

Designing for Disconnection:
Long-distance Family Relationships in a South Korean Context

Euijin Hwang

A thesis presented in partial fulfilment of the requirements for the degree of
Doctor of Philosophy in Computing Science

School of Computing, Newcastle University

May, 2020

Acknowledgement

This thesis became a reality with the excellent support and help of many individuals. I would like to extend my sincere thanks to all of them.

Foremost, I would like to express my gratitude to my supervisors, Professor Patrick Olivier, Professor Andrew Monk, Dr. Ahmed Kharrufa and Dr. Reuben Kirkham for their guidance, advice, and support throughout the research process. They helped me gain significant knowledge and opened up many new opportunities in this field for me.

This work would not have been possible without my friends and colleagues in Open Lab. Especially, I wish to thank Dalia Al-Shahrabi for her help with developing the Silent Knock prototype. I also want to express my deepest gratitude to my friend and advisor Kevin Marshall who supported and encouraged, as well as helping me to remain positive. Furthermore, I want to send my gratitude to my old and dear friend, Han Sang Song, who provided huge support as I worked to achieve my dream.

My most sincere thanks go to my family. My parents, Hyun Joo Hwang and Young Joo Kim have been, and always will be, my greatest supporters and it is because of them that I could enjoy this beautiful journey. My sister, Cheongjo Hwang whose humour and care helped me through tough moments. Importantly, I wish to thank my beloved wife, Sairom Moon, who was always at my side when I needed her most and was a constant source of inspiration, help and support in completing this thesis.

I am also deeply grateful to my examiners, Professor David Kirk and Professor Corina Sas for their dedication, insightful reflections and personal warmth throughout my examination.

Abstract

This PhD thesis aims to understand communication in long-distance relationships (LDRs) in the context of South Korean culture and define the value of disconnection in communication. I have situated this work within the South Korean context due to the prioritisation of the family unit in Korean culture and the additional demands this can cause for family members. I have conducted a design-led, experience-centred research to develop a rich understanding of the communication practices and the value of disconnection to support healthy family relationships between South Korean international students in the UK and their parents in their home country.

I have done this through three interrelated research steps. Firstly, I ran two exploratory studies consisting of in-depth diaries and extended interviews. These provided a rich understanding of LDRs between Korean students and their parents, the challenges they face, and the communication strategies they use to maintain those relationships. The studies surfaced many students feel a duty to always be in contact with their parents and are trying to find ways to *respectfully* disconnect so that they can focus on their academic performance and adjusting to life in the UK. I then designed an experiential prototype, Silent Knock, to explore how technology might be designed to support it. Lastly, the system was deployed with geographically separated families between the UK and South Korea, exploring its role in reducing the communication pressure that the students feel while reassuring their parents that they are still thinking of them. I identified that intended disconnection may have a positive impact on alleviating communicational tensions between individuals and developing new channels for healthy LDRs.

This research makes four significant research contributions: (i) it provides a rich account of the lived experiences of South Korean family, highlighting a series of tensions in their LDRs. (ii) it presents a concept of Respectful Disconnection, which supports intended disconnection (or limitation) in communication to form healthy patterns of LDRs within a South Korean context. (iii) it proposes disconnection as an important component when designing future relationship-based technology, with Silent Knock as an implementation example. (iv) it details the sketching interviewing method, Sketching Dialogue, which was used in the extended interview study, to support participant's engagement in the research, especially participants from more reserved cultures.

Publication

Euijin Hwang, Reuben Kirkham, Andrew Monk and Patrick Olivier. 2018.

Respectful Disconnection: Understanding Long Distance Relationships in a South Korean Context. In *Proceedings of the Designing Interactive Systems Conference on – DIS '18*, <http://doi.org/10.1145/3196709.3196751>

: This paper introduces two case studies aimed at exploring the long-distance relationships (LDRs) between South Korean international students studying in the UK and their parents, who remain in their home country. This study is described in Chapter 4, including the research methods and findings. However, more detail is presented on these in this thesis. I was solely responsible for conducting both studies and analysing the data, with my supervisors providing support, advice, and feedback on the published manuscript.

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Chapter 1. Introduction

1.1 Overview

The principal concern of this thesis is to develop an understanding about long-distance family communication within an Eastern context and define the value of disconnection in supporting communication in long-distance relationships (LDRs). As society becomes more globalised, LDRs have become increasingly prevalent. For example, in 2017 the United Nations reported 258 million international migrants across the world, which has increased by more than 49 per cent (i.e. 85 million; from 173 to 258 million) compared to 2000 (United Nations and Department of Economic and Social Affairs, 2017). This shift is often driven by work or study patterns and the advent of modern technologies means that it is now easier than ever to maintain connection to partners, family, or friends when separated by long-distance (Rohlfing, 1995; Cao *et al.*, 2010; Pistole, Roberts and Chapman, 2010; Chatting *et al.*, 2015).

HCI has a rich history of work in this area. Research explores how we can use technology to overcome physical absence and maintain relationships (Gooch and Watts, 2012; Kirk *et al.*, 2016; Chatting *et al.*, 2017; Häkkinen *et al.*, 2018), tackle feelings of loneliness and a lack of intimacy and affection due to distance (Guldner and Swensen, 1995; Thieme *et al.*, 2011; Singhal *et al.*, 2017), and support shared interaction between separated parties (Licoppe, 2004; Thompson, Friedland and Cargiuolo, 2005; Follmer, Raffle and Go, 2010; Hunter *et al.*, 2014; Paay, Kjeldskov and Skov, 2015), with a particular emphasis on ‘physical connection’. Furthermore, the majority of this research within HCI has been conducted in a Western context, with little research focusing on supporting long-distance family separation in an Eastern cultural context. Many different types of relationships can be geographically separated. For the purposes of this work, I have focused on the experiences of South Korean international students in the United Kingdom (UK) and their relationships and communication with their families at home in South Korea. This ensures that I can explore the lived experience of the participants more deeply and carefully reflect on cultural and social values in their LDRs (Bourke, 2014). According to the statistics provided by UNESCO, furthermore, there are over 5 million international

students in 2018, and more than half of them have moved from Eastern countries (e.g. China, South Korea and India) to Western countries such as United States, United Kingdom and other European countries (UNESCO UIS, 2018). In addition, there are many challenging situations faced by Eastern students away from their parents. This research aims to address this gap by obtaining rich understandings of long-distance family relationships within the Eastern perspective through the lens of South Korean students studying in the UK, suggesting a new strand of research when designing LDR technology.

In this thesis, I posit that an emphasis on physical connection might not always be appropriate (Dauden Roquet and Sas, 2019), especially within an Eastern perspective. In a traditional Eastern setting, the underlying group-oriented Confucian culture is often markedly different: there is a cultural expectation of deference to senior members of the family (Yang and Henderson, 1958; Henderson, 1959; Kang, 2006), and a more focused emphasis on achievement within narrowly defined societal goals (Son, 2006; Kee, 2008). In other words, achievement is judged in terms of how you contribute to the family structure and place in society. Western culture prioritises the development and achievement of the individual. Therefore, the concept of the self has developed differently within the family between Eastern and Western. Furthermore, these factors are likely to have an influence on the dynamic of a long-distance (family) relationship between the parents and their children, with the prevalence of new technologies exacerbating tensions and resulting in sometimes distressing outcomes (Guldner and Swensen, 1995; Dainton and Aylor, 2001; Cao *et al.*, 2010). Within the communication aspect, they have a range of tensions caused by parental expectation and student's academic burden, which led me to think about the needs for disconnection in communication.

The research presented in this thesis explores communication in LDRs in an Eastern context, particularly the role of disconnection when designing technology to support healthy communication. I have focused on working with South Korean international students in the UK and their parents in home country because I, as a South Korean who is living in the UK, can build upon in-depth understanding of long-distance family communication through the research with my personal values (Sas, 2017) on Korean culture. I describe how I engaged in an experience-centred design approach (Wright and

McCarthy, 2010) to obtain rich accounts of the lived experiences of South Korean students in the UK whose parents remain in South Korea and understand their parents' experiences of maintaining connection over long-distance.

Through two in-depth exploratory case studies (i.e. a-month-long diary study with 4 South Korean students and extended interviews with 10 different students), I came to develop my understanding of how South Korean students often feel significant pressure from the relationships with their parents and the important role disconnection can play in helping their wellbeing. This led to the development of the concept of Respectful Disconnection, where students wanted distance from the communicational tensions that they experienced from the relationships with their parents but were aware of the need to be respectful of their parents' desire for connection. To further explore and understand how Respectful Disconnection might work, I ran Invisible Design (Briggs *et al.*, 2012) workshops, which supports creative discussion through an ambiguous film at early stage of the design process, with South Korean international students (i.e. 10 South Korean students). This highlighted technological mediation for disconnection in communication. In response to the findings, I designed Silent Knock.

Silent Knock is an experiential prototype to explore how communicational disconnection supports LDRs between the students and their parents in practice, taking a Research through Design (RtD) approach (Zimmerman, Forlizzi and Evenson, 2007). It is a simple, smartphone-based exploratory working prototype that can be used by (geographically) separated partners, family, or friends to show how often they think of each other through an asynchronous, minimal interaction. It has been designed to remove potential tensions around communication by avoiding synchronous connection or showing the quantity of communication and reducing the need for rich communication (e.g. text, voice, and media sharing). Instead, it allows the user to check and send 'knocks' at a time that is convenient to them. Silent Knock was deployed for 5 weeks with 9 separate South Korean families (i.e. 9 students and 13 parents) and resulted in the collection of a rich data that unpicked students' and parents' experiences of LDRs, system usage, and impact of intended disconnection on their relationships.

1.2. Research Questions

This research adopts an experience-centred design approach (Wright and McCarthy, 2010) to explore the LDRs between South Korean students while they are living and studying in the UK and their parents in home country. This provides an in-depth understanding of the lived experiences of an LDR and how technology can better support healthy relationships. This thesis focuses specifically on the following three research questions (RQs):

RQ1. What values are important to maintain LDRs between South Korean international students and their parents, who remain at home?

Many studies in the fields of psychology, sociology and education have addressed the challenges faced by international students. They often explore issues of mental health, settling into a different culture and different learning styles (Ladd and Luby Jr, 1999; Andrade, 2006), and according to them, international students face common concerns such as language difficulties, cultural differences, homesickness, and potentially racism (Mori, 2000). However, tensions arising from being separated from their families may also be a significant concern. Especially, South Korean families have a unique relationship between parents and children that is rooted in the philosophy and traditions of Confucianism (Park and Cho, 1995). Confucianism strongly puts the stress on the family ties and the value as family has been considered more important than any other relationships and the forms of identify (Kim and Choi, 1994). In addition, Confucian culture has a traditional hierarchy and the expectation for devotion to family before the individual (Zhang *et al.*, 2005). Therefore, a period of time spent studying abroad will bring a significant number of previously underexplored challenges for the student and their family in maintaining their LDRs. It is important to identify what is most important in maintaining this relationship and how being away from home for study impacts it.

RQ2. What is the role of technology in supporting LDRs in Eastern culture?

I have designed a series of case studies to explore and obtain a rich account of the lived experiences of LDRs between South Korean students and their parents consisting of two exploratory studies, design workshops and the system deployment. A concept of Respectful Disconnection has been developed based on the series of tensions identified from the exploratory study that the South Korean students face in their long-distance

family relationships, e.g. academic pressure from their parents, needing to tell white lies to ensure their parents did not feel worried, and a desire for disconnection pursuing individual boundaries that often left them feeling guilty at the same time. I have explored how Respectful Disconnection is a crucial aspect of healthy communication, allowing students to disconnect from family pressure and fully engage in their lives in the UK. I have also explored how HCI researchers can design for Respectful Disconnection through a speculative design workshop imagining what this looks like in practice and the deployment of Silent Knock, an experiential prototype, which is designed to understand how disconnection might be used and the impact on the family relationships. This provided a further understanding about LDRs from the perspective of both parents and the students and how disconnection played out within their everyday lives in a way to support an individual social boundary (Whitfield, 1993). Furthermore, these findings offer a chance to discuss the concept of Respectful Disconnection as a design resource for other types of relationship-based technologies.

RQ3. How can HCI support participation in research across different cultures?

The work described in this thesis also responds to recent dialogue in design about the impact of culture on levels of participation. South Korean participants are passive in expressing and communicating their thoughts and are worried about being different from other people's thoughts (Lee and Lee, 2009). This is because South Korea has been influenced by Confucianism, which highlights hierarchy as a key determinant of respect. Therefore, their culture may lead the participants to view the researcher as their senior and respond in a way they think the researcher most desires (Kee, 2008). Consequently, I sought to adopt more creative methods that prioritised interaction with participants. For example, the diary study involved aspects drawn from Cultural Probes (Gaver, Dunne and Pacenti, 1999). This more creative, personal approach maximised the engagement of participants and provided rich accounts of their lived experience. Using sketching techniques during interviews provided a space over which research and participant could communicate. This removed some pressure between researcher and participant, as the participant talked through their sketch, openly discussing their lived experience. Furthermore, design ideas were elicited through ambiguous film under the concept of Invisible Design (Briggs *et al.*, 2012).

I explore how different methods, specifically use of sketch, can provide a way to overcome the impact of hierarchy and ensure more equal and open participation from different cultures. This led to the development of a core approach of this work, Sketching Dialogue, where sketching was used to not only support open dialogue between the researcher and participant but also allow them to have an in-depth conversation on specific topics. I advocate for the use of methods that provide a shared space for interaction between researcher and participant, especially when working with people from more reserved cultures, such as Eastern culture. It also supports empathic conversation on the personal, sensitive experiences of the participants, which is crucial to experience-centred research (Wright and McCarthy, 2010).

1.3. Research Approach

Throughout this thesis, I have sought to develop an in-depth understanding of the experiences of South Korean international students in the UK. I explore how they experience managing their study in the UK, adapting to the different culture, and how their personal relationships play out in practice through communication over long-distance. To do this, I have taken an experience-centred design approach to this research. Experience-centred design (Wright and McCarthy, 2010) is a qualitative research approach, which highlights the rich understanding of experiences as an important resource for design. This approach provides a methodology and research practice that can understand lived experience and support empathic communication with those who took part in the research.

Understanding lived experiences

Understanding user's lived experience is central to experience-centred design (McCarthy and Wright, 2004). Experience-centred design values open, flexible and empathetic ways of understanding aesthetics of experience (Leong *et al.*, 2011). In other words, experience-centred design provides HCI researchers a chance to engage with a number of different layers of participants' meaningful experiences (Wright and McCarthy, 2010). It does this by having an in-depth dialogue with the participants and listening to their stories. Researchers can not only directly ask the participants about their lives, but also in

their stories, they can deeply understand participant's experiences from their perspectives along with their tones and voice (Wright and McCarthy, 2010).

Capturing the meaningful experiences is difficult, and possibly be even more so with participants from Eastern cultures, where standing in society may be determined by age (Lee and Lee, 2009). In an Eastern cultural context, younger people are often asked to listen to older people and show their respect for them by hiding their voice (Zhang *et al.*, 2005). This cultural attitude can limit the relationship between researchers and participants, often preventing more meaningful or in-depth conversations. Many researchers in HCI have long sought to innovate around methods and find new ways to engage participants and explore their lived experiences in research and design activities (Olson and Kellogg, 2014). Approaches range from more traditional interview and ethnographic-based approaches (Spradley, 1979; Seidman, 1998; Rabionet, 2011) that seek to better understand those who are engaging in my research and design work. Creative approaches including design workshops (Anthony *et al.*, 2012; Iversen *et al.*, 2012), cultural probes (Gaver *et al.*, 2004; Graham *et al.*, 2007) and technology probes (Hutchinson *et al.*, 2003), using photograph (Crilly, Blackwell and Clarkson, 2006) and prompt card (Spencer, 2009; Rowley *et al.*, 2012), and hands-on making activities (Hutchinson *et al.*, 2003; Graham *et al.*, 2007) have encouraged increased meaningful engagement in research, building relationships, and gathering rich accounts of lived experience (Nemeth *et al.*, 2004; Luck, 2007).

This PhD thesis seeks to suggest a new vision to design healthy LDRs within Eastern perspectives by understanding South Korean international students' lives and their challenges in variety of situations in the UK. I therefore used a set of exploratory studies, following the approach of experience-centred design, including a diary study and extended interviews, to develop understanding of their challenges and the needs for technology, and even deciding the following research directions and the methods that I am adopting.

