The average confidence scale of the general use of technology found in the surveys is 3.8 out of 5. Of the

technology found to be more challenging to use, examples are tablets, Skype and Twitter. A major challenge to using mobile technology found in the surveys is cost.

The results also found that the motivations for learning to use technology include two main reasons. The first is the desire to “keep up with the changing world” and the second is the desire for the knowledge of general computing as well as to obtain online information from the Internet. The perception of computers, mobile phones and tablets were found to be largely positive, with results of ‘convenient’, ‘fast’ and ‘social’, which may also potentially motivates users to learn and use technology which is new to them.

Focus Group

In the first focus group, each of the three participants had been introduced to ‘modern’ technology (namely computers) through work. While two continued to use it in their personal lives to some degree, one made the conscious decision to avoid anything more complicated than a non-smartphone afterwards. This was not based on any of the effects of ageing, instead being rooted in informed concerns about privacy and security.

The two out of the three individually living focus group participants found socially technology useful while the other value mobile and face-to-face contact more. Participant 2 said “You feel attached, to people I haven’t actually managed to see personally, quite a while, Facebook keeps you in contact with them, lets them know you’re still there and that they’re still there, gives you a form of relationship. I certainly can’t see myself without that.” On contrary, participant 3 felt the opposite: “We don’t use Facebook, we don’t have a computer. All being local we can ring any of them at any time...”



Figure 4: Sample photo from the first focus group

The second focus group saw some changes from its precursor; namely, it was decided that it would not be feasible to conduct the card study with them. The focus group was still conducted, but with some questions from the card study recycled. Although one participant had to leave early, it was adequately apparent that technology did not play a very significant role in their life. Television and telephones were mentioned as being used regularly, and email to a lesser

extent. Considering the comprehensive social activities mentioned as being available in the home, it seems the facility's community and staff play a very large role in the social lives of those living there.

In regards to technology, the primary issues raised were largely based upon memory and input. Due to one participant having dementia and another cerebral palsy, this is understandable. While both were clearly alert and able, modern technology did not seem to accommodate their needs sufficiently. A general lack of perceived necessity was another factor, again due to the home ensuring that much of the residents' social needs are fulfilled.

Card Study

The findings in the card study indicated that while the independently living participants are exposed to technology through work, two out of three also use technology socially in their personal lives. The following section details some notable findings from the card study.

All participants chose the keyword "memory" in relation to the challenges of using technology. Their reasoning was that their learned skills of complex systems in their work life were gradually forgotten due to the extended periods of time where the participant does not use the system frequently and regularly. As a result, participants are not able to use the system as efficiently and fluently with the lack of practice.

There is also a notable disagreement with the security of personal technology such as online banking, mobile phones and social platforms. While two of the participants agreed that they felt secure and private when using the aforementioned technology, noting that being able to "go [into your account] with your password" makes one feel "secure about your transactions", the other participant felt the opposite. The explained reasons for feeling secure was that the use of technology takes place at home and in a private environment, which makes the users perceive it as a private activity that is very personal and close to them. This is also partly due to the sense of privacy that personal online user accounts provide. The third participant felt that online security cannot be trusted and that it is easy for external sources to gain access into private accounts. They felt that "There's a lot of information out there that anyone, if they know how to hack, can get access to."

Interview with Professional

From the interview with Dr Kirralie Houghton, the findings were that the nursing home where she worked is a very tight-knit community and has a close relationship with the local community, which has brought positive impacts in the nursing home. Volunteers help out and organise activities for the residents. She also shared that there is a significant emotional impact on a person upon moving into a nursing home. To accept assistance means being no longer able to care for self, which brings to many a sense of grieving and loss. To an extent, the impact is lessened by the social relationships formed in the nursing home with other residents and the staff. This highlights the importance of positive social

interactions and attitudes within the nursing home in the process of a person's transition into their new lifestyle.

Residents range from being able to live healthily independently to being dependent on assistance due to physical or mental conditions, such as dementia. The facility had two types of living units, the first being independent living units for able residents who do not need support for the majority of the time. When those residents reach the point of needing assistance, they are moved to the hostel, where they are cared for by the staff, which includes registered nurses, divisional therapists, occupational therapists and personal assistants. Technology are mostly used by the staff to care for the health of the residents and for management, although some staff provides assistance with emails for the residents if they wish to use it.

Kirralie also found that the nursing home residents often look back on their memories with fondness, which fulfils their emotional needs. Technology can be used to enhance their sense of purpose by enabling them to share those memories and connect to the outside world if used appropriately.

DISCUSSION

In the section, the key findings and their reflection to the existing literature will be discussed as well as the implications of the findings and some of the limitations of the research methods.

Key Findings

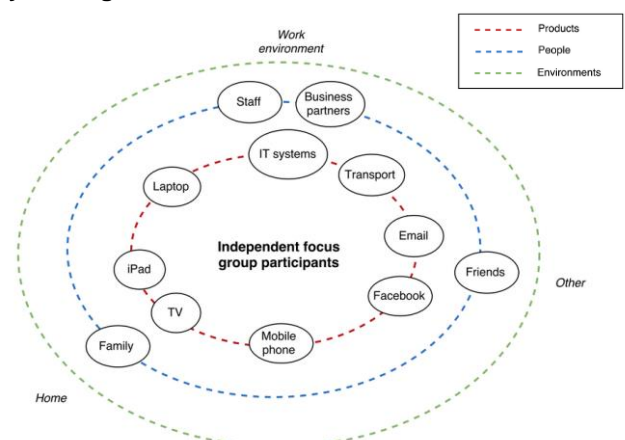


Figure 5: Ecology of Ageing model (Independent focus group)

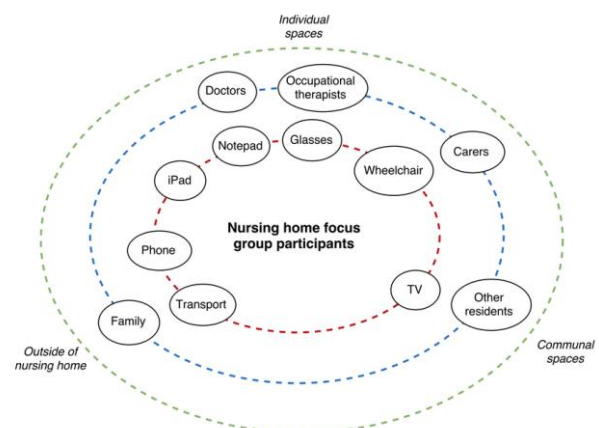


Figure 6: Ecology of Ageing model (Nursing home focus group)

The key findings suggest that all three groups of participants (independently living, nursing home and BSOL members) vary in the use of technology, challenges, needs and as well as the perception of technology. Figure 5 and 6¹ show the relationship between the people, place and products using the ecology of ageing model, which provides a basis of understanding in what context a technology is used. The distinct difference is seen between the use of technology in the independently living group versus the nursing home group in the types of technology they use and also the people they interact with using different technologies.

The results also found that the younger participants (independently living group) is more exposed to technology, the main channel is through their work and career. As opposed to the independent group, the nursing home participants use little technology and value face-to-face contact within their living environment rather than using other forms of technology. Their needs are fulfilled by the nursing home and the challenge of using technology includes finding the software too complex to use and physical and mental barriers. The trend that emerges from these findings shows that the use of personal technology decreases as age increases.

In addition, the independently living and BSOL participants use technology for socialising but not the nursing home group. Both groups found the cost to be a challenge in the adoption of technology. They are motivated to use technology due to the desire to “keep up with the changing world” and for the convenience of keeping social contacts, primarily through the use of mobile phones and computers.

Literature

The findings from the nursing home residents agree with the existing literature - the physical and mental barriers are significant challenges in the elderlies' adoption of technology. This ranges from their capability of using touch screens which requires precise gestures to typing on keyboards which involves hand-eye coordination, as well as mental conditions such as dementia, which limits the user from learning the skills for using a new technology. This encourages designers to incorporate such accessibility elements into their design. It is significant since the trend suggests that there is increased use of technology in the younger participants, who will shortly be limited by such barriers as they age. However, this coming generation of ageing users will likely use social and personal technology into their old age, unlike the current generation, who uses little technology in their daily lives. Therefore, this highlights the importance of designing technology in both hardware and software for the future generation of elderlies to overcome the inevitable mental and physical barriers that come with the process of ageing.

On the other hand, findings of isolation in older people contradicted with the existing literature. While some

literature suggest technology causes isolation in elderlies, the results of this study showed that the participants use technology socially, which decreases their isolation by providing a mean of communication between them and their family and friends. However, the participants studied do not include those are living alone independently, who are the most susceptible to experiencing isolation.

Implications

Through understanding the challenges and barriers faced by the ageing population when using technology, the findings reflect that context and lifestyle plays an important role due to the magnitude of difference in the spectrum of user needs, as seen in the three groups of participants studied in this research. While the participants are considered to be part of the same ageing demographic and do share some similarities in the use of technology, each group interacts with technology uniquely and has different needs for technology. This suggests that design cannot rely on the “one size fits all” implementation without compromising certain user needs. Future designs should target specific users and not the general “ageing population”.

One of the challenges that emerged is the cost of using technology in the market today such as smartphones. While it may be difficult to design a solution with less cost and the same functionality, it has implication for keeping future designs as cost efficient as possible.

Furthermore, of those who use technology, a majority of participants reported using social technology. Given the continuing trend of social media, this implies that the next generation of older people will be much more involved in using such technology. Therefore it would be worthwhile to start experimentations for platforms that allow these social interactions to take place while differentiating the design to suit groups with different needs.

Limitations

The low amount of returned surveys may affect the reliability of the statistical data produced by the surveys. Out of the 15 distributed surveys, only 5 were returned. The surveyed often missed questions or their explanations were not clear enough. Improvements can be made by handing out surveys in person to ensure that surveyed fully comprehend and fill out the survey.

In addition, the study did not take into account independent elderlies who live alone. This group of older people is predicted to increase in the future as the ageing population outgrows the current aged care resources. For further studies, this group should be prioritized in order to understand their needs.

CONCLUSION

This study found varying challenge faced by older people in the adoption of technology through three methods of research, including focus groups, surveys and a card study.

¹ The collected data is not sufficient to form a diagram for the BSOL group as the nature of surveys is not contextual.

The key barriers to using technology include physical and mental barriers for nursing home participants and cost for independently living and BSOL participants. The trend emerged from the findings suggests that the use of personal technology decreases as age increases. The findings have implications for future designs to be more context specific as there are many facets within the 'ageing population' and different user needs should be addressed in different designs.

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Appendix

Appendix A: Privacy Statement

Greetings,

We are Alastair Jones, Moon Lo and Samuel Struik from the Queensland University of Technology. This semester, we are undertaking a subject called 'CAB210: People, Context and Technology', which is largely based upon designing IT systems.

As part of an assessment item, we are writing a report based around one primary question; "What issues and challenges face the elderly in their adoption of technology?" This is especially relevant given the worldwide trend towards an aging population, coupled with the ongoing march of technological progression. While we have been looking at other papers on the topic, we will be conducting our own studies in addition. This is where you come in, and can help us greatly.

In order to gain more insight into the challenges elderly technology users face, we would like to learn more about your experiences, preferences, habits, difficulties and concerns in regards to using technology. It doesn't matter how often or rarely you use it; you have your reasons, and they will go a way towards furthering our understanding of the topic.

Understandably, it can be daunting to be interviewed by complete strangers. Since privacy is an important aspect of IT, we have established the following guidelines to help you feel more comfortable with participating in our study;

1. The information gathered from this study will go towards a report on the challenges older users face in using technology. Any information gathered will not be applied outside of this report and the assessment item it is a part of.
2. Any information we ask for will be anonymized in transcripts and the report itself, meaning you cannot be personally identified from them.
3. Audio / visual recordings will not be anonymized, but will not be submitted as part of the assignment. These recordings will be deleted at the conclusion of the assessment.
4. Your privacy is of paramount importance. While we encourage you to answer our questions with as much detail as possible (which gives us more insight of issues covered in the report), you are welcome to withhold any specifics you are not comfortable sharing.

Name: _____

Date: _____

Appendix B: Survey for BSOL



QUT Human-Computer Interaction Research Survey

This survey is conducted by QUT students for the unit CAB210 People, Context and Technology. The research question is "Ageing and Connection: What are the issues and challenges faced by the elderly in their adoption of technology?" Your data will only be used for assessment purposes and will not be published outside of QUT.

1. What is your age range?

- | | |
|-----------------------------------|-----------------------------------|
| <input type="radio"/> 30 or under | <input type="radio"/> 61-70 |
| <input type="radio"/> 31-40 | <input type="radio"/> 71-80 |
| <input type="radio"/> 41-50 | <input type="radio"/> 80 or above |
| <input type="radio"/> 51-60 | |

2. What are you most frequently used technology?

1. _____
2. _____
3. _____

3. What do you use the first technology for (from Q2) and why do you like using it?

4. What do you use the second technology for (from Q2) and why do you like using it?

5. What do you use the third technology for (from Q2) and why do you like using it?

6. How comfortable are you with using technology such as smartphones, tablets and computers?

Not comfortable at all

Very comfortable

1

2

3

4

5

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7. Do you have a technology you are not comfortable or confident in using? If so, why?

8. Which of the following aspects involve the use of technology for you?

- ☐ Socialising
- ☐ Financial management
- ☐ Personal hobbies
- ☐ Health
- ☐ Fitness
- ☐ Home use
- ☐ Productivity
- ☐ Other: _____

9. What is your opinion towards mobile phones?

- | | |
|-------------------------------------------|---------------------------------------|
| <input type="checkbox"/> Convenient | <input type="checkbox"/> Private |
| <input type="checkbox"/> Confusing to use | <input type="checkbox"/> Costly |
| <input type="checkbox"/> Intuitive to use | <input type="checkbox"/> Fast |
| <input type="checkbox"/> Social | <input type="checkbox"/> Depressing |
| <input type="checkbox"/> Isolating | <input type="checkbox"/> Other: _____ |

10. What is your opinion towards computers?

- | | |
|-------------------------------------------|---------------------------------------|
| <input type="checkbox"/> Convenient | <input type="checkbox"/> Private |
| <input type="checkbox"/> Confusing to use | <input type="checkbox"/> Costly |
| <input type="checkbox"/> Intuitive to use | <input type="checkbox"/> Fast |
| <input type="checkbox"/> Social | <input type="checkbox"/> Depressing |
| <input type="checkbox"/> Isolating | <input type="checkbox"/> Other: _____ |

11. What is your opinion towards health monitoring systems targeted towards older people?

- | | |
|-------------------------------------------|---------------------------------------|
| <input type="checkbox"/> Convenient | <input type="checkbox"/> Private |
| <input type="checkbox"/> Confusing to use | <input type="checkbox"/> Costly |
| <input type="checkbox"/> Intuitive to use | <input type="checkbox"/> Fast |
| <input type="checkbox"/> Social | <input type="checkbox"/> Depressing |
| <input type="checkbox"/> Isolating | <input type="checkbox"/> Other: _____ |

12. What motivated you to start learning at BSOL?

13. What skills did you learn at BSOL?

14. How have these skills changed your daily life in comparison to before you learned them?

15. Other comments (optional):

End of survey. Thank you for your help!

Appendix C: Transcripts

Focus Group 1 Transcript (Individually living group)

Participants:

- Participant 1 69 almost 70
- Participant 2 69
- Participant 3 68

Interviewers:

- Samuel
- Alastair

Question 1

Sam: Can you tell us at all about your daily routine, what you do when you get up in the morning how you go about doing things in an ordinary day

P1: Because I'm still working I have a fairly hectic schedule. I get up fairly early and get cracking sometimes I go to my computer to check my emails then I get myself off to work and commence my admin work process at work which covers accounting and the business side of things, including paperwork, invoices and that type of work, and basically that's my job.

Sam: What about after work?

P1: When I get home I have animals to feed and I try to relax a bit and unwind. I normally just sit there and have a cup of tea, look at the news prepare the meal and I usually get to bed around ten. In the interim I may go back onto my computer and do some emailing overseas to my family my family. I'd be lost without my computer.

P2: Generally I get up the latest I can, but I still have to go to work. I get up just a bit before late and apart from getting ready for work I use my smartphone to check my emails, then I go to work where I use my computer all day, mostly checking emails and doing things with bookings. I work at a travel agency as a travel consultant. I use computers all day for booking travel. Then I go home and check the emails again and go onto Facebook and that sort of thing. [Name] cooks dinner and I wash up.

P3: Right well yeah, I can tell you quite a bit, I'm a retiree now, I retired in the end of 2006. I retired to help my mum with my father who was getting on in age and had problems. I had three years at home. I helped mum with him for three years before he passed away and I'm now a carer for my mum (88). My working life, I did an apprenticeship as an electrical fitter & mechanic and after completing my apprenticeship I did a courses (...) communication at QIT. After completing my apprenticeship I became interested in medical electronics ...

Sam: So, you said you retired to try and help your mother take care of your father. So how would that play into your daily routine?

P3: When I went to QIT we never used anything electronic, a calculator was forbidden ... (continues to talk about his apprenticeship).

Sam: We'd like to know more about your personal... It's very interesting but we'd like to know just for now very briefly about your daily activities.

P3: Well, I'm retired now, being a carer for mum I do a lot of work at home. Mum does the cooking and I do most of the work around the house. I do the washing and I hang it out and everything, I look after the yard and mow the lawn. She had an aortic valve replaced last year and she finds it difficult to walk, she has to have physiotherapy every week to keep her moving and she has to do as much walking as she can so I take her out to shopping centers a lot, probably average 2-3 days a week, that's the best exercise walking from one end of the shopping center to another...

Sam: And you get to the shopping centers by driving?

P3: Yes, I drive I have the car and I take her to the shopping centers...

Sam: Okay, I think we should move on.

Question 2

Sam: Do you have any medical requirements and in what ways do you handle it, do you take medication or see a doctor?

P1: No, I'm very fortunate, I don't have any medical issues as such. I do a lot of personal training, working out, I've never smoked, I have a social drink occasionally, I'm maintaining my body the best I can because of the importance of it now as we get older. I feel as good as ever except today I'm choked up with a head cold. I've put it down to the fact that I've had a very happy life, I've got four children and I tend to maintain a healthy and happy life.

Sam: So you haven't had any major health problems in the past years? No major diseases?

P1: I do have a particular disease but it is manageable, it's not ultra-serious. Most of the population suffer from it so. I've got diverticulitis. I've had one serious attack and was hospitalized but I seem to have it under control, so I'm very fortunate really. I don't have any heart issues and I'm not on any medication, I do take vitamins (...) I have got arthritis.

Sam: You haven't had any issues remembering to take your medication?

P1: No, no, I don't take any serious medication as such, I haven't got any script medication, so yeah. I just take my vitamins.

P2: Yeah, I'm on medication for a heart disease angina I have no trouble taking, it's just a matter of taking it every morning and that's really my only health issue as such

Sam: Do you have to see a doctor at all often?

P2: I have to go back every couple of years to see a cardiologist.

P3: Yeah, no, I'm pretty healthy, I'm on one medication, a diuretic called minipress I take it for my blood pressure, probably due to my weight at the time. My blood pressure didn't go too high, but maybe a bit higher than the doctor would like to have seen it. (...) Last year I found out I had prostate cancer, so I had it removed (...) apart from that I've stayed on the minipress and my blood pressure has gone down since he put me on it. The only thing we get done on a routine basis is a colonoscopy because dad had

bowel cancer (...) that's really the only thing I have ongoing, I'm not on any medication other than the minipress

Sam: You don't see any health professionals?

P3: Only after having taken my prostate out, I see a urologist as a follow-up to having my prostate taken out

P2: Sign me up for a colonoscopy in a few years.

P3: Yes, our family have all had colonoscopies, we've had a history of bowel cancer.

P1: Excuse me Samuel, but I'm in that category. My brother died of bowel cancer (...) it's pretty normal for people in our age bracket

Question 3

Alastair: So, generally, who do you socialise in your everyday life and how do you keep in touch with them?

P1: My daughters, I'm very close with my daughters, my eldest daughter is an architect, my youngest is a personal trainer, I spend a lot of time with her with my health, like physically. My friends, I don't have much time to socialise, the person I'm married to is a workaholic we run our own business and he works 6 days a week but I am trying to get him to take a holiday for my next year. I've travelled several times overseas and it'd be absolutely wonderful to be able to drop everything and go travelling, but I'm still working and I have a duty. But maybe once there's someone suitable to replace me...

Alastair: You mentioned before sending emails overseas?

P1: I have family overseas on my husband's side, I keep in touch with them that way. I do text friends quite a bit because I'm not always able to run away and have lunch with them and I have a fairly big property to look after, my home is a big property - I try to take care of everything there myself. I think all of that keeps me healthy too, there's a lot of mowing and gardening, but there will come a time where I'll get someone else to do it and I'll be in a position to pay them (...) I do make time for friends but not as often as I'd like. As you know with your mum I don't catch up with her that often, but that's the way it is. You need to make time for your friends, it's very important. Work is work but it's important to make time for family and friends.

P2: Family wise, our family's very local (...) quite often we'll go over our brother's place and catch up with them there and see their kids because they're not too far away. We also catch up with them with family get-togethers... we keep in contact with them over facebook as well with photos and likes and those sorts of things. My groups of friends are very local so we get together four or five weeks for dinner somewhere or at each other's place... we also use email, text, facebook for friends overseas (...) we use facebook for our family as well, with messages so we know what they're doing

P3: Well, the main ones I keep in touch with are members of my own family, my brother, two sisters... we don't use facebook, we don't have a computer. All being local we can ring any of them at any time... as far as outside of the family I don't have many contacts... pretty well just a family person myself... that's probably about it.

S: You socialise regularly, it's quite often that you talk over the phone or meet up with your family members?

P3: Yeah, we're always in contact with each other, either visiting them or when they rock up or invite them. Other family members are always in contact with us... We're always keeping in contact with each other. If anything goes wrong, like serious injury in the family everyone knows straight away...

Alastair: So, when you're at home, what items do you usually use the most and why?

P1: Typically... You're not talking about mix masters are you? (laughter) I'd have to say probably a computer. I use that the most. Then it's my phone, my iPhone. I don't do facebook, I don't really do Skype, I can do Skype but I don't... So yeah, that's basically...

Alastair: Would you say these items have a sentimental value for you?

P1: Yeah, I'm quite attached to that reconnection with people with emails... sending photos on your phone to people, I like that idea too, I'm happy with that, very much so.

P2: My favourite thing to use at home is my TV, I love my FOXTEL... I help Roxanne with the house, using the vacuum cleaner and the whipper-snipper... IT wise it's mainly my laptop and my iPad, smartphone... I like my Facebook, it's really good to see what others are up to and posting, jokes and so on... It's good to see what people are doing... like trips overseas to see what they're doing and where they're going... I like the internet in general too, you can research... it helps with travel plans, see what specials are going.

Alastair: You don't have a desktop computer, do you?

P2: No, I don't have a desktop. It's just the laptop and it connects to a printer.

P1: I only have a laptop too.

P3: Proe watches a lot of movies and things, I'm not a real movie fan myself, I like quiz shows, the news and sports, so I watch a lot of that on TV. As far as communication goes we've got the landline and I've got a mobile phone which I only use as an emergency thing. If we're not at home people can contact me on my mobile, or if I'm out and I need to contact anyone like RACQ, at least I've got a phone there and we're not stranded.

Sam: Do you have any items that you use quite regularly that you would say have personal value? You've had it for a long time maybe that you don't want to replace because they have a personal value to you?

P3: No, not really.

P1: I thought you might have been referring to a phone, how when you get older you become happy with this phone and you don't want to change it, but I find it's good to change and challenge the mind a bit. I like to update my phone very regularly, I'm just getting one now, an iPhone 6. I don't want to be left behind, it's as simple as that everybody.

Question 4

Sam: You all sound like you've got quite a bit of experience with modern technologies; smartphones, laptops and so on. When you first started using these, what were your thoughts? Were they difficult to use, things like that?