Supporting empathic communication

A key consideration when choosing to take an experience-centred design approach was that it can support empathic communication between the researcher and participants. This was crucial to this research because of the impact of culture on how South Korean people

express themselves, their respect for seniority often meaning they express opinions they perceive someone in a position of responsibility (such as the researcher) might want to hear, and due to the potentially sensitive nature of family relationships.

South Korea is influenced by a culture that does not allow for separation of the individual from the collective society (Kim and Choi, 1994; Kashima *et al.*, 1995; Oetzel and Ting-Toomey, 2003). Research (Lee and Lee, 2009) suggests that South Korean people are more passive when it comes to expressing their own thoughts than people from Western culture as they are cautious about having different opinions from the others.

Understanding individual's experience is challenging because it cannot be done by simply observing what people do. In experience-centred design, therefore, empathic conversation has been highlighted as it has a much deeper understanding of the user's lived experiences and responding to them in a conversational way (Wright and McCarthy, 2010). Therefore, the interviews in this thesis have been designed as an individual in-depth interview, so that the participants had space to share their thoughts and were not worried about conforming to the opinions of others. For the group discussion (e.g. design workshops in Chapter 5), the moderator (i.e. researcher) had a key role to ensure that participants could each share their thoughts and develop the discussion.

Secondly, South Korea is also influenced by Confucian culture highlighting hierarchy in social relations and emphasising respect for seniority (Yum, 1988; Kee, 2008). This might result in a hierarchy between participants and the researcher, meaning that the participants could respond based on what they think the researcher wants to hear. Experience-centred design prioritises narrative and story-telling, where the participant recounts their experience to the researcher (Wright and McCarthy, 2010). This allowed me to ensure that my participants were able to lead the conversations and tell their experience from their perspective. For example, in one of my exploratory studies, I provided a list of the different themes for the conversation (i.e. situation-specific cards; Chapter 4), which could be selected by the participants at the beginning of the interview. This allows the participants have a chance to decide the topics they want to talk within their pace.

Lastly, family relationships are normally private, often sensitive, and can be replete with secrets. Experience-centred design offers a way to overcome this as it supports the research

and participant to build a relationship and develop trust. Open, exploratory interviews offer a way to overcome this as the participant can lead the interview at a pace and in a direction that makes them comfortable (Hillebrand and Berg, 2006). This offers “*a meaningful emotional encounter between researchers and the participants that involves a rich, holistic understanding of that person’s lived and felt life experiences*” (Thieme *et al.*, 2014, p.140). Through this approach, I was able to build a close relationship with my participants, both through deep, engaged conversation and through repeated engagement throughout the research process for this project. Consequently, experience-centred design offered a way to overcome any privacy and sensitivity concerns that a study participant might have and ensured they were comfortable to open share and make sense of their experiences with me.

Learning through the design

I have conducted this research as a journey to generate new knowledge in Eastern LDRs, specifically focusing on South Korean. This PhD thesis, therefore, engages in design-led inquiry to explore the lived experiences of South Korean international students, value of long-distance communication and a new vision for designing LDR technology.

Design practice has been considered as a crucial element in a process of the research in HCI. Research through Design (RtD) enables researchers (and design practitioners) to generate new knowledge by conducting design activities along with experimenting through the creation of a new design artefact (Zimmerman, Forlizzi and Evenson, 2007). It supports researchers to deeply understand the people, problem, and the context around a situation that they feel that they could improve (Gaver, 2012). Sein *et al.* highlight that learning should be a continuous process over the whole design process including identifying the problem, designing artefact and the evaluation (Sein *et al.*, 2011). This has been central to the approach taken in this PhD thesis. I have developed a rich understanding of the lived experience of South Korean international students in the UK and their families back in South Korea. To continue learning about communication over long-distance in an Eastern context, I have developed a technology research probe (Boehner *et al.*, 2007) that can help understand how communication in these relationships plays out in practice.

In this respect, I do not consider designing new LDR technology as my research outcome. Rather, I developed and deployed an interactive LDR technology as an experiential prototype to understand how South Korean families maintain their LDRs in use of the technology provided under their own separate situations.

Use of thematic analysis

Analysis of the data mostly followed a thematic analysis approach (Braun and Clarke, 2006), with the exception of the Sketching Dialogue study. Through thematic analysis I was able to identify a number of key insights from the data set. Thematic analysis has been identified as a flexible but rigorous form of analysis that is broad enough to effectively capture the experiences faced by the participants (Braun and Clarke, 2006). This is a popular approach of qualitative data analysis, which has been used for *systematically* identifying and organising (i.e. coding) insights into the patterns of meaning (i.e. themes) from a data set (Braun and Clarke, 2012).

The research questions of this work were experiential and exploratory, meaning I coded my data primarily through an inductive approach. This means that my analysis was embedded in the data rather than being grounded in or guided by a theoretical framework. However, I also used a more deductive approach, such as guiding analysis of data using Respectful Disconnection or the values of communication I have identified in my work (Fereday and Muir-Cochrane, 2006).

I have broadly followed the approach set out by Braun and Clarke (2012). Firstly, I read the interview transcripts continuously in order to familiarise myself with the data. I then coded the data as an identifying (or labelling) process to describe the content of the data. Lastly, themes emerged and were formed based on the grouping of codes. This was supplemented with a thematic map, which represent “a level of patterned meaning” (Braun and Clarke, 2006) that are particularly relevant to the research question. These themes would provide a coherent story of the data set. More specific analysis information is provided in each chapter.

All of the studies were approved by the university ethics committee. Furthermore, in line with the Data Protection Act (1998), the findings (including the quotes and selection of images) in each case study were anonymised to protect the privacy of the participants.

1.4. Thesis Contributions

This PhD makes four contributions to the field of HCI:

- (a) In responding to RQ1, this thesis provides an empirical understanding of the long-distance family relationships in a South Korean context: I have conducted two in-depth exploratory qualitative studies with South Korean international students in the UK about their LDRs with the parents in their home country. Firstly, through a month-long diary study (4 students), I have deeply explored their lived experiences in the UK, which present their daily concerns along with their emotional and behaviour changes. Following this, the extended interviews (10 students) have been conducted to have further understanding about their use of technology to address their concerns. The findings from both exploratory studies provide a new lens on the value of ‘disconnection’ in their long-distance communications. I argue that this provides a new avenue for HCI research focusing on communication in LDRs, which traditionally has focused on a Western context.
- (b) Responding to RQ2, the concept of Respectful Disconnection suggests a new way to design to support healthy communication in relationships. This has been developed through both close review of previous research on family relationships within Eastern perspectives and the series of exploratory case studies with South Korean international students. This is a novel concept that highlights the need for appropriately reasonable, intended disconnection between individuals in a long-distance situation to support their healthy (family) relationships. This provides a novel contribution as most previous research focuses on increasing opportunities for communication.
- (c) A design contribution, through developing an experiential prototype, i.e. Silent Knock, to embrace slow design and gives form to the concept of Respectful Disconnection. This is a smartphone-based application supporting meaningful communication through the radically limited interaction between individuals. Throughout the deployment study, I captured how the disconnection in communication, i.e. minimal interaction, releases the communicational tensions between South Korean international students and their parents in Korea over long-

distance and supports healthy communication. Furthermore, I reflect on this to provide a new lens for designing future LDR technology. This also responds to RQ2.

- (d) In responding to RQ3, I have developed a novel empathetic, interactive semi-structured interviewing method, Sketching Dialogue, to support interactive, open discussion between interviewer and the interviewee by the use of sketching. This is a technique I have used in one of my exploratory studies as a means to support engagement of participants who may be more reserved, especially those from Eastern cultures. I present this as a toolkit for researchers and designers working with similar participants groups to support more sensitive and empathic engagement.

1.5. Thesis Structure

This thesis has been structured as follows:

Chapter 2 reviews literature from other LDR studies in the field of HCI. Literature is drawn from different types of long-distance relationships, including romantic relationships or familial relationships. I explore the challenges faced in these situations and how the role of technology to support long-distance communication. This surfaced that the majority of LDR research has been conducted in a Western context. I then explore the family relationship in South Korean culture and the differences with other relationships or the cultures, especially Western culture. I end this chapter by identifying three notable gaps in research in this area that HCI can address.

Chapter 3 provides an overview of the methods from this thesis, including diary method, semi-structured interview and Invisible Design method. It also presents a novel interactive interviewing method, Sketching Dialogue, that I used for the extended interview (presented in Chapter 4). I used my own sketching skills to have more interactive discussion with the interviewee and found that this method opened up a space for dialogue between the researcher and typically reserved South Korean students. This chapter illustrates the value of this technique along with the visual examples.

Chapter 4 presents two separate but interrelated exploratory studies, a diary study and extended interviews, to explore lived experiences of the South Korean students studying in the UK and their use of technology while maintaining their LDRs with their parents over long-term geographical distances. This chapter will identify a series of tensions in communications faced by the South Korean within their LDRs with their parents. These tensions highlight the needs for an intended disconnection in communication for healthy LDRs, which is the basis of the concept of Respectful Disconnection.

Chapter 5 illustrates how I obtained the idea for Silent Knock, the experiential prototype developed as part of this thesis. I present two Invisible Design (Briggs *et al.*, 2012) workshops which facilitated critical and creative discussion about their challenges maintaining LDRs with their parents and the new ideas addressing those challenges. Using Invisible Design as the approach, I have developed a short ambiguous film illustrating a future imagined technology as an inspirational artefact to support discussion. In this chapter, I talk about the key elements of the imagined technology and how I present them in the film. Finally, four design considerations have been discussed and suggested.

Chapter 6 illustrates a smartphone-based LDR technology, Silent Knock, which has been developed based on the four design considerations discussed in the workshop (Chapter 5). The system aimed to not only support long-distance communication between geographically separated individuals (e.g. families, friends and colleagues) but also explore the practical experiences in LDRs between South Korean families. In this chapter, I discussed how I designed Silent Knock along with the captured images of the system and the reasoning behind of my decision making.

Chapter 7 evaluates Silent Knock through a 5-week deployment of the system. Silent Knock was deployed with 9 South Korean families who are geographically separated between UK and South Korea. One notable outcome of this chapter is exploring parental lived experiences in their LDRs. This chapter also explores the use of Silent Knock, its impact on their experiences of communication, and the role disconnection played in their communication.

Chapter 8 directly responds to the research questions of this research. I discuss a new vision for this area in light of the previous LDR research in the field of HCI, the communicational challenges between South Korean families over long-distance and their needs, and the value of Sketching Dialogue in supporting engaging, empathising and in-depth discussion between researcher and the participants. I also highlight some limitations of this work and potential directions for future research in this area.

In the final chapter, Chapter 9, I conclude the thesis, drawing together the work I have done and framing the key findings of my research.

Chapter 2. Literature Review

2.1 Introduction

HCI research has a long tradition of research exploring how to support long-distance family relationships. However, the majority of this work has occurred in a Western context and focused on increasing opportunities for communication, feelings of presence or intimacy in geographically separated family, romantic partners, or friends. This chapter illustrates a potential gap in this area caused by the different cultural value. South Korean culture and Eastern culture in general, are heavily influenced by the values of Confucianism; this means that an individual understands oneself and their achievements in relation to the family unit and that there is an expectation to put family ahead of their own individual success. I argue that this work offers a significant contribution to HCI research designing for LDR technologies as it extends our understanding of the factors crucial to designing these technologies and provides nuance around the role of culture.

The research in this thesis is situated within the context of South Korean international students in the UK and their relationships with their parents who remain at home in South Korea. Research reviewed here illuminates the many challenges faced by international students, especially East Asian students, when studying in a new country and adapting to a new way of life. I posit that the specific pressures of family rituals and responsibilities in Confucian-influenced cultures may exacerbate this pressure along with the use of technology through a review of wellbeing, highlighting how stressful long-distance family relationships can reduce wellbeing both by increasing negative experiences (Hedonic perspective) and decreasing the sense of connection to family that is so important to a life of meaning in an Eastern context (Eudaimonic perspective). This opens up a space for HCI research to contribute to the design of technologies that can support long-distance family relationships while being sensitive to the nuances of Eastern culture.

This review highlights the value of individuals' boundaries as part of forming and maintaining healthy family relationships. This also argues that slow design may provide

the context within which to design LDR technologies in this context. This prioritises intentionality and quality of interaction over speed, efficiency, and immediacy. I argue that an experience-centred, slow design approach can provide a rich understanding of the parent-student relationship and ensure quality interaction between South Korean international students, providing meaningful interaction, social boundaries, and improving the quality of wellbeing in their LDRs.

This chapter starts with by exploring the family relationship, including defining family relationships, the value of family relationships, differences in understanding of family between Eastern and Western cultures and when compared to other social relationships. I then focus on the challenges international students from Eastern countries face while maintaining their relationship with their family over when separated by a long distance. I examine this in light of theories of wellbeing, i.e. Hedonic wellbeing (Seligman and Csikszentmihalyi, 2014) and Eudaimonic wellbeing (Ryff, 1995). Following this, I review related HCI research exploring LDRs, highlighting the gaps within this new area of interest in the community.

2.2. Understanding Family Relationships

This section presents a review of previous research to obtain a better understanding about the family relationships and its importance in general. This gives a better sense of the uniqueness of family that clarify the differences from the other types of relationships.

2.2.1. Defining family relationships

Traditional views of family identify it as ‘the nuclear family’, i.e. a young couple, close in age who are married, have children, and own an adequate home (Bernardes, 1997).

Depending on the circumstances of the individual, however, families could be more diverse and complex within their relationships (Weigel, 2008). Burgess and Locke define the family as follows as *“a group of people united by ties of marriage, blood or adaptation constituting a single household interacting with each other in their respective social role of husband and wife, mother and father, brother and sister creating a common culture.”* (Burgess and Locke, 1945, p.8) Family, therefore, is a group of people within a single household, tied together through some form of bond, whether marriage, blood, or

need. According to Wamboldt and Reiss, however, family could be more about psychological or emotional companionship. They defined a family *as a group of intimates who share an identity within the group* (Wamboldt and Reiss, 1989). On the other hand, Noller and Fitzpatrick argued that there are three aspects we need to consider when we define family: structure, task orientation, and transactional process (Noller and Fitzpatrick, 1993). Firstly, the structure describes the number of family members, their relatives linked by blood, and their hierarchy order. Secondly, task orientation presents a (family) group work conducting for mutual needs. And lastly, transactional process highlights strong ties between individuals along with making history and sharing experiences together. Standard family theory (Cheal, 1991) highlights the differentiation of roles within the family, and how this was supposed to enable the family to maintain a positive and healthy relationships. The husband/father was considered to be the instrumental leader, the main breadwinner who provided for the family while the wife/mother was considered the expressive leader, remaining at home, and caring for the children at home.

Given the diversity of experiences and expectations within families, a family relationship does not have one specific definition, often taking a variety of forms (Greenstein, 2006). Previous research acknowledge the changing family structure, with less defined gender roles, shared home-making and emotional care responsibility, and increasingly non-traditional families such as lesbian and gay families (Jagger and Wright, 1999). Indeed, the shape of the family in the Western countries has been radically altered by a number of events from the last decades (Happel and Becker, 2006). For example, from the rapidly growth of divorce rates, there are a growing number of households headed by women as a single parent or the households with children who have only one parent. In addition, the size of the households has been reduced due to declining birth rates. There are more and more different types of families under so many different possibilities in the situation.

2.2.2. Value of family relationships

Family relationship gives a fundamentally different experience from other types of social relationships. Beutler *et al.* presented the term *family realm* (Beutler *et al.*, 2006) highlighting own uniqueness, which is distinguished from the other relationships. They noted:

“Family realm has at least seven characteristics that distinguish from other areas of human experience. These are (a) the generational nature and permanence of family relationships, (b) concern with ‘total’ persons, (c) the simultaneous process orientation that grows out of familial caregiving, (d) a unique and intense emotionality, (e) an emphasis on qualitative purposes and processes, (f) an altruistic orientation, and (g) a nurturing form of governance.” (Beutler et al., 2006, p.806)

In addition, research in various fields emphasised the importance of ‘family relationships’ that distinguish them from other relationships. In the field of education, family has been considered as an important environment for children’s development, such as their social behaviour and academic achievement, so they highlight the needs for interaction within family members. According to Rutter’s research on influences of family on children’s behavioural development (Rutter, 1985), children’s development are heavily influenced by the environmental effect, which is about e.g. parental criminality, family discord, ineffective discipline and their weak family relationships, along with the hereditary influences. Parental involvement is also important for children’s academic achievement. In their research on relationships between family and the school (Marchant, Paulson and Rothlisberg, 2001), Marchant et al. noted that supportive social environment, such as parental values and involvement in school practice, influence on children’s motivation and academic competence. Family also plays a crucial role in supporting children’s cognitive development. In other words, children develop their self-concept, aspirations, attitudes to the learning process and their ability to interact with other people from the family environment (Rutter, 1985).