P1: Initially, yes. We can go back to the year 2000 when my business went over to computers. I'd hardly touched a computer, didn't even know how to turn one on. I took the leap - it was either that or I'd get replaced. It was okay for my husband because he was dealing with computers in the workshop, with its computerized machinery... I did find it quite challenging but I'm a pretty determined person. There are a few things I prefer to do on the computer. I think you find certain things you're alright and you're happy to do that, but I do find that you have to be doing continually the same thing so that it sticks. I found that if someone said "this is how you do this" and I wasn't doing it everyday after a week I'd have to say, "I've forgotten how to do this, I'm not sure". I do pester my son a bit because he's a bit of an expert. I do try to sort it out myself. But now, I just ring up support. If I'm stuck I just ring up support, and it's quite simple then - it's great to have that support. I wouldn't call myself a computer expert in any sense of the imagination. I've never done any computer technology in the sense of systems - it's just everyday stuff that I use in my work that I need to know. I don't know how to fix issues on the computer that are really technical, that's why I use support.

Sam: So you were mostly introduced to technologies through work?

P1: Yes.

Sam: There wasn't much outside, like on a personal level?

P1: No, not at all.

Sam: So, did you have to pick up smartphones because of your work, or?

P1: No, It was just necessity to have a smartphone. I started off with a Nokia. I liked my Nokia, but when it was time to give it up I found the other phones far more exciting.

P2: Okay, as far as computers go, it's just what I used at work. I was previously working at banks, using banking systems, doing finance, just using their bank systems, so that was how I learnt the basics of computers. As far as knowing how to use a computer and what they do was through work, the work systems. Then I decided to go and get my own laptop so I could do a few more technical things on a private basis... With laptops and iPads the only way I could have an understanding of how to use them would be to get in contact with Alastair's dad and say "help me!" and he would help set me up and show us what to do and since using my own iPad I've actually learnt more about what I can use them for facebook, emails and various internet sites so I've been using them a lot more personally and again with the phone the only reason I got a new smartphone was because I lost my other phone in a cab in Melbourne and I needed a new phone so I thought I'd get a nice new you-beaut smartphone and I love what I can do with that.

Sam: So what was the earliest point you were exposed to computers or more modern technology

P2: The first time I saw a computer was back in 1975 in the state government insurance offices with their computers, their computer filled up the family room and all of this area... But all through work, probably in the 80s was probably when we started using them, using computers when they became part of workplace systems, so it's a matter of as you do your job you get to know the systems...

Sam: So, computers have just about always been present in your workplace?

P2: In my work life, there just about always been computers. I suppose as time went on, there was more personalized use of computers but initially in my workplace you'd fill them with data information cards and you'd send to them to the data processing areas and you'd get these rings of paper... with the reports and all the information you needed, that's how it used to be, with big piles of computer reports that we used to have in our workplace, but now... You wouldn't do that now, you just type up the data and it's instant...

Sam: And you had no difficulty whatsoever adjusting to these changes?

P2: No, it's just natural because, you know, the fact that as the computer systems were developed and enhanced it just became more, you know, information... It's my job as always, I've had various jobs but it's all based around having a computer handling information provided by a computer... and over the years they've been a part of my work life... it was only a few years ago that we started using them for our own personal things, and personal entertainment and that sort of thing.

P3: The first time I came across a computer was at work in the 70s, I was doing the certificate at QUIT and part of the course was doing programming, we didn't actually do a computer subject but we did programming in basic and FORTRAN... it was all on cards you know, you'd write it on cards and they'd give you your program back and if it worked it worked and if it didn't they'd hand it back and you'd have to do it again... for some of the subjects we did you'd have to have a computer at home and they'd send you floppy discs with the assignments you'd have to do and we were doing programming there as well, and you'd have to write up programs on the computer and that sort of thing so that was, as far as education went, but at work, as I said, with the recording of the work was done on the equipment that came in the 80s in all of the hospitals, and it came into work and they said, "this is what you'll do now" and they gave us notes and we followed those. We mainly used those for the database, but later on, anything we ordered for equipment components and so on from outside companies, originally things were ordered from an order book and eventually in the late 90s and 2000s everything was ordered on the computer and you could bring it up... that was my main thing with computers...

Alastair: So, with all of these technologies that you use in your everyday life, how would say that they make you feel?

P1: They make me feel, like I can cope with the world today. That you can cope, and you can access whatever you want, basically. There's nothing you can't do, really. It's a good feeling. You don't feel isolated, you feel connected with the world and people, everything. That's my answer.

P2: I feel the technological items I have, computer iPads and phones, it's good that I can keep in contact with family and friends, friends overseas, with quick email, iPad, skype, using facebook to keep in, you know, up to date with what people I know are doing... You feel attached, to people I haven't actually managed to see personally, quite a while, facebook keeps you in contact with them, lets them know you're still there and that they're still there, gives you a form of relationship. I certainly can't see myself without that.

P3: It doesn't really worry me, I haven't got a computer and it doesn't worry me, I have to do tax returns and I just ring them every year and I need the old book... I guess if I had to do anything on a computer I've got family members who have computers and I can always do it through them, and I don't really feel as though I need a computer myself. Mum's never had anything to do with computers so they're foreign language to mum. I can get by without one, so it doesn't really worry me. I think I'm one of those people

who says, "If it's not broke don't fix it". I know technology was advancing and finding new ways of using it, so you can understand I'm not a real lover of change, it's just in me. bably the TV set is our most popular thing. Mum having to rest a lot she watches a lot of TV, sh

Focus Group 2 Transcript (nursing home group)

Participants:

- Participant 4 – age 75
- Participant 5 – age unknown
- Participant 6 – age unknown (has cerebral palsy, her lines are heavily interpreted)

Interviewers:

- Lok Sum (Moon)
- Alastair

Question 1

Alastair: Let's start. Tell us a bit about your daily routine

P4: I get up at 5 in the morning, I have a shave and I bath myself. I put my own clothes on. At seven, I put the news on, see what's going on in the world. at half past 7 they come in, I can stand but I need a standing hoist to transfer me into this (his wheelchair). I've been here approximately two months. A week in saint vincent's over the bridge... I fell and crippled this arm, poor circulation's the cause... I'm 75 and I've got the will to keep going. I fill my days by going along to the sing-a-long, bingo, they do art here... I try to mingle as much as I can. We have a beautiful view here, the nurses are excellent, the food's good. There's nothing to complain about. I didn't know how to adjust moving into a nursing home at my age... I don't pass it as a nursing home, it's a beautiful place... I can't speak highly enough, excellent staff, very caring to help you rehabilitate, you know?

P5: I'm a dementia sufferer, alzheimer's... I really don't remember what has happened maybe two hours, maybe two days...

Alastair: So that's the reason for this notebook here, I see, it's for reminders?

P5: Yeah... I have no responsibilities here. I don't feel embarrassed about it...

P4: It happens to a lot of people... Up there they said, "you'll be in a wheelchair for the rest of your life", I said, "I don't think so", my grandmother raised me at 65 years of age, if she can do it I can do it. My granddaughter, 11, she gives me my inspiration, the motivation. I don't want no praise for it...

P6: Well, I wake up in the morning... the staff is good, the nurses are good, I love them...

P4: She mixes well, she goes to bingo, she goes to the sing-a-long, she mingles well.

P6: I mix, love people, I love (???), I love life.

Alastair: Sounds like both of you make a lot of use of the activities here?

P4: We all do, we mix as well as we can, it's one big happy family sort of thing. We've been working with all nationalities, Australian's a multicultural country and you've got to live with it. I've been here since

year dot and I've seen a lot of changes, I know the area well. In 1954 I started my first job as an apprentice carpenter down in the Queen's Arms hotel, so you won't lose me in the area.

Alastair: So, you would say it's a pretty tight community?

P4: Yeah, three or four might cause a few hassles but we don't cause no trouble.

Question 2

Alastair: So, you've been saying you're a big happy family so I take it you all socialise a lot?

P4: This little 73-year-old, the little one with the trolley, she's been here 35 years, the day she gives that work up, that'll be it, what's she gonna do?

Alastair: So, beyond the other residents, who do you find you socialise with?

P4: Practically everyone, the new manager, the nursing staff, we have the daily activities, like the rock-and-roll day, we have a pirate day...at first I said no, but I go now to meet new people, who are coming and going all of the time.

Alastair: So, do you guys get a lot of visitors from relatives or...?

P4: I don't have a lot, I had one daughter visit me... most of us have a few visitors come and go...

Alastair: Other than visitors, do you keep in contact by email, or phone?

P4: Phone, yeah, phone, I keep in touch with my two sisters...

<P4 leaves due to his "hot date">

Question 3

Alastair: What items do you find yourself using most during the day?

P5: I use my diary a lot because I've such a bad memory, I don't have any jobs around the place so I don't have any equipment as such.

Alastair: Do you read during the day, or watch TV?

P5: I used to read, constantly. Now, if I spend an hour reading in the morning I've forgotten what I've read by the afternoon. So I've stopped that habit.

Alastair: Do you have anything that holds sentimental value to you?

P5: I don't know that I do. Not that I can remember...

P6: I've got photos of my family and a [couple of things] I do have my iPad...

Lok Sum: So, you said you've never really had any exposure to modern technology like mobile phones?

P6: I was looking into it three-four years ago, but no real experience with any of it.

Lok Sum: So, is there a reason why you don't particular want to use technology, that you don't need to?

P5: Well, I have reason to be very grateful that it exists, but I've never used it, I've only used the information that it's supplied.

Lok Sum: What sort of technologies did you use while you were working?

P5: I worked from the head office of [sales] we had communication there but [...] the production of all the statistics we were supplied [...]

Lok Sum: When you think of the technologies of today, with people using their phones and stuff, what do you think of them, do you think it's too complicated or...

P6: Oh yeah, anything you can buy is very complicated. I bought my iPad, I had a computer [...] It was not a very important part of my life [...] I mostly played games [with my iPad]

Lok Sum: So, if it's really complicated to use would you try to find alternatives, like, asking others?

P6: If it's available I would take that option.

Lok Sum: Do you ever feel you are missing out because of people out there who are using gadgets?

P6: No, no.

P5: I felt that way while I was working... I was an international sales manager... any information I wanted was fed to me like that, so it was never really a worry for me.

Card study transcript (Independently living group)

Sam:

So now we're moving onto the card study. We'll ask you some questions and you can respond to them with the cards. And then we'll ask you to explain your choices.

Alastair:

There's a blank card in case you can't find the right one to express your feeling.

Sam:

So you can look through the cards to get familiar with them.

Sam:

So first question. Which activities involving technology do you value the most in your everyday life?

Alastair:

So the yellow cards represent the activities you can choose from.

P1:

So if I choose the internet, it would encompass all the activities I do on it?

Alastair:

Yeah. And there are other cards for online activities as well.

P1:

Well... I would choose banking, shopping...

Sam:

So what personal aspects or interactions do these activities entail? So the green cards. What green cards would you use with the yellow.

Sam:

And lastly what emotions do you correlate with these activities?

Sam:

So, could you walk us through your chosen activities?

P1:

It doesn't have to be something to do with being social, does it? Well, what I'm saying is that, if it is work related, like doing wages. it's very easy and quick. To me, it's satisfying to get that out of the way, because that's what I do. I pay my bills and stuff like that. So I'm saying, internet and online shopping is uh... maybe you should go first P2. I'm not sure.

Sam:

Would you like to go first P2?

P2:

Ok. So I went online banking, internet and text. To me that's what I find technology useful. Personally, online banking, well we all need to do our finances and it's just so handy to have online banking so you can just keep tap of the money you've got, the loans and fees on your credit cards. Yeah it allows me to keep control of my finances. The internet, it's great. You can get so much information. There's so many different sites to go on, you know. I can just learn about different travelling places, various travelling sites. and Wikipedia, I can just learn what I want to know about. So that's why I find the internet good. And text. It's good for when you don't have time to speak on the phone. You just send a text across and keep in contact with people.

Sam:

So for personal aspects and interactions, you've got vision, memory and touching, how does that play into your activities? Like how are they important to the things you've chosen.

P2:

Well, I'm pretty much a visual type person, I want to be able to see the information from off the internet or off the online banking system is visual because I can see it. And to me because I can see it, it's real. Once I see something, whether it's off the internet or banking system, you tend to remember it. So that's why memory and vision are there. It's funny like when I'm dealing with someone over the phone, with my job for example, if I have the capacity to see it on the screen, it means more to me so. I can remember it better. And touching too. with typing and texting, you're touching the keys so yeah.

Sam:

And for emotions, you've got "visually pleasing".

P2:

Yeah well, the fact that I can see something. It's pleasing to me that I can confirm it to my knowledge. And it's convenient that with online banking I can't have to go into the bank, I can just go online. It satisfies me to see the information I need. And for texting, particularly Facebook and Skype, social interactions are enjoyable and seeing them is also satisfying. It's convenient.

Sam:

And what about "secure"?

P2:

The fact that if I can see it, then to me it gives more of a meaning to the reality of it as such. So I feel more secure and I know it's right if I can see it. It's more certain. You can't believe everything that's on the internet but if I can see it and have an understanding about it then I can feel quite secure with my judgement of the world.

P1:

And I go along with Philip too, we picked out quite similar cards. And that's how I feel too. That's it kind of an accomplishment, that you're able to get that far in the complex world of computers. I feel that it's all can be very challenging. But when you talk about secure, it's probably a different aspect of security but because you're in your own home or your office. This privatisation, you feel secure there too, don't you.

P2:

Yeah.

P1:

You feel that no one's looking over your shoulder. You've been able to go in with your password and you feel totally secure about your transactions. And yeah that's what I understand.

P3:

I think that's where I differ. When you hear about all those scams that go on. I don't do online banking, I go to the full banks and they ask me "why don't you do online banking?" and security is one reason why I don't. When you hear about old people losing all their money from online accounts and that sort of thing. So I don't have the same feeling about security online, even if I had to do the work I do online with computers. There's a lot of information out there that anyone, if they know how to hack, can get access to. It's funny how last year we had phone calls from this foreign speaking person telling us we had problems with our computer. I kept on saying, "but I don't have a computer." In the end I got sick of it and said "can I have your phone number please? I want to call the police about this" and they just hung up. So anyway, I suppose read, I like reading, and sometimes watching a really good movie. I'm a factual reading and gathering information, but yeah, I just read traditional books, nothing fancy with technology, all paper. I used to buy the newspaper every day too. But now if I see something I want to know more about, then I buy the newspaper.

Sam:

So the activity you also have is phone calls and your personal aspects are hearing and speaking.

P3:

Yeah, it's important that I can hear and speak. I enjoy talking to people and speaking. I find it satisfying, it's a social kind of activity. And using the phone is convenient. It's easy to phone someone instead of driving to their house.

Sam:

So P1, back to you. You did talk about your activities. So your emotions.

P1:

I think the fact that everything is so instantaneous and convenient can also put pressure on you, particularly at work. Because everything's so instant, for example, when a car comes in for a quote, it is expected to be done instantly, and there about about 30 to 40 quotes before that quote that needs to be done. Because everything's so instant you have the owners coming in and asking where their quote is. It's just a constant pressure you know. That can be stressful.

Sam:

One of your chosen emotions is "painful" is that what applies here?

P1:

Well that's for when something goes wrong. Maybe the word frustrated would be better, but you haven't got that. Frustration could come into when you're in a situation where you're looking for something and the computer shuts down for the latest update or whatever. I think because we're starting to expect everything to be instant for us and we get annoyed if things aren't. Even at our age, we don't want it, we want everything to happen straight away. We're not young so our time is important.

Sam:

So a big element for you is convenience.

P1:

Definitely, definitely. Yes.

Sam:

Ok so next question, what feelings, so the red cards, would you say deter you the most from using technology? What puts you off?

P3:

Well as I said, security comes into it. If I had a computer, I would be tax return on it but even then, security is a concern. I don't think they're secure enough for me to use, not that I've got anything to hide. Well I wouldn't put confusing. It's only confusing until you know it, you know. It's a matter of learning it then it's not confusing anymore. Difficult, well maybe for an older person in their 80s who has never had technology, like mum, to try and teach her anything about the computer would be useless. She just wouldn't apprehend any of it at all. So I guess my main cards for this question would be "secure" and "impersonal".

Sam:

So how is it "impersonal"?

P3:

Well I suppose it ties in with security again.

Sam:

Right I see. So what have you got, P2?

P2:

New technology. This is about new technology right?

Alastair:

Well, it's technology in general.

P2:

Well, with any new technology I tend to find a bit confusing or perhaps difficult. For example, when Facebook came out I was very confused. I didn't understand it. Now, well now I do. But for example Instagram, I don't know how long it's been out for but I have no idea what that is and how it works, what it means. So to me it's confusing and difficult because I don't understand it. When something new comes out, something technological, then yeah, for me it's confusing. So I shy away from it. New iPhones and Apple watches, new toys, they're also very expensive, so I tend to shy away from it. Once they become older and cost about a quarter of what they used to cost then yeah, I would buy that then haha.

P1:

Yeah, they always come out, but you don't have to be the first to get it.

Sam:

So what emotions do you have, P1?

P1:

I have "convenient". It's what I've covered it before. I mean I'll learn new technology but I'll probably stay in a fairly safe perimeter. When I say safe, I mean when I don't need to have it, I don't. I don't familiarise myself with it because it's there, I learn it when I need it and if it's going to be important to me, then I will tackle it. I don't find the cost an important factor because if I want something, I have it. I find that in some business situation, they're always changing software. And you've always gotta learn every over again. But then again, in saying that, because it has updated, this new technology is going to be far better for you. Sometimes they get rid of things that you love that's very convenient to you, you're annoyed that something is gone and you have all new stuff. So yeah, probably those few things.

P2:

And yeah, sometimes you have something you're used to using and then they change it. If it ain't broke why fix it. It was fine exactly as it was.

P1:

Yes, I agree with that. But anyway, that could affect young and old people.

Sam:

Would you say what attracts you or deters you is not really age-defined?

P1:

No, no. Definitely not. I used to be not so confident on things but once I've mastered it I feel a lot more confident and all yeah. Stepping forward and it doesn't matter what age I'm at really. But I do say because I'm in the situation I'm in with business, I'm forced into it. But I'm glad for it too, it's moved me forward and it's good when you're even overseas and you're able to do what you want to do overseas with computers. It's great.

Sam:

So, next question, which interactions, the green cards, would you say you have the most difficulties with getting around?

P1:

Probably “memory”. Memorizing it all, for me.

P2:

I think for me it’s “memory” and “forgetting”. Like with any computer system we use, if you don’t use it regularly, then you forget how to use it, that kind of thing. I’ve become a travel consultant for the last 9 months. I was in banking before that. They have this computer reservation system, they have all sorts of codes you have to input and keys that do different things. Unless you use it regularly, you forget it. And now that I’ve been working with it regularly, there’s more stuff that I could do on it. So I find that i’m keen to experiment more with it and use it more. So that’s a good thing, when you use it enough, you get to remember it. But the hard part’s actually remember it haha.

Sam:

I see. So what do you have, P3?

P3:

Yeah, I have the exact same thing. I’d say “forgetting” and “memory” would be the ones I choose. Unless you spend a lot time with you, you’ll just forget. With the work I used to do with the two main things we did with computers was the storage of the data and what you did the equipment. It depends on what job you’re doing. some take half an hour, some take an hour, some take days. So you work on one piece of equipment for a long time, like calibrating different medical equipments, and by the time you’re done with one, you have to log it into the computer and sometimes you don’t do that at all. By next time you have to use the computer, you’ve forgotten how to do a lot of that work. But that was a few years ago, my work life.

Sam:

So does this struggle give you any outstanding emotions?

P2:

I think this is where the “frustration” card comes in haha.

P1 & P3:

Yeah haha.

P1:

Definitely frustration for me.

P3:

For example, when I haven’t used the computer reservation system, and I get back to it. I get frustrated and it’s like “where do I start now?” Now that I’ve been using it more, it’s more intuitive and beneficial and pleasing.

Moon:

So the examples you guys gave about “memory” seem to gear more towards the work aspects of your life. So does that extend to your personal life, in terms of technology and memory?

P1:

No necessarily, no.

P2:

With the personal side of things, I use my laptop computer. From a personal point of view, I find that I can remember how to use all the different things like email, it's all easy, no problem. With online banking, which I use a lot, you've got into codes and passwords to get into different systems and I have no problem with the memory of that. I suppose because it's important to me, I can remember it.

P1:

Yeah, I think when something is important to you, you go all out to try and conquer it because you know that's going to make my life easy. I like the idea of being able to go into my accounts and swop money around. I think it's one of the best things. It's great.

P3:

I just go to the ATM haha.

Sam:

So in your day to day life, what feelings would you say is the most important to have, and what negative feelings do you want to avoid the most?

P2:

To me, whether it's work or personal achievement, I want to accomplish things. for example if a client wants to book a flight overseas, I get it all completed, it's an accomplishment there and I am satisfied by it. What's important to me is "accomplishment" and "satisfaction". What I don't like is frustration, if a customer is holding things up or a supplier is being difficult. Yeah, that causes frustration.

P1:

Look, a computer isn't an emotional thing and you're not dealing with something that's not emotional, you are. So I just find it satisfying and convenient. And visually appealing as long as the results are, it's all good.

Sam:

And what about you, P3?

P3:

Yeah, nothing really comes to me.

Sam:

So do you use technology to avoid any negative emotions?

P3:

No, technology doesn't come into play, no.

P2:

I suppose with my day to day life I need technology, whether it's keeping in contact with texting or email. I use that to avoid frustration of not being able to contact someone. And I find that provided the technology is working, I'd be pretty happy with it.

P1:

Yeah, I'm happy with it, connecting with the world is good. It solves our problems. But it also gives us problems. But at the end of the day, I'd like to think myself as a positive person and if we take that step forward, it's going to make our lives so much easier, no matter what age.

P2:

When the system's working, you know everything's good haha.

Sam:

I think that concludes all the questions that we have, thanks for participating guys!

Interview with D Kirralie Houghton Transcript

Interviewers:

- Samuel
- Lok Sum (Moon)

Lok Sum: "We are going to have an interview with Kirralie. So, tell us about your experiences as board member of an aged care facility."

Kirralie: "It was about 4 years ago now. I was a member of the board of directors for Marina Aged Care Facility at Caloundra. There were 8 other board members, and we looked after the functioning of the facility. Mostly it was on a strategic level, rather than operational. But because it's such a small board, a small facility, and fairly low budget, we ended up doing a lot of operational decisions as well."

Lok Sum: "How did you get involved with the facility to start with?"

Kirralie: "As part of our church, which runs the facility, someone actually approached me and said 'You'd be good on this,' and because at the time I was doing my PHD about communities and people and places, it kind of made sense."

Lok Sum: "So, the church community also connects quite tightly with the people within it?"

Kirralie: "Yes, they do. In a couple of weekends, on the 11th of September, they run a fair every year. The whole church community from across Queensland gets behind it to run it, and then they interact with all the people there from their facility, who come down and enjoy spending time and mixing together. They raise money for things, and all the board members are with the church."

Lok Sum: "Tell us more about the facility itself. What kind of environment is it?"

Kirralie: "When I was on the board (it's changed ownership now), it had independent living units outside; 1- and 2-bedroom units, which people that still had a fairly high level of personal mobility and capability lived in. And then it had studio apartments where, they could have shared kitchen facilities, but also could have a kitchenette in their own space, and their own little sitting area for a bit of privacy. Through to the hostel accommodation, which is they have their room and then go to a shared dining room and shared lounge. With the way regulations are now, you have to be quite dependant to be rated so you can get into a hostel. So, the people in the hostel need a lot of support. So, the facility looked after those three levels of care. Basically, the idea was that people would go into independent units while they were still quite capable, and then the facility itself would help them make that transition and decision when they needed to go to the others, so they were guaranteed a place in the hostel."

Lok Sum: "With the hostels, would there be a lot of systems to help in case something goes wrong? Is there a staff member there?"