Family relationships has been considered as an essential healing resource for the patients who need special care. Johnson et al. highlight making partnerships with family as a valuable approach for enhancing quality of health care (Johnson, Abraham and Conway, 2008). This is considered as a medical family therapy, which has been suggested to address psychological, interpersonal concerns that can be brought with illness or other medical problems (Shapiro, 2008). Shelton et al. also highlight the value of family relationships in health care as the family is the constant in the patient lives (Shelton, Jeppson and Johnson, 1987). They noted that *“parents play a central role in their child’s life also involves valuing their judgement and respecting the unique contributions that*

they make. Because parents are the only ones who see their child in all settings, they really are the 'experts'." (Shelton, Jeppson and Johnson, 1987, p.9)

Family environment is supportive not only physically and psychologically, but also socially (Shukla *et al.*, 2016). Family is a fundamental unit of society as children get their early social development from their families (Burgess, E. W., & Locke, 1945). Self-determination theory (SDT) may explain how family plays an important role in an individual's social development (Ryan and Deci, 2000). SDT is a theory of intrinsic motivation that suggests that an individual who has a high degree of autonomy, competence, and relatedness will be flourishing (Deci and Ryan, 2000). In this sense, if an individual has independence and control over their own lives, has the skills and abilities to complete the challenges they face, and has a sense of belonging and closeness with important individuals, they are likely to flourish in society (Marshall *et al.*, 2014). When individuals develop their 'self' and yield enhanced self-motivation, these would improve their mental wellbeing (Ryan and Deci, 2000b). Secondly, competence refers to individual's ability of achievement and challenge spirit. Lastly, relatedness highlights the needs to belong and individual's desire to form a group to be stronger and more stable (Baumeister and Leary, 1995). The relatedness developed through several types of social interactions and resultant feelings (Reis *et al.*, 2000). In the respect that family is an initial and a fundamental unit of the society, having close and healthy family relationships may improve individuals' social relations and their wellbeing.

2.2.3. Healthy boundaries in family relationship

"For some people, boundaries may bring up images of walls, barriers to intimacy, or even selfishness...if you understand what boundaries are and do, they can be one of the most helpful tools in your life to develop love, responsibility, and freedom." (Cloud and Townsend, 2000, p.28)

Individual boundaries have often been considered important to maintaining healthy relationship with other people (Whitfield, 1993). Whitfield warned that if we neglect our own space and inner world, we lose our individual identity and impact our wellbeing. He argued that healthy boundaries help us *"feel freer and safer"* to be ourselves (Whitfield, 1993):

“Having healthy boundaries enable us to affirm and honour ourselves... It also enables us to move from self-betrayal to self-affirmation, self-regard and self-trust.”
(Whitfield, 1993, p.18)

While Whitfield spoke in terms of romantic relationships, his perspective can also be applied to family relationships. To have a healthy family relationship, it can be important to have independent thoughts, feelings, and judgments (Waldo, Horne and Kenny, 2009). This means that each family member maintains separate boundaries for the self, responsibility and own identity, and that this is critical to maintaining harmony within the family relationship. Healthy family functioning (Barnhill, 1979) introduces the concepts of family individuation and family enmeshment. Family individuation refers to the independence, identity, and responsibility of each individual member, presenting them as an individual being with their own identity and autonomy. Family enmeshment refers *“to poorly delineated boundaries of self, to an identity dependent on others, to symbiosis, and to shared ego fusion.”* (Barnhill, 1979, p.95) This highlights how, in some situations, it can be difficult to separate the individual from the family unit, reducing the sense of healthy individual boundaries. Yet, research suggests that enmeshed family relationships are not healthy, reducing individual boundaries and the sense of self (Papanek, 1959).

2.3. Understanding South Korean Family within Eastern Perspective

Cultural differences can have a significant impact on the role, understanding, and value of the boundary of the self within the family. This section reviews aspects of Eastern culture that influence family structure and relationships.

2.3.1. Confucianism in comparison with Western culture

Confucianism is an East Asian tradition (Yao, 2013). The term Confucianism is derived from the perspective of Confucius and his followers, and it has been highly influenced by notions of Taoism, Shamanism and Buddhism (Nuyen, 1999). Previous research described its meaning within various perspectives. Yao notes that Confucianism arose as *“a tradition generally rooted in Chinese culture and nurtured by Confucius and Confucians rather than a new religion created, or a new value system initiated, by Confucius himself alone”* (Yao, 2013, p.17). It has been defined as *“humanism, which is*

understood as a warm human feeling between people and strongly emphasizes reciprocity” (Yum, 1988, p.374) and as *“interpersonal harmony, relational hierarchy and traditional conservatism”* (Zhang *et al.*, 2005). These definitions highlight the submission of the individual to the familial or society whole and the prioritisation of group (i.e. family or society) success rather than individual success.

Despite roots in China, Confucianism has had a strong impact in many East Asian countries, especially South Korea (Lee, 1998; Kee, 2008; Yao, 2013). Its impact is particularly visible in people and how they defined the self. This is demonstrated through research comparing behaviours of Eastern and Western people in different contexts. A study in the field of business highlighted that Asian consumers are different from the Western consumer, in terms of interdependent self-concepts, the balance between individual and group needs, and hierarchy (Wong and Ahuvia, 1998). In other words, there are obvious differences between the two culture in terms of the conception of the self. Markus and Kitayama (Markus and Kitayama, 1991) stated that the conception of self can be divided into two different types, which are independent and interdependent. They identified that people in Western culture tend to value independence of the self, and it is rooted in the point of view that individuals are fundamentally separated. For Western people, the inner self, including personal preferences, abilities and values, is the most important aspect in regulating their behaviour. On the other hand, the interdependent construal of self is dominant in Eastern cultures, and it is based on the concept that human beings are fundamentally connected with each other. Therefore, people from the Eastern culture tend to consider one’s cultural, professional and social relationships when they seek to characterise themselves. Therefore, Eastern and Western people provide different answers when they are asked about their identity (Wong and Ahuvia, 1998). While Western people answer based on their own internal attributes such as intelligence, creativity and personality, Eastern people would answer based on social roles, family relationships and national aspects. Similarly, Wong and Ahuvia (Wong and Ahuvia, 1998) stated that people from Eastern culture tend to consider the individual as a member of a group and judge them based on group identifies, such as family and nationality. However, people from Western culture tend to have much clearer distinctions between individuals and group identifies. The different construal of self between Eastern and Western lie on opposite ends of a continuum, and other cultural positions may be found somewhere in the middle (Wong and Ahuvia, 1998).

Secondly, there are huge differences between Eastern and Western culture in terms of their motivation to achieve their needs (Wong and Ahuvia, 1998). Western culture fundamentally highlights individual freedom, which is valued as a good in itself because it enables the individual to have their own authentic life by expressing their inner values and needs. In contrast, Eastern culture values conformity to the group and considers it more important (Wessen, Weber and Gerth, 1951). In this perspective, a good person is expected to be strong and thoughtful to put their own internal feelings or desires aside, acting in a way that makes smooth social relations and achieves group goals. In studies on the patterns of social interaction (Wheeler, Reis and Bond, 1989), Eastern culture highlights harmonious interactions among group members, whereas Western culture focuses on expressing personal preferences to meet their needs. Furthermore, strong social hierarchies are prominent elements under collectivist cultures such as Eastern culture (Markus and Kitayama, 1991) and this takes the form of respect for authority and obedience to political dictates (Bond, 1994). Western culture also underlies values of social hierarchies, but Western social hierarchy requires a condition that it clearly be linked with individual achievements (Bond and Kahn, 1968).

2.3.2. South Korean family relationships under the influence of Confucian culture

Confucianism has been a dominant ideology in South Korea for over two millennia (Yang and Henderson, 1958; Yang and Henderson, 1959). It has been most influential in shaping the family structure and behaviour patterns of South Korean family. According to the Confucian perspective, family is the fundamental unit of the society and it is the fundamental goal of all family members to maintain this unity and pass it down to future generations (Nuyen, 1999). Therefore, it has had a significant impact on the relationship between parent and child and the expectations placed upon South Korean children. In this respect, the relationship between parent and child is considered the most important family relationship, rather than the one between husband and wife or between siblings (Nuyen, 1999). Furthermore, the relationships between parents and children under Confucianism are not horizontal like the concept of mutual love and equality. Rather, it is vertical relationships, which is characterized by the concepts of authority and obedience (Nuyen, 1999). Under this vertical relationships, each individual has their specific role and position, and each family member will fulfil their duties in their roles (Park and Cho, 1995).

Modern South Korea is founded upon a highly educated workforce competing for prestigious jobs in well-respected companies (Li, 2001; Lee, 2006). This has led to a culture that is obsessed with academic achievement and “*an examination hell*” for university entrants (Lee, 2006). In this sense, many parents expect their children to work exceptionally hard, attend the best schools and universities, achieve excellent grades and be rewarded with highly prestigious jobs. This is supported by a wealth of studies that illustrate the correlation between parental expectation and children’s school achievement (Burgess and Locke, 1945).

In addition, there is an expectation that children will remain devoted to and focused on their family (Kim and Choi, 1994). For example, being a son or a daughter brings with it a moral responsibility to remain devoted to the parents, and they always need to put the family unit over their own needs. In terms of the importance of maintaining healthy boundaries, this culture is likely to promote unhealthy relationships between families. From the research on Confucianism and its influence on the children’s academic achievement, the notion of filial piety, which is defined as a remaining loyal to the family, was highlighted. Filial piety is a reciprocal relationship in nature (Ho, 1996a), which means that parents are willing to sacrifice and do whatever they can within their means to provide the ideal environment for their children’s better life. In turn the children repay them by showing their respect and taking care of their parents. In their study, one participant explained the correlation between the notion of filial piety and children’s academic achievement; children within Confucian culture often exhibit an unquestioned compliance with their parental expectation and decide to study abroad in order to please their parents (Li, 2001). The participant said:

“Children desire to honour their families and ancestor. If they fail, they would lose face in front of their families...they want to succeed, to feel good, and to bring honour to their families. Whereas Western kids rarely have this kind of thinking...The ultimate goal of Chinese children is to strive for a good position in society. They want people who know them, such as their parents, friends, teachers, to be proud of them...they have a sense of shame. This is their strength.” (Li, 2001, p.482)

In this respect, according to cross-cultural research on parenting styles (Dornbusch *et al.*, 1987; Chao, 1994), the authoritarian parenting style is seen more in relationships between parents and children within an Eastern culture than the Western. Parents under Eastern culture tend to be more concerned with the control of their children's impulse than parents in Western culture (Ho, 1986). People within Eastern culture stress that certain amount of parental pressure is necessary for children's success, while Western culture highlight children's natural development (Li, 2001). In addition, being respected and well thought of in their community (e.g. society and family) may be more important to Eastern students. Therefore, it is important to explore how these values impact on the South Korean international students when they are living abroad and how the nature of communication may change.

2.3.3. Understanding international students from Eastern culture

Over the past 20 years, there has been a significantly increase in the number of students who leave their home country to gain an international education and experience a new language, culture, and way of living (OECD, 2004). In this trend, the increasing sophistication of technology has contributed to this as smartphones, video conferencing services (e.g. Skype), social network sites (SNSs), and mobile instant message (MIM) applications mean people are easily connected with each other over long-distance (Boulos *et al.*, 2011) and perceptions of separation and distance can be reduced.

Being an international student at a third-level institution, however, can be a tough experience, with one study highlighting that 41% of international students experienced substantial levels of stress (Russell, Rosenthal and Thomson, 2010), especially when they need to adapt to a new culture at the same time (Berry *et al.*, 1987). This can include adapting to a new physical environment, language, education system, and inherent social customs and norms, while also potentially dealing with homesickness even financial problems (Church, 1982; Lin and Yi, 1997).

To overcome these challenges, schools and communities offer a variety of support. Firstly, universities offer support services, such as language learning courses, tutoring, and other specific programs that can help a student adjust (Andrade, 2006). Students may have academic adjustment aided by teachers, including having a small group seminar, providing same language skill class, suggested keywords on the board, and speak slowly

and give more time to reflect on the contents of a class (Andrade, 2006). The students are also provided cultural exchange programs to join, and this offers them opportunities to understand non-verbal behaviour, develop friendships with local people, and join the university community (Jacob and Greggo, 2001).

Previous studies, however, have indicated that international students who come from Asian countries, about 53% of all international students in the world, experience significantly more stress than Western students who have moved to study at another Western institution (Parr, Bradley and Bingi, 1992; Guclu, 1993). This suggests that Eastern students might require increased support to overcome the greater cultural difference between their home culture and the culture they now reside in. Additionally, interpersonal relationships (e.g. family relationships and friendships) of international students from the Eastern culture may also be a significant source of difficulty for the student as they seek to adapt to their new home (Mori, 2000). In the face of such challenges, most international students, regardless of nationality, report desiring more emotional, informational, and practical support compared to local students (Ramsay, Jones and Barker, 2007).

Given the prominence of family and respecting the family culture, maintaining relationships with their parents, may provide another, underexplored obstacle to South Korean students seeking to adapt to an international university. Ultimately, this may make an already daunting adaptation even more difficult and, potentially, reducing their wellbeing. This suggests a new avenue to understand how support programs or other interventions may help Eastern international students adapt to a new culture.

2.4. Understanding Wellbeing

Key to adapting to a new country is to understand how to improve or maintain one's wellbeing. This section explores the meaning of wellbeing and how it is influenced by family relationships. Difficulties in the family relationship of an international student in a new country could be detrimental to their ability to flourish. Here, I review what enables an individual to flourish and how family impacts that process.

2.4.1. Hedonic wellbeing

Hedonic wellbeing emphasises seeking enjoyable, pleasant experiences. According to this point of view, people are happier and have higher wellbeing when they have more positive experiences than negative ones (Marshall *et al.*, 2014). Positive experiences may include feelings of hope, happiness, love, courage, perseverance, forgiveness, future mindedness, spirituality, originality and so on (Seligman and Csikszentmihalyi, 2014). On the other hand, negative experiences can be described as being accompanied by the feelings of fear, anxiety, worry, anger, shame, and worthlessness (Lee *et al.*, 2008). Therefore, more negative feelings than positive feelings during the day would result in lower levels of wellbeing. Current studies acknowledged that the negative feelings have impacts on individual's behaviour and their wellbeing through insomnia, inability to concentrate, loss of appetite, increased alcohol use, and thoughts of suicide (Baum and Posluszny, 1999; Mayne, 1999).

The meaning of wellbeing is difficult to define, but measuring wellbeing is even harder (Conceição and Bandura, 2016). Measures of Subjective Wellbeing (SWB) are used in the Hedonic perspective. SWB tells that happiness can be increased through life satisfaction, the presence of positive feelings, and the absence of negative feelings (Ryan and Deci, 2001). Consumption has often been used as a proxy measure of wellbeing, especially Gross Domestic Product (GDP), as it assumes that wellbeing increases with consumption (Wong and Ahuvia, 1998). However, using GDP to measure wellbeing has several flaws. Firstly, it does not consider some invisible activities (e.g. government services). Secondly, it is difficult to measure the environmental changes caused by people's consumption pattern (e.g. pollution, global warming, and depletion of natural resources). Lastly, GDP does not measure the value of non-market activities (e.g. house work, leisure and illegal activities) (Giovannini, Hall and D'Ercole, 2006). Therefore, it is important to also take subjective measures of wellbeing that consider people's emotional experiences into account (Conceição and Bandura, 2016) as these provide more holistic understandings of human life.

2.4.2. Eudaimonic wellbeing

The Eudaimonic perspective offers a counterpoint. This perspective argues that positive wellbeing comes from living a good life that is in tune with your personal values rather than seeking out an excess of pleasant experiences (Marshall *et al.*, 2014). This approach

describes wellbeing as not being derived from pleasure but that it is deeply related to the individuals' efforts to achieve a goal which is valuable to them, and their level of satisfaction (Ryff, 1995). Therefore, people would promote wellbeing when they have valuable experiences although their feelings were not representative of happiness.

The concept of Personal Expressiveness (PE) is deeply related to the theory of Eudaimonic. The Eudaimonic view highlights the daimon or people's 'true self'. The meaning of the daimon refers to the potentialities of each individual and their efforts to get greatest achievement in living (Conceição and Bandura, 2016). Therefore, it tends to provide a direction for how to live a meaningful life.

According to Waterman (Conceição and Bandura, 2016), people find the value of PE as a means to measure their wellbeing because each individual has their own capability and standard for living. In addition, it is unclear to define which endeavours are more valuable than others. Instead, it highlights the value of individual's intrinsic motivation, flow and self-actualisation. Compared to the concept of Hedonic wellbeing, PE puts more values on how much people desire to do that for being happy (Telfer, 1980).

Research from psychology suggests that the hedonic and eudaimonic conceptions of wellbeing both overlap to form human wellbeing (Compton *et al.*, 1996). This is supported by empirical research, showing the value of hedonic or Eudaimonic wellbeing alone or together. For example, research has found that maximising pleasure is key to wellbeing (Lewinsohn and Amenson, 1978), while others found that feeling meaning and purpose in your life was the key to wellbeing. More research has found that both are needed together to bring wellbeing (Sweeney, Shaeffer and Golin, 1982). Therefore, to have high wellbeing, a person must have both a sense of meaning in their life and have more positive than negative experiences.

In this thesis, I adopt both conceptualisations of wellbeing to understand the long-distance family communication between South Korean international students and their parents. Adapting to a new culture will bring a mix of positive and negative experiences, determining their hedonic wellbeing. Family relationships, and the sense of trying to achieve success for their family, ought to bring Eudaimonic wellbeing. However, if there are challenges in their relationship due to cultural expectations and the impact of distance,

this may result in lower wellbeing. Specifically, SDT highlights the importance of relatedness to conceptions of wellbeing. In addition, the modern technology mediates our experiences in daily life with both negative (e.g. frustration from too many notification) and positive (e.g. providing new experiences of possibilities for reflection and self-awareness) outcomes (Dauden Roquet and Sas, 2019). They highlight the value of designing technology for individual wellbeing:

“Digital wellbeing concerns the conceptualisation, design, and development of digital experiences with the main focus of fostering wellbeing.” (Dauden Roquet and Sas, 2019, p.11)

Therefore, it is crucial to have rich understanding about their lived experiences of LDRs along with their emotional status when designing LDR technology.

2.5. Technology for LDR

There has been a significant amount of research in HCI exploring long-distance relationships. A substantial proportion of these studies have focused upon overcoming physical absence and supporting the sense of togetherness between geographically separate individuals, such as couples, friends and families. This work identifies mediating intimacy between two separated places has been considered as the most important aim for the LDR technology and focus on how technology can help mediate this form of human interaction for the people living at a long-distance. In this section, I review previous LDR research in HCI, particularly focusing on the types of technology that have sought to explore a sense of togetherness by either facilitating intimacy or supporting shared experience over long-distance. Through this, I highlight some gaps in this field and highlight new directions for HCI research addressing communication in LDRs.

2.5.1. Supporting emotional connectedness

Video mediated communication systems have been used as one of supportive communication tools to maintain long-distance relationships within HCI. It has been shown that video enhances communication and build trust between two separated parties (Isaacs and Tang, 1993). Along with the use of video, people can share their emotions

through body language, gestures and facial expressions with less misunderstandings over long-distance (Scherer *et al.*, 1974).

Neustaedter and Greenberg (Neustaedter and Greenberg, 2012) investigated how couples use video conferencing tools, e.g. Skype, to maintain their relationships through sharing presence over long-distance. As a qualitative exploratory study, they conducted semi-structured interviews with 14 individuals in LDRs to gain deeper understanding about their use of video chat system to share their intimacy with their partners. Neustaedter and Greenberg explored the value of using video as a tool to provide a chance to see each other's face, and so it helps them to be emotionally closer. Video mediated systems can offer opportunities for couples to share the presence over long-distance while trying to manage other variables beyond their control, such as time differences, connection of the internet, and lack of actual physical connection. In other words, the (geographically) separated couples share their living experiences with voice and facial expressions through the video, and this creates strong feelings of connectedness. However, Neustaedter and Greenberg might need focus more on understanding the relationship itself, rather than just considering the efficiency of video-mediated tools as a way to support physical communication. In addition, taking a long-term point of view (rather than one-off experiences) to explore the development of relationships would provide better understanding of the use of video mediated communication and its value. Finally, their participants were all drawn from Western culture and, given the differences previously identified between Western and Eastern culture, there is a need to understand the values important to non-Western LDRs and how to support those.

Kirk et al. conducted an in-depth qualitative research (i.e. diary study and interview) with 17 individuals (Kirk, Sellen and Cao, 2010) to identify design implications of a video communication tool. They explored participants' use of video in communication, their motivation to use it, and the relationship being supported. In addition, they have explored the sense of 'closeness' in video communication in the home/family setting. They identified the meaning of connection with the number of different senses of closeness in video environment, e.g. making a chance to meet physically in online, avoiding awkwardness from the situation of face-to-face meeting, feeling relieved from having a personal link to be connected and having an opportunity to communicate without words. Interestingly, those meanings of closeness that they found seem very personal, rather than

the shared experience. It is therefore quite possible that separate individuals have opposite (or very different) experiences between each other from their communication. This gives a rich understanding about what types of connectedness individuals need and why they want video communication. The authors suggested the design of a video-mediated system is a concept of 'video messaging'. This presented an idea of sending a simple, asynchronous video message between individuals by addressing the situational difficulties in communication over long-distance such as time differences and low quality of connection. This might support intimacy over long-distance by showing how much time they have spent for each other, rather than making physical, synchronous connection.

HCI literature focused on family relationships mostly look at the parent-child relationships or connection across multiple generations. One strand of this research is conducted by Yarosh (Yarosh *et al.*, 2013) examined the nature of the relationships between divorced parents and their children. She interviewed 10 parents and 5 preschool children to get a better understanding of their communicational behaviour and the concern of maintaining LDRs in their situations. From the research, she identified that the telephone was the foremost means of communication between children and their parents, but this was fraught with challenges of keeping the child engaged in conversation. Yarosh and colleagues then designed the ShareTable cabinets (Yarosh *et al.*, 2013), which combined video conferencing systems with two separated cabinets. There are two issues identified in the communication between non-residential parent and child, i.e. lack of child's ability to use of technology and needs for physical activity to improve their interaction. Children could make a call with their parents easily. They could simply open up their ShareTable cabinet if they want to make a call, and then the other paired cabinet would ring. This provided an opportunity for the children to express emotion and the chance to play with their distant parent rather than just having a conversation, which was especially important for younger children who may not yet be able to hold a conversation. Yarosh et al. deployed the system with two families in their practical situations. Cabinets were installed in the child's home and the geographically separated parent's home and ensured that the child could use the ShareTable without needing help from their parent or caregiver. Each video chat table offered projected view of each other's table surface, which made them share physical activities (e.g. parent and child can collaborate to draw a cat on each other's table at the same time). A month-long deployment highlighted its

value in supporting playful activities, emotional moments, and facilitating a sense of closeness through metaphorical touch. The main aim to design ShareTable cabinet is to mitigate tension between two households to connect with child while maintaining closeness between non-residential parent and child, and to offer a new opportunity for playful activities through sharing the view. In their point of view, making more chances of physical connection could be considered as a way to support their closeness over long-distance. However, they noted the parents face other types of communicational concerns by giving the children a chance to initiate contact at any time they want. It meant that too much spontaneous contact could feel like an interruption and reduce the quality of the moments when they are speaking. This might be a valuable research area for supporting LDRs, focusing on how moments of space and distance can be an important part of healthy communication in relationships.

Hunter *et al.* also suggested a video-based communication environment, WaaZam (Hunter *et al.*, 2014). In their research, they aimed to explore a creative way to support shared interaction (i.e. play) between families at a distance. Along with the value of video in communication (Isaacs and Tang, 1993), they designed video mediated interactive environment to address the issues of limited view on the video chat system and restricted behavioural expression. WaaZam provides four different conditions of shared environments (e.g. separate windows, merged windows, digital play set and customised digital environment) between separated families through the screen and encourages them to have some fun with the playful activities. They conducted a series of case studies with both parents and children and asked them about their experiences on engagement and connectedness under the separate conditions provided. They found that customisation has increased family engagement in long-distance communication and the shared activities between individuals. In the similar context, Follmer *et al.* (Follmer, Raffle and Go, 2010) designed Video Play containing a series of games for supporting intergenerational families to play between parents and young children while doing video chat. Their main aim is to provide a playful space that separated families and children can have shared activities in a fun way. They highlighted the values of body movement and playfulness like Nintendo Wii. Unlike typical video game, Video Play offers games that children can only play with someone who is separated from them (i.e. a parent living away). In addition, the game mechanic supports open-ended play and collaboration between remote families. Video Play focuses on having shared fun activities with each other rather than

winning. It is designed to prioritise physical activity and movement as part of children's play. However, both Waazam and Video Play focus on the evaluation of a pre-designed system with separated families rather than the development of a bespoke system tailored to the specific needs of the families they work with. This may be important given how relationships have different patterns of communication, situation and cultural background (Stafford and Canary, 1991; Umberson, 1992; Zhang *et al.*, 2005). Therefore, if the research aims to support relationship-based communication, it may be important to first develop a rich understanding of the relationship before designing a system.

Story Play (Ballagas *et al.*, 2010) is another video-based system which supports intergenerational gaps between kids and their grandparents. Like other video mediated communication systems, a sense of playfulness has been shown as having an important role in building connections between the geographically separate family members. Story Play is an interactive book reading system, designed for young children to interact with distant grandparents by video-based communication system. The authors highlighted the need to develop shared activities in order to fill the generational gaps. They also have identified the value of ludic elements in order to help scaffold these interactions. They especially focused on children's engagement in the activity and parents' role to support their children during the design process. Due to the children's inability to use the technology alone, the parents often had to help, and this brought three generations of a family together in a playful way.

HCI has a significant tradition of research in the theme of LDR, and most work in HCI have explored new interactive ways of supporting togetherness and family communications over long-distance by improving their emotional connectedness. However, another strand of work looks closely at the lived experience of people living apart and appreciates the variation inherent in most relationships. This also provides designers a space to reflect deeply on the assumptions embedded in their responses to the research (Kirk *et al.*, 2016).

Ritual Machines (Kirk *et al.*, 2016; Chatting *et al.*, 2017) captured the form of family life between mobile workers and their families in both cases that they are together and separated, exploring how technology might support emotional connectedness. Their previous work (Chatting *et al.*, 2015) highlighted the value of phatic technologies and

technologies in the home within the context of separation. Ritual Machines (Kirk *et al.*, 2016; Chatting *et al.*, 2017) built upon this to explore the design of phatic technology in this context, adopting a Research through Design (RtD) approach (Frayling, 1993). They wanted to understand how family separation affected their lives through capturing the differences of their daily rituals when they are together and apart. Two families were recruited and went through four phases of engagement over a period of nine months. The first phase involved a home visit and Skype calls to understand more about their family situation and typical activities within the context of work-based separation. The second phase involved four to six weeks of probe studies (Gaver *et al.*, 2004) to obtain a deeper understanding about their experiences. The families were involved in the design and development process through this bespoke design-led approach. In the last phase, they lived with their ritual machines, which were designed for them, for up to eight weeks. After each phase, they had semi-structured interviews to talk about their experiences. They had two different concepts; one is ‘drinking together whilst apart’ and the other one was ‘anticipation of time together’. The first concept embodied a sense of fun and was designed for continued enjoyment of their own company. The second machine was designed to highlight the sense of time keeping and routine because the second family put an important value on ‘time’. Each family member had a very busy schedule, but they frequently planned to spend time together during holidays or on weekends. Careful consideration of the system design (e.g. purpose, colour, shape and places to install) ensured that they fit within the rhythms of daily life and became a valued part of their everyday lives. Results of the deployment showed that both machines supported moments of connectedness without replacing current communication tools (e.g. mobile phones and video conference). Furthermore, this bespoke design-led approach gave personally meaningful ways to use the machines to maintain their togetherness.

In similar approach, Blossom (Wallace, 2007; Olivier and Wallace, 2009) was designed to support a sense of emotional togetherness in relationship between a participant, Ana, and her grandmother who had passed away previously. Unlike person-to-person relationships, Blossom made a connection between Ana, residing in the UK, and her family’s homeland, Cyprus, helping her to feel closer and more connected to her grandmother and her life. Ana’s heritage is very important to her as her family is Greek-Cypriot, while Ana is British. The design of Blossom was informed by Ana’s grandmother’s love of flowers and plants and she felt her ability to grow plants had given

by her grandmother. Blossom took the shape of a flower and is connected to a rain sensor buried in her family's land in Cyprus. The flower blooms only once after a certain amount of rainfall has occurred in her home, giving great weight to that moment. Blossom helped Ana feel closer to her family by fostering a sense of 'home' and more aware of the importance of life itself.

A number of given examples highlight how a significant strand of research in LDRs explores ways to support emotional connectedness between individuals separated by long-distance. These illustrate how togetherness can be supported by personally meaningful connection, a shared space, and playful activities (Barden *et al.*, 2012), and that the technology offers a way to link separated individuals. While some of this research has looked at the communicational values in family relationships before designing the system, most have deployed a pre-designed system. Furthermore, most of them did not take long-term point of view to understand the behaviour and relational changes in communication while using the system.

2.5.2. Supporting physical connectedness with multisensory interaction

Allowing people to express their emotions through multisensory interaction has been considered as another notable way to share intimacy between geographically separated individuals. A significant amount of research has been conducted to design new systems using sensory interaction to support physical (or tangible) connectedness over long-distance (Thompson, Friedland and Cargiuolo, 2005; Kirk, Sellen and Cao, 2010; Kontaris *et al.*, 2012; Kirk *et al.*, 2016). This general body of work demonstrates that having more physical ways to communicate over long-distances enhances intimacy between individuals. In this section, I review several studies focused on using sensory interaction as a means to support relationships separated by distance.

Motamedi's Keep in Touch (Motamedi, 2007) is an interactive fabric touch screen that applied multisensory interaction to support a sense of connectedness between couples over long-distance. The system was installed in two separate places, and each screen displays a blurry image of other side. Touching the screen leads to the image becoming clear and giving a sense of being connected to each other. Motamedi's work was inspired by human behaviour, focusing on how people often close their eyes when they wish to have more tactile feelings, such as kissing. Therefore, he used both tactile and visual

senses to help people feel connected despite their communication over long-distance (Motamedi, 2007). Based on the lab-based pilot study, Motamedi expected that couples share their emotion by combining among touching the physical object, seeing digital images, and using their physical movement (e.g. hand gestures and body language).

Kissenger (Samani *et al.*, 2012) supports physical connectedness in romantic relationships between couples. It is a physical object applied tactile sense. Romantic relationship often need to prioritise time, attention, and intimacy to ensure happiness within the relationship (Hendrick *et al.*, no date). However, sharing intimacy is challenging for couples who live in different cities, countries, or time zones and physical interaction is often crucial to building or maintaining trust in their relationships (Solomon and Flores, 2003). Kissenger gives couples an opportunity to share a series of physical interactions through touch of the lips as a way to promote their intimacy. Couples can feel pressure, softness, and warmth of each other's lips through the behaviour of kissing, which can illustrate respect, greeting, romantic affection, farewell and sexual desire (Walter, 2009). They note how existing LDR technologies (e.g. SNS, email, IM, video conferencing and voice call) do not offer a way to share intimate signals (Samani *et al.*, 2012). Through a personally meaningful action (e.g. kiss), therefore, couples may share more expressive interaction.