Kirralie: "Yes, they've got nursing staff on all the time. I think overnight they have two RNs (registered nurses), and lots of other personal assistants. Through the day I think they have more RNs on for medication and general care and things like that. They also have staff like diversional therapists and an occupational therapist. It depends on who they have on at the time. They'll ring in doctors and hairdressers and others to come in to the facility, because in the hostel they need that; they don't get out that much. One of the features of the Marina is that it's got lots of volunteers; there's over 50 who regularly come in, read to people, take them shopping, take them to the hairdresser's or bank or whatever. So there was lots of support, partly because it's part of the church, and there's a lot of people outside of the church who also volunteer there. I think what happens is that once you get to the point of retirement, sometimes you can get your pension if you're doing so much volunteer work, and Marina is quite a nice place to do that. People gravitate there, and stay on after they've officially reached retirement age. So, the volunteers tend to be older as well, 60 to 65. But that being said, there's still a lot of younger volunteers, particularly from the church. They have a coffee shop inside too, with volunteers running that. There's one person employed to oversee, and the serving staff are volunteers."

Lok Sum: "You said the interactions with other people, mainly meeting others and keeping in touch with friends and family, that kind of thing. Would people visit them in the facility?"

Kirralie: "Yeah, they have lots of visitors. Because of the volunteers, they always have somebody. People who don't have a lot of family members have volunteers who come and see them a lot. But, again, because it's a fairly close-knit community within the church, they actually have a higher number than other facilities might have. There's always children and grandchildren, and other groups for entertainment and things. There's a fair amount of interaction, particularly as part of the church, although it's not a requirement. They'd still mix and mingle if they're not. The volunteers go to everyone, and help them keep in touch through email and the like."

Lok Sum: "So, with technology, the residents rely on the volunteers to help them?"

Kirralie: "In the hostel, yes. In the units they do emails themselves all the time. They had a 'help older people with computers' programme, running courses for a time to teach various computer-related things. Other just won't touch it."

Lok Sum: "It seems like email and phones are the secondary way of socializing, with face-to-face being the primary."

Kirralie: "I would say so."

Lok Sum: "So, what's the age range of residents in the facility?"

Kirralie: "To move in, you need to be 60+ to live independently. We had a woman who was 55, whose husband was in his 70's. As a married couple, they could move in together. But it's still 60 to 100+. Significant, when you look at the independent units. They're the ones going out on trips and doing stuff, through to the people who don't move much from their special chairs and beds. There's a range in ability as well as age. Health, and mental capabilities too. There's a dementia ward, which is over-capacity. There's a large amount of such cases."

Lok Sum: "The dementia residents would be dependent on assistants?"

Kirralie: "Absolutely. I remember one man would get his groceries delivered, and put the cold food in the cupboard, so there's a health risk to consider. They tend to forget the short-term, but recall more long-term things. It's quite a nice facility there. They have a special garden there. One of the things with dementia patients is that they take themselves for walks and get lost. One got on a bus and train, and down to Brisbane, before they found him. Fortunately, he was identified and brought back. It's not easy

to do that, using a bus and a train to get that far. They have their lucid moments, but then they're lost again. They're quite dependent on care all the time."

Lok Sum: "I think cost would be a big factor for the residents living there, in order to afford to live in an environment with such contact and care."

Kirralie: "Actually, our chairman used to say we were the cheapest house in the area. But they do have a policy to keep it affordable. They have a policy where they have to leave 20% for people who can't afford the entry fee, which is in the \$200,000 range. Generally, people sell their house, and that goes in. That money is held in a bond, which goes to the family later. It doesn't appreciate like real estate does, but they get it minus the fee back later. Might be 5 or 10%. But the bond is invested, and the interest covers their costs. Then they get that bond base back at the end. But they have a system of grading that cost, assessed by the government, to see if they can afford it. If they can't, they can go in as regular fee-paying residents or supported by the government. Not sure if the laws have changed. They recently sold the facility to a Sydney group, so management has changed. Structure might be different, but the 20% should still be open. Then it costs them, on a regular basis in terms of their income if they're on a pension, most goes towards accommodation with an allowance off the top. They don't have many expenses, outside of gifts. They have one room to put things in, so they don't tend to collect much themselves aside from minor luxuries. At that point, it's sufficient for them. The things they need are covered, like toiletries and personal health products, so it eliminates the need to buy much stuff. They can't get to the shops much anyway. It's different for the IOUs, as they buy into that. It's the same sort of process; they buy a unit, and it depreciates a certain amount in the first year, and then a minor percent beyond. Unlike real estate, it doesn't go up with the market; it stays at that fixed price. But most of them are in those units 5-10 years max. In the whole scheme of things, they don't lose much. They end up with a lot of money in their nest egg that they don't need. I think now their fees can cover things like wine, if they like. If they look at the cost of transport and things they buy and electricity are covered, and they end up with spending money on top. I think the manager is particularly fair about that cost."

Samuel: "So, you wouldn't say they usually have an emotional hang-up about having to sell their home?"

Kirralie: "No, I wouldn't say that. It's something different to cost. There are some who lived in their home and raised their families there; it's a huge step to move. At the Marina, because it's a church group and some have been part of fundraisers for years, when some of them come up on the list they question if they're ready for it and acknowledge they want to live at the facility. There's still a lot of emotional hang-up, and a change of lifestyle. They're pushed more and more by the government, and that's why it's so hard to get into a hostel. You have to be graded high enough in terms of need, or pay premium rates. But sometimes, when they start putting their food in the cupboard or washing machine, or put the cat out and..." *chuckles*

Samuel: "So, they adjust quite well?"

Kirralie: "It's interesting, because a friend I've had go up there had dementia, and since she's gone up there, she's just thrived because she's being looked after. The classic is that they don't eat at home because it's too much effort; whereas the food's there for every meal. I think taking away some of those stresses, or things they forget, it can be a positive step for their health. Another thing is that, because it's a church group, they're suddenly around people they knew as teenagers. They might not have seen or spent much time with them, but they're around. Social networks are rebuilt. They do all sorts of activities together, so quality of life can increase. If they were at the point where it was bad, which is more a case with the hostel than the independent units, it's far better than what they'd have trying to manage on their own at home."

Lok Sum: "From our research, we know a lot of homes and technologies for older people are stigmatized, and they might not be willing to adopt it as a result."

Samuel: "Being in need of care, and so forth..."

Kirralie: "Yeah... accepting you're at that point can be really hard."

Lok Sum: "Would you say that because of that social factor that they get within the nursing home, that sort of stigma gets reduced?"

Kirralie: "I think it's going to be an emotional time for them however it goes. I think that eases the way for them. But I think when it gets to a point where you can no longer bathe yourself or cook your meals, you've lost something, and there can be a sense of grieving and loss. Unless they're at a point of dementia, where it's not registering anymore. I did some training while on the board, looking at dementia. It talked about the need to, as a carer, give dignity to the person and acknowledge that they've lost and given up a lot. And that they're not just a hassle to you, but it's their whole life, it's where they live. And if you make it hard for them, telling them off for not doing things, then it makes their life hard. But if you're nurturing and caring, then it's much easier for them to accept that point in life they're at."

Samuel: "So it's important that, when they are adjusting, that it's a nurtured transition?"

Kirralie: "I'd think so. That makes the best transition, where's there's that nurturing. My daughter's doing nursing in a geriatric ward, and someone was going to Marina having heard how great it was. It was nice feedback to hear that out there, within the medical system, they'd heard that it's a really nice place to go. Which is what we've always aimed for. Putting on more staff and volunteers helps that nurturing, otherwise it's hard to do what's necessary to meet their needs."

Lok Sum: "Do they use any other technology other than calling or emailing?"

Kirralie: "I think they've got lots of technology. Talking broadly, I know some facilities have things like automatic water taps and things like that. Helps people with arthritis who can't easily use a taps. Also medical technologies, like heart monitors, or adjustable beds to help avoid bedsores. Those are often funded by the church group that does the fundraising. Then... I was looking at a project where you could provide a lot more connection to them, but I don't think they use much more than email and other things. In independent units, yes, and when those people move into the hostel there'll be a higher usage of technology in there. But the ones there now, with exceptions, wouldn't have used much internet or use it now. They were talking about a new programme with iPads for the nurses to keep track of records and things like that. So, that is looking to move a lot more technology-based. But there's lots more they could do. It's just getting over that barrier learning to use it late in life."

Lok Sum: "We were looking at some research about wearable technology for dementia patients, that could track them if they do get lost."

Kirralie: "I think they have those, yes."

Lok Sum: "Do they use them?"

Kirralie: "I think they have those tracking things for the serious ones, or ones they don't have room for and are in another ward without a closed door. The other thing we looked up, but didn't get any further, is a heritage travel, which told stories in different places as it went around. I did a workshop with residents to look into a smartphone system to tell them a story while walking around the garden. Or it could tell them more about the different plants. They loved the idea, but it didn't get any further due to lack of funding. But it captured their imaginations. The other thing we looked at was those outdoor gyms, which they also liked. Obviously it would have to be age-appropriate, but something they could do while

outside. Something that used that space. There's also this big, blank wall they look out onto, which they suggested we should put something on. So, they have these ideas. It's their home environment. I think there's lots of ways technology could help that. In the dementia garden, they have a fake bus stop, where the patients sit and wander off again afterwards. Some of those things could be made more interactive. Maybe one day they could use a virtual reality room kind of thing, to relive memories. Recently they did a pioneer day, and collected all these items that would invoke memories from their childhood. Those sort of things that relate to their past help a lot. Sometimes, they trigger a memory, which is fulfilling. So, technology that could help fulfil some of those things. To give them memories back, and fulfil emotional needs."

Lok Sum: "A lot of healthcare, from our understanding, focuses on health. Maybe we could work something out in there about emotional and personal space."

Kirralie: "Yeah, there's actually been some research done into this area of technology for aging. The last thing they want is to be told they're old and incapable, so you need to slip in things like making the phone buttons bigger subtly, so they don't worry about being old and needing to use the big buttons. But it's looked at from an emotional point of view, like one guy who does YouTube videos talking about his life and giving advice. He's got all these young people following him, and it gave him a whole sense of purpose. He was stuck at home, couldn't do much, but he could tell his story to the world. And he had all these people following him, saying that he's like the grandad they never had, and all this stuff. So, if there's ways to connect people like that, I think that adds meaning to people's lives. Some are at a point where they just can't anymore. I remember another study that had an indoor carpet bowling competition between two aged care facilities. Except they did so through a big screen, so they were competing against each other in completely different places. So, without leaving their facility, they're meeting friends in another facility. That seemed to work quite well. The other they do use are Wiis, they use those quite a bit. They have them in the recreation room, so I guess they play tennis and bowling on it, so they are using those. So, it is a good idea to think about the emotional needs."

Lok Sum: "What is the average routine a person living in the independent units like?"

Kirralie: "It would vary, because they're independent. It's like living in a unit independently, or a small house. But they get up in the morning, drive themselves to the shop, and visit each other. They have regular activities. At 10, they'll do bowling or croquet. They're the lives of the retiree. They'll read, watch television, go shopping, go see lots of specialists. They spend a lot of time seeing doctors. I guess that has to factor into it, too. They might have a setback in health that can be two or three weeks to recover from, like after an operation, after which they're bed-bound and the routine alters and they'll be reliant on someone to support them. My mum's been doing that for someone in an independent unit, who's been sick for about four months, so other people bring her food. Others have been up and active, and took themselves on caravan trips to Carnarvon Gorge and things. I guess the other thing to note is that change can happen quickly for them. That couple that took themselves out to Carnarvon Gorge; the lady got sick, and in three months passed away. So, he's still quite capable, but he's seen death and a change in his social circumstance. She was a friend to a lot of people around, so they've got to deal with that as well. It's not uncommon, and they hold a memorial service when it happens. But it's a reality of aging, and can be quite emotional and a burden."

Samuel: "I just want to ask about the relationship between the elderly and their carers. Are there ever any conflicts? Any important relationships they have? Do they get to know each other?"

Kirralie: "Yeah, they'd get to know their carers very well. If we're talking about within the facility, particularly. Therefore, if there's a personality mesh, it can be quite significant. I was saying before; that's their home. They've got nowhere to escape to. If the person that comes in every morning is someone you don't get along with, that can be a problem. Now, theoretically, they should be trained in terms of care and nurture and being professional beyond what their personal position might be. People

are people. Some are struggling to cope, and might be in a lot of pain, so will be snappy and nasty. So, it's really significant. It has a big impact both ways. I think you'll find above that, there's a management relationship with the workers and residents, which has an impact on the feel of the place. There's the juggling of emotion across a whole facility. They're sitting down to dinner at a café or restaurant style table, with a positive or negative vibe within the room. Even things like wall colours can have an impact, with studies done about the emotional meanings. The colours in the different rooms can make a big difference. It can have an impact on wayfinding, too. How they find their way around. It becomes significant if they forget where they're from. If they all look the same..."

Lok Sum: "I think that's the end of the interview. Thank you so much."

Samuel: "Yes, thank you."

Appendix D: Card Study Questions

1. Which activities involving technology do you value most in your everyday life?
 - a. Which personal aspects and interactions do these entail?
 - b. Which feelings and opinions do these entail?
2. What feelings and opinions would you say deter you from using technology most often?
 - a. Why is this the case?
3. Which personal aspects and interactions do you have the most trouble with?
 - a. Which activities have these aspects limited you in doing, if any?
 - b. How has this made you feel?
4. Which positive feelings do you think are the most important in your everyday life and which negative feelings do you dislike the most?
 - a. Does technology play a part in causing the positive or negative experience? How so?
 - b. How do you deal with these negative emotions? (Can technology play a part?)

Appendix E: Card Legend/Layout

Feelings / Opinions - Yellow

Activities / Features - Blue

Personal Aspects / Interactions - Green

Convenient	Confusing	Secure
Private	Difficult	Intuitive
Visually Pleasing	Painful	Annoying
Impersonal	Social	Portable
Awkward	Satisfying	Enjoyable
Disenfranchising	Isolating	Expensive
Cheap	Reading	Writing
Games	Internet	Phone Calls
Texts	Online Shopping	Online Banking
Maps	Moving	Video Chat
Sharing	Vision	Grip
Touching	Hearing	Speaking

Carrying	Ignoring	Forgetting
Avoiding	Memory	

Appendix F: Photos of nursing home



The front garden and entrance of the nursing home, as seen from the second-story balcony.



A hallway in the residential area.



The main dining area.



A sitting area adjacent to the balcony.

Appendix G: Enquiry email for nursing homes

To whom it may concern,

We are Alastair Jones, Moon Lo and Samuel Struik from the Queensland University of Technology. This semester, we are undertaking a subject called 'CAB210: People, Context and Technology', which is largely based upon understanding user needs and designing IT systems.

As part of an assessment item, we are writing a report based on the research question; "What are the issues and challenges faced by the elderly in their adoption of technology?" We find that this is especially relevant given the worldwide trend towards an aging population, coupled with the ongoing march of technological development. While we have been looking at other research papers on the topic, we will be conducting our own studies in addition.

As such, we would be interested in speaking to some of your residents in order to gain more insight into the challenges elderly technology users face. Our current plan is to perform two studies; a focus group (wherein we sit down with a small group of your residents and hold a question-driven discussion to learn their experiences in and opinions of the topic) and a subsequent card sorting activity (where we provide a set of cards with relevant keywords, the participants select and arrange cards based on questions we ask them, and we discuss their choices). We do not wish to outstay our welcome or make the participants uncomfortable by taking up too much of their time, and will try to keep each study to three people involved for half an hour or less. We are prepared to bring appropriate snacks and conduct the interviews over tea and biscuits.

To keep with the project deadline in three weeks time, we would conduct these studies late this week or sometime next week (17th August - 31st August) to ensure we have enough time to make use of the data. We would need to make audio/video recordings of the studies, as we are required to submit transcripts in the report appendix. To respect the privacy of participants, the transcripts will be anonymized and original recordings deleted as soon as the assessment is completed. The participants and *(NAME OF THE NURSING HOME)* are welcome to have a copy of our final report when it is complete in mid September.

If it is possible, we would love to arrange a time to have a chat with the residents. We are very grateful for your help and every little gesture is appreciated. Thank you for your time and please feel free to contact any of us for any further enquiry.

Yours sincerely,

Alastair, Samuel and Moon

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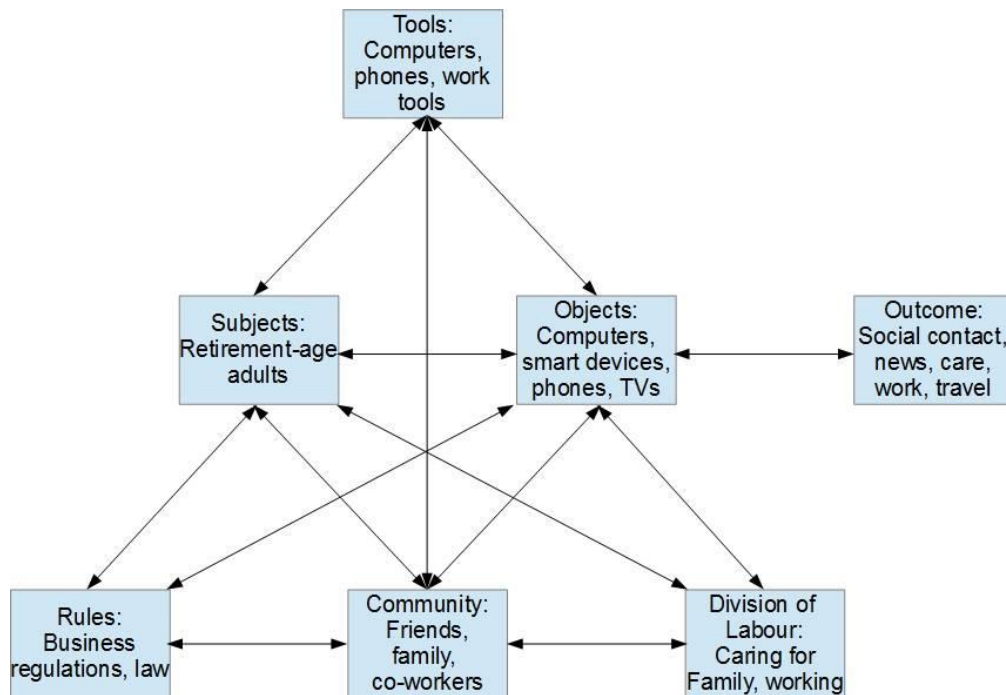
Unit Coordinator:

Dr Dhaval Vyas

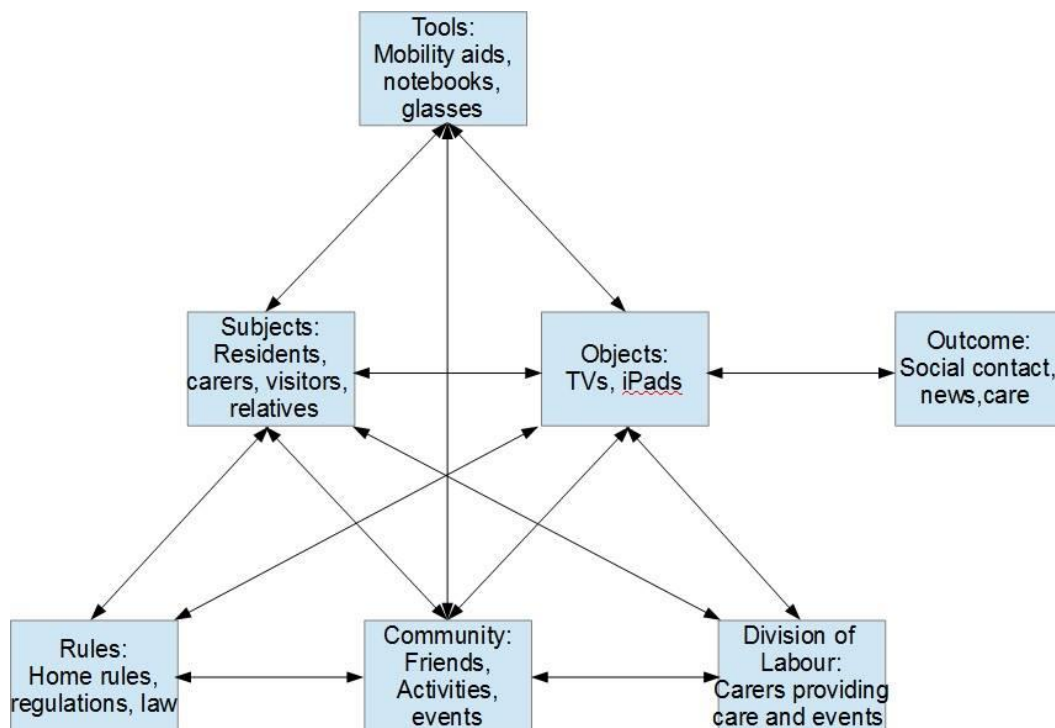
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Appendix H: Activities system diagrams



Individually living participants



Nursing home participants

Appendix I: Literature reviews

Alastair's Review 1:

<p>Title of Paper: A Qualitative Study of the Applicability of Technology Acceptance Models to Senior Mobile Phone Users</p> <p>Authors of Paper: van Biljon, J., & Renaud, K.</p>
<p>Citation – use APA format (which you can find in Google Scholar)</p> <p>van Biljon, J., & Renaud, K. (2008). A qualitative study of the applicability of technology acceptance models to senior mobile phone users. In <i>Advances in conceptual modeling–Challenges and opportunities</i> (pp. 228-237). Springer Berlin Heidelberg.</p>
<p>What is the main argument of the paper – the contribution to knowledge?</p> <p>The paper looks at what influences the adoption of mobile technology by the elderly, in terms of technology acceptance and adoption process modelling. The main question posed by the paper is, quote, “Do existing technology acceptance models incorporate the factors that lead to mobile phone adoption and use by older adults?” Based on observation and interviews, the paper argues that current models do not completely accommodate the elderly.</p>
<p>What methods were used?</p> <p>In addition to discussion of existing theory (namely about acceptance modelling and the context of an elderly user), interviews and observation were performed with a number of elderly people with experience using a mobile phone. Based on this experience, they were interviewed with a number of scenarios regarding their devices. These were about obtaining information about the device (most would consult the vendor, and some others their family), accepting a cast-off phone (most wouldn't for memory and learning reasons, while a fair number would indeed accept it), using it in an emergency (most agreed that it would be useful, but others raised concerns about fear and confusion getting in the way), using it as a memory aid (most agreed it could work) and using it as a safety aid for travelling (most agreed it could be useful, or at least by a third party in an emergency).</p> <p>Furthermore, the participants were asked to name and demonstrate the three features of the phone they used most often, which were observed by the researchers. This was to provide more observational results than pure interviews. This was discontinued after widespread difficulties amongst participants, leading to the conclusion that most phones have ease-of-use issues for the demographic.</p>

Do you think the work is valid? Are the results believable? Do you think it could be done better?

While the results are rooted in experience, the data may be more accurate if the scenarios had actually been enacted by the participants. This way, potentially more reliable information could be gained based on how well the participants are able to carry out the tasks laid out in the scenario. However, considering the difficulties encountered when the participants were asked to demonstrate their most-used mobile phone features, this approach may not be practical.

Aside from this, the theory discussed earlier in the paper works well. Most is based on pre-existing research, and covers both technology acceptance and the context of the target demographic. Of particular note is the adoption matrix, which highlights a number of factors (specifically social influence, perceived usefulness, perceived ease of use and behavioral intention) and whether or not they are present in various dimensions (appropriation, objectification, incorporation and conversion (though the latter had no evidence in observation or interviews)).

Why is the work important? How will it have an effect in the real world?

The paper not only provides explanation of technology acceptance and the context of an elderly user, but it demonstrates where acceptance models fail this demographic. By understanding which areas of adoption require attention in order to better acquaint the user with their devices, the paper proposes using the acceptance matrix model to better link technology acceptance factors to the adoption phase. This would allow for better identification of gaps in the adoption process, leading to a more inclusive acceptance model overall.

What did you like about the paper? What new ideas did it give you for your own work?

The paper does a fine job of building upon existing theories with its own research and recommendations. The adoption matrix, as well as some of the wider usability factors, would make for something good to discuss in my own work.

Title of Paper: Inclusive design and human factors: designing mobile phones for older users

Authors of Paper: Pattison, M., & Stedmon, A. W.