Along with this, Samani *et al.* designed the system by carefully observing their practices to be more sensitive and reflect couples' experiences (Buchenau, Francisco and Suri, 2000). The concept of a technology probe (Hutchinson *et al.*, 2003) has been used to explore the experiences with Kissenger and generate new knowledge from use of the prototype. This approach outlines building a prototype first based on the researcher's observation and evaluating it with participants to better understand the value of design decisions they made previously. Through this design process, they seek to know how this kiss communicator needs to be designed (i.e. design decisions for function, size and shape), how separated couples use this device to share their intimacy, and what are the limitations and opportunities. They found that using a pair of sensory devices during the video chat increased the level of affectivity and co-presence between separated couples compared to solely using the video chat system.

Feelybean (Kontaris *et al.*, 2012) is a subsidiary device of a video conferencing system to

support emotional connection between geographically separated couple through physical tactile interactions. Their main concern is to promote couple's physical interactions over long-distance like other sensory technology. In this respect, they designed a system to support personalized touching experiences, i.e. personalized gestures. It recognizes patterns of user's finger stroke and send them to a corresponding device, which can translate the input to vibrations. Kontaris *et al.* decided the major concept of the system design based on the study participants' feedbacks, which highlights portability and real-time interaction between individuals. They found that the couples used this device for maintaining their LDRs and enjoyed making their own patterns for their separated partners (e.g. circles and heart-shaped figures) in personally meaningful ways. This suggests the value of 'personally' meaningful interactions would support the intimacy in LDRs. Experience-centred design talks about how meaningful comes through interaction and shared sensemaking of a process (Wright and McCarthy, 2010). Creating their own gestures and interrupting those of their partner offers a form of meaningful interaction different to existing technologies (Ryff and Singer, 2001). Therefore, this might be the important value of using sensory technology.

These studies highlight the value of sensory interaction as a means to share the physical presence and connectedness in a distant setting. These studies mainly aimed to suggest new way of supporting interaction and communication between individuals, rather than focusing on emotional aspect of the relationship. These suggest how sensory interactions can be a crucial part of sharing intimacy in distant relationships but mostly in the sphere of intimate relationships. However, they highlight how more ambiguous forms of communication may overcome the challenge of maintaining a balance between too many interruptions and too little contact, as noted in ShareTable (Yarosh *et al.*, 2013).

2.5.3. LDR technology supporting disconnection

This literature review has shown that many LDR technologies highlight the value of synchronous connectedness to support distance communication. However, it should be noted that the value of meaningful interaction, and most LDRs require maintaining the balance the values between synchronous and asynchronous (Yarosh and Abowd, 2011). As an extreme case, some separated parties deliberately use instant message for *asynchronous* communication, rather than a video chat system for *synchronous* communication. The values of both synchronous and asynchronous communication have

been issued in HCI with considering the sense of presence between separated locations. Cao *et al.* (Cao *et al.*, 2010) conducted interview study with 12 households to explore what specific challenges and practices between separated family members living in different time zones. The families in their studies were separated by time zones spanning from 3-hours to 12-hours difference, a large gap that might impact their communication. It was found that distant family were dominated by synchronous methods to share the sense of presence. However, time difference was considered a serious barrier to meaningful communication among the families, resulting in different communicational practices with each other.

Slow design has been used both for managing time differences and also supporting meaningful connection. Slow design explores how design can help us slow down the pace of our lives (Fuad-Luke, 2008). In the field of HCI, it highlights the emotional status of system users rather than efficiency using the system (Odom *et al.*, 2012a; Odom and William, 2015). King and Forlizzi (King and Forlizzi, 2007) found that expending time and effort on communication between individuals separated by long-distance may be more important than the degree to which they were connected. Intentional discontinuing has also been identified as important for healthy relationships by supporting boundaries of the self (Sas and Whittaker, 2013). Other research highlights how ‘letting go’, coming to accept the end of something important to you, and the rituals involved in that can improve wellbeing (Sas, Whittaker and Zimmerman, 2016)

Therefore, systems that offer an opportunity for more meaningful communication and connection may offer wider benefit to the design of LDRs (Hallnäs and Redström, 2001; Odom and William, 2015). Slow design has been also considered as beneficial for wellbeing (Strauss and Fuad-luke, 2008). In this respect, Grosse-Hering *et al.* posit that the principle of slow design could support mindful, lightweight interaction between technology and the user, stimulating positive user involvement (Grosse-Hering *et al.*, 2013). Odom *et al.* have considered the value of pause (or delays in time), a contrast to the increasing immediacy, efficiency and productivity of new technologies (Odom *et al.*, 2012). They highlighted the importance of slowness, mental rest, and lightweight technology that is accessible to multiple generations (Lindley, Harper and Sellen, 2009; Waycott *et al.*, 2013). Long living chair (Pschetz and Banks, 2013) has been designed to understand the changes of human recognition and the behaviour over the use of an

everyday object for long-term period. Pschetz and Banks explored how people interact with a familiar lifespan object which is an often invisible, taken-for-granted aspect of everyday life, and experience life-changing moments along with the technology.

TimelyPresent (Kim *et al.*, 2013) is a particularly relevant example because it is a LDR study within the concept of slow design. It is an interactive video messaging system that addresses asynchronous communication across time zones between the UK and South Korea. This system supports connection between three generations of a family over long-distance by sending a media gift timed to arrive at an appropriate time. The screen-based interactive system delays the delivery of messages so that families in different time zones can experience the illusion of living in the same time zone. For example, a message sent in the morning in the UK would be delayed so that it would arrive during the morning in South Korea. Through this, Kim *et. al.* highlighted the power of asynchronous communication as a means to exchange meaningful presents in a distant family relationship. TimelyPresent prioritised the sharing of ‘moments’ rather than the specific content of what was being shared. However, it requires significant effort from the sender, because they need to know about the recipient’s schedule and have sufficient patience to deal with the delayed connection. While this study did attend to the time difference between the UK and South Korea, it was not cognizant of how cultural differences may impact communication and potentially hinder the development of healthy relationships.

2.6. Summary

HCI has a long history of designing technology to support long-distance family relationships. The majority of this work has considered the type of relationship (parents, family, romantic partner) and type of communication (increased intimacy, increased opportunity for interaction, or increased physical connection) as key determinants when designing LDR technologies. This work has also mostly been situated in a Western context.

I explored three gaps in this area: (a) lack of reflecting on the cultural context, (b) lack of exploration of the relationships in a long-term point of view, and (c) most LDR research might be biased to providing shared experiences as a way to support long-distance

communication. However, the literature demonstrates that there are significant differences between Western and Eastern people and that culture may be an additional factor to consider when designing LDRs. Specifically, research shows that Eastern people are more reliant on relatedness with family, fulfilling specific family roles and meeting the academic, social, and behavioural expectations of their parents along with a lack of individual boundaries. I argue that this cultural context is a significant contribution to the field of HCI as it extends our understanding of what we need to consider when designing LDR technologies. This suggests a space in the existing body of work where HCI can develop a more sophisticated understanding of how technologies can support LDRs and the nuances culture provides.

This thesis study particularly focused on relationships between South Korean family relationships, especially between the parents and their (adult) children. Evidence suggests that international students, especially those from Asian countries, face many challenges when adapting to a new culture (Lin and Yi, 1997). These include loneliness, academic struggles, and sometimes financial pressure. Less explored has been the impact of family on adjustment to a new way of life and study. However, given the centrality of the family unit in Confucian culture, it can be argued that family pressure and family relationships can add to the pressure faced by East Asian (especially South Korean) international students in the UK.

Consequently, the research presented in this PhD seeks to develop an understanding of the lived experience of South Korean students in the UK, the impact of family relationships on their adjustment to a new University and way of life, and how technology may support the development of healthy family relationships in this context.

Chapter 3. Methodology

3.1. Introduction

The previous chapter provided the conceptual foundations of this thesis. In this chapter, I provide an overview of my approach to research and the methods that I used throughout the thesis. This thesis follows an experience-centred design approach (Wright and McCarthy, 2010), prioritising a deep understanding of the lived experiences of long-distance relationships between South Korean in the UK and their parents at home in South Korea. Therefore, the methodologies used in this thesis should enable an in-depth understanding the experience of LDRs within this specific cultural context and identify the challenges families face grounded in their lived experience.

South Koreans are influenced by Confucian culture (Park and Cho, 1995), which emphasises the collective and perceives signs of individuality negatively. This can impact South Korean participants' engagement in research, especially more design-led and participative approaches, as they might fear having a different point of view with other people or standing alone from a collective opinion (Lee and Lee, 2009). This necessitates carefully considered research methods that can support empathic communication with the study participants. For example, I have used three different research methods, each designed to ensure creativity and more engaging methods: a diary method (Bartlett and Milligan, 2015) designed as a cultural probe (Gaver, Dunne and Pacenti, 1999), using ambiguous film in design workshop (Briggs *et al.*, 2012), and a qualitative, semi-structured interview using sketching. In this chapter, firstly, I will describe these three interactive research methods and highlight how they supported participation and engagement from participants who may traditionally be more reserved. Following this, I define a novel interviewing technique using sketch, Sketching Dialogue, and explore the value of this new technique as a means to support interactive, empathic conversation with the participants.

3.2. Supporting Interactive, Empathic Communication

3.2.1. Diary as a cultural probe

Diary studies are well known to be effective and efficient mechanisms for empathising with participants, as well as being a less intensive (and thus practical) method for collecting long-term field data (Milligan, Bingley and Gatrell, 2005; Mark and Semaan, 2009). Diary method is generally considered as *a valuable tool for collecting detailed aspects of individuals' everyday lives over a certain period of time* (Bartlett and Milligan, 2015). In addition, it has been more valued on recording events when they occurred than other methods such as questionnaire and interview (Tomitsch *et al.*, 2018). Therefore, diary method tends to be conducted in an initial design process to obtain inspiration or to discover new problems under the perspectives of others. However, they do have the limitation in that they require *“a level of participant commitment and dedication rarely required for other types of research studies”* (Bolger, Davis and Rafaeli, 2003, p.591). The diary study design itself therefore contained many (culturally-appropriate) elements that were aimed at maintaining continual participant engagement; indeed, it was effectively designed as a cultural probe (Gaver *et al.*, 2004). Cultural probe is an inspirational, interactive design approach obtaining *“contextually sensitive information in order to inform and inspire the design of new technology.”* (Gaver *et al.*, 2004, p.53) It was developed by a group of designers led by Gaver as a way to make the older participants involve into their initial design process and explore better ways to look at their everyday lives in their own communities (Gaver, Dunne and Pacenti, 1999). This inspirational design approach highlights uncertainty, play, exploration, and subjective interpretation to overcome existing methodological limitations that restrict the acquisition of unexpected information and discovery of new ideas (Boehner *et al.*, 2007). This method generally provides some sort of bundle of interactive tasks for the purpose of exploring participants' lives, experiences, and their values. Participants then conduct their assigned tasks to show their lives as various pieces of inspirational data. Through analysis of the collected data, design researchers can *“stimulate their imaginations rather than define a set of problems”* (Gaver, Dunne and Pacenti, 1999, p.25). In my research, therefore, I used a ‘hand-made’ diary (as opposed to an ‘off-the-shelf’ construction), the provision of additional materials, such as stickers, coloured pens and pencils (the full set of materials is in Figure 4.01, p.64), the provision of family photos and other thematic elements, and the introduction of ludic elements (e.g. a calendar for self-managing their

day-to-day work process and a wooden dreidel for providing a bit of time to think of their family). A detailed description of the material will be illustrated later in the chapter on case studies.

During the diary study, I had two types of interactions with the participants who are in reserved culture; informal weekly meetings and the formal exit interview. Both interactions are based on conversation about the contents of their own diary notes, and this makes us have deep conversation. In the case of the weekly meeting, for example, it was planned to check the progress and difficulties of the diary notes that the participants write in daily, and to listen to additional explanations of the contents or the situations that the participants could not write down. Through the weekly meeting, I had the opportunity to skim through the diary notes of the participants and talk about what I find interesting in the moment (before they forget their memories). Another example of interaction was a formal exit interview that took place after a diary activity was completed (after a closely look at the diary note). At this time, it was planned for the purpose of in-depth conversation about some specific challenges that each participant had along with their emotional status such as their feelings, personal reasons, and wishes.

3.2.2. Invisible Design: use of ambiguous film in design workshop

After looking at the lived experiences of South Korean families, I designed two separate, two-hour group workshops to brainstorm design ideas for future digital technologies supporting the LDRs between South Korean international students in the UK and their parents back in their home country. In each workshop, I had a group discussion with the workshop participants, who were all South Korean students living in the UK to obtain significant insights from their practical experiences. I applied Invisible Design (Briggs *et al.*, 2012), an interactive participatory design approach (Schuler and Namioka, 1993), that uses ambiguous film as an inspirational artefact in a group discussion to efficiently share a number of scenes illustrating the key design challenges and discuss the ‘imagined’ technology which was never shown in the film directly. The use of such ambiguous film in the design process provides an opportunity for participants to consider how an *imagined* idea, one that is not given any form in the film, might be play out in practice in their lives (Briggs *et al.*, 2012). The Invisible Design approach has also been identified as a particularly useful method to support engagement in a focused discussion (Read, Fitton and Mazzone, 2010). Furthermore, it makes both designers and the participants think

beyond the existing object which might limit their creativity. According to Brereton and McGarry (Brereton and McGarry, 2003), a danger in the design process is that designers often heavily rely on existing physical objects when they are generating new ideas, limiting their imagination. Invisible Design reduces the impact of this bias on the design process. In the following section, I critically discuss the use of Invisible Design and explain in more detail the preparation, method, and experience of the workshops alongside development of the film.

3.2.3. Qualitative interview using sketch

Qualitative interview

Qualitative, semi-structured interviews have long been a cornerstone of understanding people, both in HCI research and more generally, by practitioners in the field for the purpose of understanding and engaging with users. The opportunities afforded by qualitative interviews are multifarious (Britten, 1995; Roulston, Demarrais and Lewis, 2003; Robertson, 2005; DiCicco-Bloom and Crabtree, 2006; Nicolai, Demmel and Hagen, 2007; Rowley, 2012). However, conducting and preparing interviews can be challenging. In respect of semi-structured interviews – the approach most commonly used within HCI - this requires carefully designing interview questions, being able to actively listen to the answers to these questions and being able to identify interesting responses and explore them more deeply even if going off topic (Dingwall *et al.*, 1998; Gillham, 2005). Whilst the semi-structured interview is one of many qualitative methods adapted for HCI, there are two important distinctions between the traditional social science interview, and those interviews aimed at designing *specific* interactive systems or solutions in HCI. First, the objectives are different: the goal in understanding people to produce interactive system for *them* (i.e. problem solving HCI interviews), whilst in social sciences to understand people for developing a more general theory of how people (or populations thereof) behave (the social science perspective). The second distinction is the level of resource and training: in the social sciences, learning how to design and conduct interviews can be considered a form of apprenticeship involving learning over time from a more experienced mentor as a co-investigator over a number of focussed years (Weiss, 1994), whilst conducting semi-structured interviews in HCI is one of many tasks a designer is expected to do. It is notable that HCI is constantly development and adapting techniques to better understand people for the purposes of the design of

interactive systems, especially in respect of sensitive topics and populations who may have challenges in engaging in traditional interview processes.

Qualitative interviews were used effectively in this PhD research to identify the participants' experiences, the emotions they felt, and the different perspectives on the problem. As mentioned earlier, two types of interviews were conducted in the first exploratory study (i.e. the diary study); One is informal weekly meetings and the other is exit interviews. From these two types of interviews, I explored the lives that the study participants (i.e. South Korean international students) are experiencing in the UK, especially focusing on the challenges in communication with their parents. This became the topic of conversation for the second study, which is extended interviews. The second study was conducted with 10 new participants who did not participate in the diary study, and the main purpose was to understand the use of technology supporting the communicational difficulties between South Korean students and their parents. The interview was conducted one by one, but divided into two groups of five people, using two different methods. The first method is a typical way of interview (i.e. conversation-based), and another one is an interview that values on the use of sketch developing more interactions with the participants. Interviews were also used in deployment study to explore the lived experiences of the newly designed technology (i.e. Silent Knock), changes in communication between the parents and the students, and their emotions.