Citation – use APA format (which you can find in Google Scholar)

Pattison, M., & Stedmon, A. W. (2006). Inclusive Design and Human Factors: Designing Mobile Phones for Older Users. *PsychNology Journal*, 4(3), 267-284.

What is the main argument of the paper – the contribution to knowledge?

The paper reviews the human factors of applying inclusive design to mobile technology. In particular, these factors are examined to see if they are correctly applied, specifically in regards to catering for elderly users. Overall, the paper argues that these factors should be implemented as effectively and flexibly as possible to reap the benefits of inclusion.

What methods were used?

No user studies were conducted as part of the paper. Instead, information is drawn from existing sources. Details vary, but the sources seem to use a variety of methods themselves. This includes studies with users involved.

Do you think the work is valid? Are the results believable? Do you think it could be done better?

The paper is very comprehensive, utilizing a range of sources from studies to theories to real-life examples. This may be to the work's detriment, as it is quite long. A more succinct approach may have been preferable to keep the paper easily readable.

As previously stated, the report does not contain user studies of its own. While not necessary (provided the sources are reliable and handled well), it is something of a missed opportunity for putting some of them to the test.

Why is the work important? How will it have an effect in the real world?

The paper is based around inclusive design, which is of great importance where the elderly are involved. By looking at the needs of elderly users and the theory behind inclusive design, the paper offers insight (or at least a foundation of it) into how the latter may address the former. Ensuring more technology adheres to inclusive philosophy will likely go a way towards making it more readily usable by the elderly.

What did you like about the paper? What new ideas did it give you for your own work?

There is a detailed look at various aspects of aging that will likely affect the elderly's interaction with mobile technologies (vision, hearing, motor functions, etc.). This summary alone would be worth citing, to summarize these aspects and their implications for technology adoption and use.

The paper also includes various models of inclusive design which may be useful. These include Keates and Clarkson's model (designers must account for user needs, perception, cognition and motor functions, as well as their own design's usability) and the 'cell of exclusion' (with four walls (non-inclusive design processes, barrier ignorance, exclusion penalty ignorance

and absence of expertise), a ceiling (low expectations of society) and a floor (low expectations of users)). These models would not only help with designing inclusive systems, but also looking at where existing designs may be failing elderly users.

Alastair's Review 3

Title of Paper: On Some Aspects of Improving Mobile Applications for the Elderly
Authors of Paper: Holzinger, A., Searle, G., & Nischelwitzer, A.
<p>Citation – use APA format (which you can find in Google Scholar)</p> <p>Holzinger, A., Searle, G., & Nischelwitzer, A. (2007). On some aspects of improving mobile applications for the elderly. In Universal Access in Human Computer Interaction. Coping with Diversity (pp. 923-932). Springer Berlin Heidelberg.</p>
<p>What is the main argument of the paper – the contribution to knowledge?</p> <p>The paper looks specifically at mobile technology applications for improving quality of life for the elderly, and how they can be improved to better meet the target demographic's need. This includes discussion of relevant issues involved. The overall aim is to highlight how the issues facing the elderly are not necessarily well understood or considered by designers, raising awareness of the importance of taking such issues into account.</p>
<p>What methods were used?</p> <p>No user studies were conducted as part of the paper. Instead, information is drawn from existing sources. Details vary, but the sources seem to use a variety of methods themselves. This includes studies with users involved.</p> <p>The paper also looks at the AgeSim suit, which allows young, able-bodied people to simulate minor physical impairments that face the elderly. This allows them to gain insight into these impairments through the course of testing, so that they may better understand and design for them. The paper includes tests of a non-elderly user wearing the suit.</p>
<p>Do you think the work is valid? Are the results believable? Do you think it could be done better?</p> <p>The discussion of problems facing the elderly when using mobile devices is sufficiently detailed, along with how these issues play a role from a design perspective. The discussion about simulating physical disabilities was also useful, but could have benefitted from more lengthy and structured research with more than one participant. Having one user do two exercises is not sufficient, although some useful results from the tests can be examined.</p>
<p>Why is the work important? How will it have an effect in the real world?</p> <p>The paper aptly examines a number of important challenges involved in designing for the elderly, including cognitive complexity, motivational issues, physical impairments and perception barriers. This is further discussed in the context of mobile technology, where it is noted that selective disability (where a person may only have difficulties in a certain way, but be perfectly fine in others) must be addressed with insight into people, their incapacities and their preferred lifestyle. As discussed in other papers, this approach is key to making designs inclusive to the elderly.</p>

The paper's look at simulating physical impairment is one of the more noteworthy sections, providing a novel way of experiencing and learning from physical impairments from the perspective of an able-bodied person. This is a possible approach for designers to better accommodate the elderly, provided it is proved to deliver results.

What did you like about the paper? What new ideas did it give you for your own work?

While some of the paper's look at challenges facing elderly technology users has been covered elsewhere, it still provides a good deal of useful information. But what is of particular use is the AgeSim suit. While acquiring and using a suit is likely not practical for my own work, it is a point of discussion that should be included when suggesting how designers can learn more about how the elderly interact with devices.

Alastair's Review 4

Title of Paper: Universal access to mobile telephony as a way to enhance the autonomy of elderly people

Authors of Paper: Abascal, J., & Civit, A.

Citation – use APA format (which you can find in Google Scholar)

Abascal, J., & Civit, A. (2001, May). Universal access to mobile telephony as a way to enhance the autonomy of elderly people. In Proceedings of the 2001 EC/NSF workshop on Universal accessibility of ubiquitous computing: providing for the elderly (pp. 93-99). ACM.

What is the main argument of the paper – the contribution to knowledge?

The paper examines the role of mobile telephony in opening up ubiquitous communication and remote service access, along with social and ethical risks, for elderly users. As well as the benefits and risks, the paper puts forward some future applications of present technology.

What methods were used?

No user studies were conducted as part of the paper. Instead, information is drawn from existing sources. Details vary, but the sources seem to use a variety of methods themselves. This includes studies with users involved.

The paper does lay out a series of scenarios that elderly users would likely encounter (using the phone to chat, viewing a received message, requesting assistance, trying to find their way after becoming lost and calling for help when ill). These scenarios are deconstructed to see what the user would need to do and what factors would potentially impede them.

Do you think the work is valid? Are the results believable? Do you think it could be done better?

While the paper's deconstruction of scenarios is based on other studies, and is certainly useful, it does not have any dedicated user studies to back them up. Observing elderly users walk through these scenarios would provide examinable data as to the accuracy of the highlighted issues, as finding ones that may have been missed.

Why is the work important? How will it have an effect in the real world?

Scenarios aside, the paper discusses several considerations for designing for an elderly audience. These include ergonomics, user needs assessments, universal / inclusive design philosophy and use

of design guidelines. It also describes several technologies that may be of importance, including text telephony to overcome hearing problems, light internet terminals for ubiquitous access and tele-guidance for assisted navigation. Taking these considerations into account represent a possibility for improving access to mobile technology for the elderly.

What did you like about the paper? What new ideas did it give you for your own work?

The paper offers several points of discussion, including mobile technology use scenarios, good practices for designers and possible technological solutions. Even if not outright recommended or utilized in my own work, these factors are at least worth taking into consideration.

Lok Sum (Moon)'s Review 1

Title of Paper: The Independent LifeStyle Assistant: Lessons Learned

Authors of Paper: Karen Zita Haigh, Liana M. Kiff, Geoffrey Ho

Citation – use APA format (which you can find in Google Scholar)

Haigh, K. Z., Kiff, L. M., & Ho, G. (2006). The independent lifestyle assistant: Lessons learned. *Assistive Technology*, 18(1), 87-106.

What is the main argument of the paper – the contribution to knowledge?

This paper documents the process of prototyping and testing an agent-based passive monitoring system, ILSA (Independent LiftStyle Assistant), over a period of six months as it aims to reduce the caregiver's burden. The results showed that an agent-based system is not financially sustainable and a simpler and more centralized implementation is needed. The aim is to provide intelligent, affordable, usable, and expandable integration of medical and activity sensing technology into aged care.

What methods were used?

A passive monitoring system was installed in the homes of 11 elders who live independently over the duration of six months. It included continuous data collection and transmission via security sensors installed in the home, data analysis, information synthesis, and information delivery to ILSA clients and their caregivers. The system monitors activities of daily living (ADLs) and alerts the client's family/caregiver as necessary.

Do you think the work is valid? Are the results believable? Do you think it could be done better?

I think the work is valid and a source of valuable information as it draws from prototyping tests, which allows us to understand user needs and the practical limitations of such systems more. However, the research is quite dated technologically (the experiment was conducted in 2003) and a lot of systems would have been improved already.

Why is the work important? How will it have an effect in the real world?

It's important because it's one step closer to designing products which are appealing and useful for older people. It is particularly useful to learn from prototyping to further refine and iterate various design elements to deliver a better final product in the future. Designers can use this as a reference

What did you like about the paper? What new ideas did it give you for your own work?

I liked that it tested out a prototype and does not only rely on the existing literature. It gave me a clearer understanding of the procedures for testing a design and evaluating its usability and relationship with the user.

Lok Sum (Moon)'s Review 2

Title of Paper:

Socially dependable design: The challenge of ageing populations for HCI

Authors of Paper: Mark Blythe, Andrew Monk, Kevin Doughty

Citation – use APA format (which you can find in Google Scholar)

Blythe, M. A., Monk, A. F., & Doughty, K. (2005). Socially dependable design: The challenge of ageing populations for HCI. *Interacting with Computers*, 17(6), 672-689.

What is the main argument of the paper – the contribution to knowledge?

The paper highlights the need for better technological HCI designs for older people in not only the medical but also the social aspect in order to reduce the isolation that older people often experience. The current technologies used in age care are often stigmatized by the users, who want to feel a sense of independence and emotional fulfilment, which they don't get in the medically focused assistive technology. This calls for the need for more socially dependable systems - systems that take into account the social context of its users and are accessible to all who need them.

What methods were used?

Quantitatively, the research analysed Accident and Emergency admission statistics. Qualitatively, interviews are conducted with ambulance crews, Occupational Therapists, age concern service providers as well as elderly people. The three methods used to collect the qualitative data are: statistical prompts, ethnographic observation and interviews, and the technology biography.

Do you think the work is valid? Are the results believable? Do you think it could be done better?

I think the work is valid as it comes from in-depth primary research with the relevant stakeholders of age care. However, because the study only has a relatively small sample size based in the UK, the results cannot be generalized. Nonetheless, the suggestions and examples of socially dependable technologies (friendship groups using telephone conferencing, Net Neighbours shopping scheme) successfully demonstrates the achievable goals of designing socially dependable technologies.

Why is the work important? How will it have an effect in the real world?

It's important because it highlights the lack of sociability in the current age care technologies, which focus on medical purposes and fail to satisfy the social and psychological needs of its users (such as isolation, privacy and a sense of independence). By shedding light to this need, the paper will encourage designers to make more socially engaging solutions to the problem of age care.

What did you like about the paper? What new ideas did it give you for your own work?

I like how the research includes various different perspectives, ranging from different types of caregivers to the users themselves. This shows a contrast between the different needs each party wants - caregivers may prioritise the user's health and safety, however, the users (older people) gives an equal importance to social and psychological needs. It inspired me to be more aware of the social aspect of a design when designing for the elderlies.

Lok Sum (Moon)'s Review 3

Title of Paper:

Gerotechnology: A new kind of care for aging? An analysis of the relationship between older people and technology

Authors of Paper: Giulia Rodeschini

Citation – use APA format (which you can find in Google Scholar)

Rodeschini, G. (2011). Gerotechnology: A new kind of care for aging? An analysis of the relationship between older people and technology. *Nursing & health sciences*, 13(4), 521-528.

What is the main argument of the paper – the contribution to knowledge?

The paper is a critical literature review of various studies regarding the relationship between older people and technology. It describes a trend in the fields of social sciences and technology, where both fields research aspects of aging and its relationship with technology, resulting in an interdisciplinary field of gerotechnology. The literature review also highlights the three perspectives used in gerotechnological research, which include: The Ecology of Aging, The Model of Acceptability, and The conceptual Model of Gerotechnology as Compensatory Mechanism in Person–Environment Interaction.

What methods were used?