Using artefacts in qualitative interview

Conducting qualitative interviews requires a considerable degree of skill, careful preparation and ingenuity, especially in sensitive settings (Guillemette, 2014). Therefore, interviewer needs to carefully design the interview questions based on the aims of the investigation and the consideration of any difficulties that might arise with the participants. Furthermore, the responses from the participants could often be unexpected (Britten, 1995), and so the researcher needs to identify interesting responses timely and explore them more deeply even if going off topic (Gillham, 2005; Blandford, Furniss and Makri, 2016), whilst also maintaining the trust and engagement of the participants. Naturally, this whole exercise requires a considerable amount of expertise (Costa, Renzetti and Lee, 2006). While social scientists may spend a significant amount of time developing their interview practice, many researchers and design practitioners may not have the same opportunity. In this section, I would provide a background research of using sketch as an artefact in qualitative interview.

Use of visual artefact

There has been a continuing evolution of qualitative methods within HCI for the purposes of better understanding user's experiences. Researchers and design practitioners often use artefact, so they can develop the conversation with the participants and reveal their understanding of the scheme (Luck, 2007). In her work, Luck found that the pre-designed artefact could be used in interview-based study to prompt the discussion with the participant (Luck, 2007). Crilly *et al.*, for example, used diagram-based artefacts in their interview to support engagement of their participants. They found that the diagram is "*an effective instrument of presenting one's thought and a valuable tool in conveying those thoughts to others*" (Crilly, Blackwell and Clarkson, 2006; Blackwell, 2011, p.341). In addition, Harper highlighted the use of photography to elicit in-depth discussion with the participants by sharing their comments on it. In his work (Harper, 2011), Harper argues that the visual image could evoke participants' emotions, memories and new form of information by its ability of representation. Using visual artefacts is reliable tool, but it might be challenging to use them properly. For example, visual artefacts are well used in healthcare research. According to Nemeth *et al.* (Nemeth *et al.*, 2004), they explored the nature of communication and information sharing between the patient and healthcare providers, and they have used a visual artefact as a decision support tool to improve the participants' cognitive performance. However, they found it difficult as the individuals have different shapes in their mental imagery, cognition and memory depends on other factors, such as the gender (Richardson, 1991), cultural and social backgrounds (Taylor *et al.*, 2007; Johnson, Hardt and Kleinman, 2011; Al-Musaiteer, 2015), and both physical and mental disabilities (Olney and Kim, 2001; Fedewa and Ahn, 2011). Furthermore, visual artefacts have been affected differently to explore their behaviour, enjoyment, satisfaction and trust between older and younger generations (Brajnik and Giachin, 2014; Amin, 2017). Therefore, the researchers who plan to use the visual artefacts need to carefully consider the way of using them in their research settings. In this thesis, I mostly value on the visual artefact as a supportive tool to bring more interactions with the participants, rather than reflecting their experiences and thoughts.

Sketching as an artefact

As another type of artefact, sketching (or hand drawing) has been used in the field of design as a powerful tool for the brainstorming, thinking, defining goals and objectives, and exploring opportunities (Buxton, 2007). In his work, Baskinger argued that the

designers use the form of sketch to “*transform intangible ideas to tangible information*” and effectively share that with other people (Baskinger, 2008). In addition, sketches can develop designer’s thinking process. In other words, the design practitioners develop their ideas by communicating in an active conversation with the sketches they generate (Van Der Lugt, 2005; Chamorro-Koc, Popovic and Emmison, 2008). In the same aspect, Ullman *et al.* highlighted power of the sketch as a means to extend the designer’s working memory (Ullman, Wood and Craig, 1990). Sketching is also useful in qualitative ethnographic study. It allows researchers to record the experiences, new ideas and the situation through observation and visual note taking (Baskinger, 2008). In Fleury’s work, he used participant-generated drawings as user experience research method, and the sketch has been considered as a powerful tool for engaging participants and evaluating user experiences (Fleury, 2012). Within the participatory design, the use of sketch has been highlighted as a form of tangibilising communication (Wang, Ramberg and Kuoppala, 2012), enhancing creativity (Craft and Cairns, 2009), and re-interpreting ideas (Van Der Lugt, 2005) in a group. Sketching also well used in presenting data and allowing researchers gain new insights, so it has been proven to a valuable exploratory analysing tool (Keim and Ward, 2007).

3.3. Sketching Dialogue: Designing A Novel Interviewing Method

3.3.1. Sketch in Sketching Dialogue

Sketching Dialogue is the use of sketch as an integral component of a qualitative interview. The goal of using sketch is to enhance the quality of the discussions that take place within that interview. In other words, sketch is an *aid* to conversation, not a substitute for it. Accordingly, I place value on not only the action of sketching itself, but also the mediated situation and interaction around the sketch. Sketch in Sketching Dialogue is therefore the use of illustration to scaffold conversation. In effect, each sketch serves as a prompt for the participants, with the point in question being memorialised in front of them.

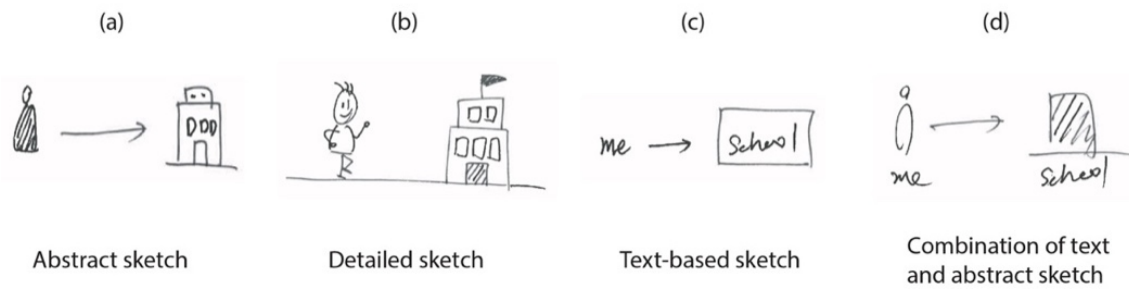


Figure 3.01. Representation of the theme, “*I am going to school*” with four different types of sketch.

Whilst there are no constraints on the substance of what is drawn, the way in which the sketches are constructed and deployed have some important features. There are three important qualities. Firstly, Sketching Dialogue does not require highly detailed drawing. Instead, *quick sketches* that do not substantively interrupt the conversation are most useful. The goal of sketching in this method is to create a space to make conversation deeper and developing a simple artefact through which the researcher and participant can converse. Therefore, being able to quickly sketch ideas or concepts to talk through is more important than the fidelity and quality of that sketch. Accordingly, the emphasis is upon its communicational aspects (i.e. facilitating interaction and expression) rather than the aesthetic quality of the drawings. I have provided a range of examples of the types of drawing that can be performed in Figure 3.01: these include abstract sketches, text-based sketches, and combinations of the two. Secondly, sketch is part of a conversation: the sketches themselves *evolve* over the course of the discussion. Conversations evolve and develop over a course of an interaction between two (or more) people. It follows that the sketches themselves will often develop through the course of the conversation, with additional elements and features being added as the conversation progresses (see Figure 3.02). In other words, important parts of the dialogue are illustrated through the sketches, which also support the emergence of new themes or topics of conversation in turn. Ultimately, the sketch is not an outcome of the interview. Instead, it serves to support the development and deepening of dialogue. In this technique, the use of pen is considered as an efficient means to control the depth and the flow of the conversation, and also it provides ownership of the interview to the participants. Lastly, the sketches are a *reference* point that helpfully memorialises previous discussion. Interviewees often returned to the sketches or elements of the sketches, which served as reminders of topics they wanted to discuss. In other words, it is expected that the sketches act as a cognitive

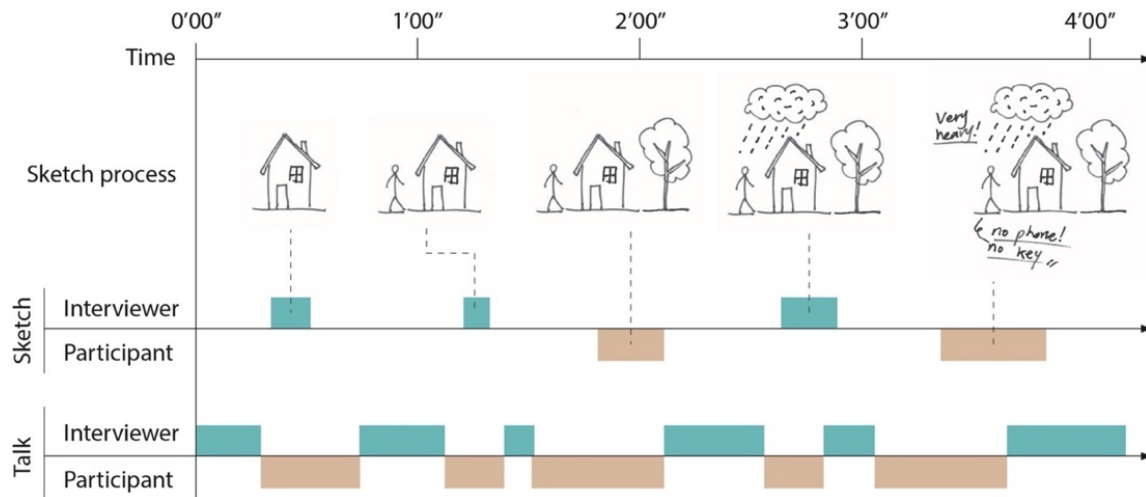


Figure 3.02. Visual representation of the sketching process. The sketch has been developed by collaboration between the interviewer and the interviewee. This figure shows who has the pen and when the sketch has been made during the conversation.

support for participants, and can be compared across the discussion, much as a way traditional notes of researchers would be used to support gaps and inconsistencies.

3.3.2. Preparing Sketching Dialogue

Sketching Dialogue is simply a semi-structured qualitative interview with the use of sketch as a supplementary artefact to assist conversations. However, there are some additional preparatory steps that are required to fully facilitate the use of sketch in an interview.

Prepare the substantive content of the interview

All effective qualitative interviews require considered preparation and planning. An interview using Sketching Dialogue is no exception. In practice, Sketching Dialogue lends itself to semi-structured interviews. These traditionally involve a list of questions, with potential follow up questions. These would also be required for Sketching Dialogue, however some aspects might be planned by way of the medium of sketch. For example, researchers can prepare several coloured pens to look at a specific subject from various perspectives while sketching. In terms of the types of sketching, some may make a Venn diagram-type sketch for easily comparing two or three different elements and some others may create a chart-style sketch to map out a list of properties (i.e. more than three)

according to various criteria and develop the discussion with their interviewees. Similarly, just as with qualitative interviews, a degree of rehearsal can be helpful, including a reminder of the basic tenets of the technique and what one is trying to achieve. Furthermore, sketching can be helpful to make use of moments when the interview proceeds. In Sketching Dialogue, ‘pauses’ cannot be avoided while the researcher attempts to finish sketching. However, this could be useful for both the interviewer and the interviewee. This may allow time for both to reflect on what has just been said and where, so they could replenish any important discussion on the topic if they have missed something. Furthermore, the silence will not hang heavily on researcher and participant as it is filled with sketching, and so the conversation may naturally flow.

Prepare materials (pen, paper, video recorder)

A qualitative interview requires few materials. In normal practice, these are an audio-recorder for transcription, participant incentives (e.g. gift vouchers), and some medium for note-taking. Sketching Dialogue is little different. It requires no more than basic (and widely available) equipment. Indeed, the main additional requirement for sketching dialogue is the *provision of pen and paper*. In practice, I would propose the use of a *selection* of coloured pens. This variety allows for different aspects in context to use different colours (so that they can be easily distinguished), as well as for different colours to be used to give emphasis to particular points. I would also recommend the use of A3 (or larger) paper, as this provides the possibility for more information to be included in a given sketch, as well as multiple sheets of paper to allow for new sketches, or to demark changes in topics. Given that the sketches and how they evolve over time is integral part of the conversation, and it is also strongly encouraging to use a *video recorder* (as opposed a simple Dictaphone) in order to fully capture the entire conversation along with the progress of sketching.

Prepare additional artefacts or illustrations (optional)

Sketch is a *form of illustration*. This means it has the advantages that arise from supporting discussion with imagery, which is already a common approach in sensitive topics (Halskov and Dalsgård, 2006; Hornecker, 2010). It is possible to support Sketching Dialogue with prepared illustrations, cards, or other artefacts, which complement the use of sketch in the interview. This can save time in the interview, as well as providing the opportunity for more detailed artefacts for further exploration, or even a mixed-method

interview. However, there are two important differences between sketching and pre-prepared additional illustrations that should be borne in mind. Firstly, sketches are made in the moment: there need not be any pre-defined drawing in advance, and thus there are not the constraints that arise from potentially pre-judging what might be said. Secondly, sketches can evolve and be revised and expanded over the course of a conversation. Accordingly, whilst sketch has the benefits of imagery, its use is intended a form of flexibility and responsiveness that cannot be found within alternative approaches.

3.3.3. Conducting Sketching Dialogue

Facilitating interaction is a main goal of Sketching Dialogue. The interviewer mainly conducts a visual representation of what the interviewee said in their interviews, and it is sharing with the interviewee for making confirmation about their understanding. The interviewee has an opportunity to join the sketch at any moments and has a chance to lead the conversation. In this respect, the sketch could be considered as a prompt for developing discussion. Using non-verbal communication is also the key element for Sketching Dialogue. For example, both the interviewer and the interviewee could show their uncertainty of the contents through the non-verbal social cues such as hesitating. Sketching Dialogue might be particularly useful where the interviewer needs to facilitate the interview in a natural and intrusive manner, especially for the discussion of sensitive topics. Furthermore, it might be useful when there is a communicational barrier between the interviewer and the interviewee (e.g. language barrier or some situations in medical interview). In the following section, I would present a case study to illustrate the value of Sketching Dialogue and help concrete the understanding of the method for those who might use it going forwards.

3.4. Exploring the Value of Sketching Dialogue

I conducted individual face-to-face interviews with 5 participants (i.e. the second group of extended interviews; Table 3.01), and those were lasted 54 to 92 minutes (381 mins in total and average 76 mins). The participants were compensated for their time with a £20 Amazon voucher. Two of them conducted the interview through Skype as they live in different cities, and therefore they found it difficult to come to our research lab for their interviews. This study was approved by the relevant faculty research ethics committee. I

Participant	Gender	Interview Setting	Number of Sketch	Length of Interview
P1	Male	In-person	9	92 mins
P2	Female	In-person	10	85 mins
P3	Female	In-person	11	83 mins
P4	Female	Online	5	54 mins
P5	Female	Online	7	67 mins

Table 3.01. Participant Information (i.e. Group B of the extended interview).

have collected three types of data from the study; (a) the video recording showing the development of the sketches, (b) interview dialogue and (c) the set of sketches between me and the participants. In terms of the interview dialogue, the interview was conducted and transcribed in Korean as the participants were South Korean. Those were translated in English after being analysed. For the sketch, I have analysed both paper- and video-based data to explore the role of sketches in developing the interaction between me and the participants, along with the conversation (Knoblauch *et al.*, 2009). I used the constant comparative method (Boeije, 2002; Glaser *et al.*, 2019), which is useful method where the researcher have a combination of observing situated action, talking and sharing between individuals in the situation, and reading some documents at the same time. It highlights to conduct different levels of coding depending on the type of data and compare them with each other constantly to accumulate knowledge from the diverse perspectives (Glaser *et al.*, 2019). It enabled the feature-by-feature comparison of two or more important moments in the conversation to identify where interaction with the sketch facilitated a deeper level of conversation. The emphasis of the analysis was upon understanding the operations (and mechanics) of the Sketching Dialogue, and the findings reflect that.

3.4.1. Highlighting sketches

Sketching affords the possibility of a researcher using subtler cues that more gently lead the participant closer to the topic, whilst avoiding ‘putting words’ into their mouth. In one example, I highlight specific keywords to express my interest through the sketches, and the participants develop the direction of their story by referring to the sketch. This emphasis has been expressed in various ways in the sketches such as drawing a circle, marking dots or highlighting arrows (see Figure 3.03).

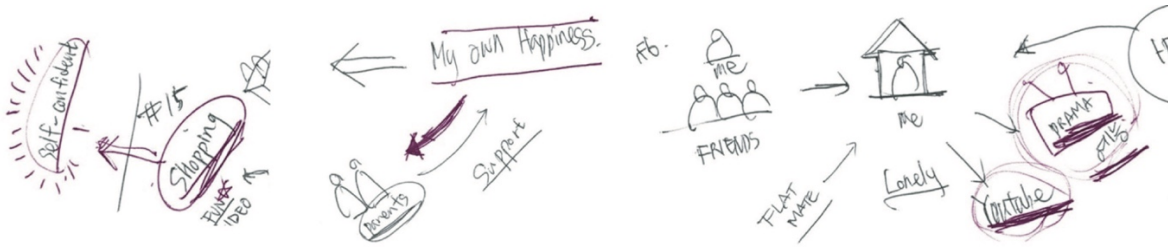


Figure 3.03. Sketches are highlighted by marking dots (left), arrows (middle) or circles (right); colour included for emphasis after interview.

In one interview, P2 shared her cooking practices while living away from her family, noting how she has never cooked in South Korea before, *as my mother is a housewife, she doesn't like her domain being cut down* (P2). I documented this in a sketch as the participant explained the issue. The expression, 'mother's domain', was interesting to me but I was wary of asking a question about her choice of words. Instead, I 'paused' for a moment and commented "hmm... mother's domain", while highlighting the word on the sketch, P2 'paused' momentarily, gazing at the sketch (see Figure 3.04; left-hand side).

Perceiving interest in this phrase, P2 elaborated describing how having a cook for herself is a new experience here in the UK (see Figure 3.04; right-hand side). She added, "Yeah, she thinks it's her domain. As she thinks it's most comfortable when she does it, she knows where things are, she can clear and clean up in her style. So she didn't really even ask me to do the dishes or cook." (P2) This simple repetition and marking of her phrase on the sketch were sufficient encouragement for P2 to paint a picture of life at home and the differences with her life in the UK.

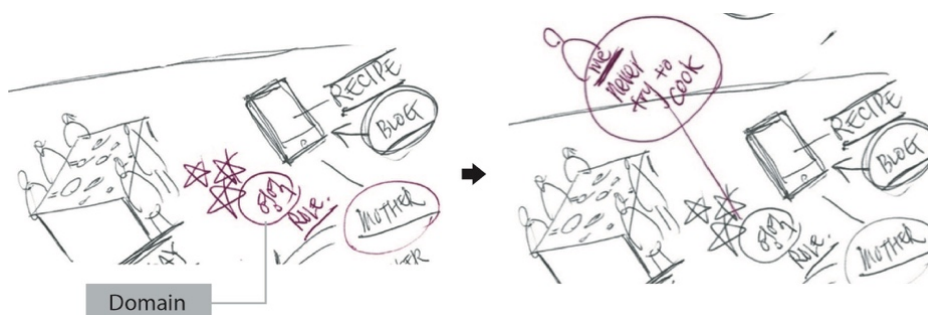


Figure 3.04. Highlighting P2's word of "mother's domain" in the sketch (left), and additional explanations about the sketch highlighted (right).

3.4.2. Providing ownership of the interview process

Sketching also offers the participant the opportunity to take more ownership of the interview process, especially where the participant is provided with an opportunity to sketch themselves. I found that sharing the pen and paper allowed both the researcher and the participant to actively co-construct the sketches, and the dialogue, together. This gives the participant a shared sense of ownership of part of the interview and notes, helping them co-create and share their understanding of the conversation and providing a sense of agency in the process. Figure 3.05 shows an example of this process. P3 talked about her relationship with her parents when she was living with them in South Korea, discussing how she perceived her mother to be controlling aspects of her life. For example, she complained, *“I had no private spaces in the house. Even my room was my mother’s. To be honest, I can say all the spaces were my mother’s.”* (P3) At this point, I handed over a pen to her and encouraged her to draw the floor plan of her house as a way to closely look at her experiences with her mother at home, something which worried P3 initially, noting with surprise in her voice, *“Do you really want me to draw it?”* (P3) Hesitating, and appearing embarrassed, *“well, how to draw it? Let me think how was it look like?”* (P3), she soon began to describe her experiences through the sketches. While her sketch consisted of some simple square boxes and words, she used it as a way to explore her own thoughts and experiences more deeply and to organize her memories. After she finished it, she returned the pen to me, and the conversation was continued based on her sketch.

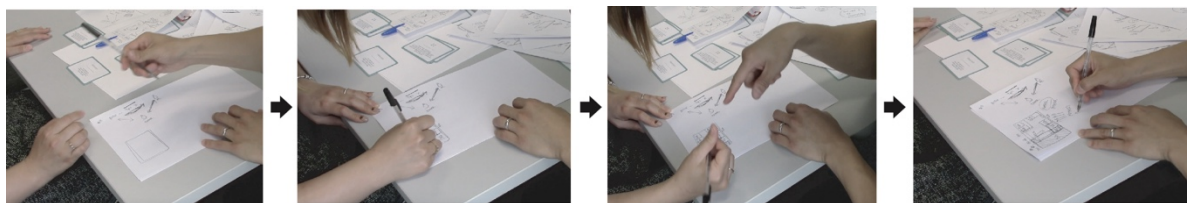


Figure 3.05. Researcher handed over the pen to P3, encouraged her to express her ideas by sketching. P3 sketched and made further discussion with researcher based on the sketch.

3.4.3. Controlling the flow of the interview

I found that sketching also allowed the researcher to subtly end parts of the interview and move on to another topic. While a participant was talking, the researcher would mark the

end of a topic by drawing long lines across the paper. This became recognized as a sign by both the researcher and the participant to move on to the next topic. The situation cards also acted as a way to control the dialogue. The researcher could direct the conversation to a different topic by choosing a different situation card. In her interview P3 mentioned, *“I was trying to finish up my words and move on to the next topic when you (researcher) held up the next (situation) card. It is interesting that we are communicating through the cards.” (P3)*

As one would perhaps expect, the situation-specific cards also used by the participants as a prompt to keep conversation on the current topic instead of moving on the next. Figure 3.06 shows P1 using a situation card to manage the flow of the dialogue. During the interview with P1, I tried to move the conversation forward by turning over the paper. P1 continued to tap the current situation card with his fingers, leading me to realize that he had more to say on this current topic. This interaction shows how the cards were physically used in the interview, both the researcher and the participants paid attention to each other’s physical expression, enabling the participants to be able to speak as they wished.

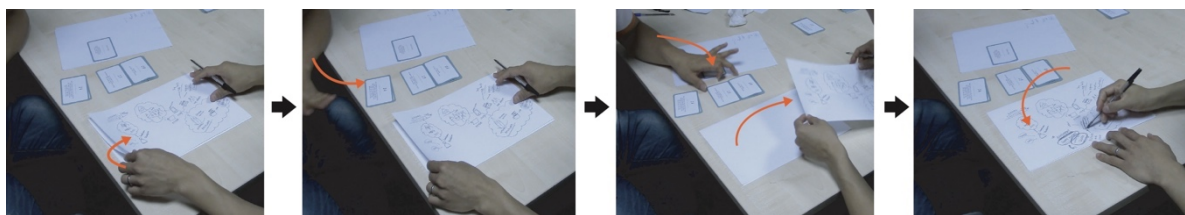


Figure 3.06. The researcher tried to move to the next topic by flipping over the paper, but P1 tapped the (current) card to signify his desire to stay more on the current topic. Then, the researcher returned the paper and sketch more on it.

3.4.4. Sketching as a collaborative process

Memorialising participants' words using sketch also reflects the researchers' perspective and understanding of their experience, allowing the participant to see and reflect upon (and if necessary, correct or clarify) the researchers understanding of what was being said. Through this dialogue, the participant came to reflect on their own experiences, making sense of it in a new way as they spoke to the researcher. For example, P4 explained that she mostly contacts her parents for something urgent, such as when she

needs money or a certain document from home. I sketched this as 'contacting her parents when she needs help', with P4 indicating agreement. This process of co-constructing headings or titles for aspects of the sketch greatly facilitated the researcher to make sense of the participants' experiences.

Sketching also allowed the interviewer to clarify the meaning behind aspects of the conversation, through the co-creation of titles for parts of the sketch with the participant. P2, for example, was talking about her decision to study abroad, which she considered "*a sort of investment of my parents.*" (P2) Further probing revealed the decision to be strongly influenced by her own desire to study abroad, with support from her parents who considered it important, "*if I consider it as a percentage, about 30% for my parents and 70% is mine*" (P2), suggesting that this percentage referred to her motivation to study abroad. Based on this dialogue, I labelled this part of the sketch as 'aim to study abroad' (see Figure 3.07), checking this with P2 who agreed with the idea, "*Well, that could be.*" (P2)

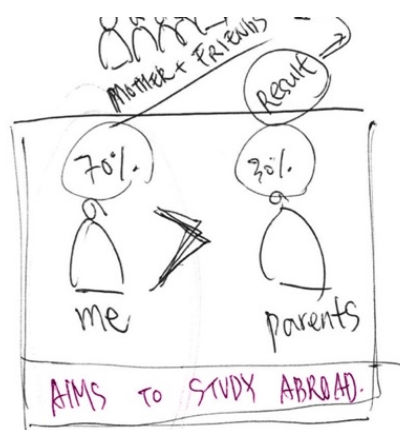


Figure 3.07. Researcher puts the label on the sketch to check the understanding with the participant.

3.4.5. Talking through sketching

Sketching was used as a supplementary artefact to make communication more intuitive and simpler. Through the sketch, the participants were able to easily communicate their ideas with the researcher. The use of visual elements reduces misunderstandings between the researcher and the participants and also can be used effectively to help the researcher's imagination. For example, P3 was able to quickly and directly explain the makeup of her family home through sketching (see Figure 3.08):

“This is the lobby, this is the toilet, this is my room, sister’s, brother’s room, kitchen, living room and the toilet is here. Computer places here. And this is sofa and TV.” (P3)

By drawing a simple sketch, she was able to point to different spaces on it and give me clear idea of her home and her life in South Korea. This makes it easier for her to quickly make her point without the need for elaborate explanation. I also used her sketches as a way to ask for clarification on parts of her experience. In one such interaction I pointed to a box she had drawn, asking, *“what is this long square box here?”*. While P3 scrambled for the correct word, she began to draw it, *“oh, that is...how is it called? The books are placed like this... (P3 is sketching...)”*. Through her sketch, I realised quickly that she was referring to the bookshelves in her apartment.

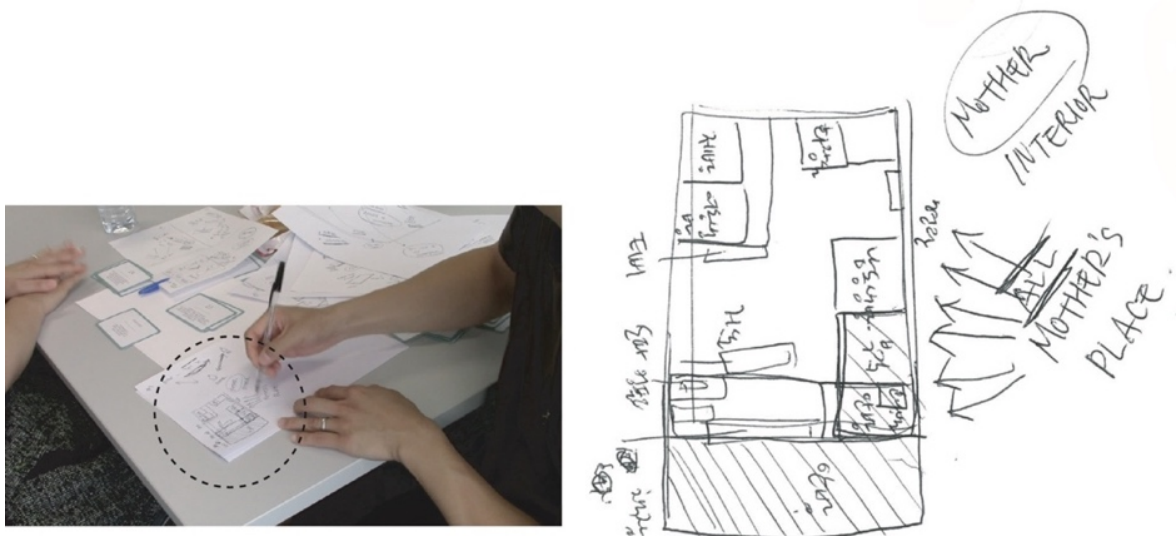


Figure 3.08. Researcher used P3’s sketch to discuss the detail about her home and her experiences in there.

3.4.6. Sketching as a reference

Throughout the interview, completed sketches were placed on the desk and used as a point of reference for both the researcher and the participants. This meant that previous conversations could be easily recalled and developed through further sketching. For example, P1, discussed his experiences of loneliness and being away from his family, identifying meeting friends, listening to music, and reading the bible as important ways of overcoming this loneliness. However, these had been noted in a previous sketch as the ways he also overcomes other hardships he faces. I began to explore the difference in meaning between loneliness and hardship for P1 by comparing the sketches (see Figure

3.09). Comparing the sketches, he said, *"Even if I read the same book, reading in a loneliness has a purpose to keep myself busy, but when I am suffering, emotional healing is the main purpose."* (P1) Therefore, sketches make it easier to remember previous conversations and can help both researcher and the participant reflect on the context of different parts of the dialogue, providing an opportunity to look at their experiences more deeply.

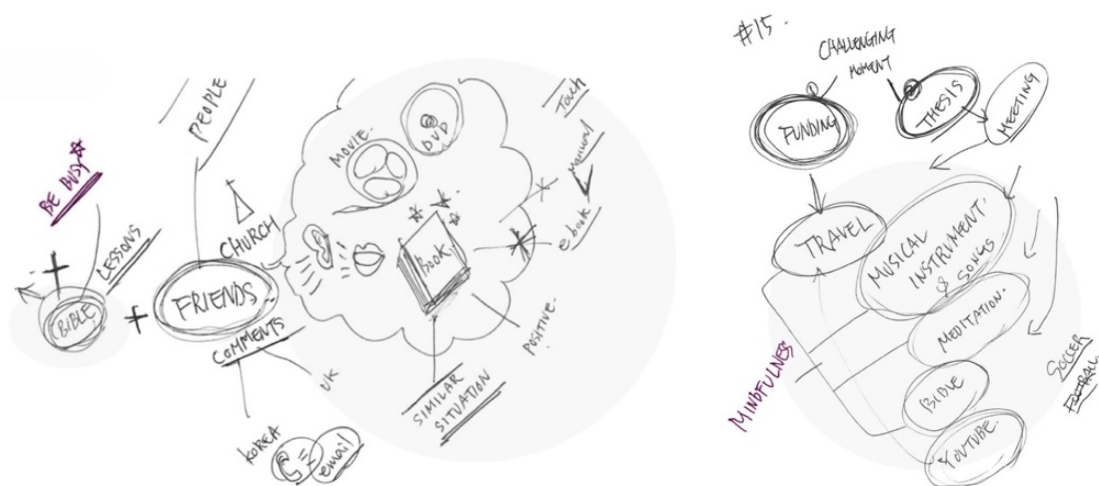


Figure 3.09. By comparing two separate sketches under the similar context, the researcher discovered hidden meanings of participant's words. Left-hand side sketch shows P1's solutions to overcome his loneliness, and the right-hand side sketch shows P1's personal hardships.

3.4.7. Generating new themes by sketching

Sketches also support extending the dialogue in different directions. The sketches are developed around keywords from the conversation, allowing both the researcher and the participant to make comparisons and contrasts between the keywords and develop the conversation on a new theme. In one example, P2 was speaking about how she communicated with her parents, noting how she usually contacted her father using Kakotalk (i.e. the most popular messenger in South Korea) and quickly clarified that it was mostly talking on a phone call rather than text message. In response, I sketched the comparison between the two keywords, 'Text' and 'VoiceTalk,' which refers to a feature of phone call in the messenger (see Figure 3.10).



Figure 3.10. Researcher puts a comparing code between two keywords to encourage the participant to make comparisons.

This quickly led to a deeper interrogation of why her father and she usually used VoiceTalk rather than text message, with the sketch acting as a prompt for P2 to naturally reflected on why her father may choose to call her rather than use a text message, *“I think the main reason my father calls me would relate to something quite religious. As we are Christians, my father prays and shares inspiring bible passages with me when he calls. These often take about 10 minutes or maximum 15 minutes, so it’s not very possible via text. Normally he would text me when I am in classes or sleeping. Otherwise normally phone calls.”* (P2) As she explained, she tried to give a comparison between the two keywords provided (see Figure 3.11). I continued to sketch out the keywords, ‘class’, ‘prays’ and ‘say hello’, of her dialogue as the interview proceed.