The research critically analyses 287 theoretical and empirical research papers emerging from gerontological, social technological and gerotechnological disciplines. Two strands of study were identified and separated into gerontology and technological studies.
<p>Do you think the work is valid? Are the results believable? Do you think it could be done better?</p> <p>Yes, I think the work is valid and the results are believable. Since it takes into account of a wide range of existing studies, it is a good starting point for understanding the overall picture of the relationship between the aging and technology, and what types of research are being done.</p>
<p>Why is the work important? How will it have an effect in the real world?</p> <p>It's important because it serves as an introduction to the relatively new discipline of gerotechnology. It raises awareness of this new field and the need for further research and development in designing and incorporating the older population into the design process.</p>
<p>What did you like about the paper? What new ideas did it give you for your own work?</p> <p>I liked that it summarizes a lot of other studies and it is a good starting point looking into further research. It gave me a clearer idea of how to approach our primary research and what to look for in the process.</p>

Lok Sum (Moon)'s Review 4

<p>Title of Paper: Active Ageing and Independent Living Services: The Role of Information and Communication Technology</p> <p>Authors of Paper: Norbert Malanowski, Rukiye Özcivelek and Marcelino Cabrera</p>
<p>Citation – use APA format (which you can find in Google Scholar)</p> <p>Malanowski, N., Cabrera, M., & Özcivelek, R. (2008). <i>Active ageing and independent living services the role of information and communication technology</i>. Luxembourg: Office for Official Publications of the European Communities.</p>
<p>What is the main argument of the paper – the contribution to knowledge?</p> <p>The paper argues for the use of ICT (Information and Communication Technology) in assisting older people to live independently in Europe, where the rate of growth in the older population presents a burden to the current age care system. It also provides a political overview of ICT integration in aged care policies and regulations in Northern European countries. In addition, it raises the issue of cost of acquiring the aged care service or product as a barrier to the users in a market-driven economy.</p>
What methods were used?

Data were collected through official government or organisational sources. It also references to and analyses different aged care campaigns across various European countries.
<p>Do you think the work is valid? Are the results believable? Do you think it could be done better?</p> <p>I think this work is valid in terms of being more focused on the political aspects of European countries in relationship to using ICT as a solution for the aged care problem. It does not directly explores ways of implementing or designing technologies for the older people nor does it explore the delicate interaction between the aged user and various forms of technology.</p>
<p>Why is the work important? How will it have an effect in the real world?</p> <p>It's important because other than exploring the technological and user-centred aspects of aged care, the government could potentially establish policies that improve and encourage the use of technology in aged care. This paper gives a reference to other parts of the world in preparation for a change of policies regarding the aging population, and the possibility of incorporating ICT as a solution.</p>
<p>What did you like about the paper? What new ideas did it give you for your own work?</p> <p>I liked that it gave examples of current aged care programs from different countries and that the political side of the field is explored. However, it did not inspire any new ideas as it is not the most relevant topic for our research for this assignment.</p>

Samuel's Review 1

<p>Title of Paper:</p> <p>The ELDer project; social, emotional, and environmental factors in the design of eldercare technologies</p> <p>Authors of Paper:</p> <p>Tad Hirsch, Jodi Forlizzi, Elaine Hyder, Jennifer Goetz, Chris Kurtz, Jacey Stroback</p>
<p>Citation – use APA format (which you can find in Google Scholar)</p> <p>Hirsch, T., Forlizzi, J., Hyder, E., Goetz, J., Kurtz, C., & Stroback, J. (2000, November). The ELDer project: social, emotional, and environmental factors in the design of eldercare technologies. In <i>Proceedings on the 2000 conference on Universal Usability</i> (pp. 72-79). ACM.</p>
<p>What is the main argument of the paper – the contribution to knowledge?</p> <p><i>“Our findings showed that social, emotional, and environmental factors play a key role in the eldercare experience and the adoption and use of new products. We argue that eldercare technologies that address all of these factors lower social and economic barriers to universal usability.”</i></p>

The paper asserts that ordinary assistive technologies reinforce handicapped/elderly stigma and are overly expensive. They focus more on solving problems that have arisen from degrading physicality rather than on the users' experience wholly, i.e., emotional effects, the environment the technology is used in. The paper argues that to provide the best quality of life, assisting technology needs to be emotionally and socially satisfying as well as functional.

What methods were used?

To gain insight, they reviewed other literature covering the topic of elderly culture. They conducted one-on-one in-depth interviews with elders and caregivers in their ordinary context (at home) to learn more about their lifestyles, including their routines, social interactions and perceptions (accompanied by photos of their home). Diary studies were also used to learn what was important and desirable to the elderly and what services they rely on daily. The final method they used was a passive observational survey. They spent 28 hours within a senior community observing the flow of people and events, taking notes of particular behaviours and interactions. During this survey they would occasionally take subjects aside and conduct brief interviews. Data was recorded with sketches, photography and general note-taking.

Do you think the work is valid? Are the results believable? Do you think it could be done better?

I believe the observations made in this study are valid and important. The research vested in this paper's ideas lend it great credit, considering the researchers made a considered effort to learn more about the needs of elders on levels above simply functional as well as the culture of being a part of the senior community and being a caregiver. The methods used were appropriate and the findings are accurate and insightful. The project made its findings in, what I believe to be, the most appropriate and effective way possible, leaving minimal room for improvement. The only additional method that could be conducted to provide better results would be to survey elders from a wider sample of cultures to be able to better define the lifestyle, needs, perceptions and culture of the elderly.

Why is the work important? How will it have an effect in the real world?

The findings from this paper are important because they indicate the importance of considering all factors when designing technology for use by the elderly. Formerly, value was placed only on the functionality of technology and not the impact it has on the user emotionally, socially and so on. By abiding by the findings in this paper, better technology can be made and the the quality of life for the elderly can be increased, which would lead to lower levels of late-life depression and other negative phenomena that occur for the senior population.

What did you like about the paper? What new ideas did it give you for your own work?

The paper is very relevant to the aims of our research, almost plainly answering our research question, "What challenges do the elderly population face in their adoption of technology?". From this paper I've deduced that, when interviewing and observing our research subjects, we

should inquire into perceptions each subject has of their assistive technology as well as what ways they use these technologies versus their intended use.

Samuel's Review 2

Title of Paper: Mobile applications in an aging society: Status and Trends

Authors of Paper: Inmaculada Plaza, Lourdes Martín, Sergio Martín, Carlos Medrano

Citation – use APA format (which you can find in Google Scholar)

Plaza, I., Martín, L., Martín, S., & Medrano, C. (2011). Mobile applications in an aging society: Status and trends. *Journal of Systems and Software*, 84(11), 1977-1988.

What is the main argument of the paper – the contribution to knowledge?

The paper is arguing for the potential mobile applications have as a vital tool for increasing the quality of life for an aging population going into the future.

What methods were used?

The paper makes many of its assertions and observations through comparing and contrasting various other pieces of literature that cover the needs and expectations the elderly have in relation to mobile technology.

Do you think the work is valid? Are the results believable? Do you think it could be done better?

The conclusions drawn from this paper are valid and well-founded, making sure to compare a wide variety of sources. Drawing upon previous studies exclusively means that these findings are rooted solely in theory, rather than the products of a physical study meaning that the researchers haven't been able to personally validate the information they are using as the basis of their paper. To increase the integrity of the information and to solidify what's being drawn from other papers, a simple wide-sample survey should be conducted.

Why is the work important? How will it have an effect in the real world?

The paper goes into great depth about appropriate design and functionality of mobile tools as well as the various needs that they can satisfy for the elderly. The paper could be a valuable source of insight going into designing tech for the elderly.

What did you like about the paper? What new ideas did it give you for your own work?

I like that it collates many other works in this topic, and makes useful observations as to the role of mobile tech for elders in the future. It expresses in great detail the needs of the elderly, and gives great insight into what direction I should take my research into this topic.

Samuel's Review 3

<p>Title of Paper: The Duality in using information and communication technology in elder care</p> <p>Authors of Paper: Stefan Sävenstedt, P.O. Sandman, Karin Zingmark</p>
<p>Citation – use APA format (which you can find in Google Scholar)</p> <p>Sävenstedt, S., Sandman, P. O., & Zingmark, K. (2006). The duality in using information and communication technology in elder care. <i>Journal of Advanced Nursing</i>, 56(1), 17-25.</p>
<p>What is the main argument of the paper – the contribution to knowledge?</p> <p>That ICT has both humane and inhumane applications in elder care - it can provide a duality of genuine and superficial care, it can be restricting and liberating and it can give and take dignity from the elders it aims to assist.</p>
<p>What methods were used?</p> <p>Ten carers with medium ICT exposure were given a presentation overviewing various assistive technologies. Afterwards, they were each interviewed and asked of their opinions on the technologies and their application in an elderly care environment.</p>
<p>Do you think the work is valid? Are the results believable? Do you think it could be done better?</p> <p>The methods to gather these findings were valid and the conclusions drawn the data collected correlate with other studies in this field. The research conducted on the carers was extensive and covered a wide sample, but it would have been very valuable to survey the elders themselves to get their personal perceptions.</p>
<p>Why is the work important? How will it have an effect in the real world?</p> <p>ICT applications are becoming more and more prevalent in elder care environments and it is important when designing for these circumstances to understand the pre-existing perceptions of technology that has come before hand. The findings in this paper give a designers a baseline for ethical reasoning when producing technology for elder care.</p>
<p>What did you like about the paper? What new ideas did it give you for your own work?</p> <p>The paper gives great insight into the barriers that experienced carers believe ICT will put between them and their elderly patients. This knowledge is very relevant to our research question, and the results in this paper go into great detail, contrasting positive and negative aspects. In terms of inspiration for our own methods, the paper's findings are from carers, rather than first-hand experience from the elderly, yet they still give valuable perspectives on the impact technology has in an elderly living environment. Rather than focusing solely on elderly and their interaction with tech, we could learn much through their carers. It may also be valuable to preface interviews and surveys with an overview of the material we will be asking about, incase the subject has little knowledge or opinion ready to give without a prompt. The negative side of this approach is that it can influence and control the subject's opinion, resulting in different responses than what they may believe without these prompts.</p>

Samuel's Review 4

<p>Title of Paper: Aware Technologies for Aging in place: Understanding User Needs and Attitudes</p> <p>Authors of Paper: Elizabeth Mynatt, Anne-Sophie Melenhorst, Arthur Fisk, Wendy Rogers</p>
<p>Citation – use APA format (which you can find in Google Scholar)</p> <p>Mynatt, E. D., Melenhorst, A. S., Fisk, A. D., & Rogers, W. (2004). Aware technologies for aging in place: understanding user needs and attitudes. <i>Pervasive Computing, IEEE</i>, 3(2), 36-41.</p>
<p>What is the main argument of the paper – the contribution to knowledge?</p> <p>For elders to adopt new technology, they need to be assured that it will meet a balance between giving them assistance and autonomy, as well as privacy and connectedness.</p>
<p>What methods were used?</p> <p>The researchers tested various technologies on a sample of elderly individuals to gather their thoughts on the perceived usefulness and likelihood of acceptance of the technology.</p>
<p>Do you think the work is valid? Are the results believable? Do you think it could be done better?</p> <p>The lengths gone to researching the impact these particular technologies have was adequate. The results drawn from this research are believable, however could be improved by testing the technologies in the actual home environment. Perceived ease of use and technological acceptance can change in a controlled or unfamiliar environment. They were able to draw from a larger sample by using a simulated home, but the results may have suffered in accuracy.</p>
<p>Why is the work important? How will it have an effect in the real world?</p> <p>The paper brings to light the contrasting values of connectedness, privacy and independence and outline ways to balance or appeal to the needs of the elderly in these different areas (when it comes to designing assistive technologies for them). Designers can use this paper to gain new insight into the potential avenues and obstacles when designing tech for elders</p>
<p>What did you like about the paper? What new ideas did it give you for your own work?</p> <p>The primary method the researchers used for this paper - conducting tests of technology with elders as testers - seems to yield immediate results that are likely to be relevant to our research question. Testing tech with the elderly would show us immediately what issues confront them (on a technical level) and we would be able to probe deeper to gain quick insights into their psychology while using the technology. This kind of method is unobtrusive (can be done in an elder's home environment) and can be carried out quickly.</p>