Figure 3.11. Participant provided information by comparing the two keywords.

The sketch highlighted that she had spoken only about her father and led to me enquiring about her communication with her mother. It quickly became clear that P2 and her mother had a difficult relationship, with P2 suggesting she was hesitant to contact her, *“I don’t really like talking to my mother because she scolds me too much.”* (P2) The sketch now has a conflicting structure between mother and father (see Figure 3.12).

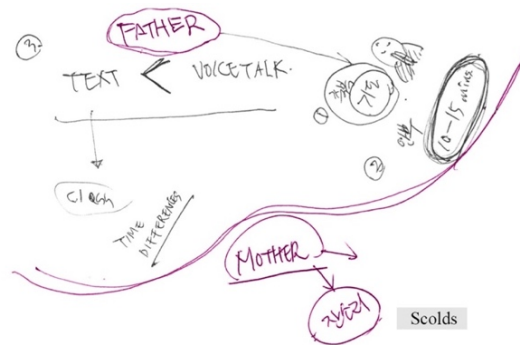


Figure 3.12. The researcher can lead the comparison between two keywords along with separating line.

The sketch encouraged her to compare her relationship with her mother to that with her father by showing how different her perceptions were through the keywords. P2 continued:

“When I am talking to my father, we have a clear set of aims for the calls. On the other hand, when I am talking to my mother, it doesn’t really have a clear focus, not like my father. It’s all about worries and she often scolds me for something.” (P2)

I paused momentarily on the word ‘scolds’, encouraging further clarification from P2. Through this, P2 illustrated how she could find this difficult, saying, *“as she only comments negatively, I don’t contact her often, or maybe try to avoid her.” (P2)* P2 actively avoided calling her mother until her father asked her to do so, saying, *“sometimes my father would say “would you go call your mother?”, then I would call and talk to her.” (see Figure 3.13)*

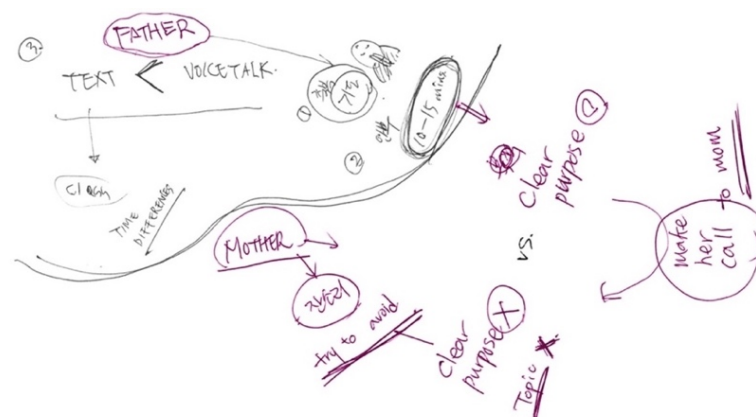


Figure 3.13. Participants develop the dialogue by comparing and contrasting between the keywords provided.

Through the sketch, I was able to develop the conversation, making it more in-depth and create opportunities for the participants to reflect on their own experiences. Sketching the keywords of the dialogue leads to a broader conversation that enables the participants to compare the keywords and further reflect on their own life, providing a more engaged conversation.

Throughout this section, I explored the value of Sketching Dialogue as a supplementary artefact to develop the interaction between the interviewer and the interviewee, how the sketch was used to build a close relationship and how it generated new themes.

3.5. Summary

The details of specific methods and case studies related to these are illustrated in each chapter. However, in this chapter, I overviewed the methods I used in this thesis (i.e. diary method, interactive qualitative interview and Invisible Design) and how they provided an opportunity to support empathic conversation and deeply look at the lived experiences of South Korean LDRs. I also presented a novel interviewing method, Sketching Dialogue as an interactive, qualitative interviewing tool in responding to RQ3. I argue that this may present a new way of interviewing for the researcher, who do not receive the same substantial interview training afforded to social scientists. I also shared my understanding of participants' experiences through sketching led to a closer, more engaged relationship with the participants and a deeper level of dialogue. Sketching Dialogue complements existing performative methods in HCI and design research and provides a new tool to better understand our users during the confusing, early stages of a design research project.

Chapter 4. Developing an Understanding of Long-distance Family Relationships between South Korean Students and Their Parents

4.1 Introduction

One of the research questions (RQ1) seeks to understand the value of LDRs within an Eastern context. I have closely looked at South Korean international students in the UK and their LDRs with their parents and explored a supportive way of using technology for their healthy communication over long-distance. As noted in the previous chapter (Chapter 1), a rich understanding of the lived experiences of South Korean students provide the sense of fundamental benefits and challenges in their LDRs along with their emotional and behaviour changes. However, I noted a concern that the participants from South Korea have different cultural practices around communication. In particular, they have a tendency to heavily rely upon the words and behaviour of the person with a higher hierarchy (i.e. possibly a researcher in this case) (Lee and Lee, 2009), which raises the risk of bias in respect of conversation-based interviews, necessitating a more implicit approach. This exploratory research has therefore required a significant degree of modification of existing methods, to maximise the depth, accuracy and relevance of the findings which are to be drawn from this investigation.

I have conducted a set of two separate but closely interrelated case studies. The first was an in-depth diary study, where the ‘diary’ took the form of a carefully curated set of cultural probes (Gaver *et al.*, 2004) (which were intended to be both ludic and empathic in nature) and was supplemented by regular interviews and discussions with the researcher. This was designed to elicit the nuances and mechanics of the LDRs, serving as a window into South Korean international students’ lived experiences of studying (and living) in the UK, separate from their families in South Korea and the associated challenges. The second study is an extended interview with a different participant group that followed on from the first case study, drawing on the specific nuances and concerns identified to inform a more prospective discussion of technology design that might most appropriately underpin and support this form of LDR. The interview has been designed to use of a set of situation-specific cards as an inspirational artefact, which is categorised

based on the number of emotions derived from the analysis of the diary study. As with the first case study, there was an adaptation of existing methodology for the interviewee's better engagement. For example, one half of the interview was conducted by use of sketching as a (possibly suitable) means to support interactive discussion in the interview, whilst the other half was only conversation-based.

These two case studies (i.e. diary study and extended interview) are presented separately as they have been designed separately with different aims, participants, methods and the findings. Throughout the first exploratory case study, I identified a series of communicational tensions that the South Korean students face in the UK while maintaining their LDRs with their parents in home country, including feeling burdened by the expectation of maintaining continuous communication with their parents and guilt caused by avoiding their parents' attempt to communicate with them. I explored the various emotions that South Korean students have, including their longing for an independent life away from their parents and the sense of freedom while living away from home.

The second case study explored how South Korean international students in the UK manage those communicational tensions, particularly through their use of technology. This provided an understanding of the limitation of existing technologies used to maintain relationships with their family over distance. Challenges with this included their parents struggling to use technology and not being able to maintain appropriate communication with them and how not being co-present could lead to miscommunications and misunderstandings among families. The two exploratory studies presented in this chapter were published at a scientific conference (Designing Interactive Systems 2018).

4.2. Case Study 1: Diary Study

4.2.1. Method

4.2.1.1. Participants

Participants	Gender	Age	Time abroad (years)	Exit interview length (mins)
D1	Female	22	1	76
D2	Female	22	2	55
D3	Female	23	2	39
D4	Female	21	1	50

Table 4.01. Summary of participants in the ‘diary study’.

Four South Korean international (taught) students living and studying in the UK were recruited as participants for the diary study (see Table 4.01). They were recruited by both online advertisement and word of mouth. This approach reflects the fact that international students tend to be connected through social communities (Lee, Koeske and Sales, 2004; Poyrazli, Senel and Kavanaugh, 2004), and the vast majority of South Koreans in the UK are there as relatively short term taught students, according to the Korean Statistical Information Service (KOSIS). They are all female (unintentionally) and aged on early 20th (from 21 to 23 years old). All of them have few years of experiences in living abroad (but with their families) before coming to the UK alone for their study abroad while their families are in South Korea at the moment. Therefore, the participants could provide a full range of insights (including the ability to reflect upon how they had adapted to the difficulties of being in LDRs). They were paid to participate in the case study (i.e. about £15 per an hour) according to their time spent as this is not a one-day workshop. They were expected to spend for this study at least 30 minutes per day for a month. In addition, it can be a motivation for them to conduct their work daily-basis with high level of efforts. Before being formally inducted into the study, I had an orientation meeting with the participants to discuss how the case study would work (including the length of the commitment) and to answer for any questions they raised, as well as to obtain consent.



Figure 4.01. A package of diary study materials: the materials were provided with study descriptions at the first meeting for each participant.

4.2.1.2. Diary exercise

In order to understand the lived experiences of South Korean international students, I have used an autobiographical diary method. Diary studies offer a flexible but effective approach to empathising with the participants (Milligan, Bingley and Gatrell, 2005; Mark and Semaan, 2009). However, the quality of the data collected from the diary study may differ depending on level of participation and engagement with the task (Bolger, Davis and Rafaeli, 2003). Therefore, the diary study drew on aspects of cultural probes to ensure a more interactive and engaging study (Gaver, Dunne and Pacenti, 1999). At the outset of the study, participants received a set of materials, including a hand-made diary (see Figure 4.01), an emotion map describing the different types of emotions we feel, as well as coloured pens and coloured pencils, calendars, six emotional photos, wooden dreidel, stickers, and post-it notes. A participant information sheet was also provided.

The materials provided aimed to encourage participants to reflect on their emotions (emotion map) and encourage consistent participation in the study (calendar). Participants

were also provided with a selection of photos that sought to elicit reflection on their family while completing the task. The images captured Korean food, their route home through an airport, landscape in South Korea, pets, rainy street images, and beaches in Korean. The dreidel sought to encourage pause and moments of reflection, giving the participants an opportunity to recall their day, think about their families and reflect on their emotions.

The participants were asked to complete one entry per day for 30 days. Participants were informed that they did not need to focus solely on their family relationships. Rather, they could use the diary to document any of their experiences of living and studying in the UK with other social relationships, so I could have rich understanding about the unexpected connections between each experience (Milligan, Bingley and Gatrell, 2005). I chose a diary note contains with no lines. Therefore, they were also encouraged to share their experiences through a variety of ways, whether that was drawing, writing, or photography (see Figure 4.02): this was intended to be a flexible and open-ended exercise (and also engaging), for follow up in the interviews and discussions that took place over the course of the study.



Figure 4.02. The use of drawings, writing and photography that the participant (D1) made in her diary.

For example, the diary study was supplemented by the use of photography, which is a common method for eliciting inspirational responses from participants (Gaver *et al.*, 2004). The participants were asked to take at least one photo per each day related to their experiences of the day. During weekly (informal) meetings (discussed in 4.2.1.3), the participants would select and print photos that would be added to the diary, using a Bluetooth photo printer provided by me. An example of a completed diary is provided in Figure 4.03.

Every other week, a thought-bubble exercise (Thonhauser, Softic and Ebner, 2012) was completed, which adapted the concept of cultural probe and designed to be conducted as 'homework' shared between the participants and their parents (see Figure 4.05, p.69) as an informal way of helping both parties to think about their relationships. The exercise consists of two different questions: (a) what do students worry most about their parents, and (b) what do the parents worry most about their children. Each task has been divided into two sections that students and parents must answer separately in order to make comparison after the task has been done.

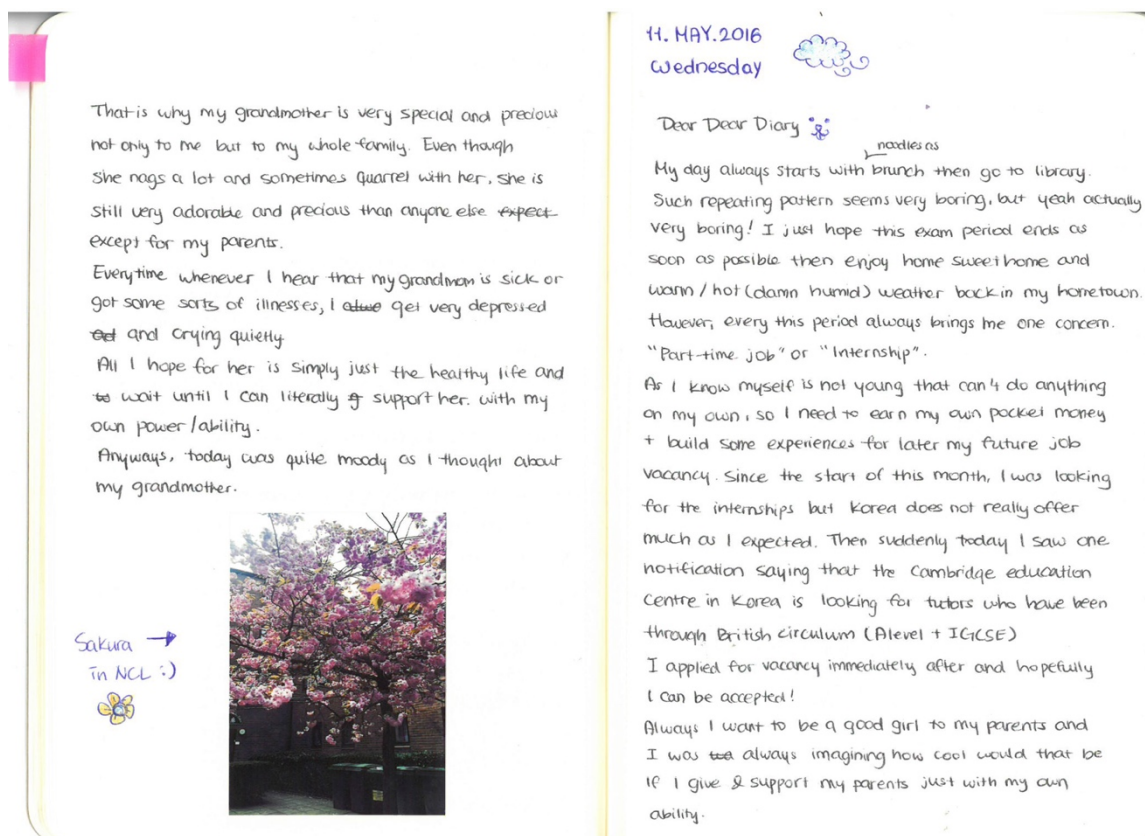


Figure 4.03. An example of diary note written by D1.

Thought-bubble exercises provided an opportunity for the student to make more senses about parents' thoughts on them. In terms of the second question, for example, the students would make an answer on the list of things their parents would care about them, and they are able to compare their answer with the actual parents' answer. Through the exercise, I was also able to make sense of the relational (or communicational) gaps between the participants and their parents.

4.2.1.3. The (exit) interview

As I noted, there were weekly meetings throughout the diary study. These were intended to be informal opportunities to discuss and clarify the contents of the diaries themselves, as well as to help motivate diary completion. Additionally, the study concluded with a more formal exit interview, which was audio recorded. These exit interviews were conducted in the research lab with each participant separately about two weeks after the diary study had concluded, allowing me to carefully review the existing documentary record to inform my questioning. For example, I was able to ask some questions about the specific, interesting moments mentioned in the diary note and explore their lived experiences (see Appendix A.3). To help ensure cultural sensitivity, the interviews were conducted by me (i.e. an English-speaking South Korean native speaker), and participants were offered the opportunity to conduct the interview in either Korean or English based on their own preferences. In the event, most communication took place in Korean, although participants often used expressions in English to better articulate certain experiences. The interviews were conducted in a semi-structured fashion to ensure a flexible (Seidman, 1998; Rowley, 2012), but focussed discussion, on the nature of LDRs in a South Korean context. Four interviews were taking from 39 minutes to 76 minutes (55 minutes in average).

4.2.1.4. Data analysis

The collected data, namely (i) the diaries, (ii) the researcher's informal notes on meetings whilst the diary study was in process, (iii) the photographs, (iv) the completed thought bubble diagrams, and (v) the transcript of the exit interviews, were examined in depth using thematic analysis (see Section 1.3.). Using an inductive approach, I familiarised myself with the data by repeatedly looking at the diaries. Data was coded afterwards based on the types of emotions in different situations (e.g. happy, loneliness, sad, overwhelmed, longing, sorry, hate and surprised). From this, I have created a number of

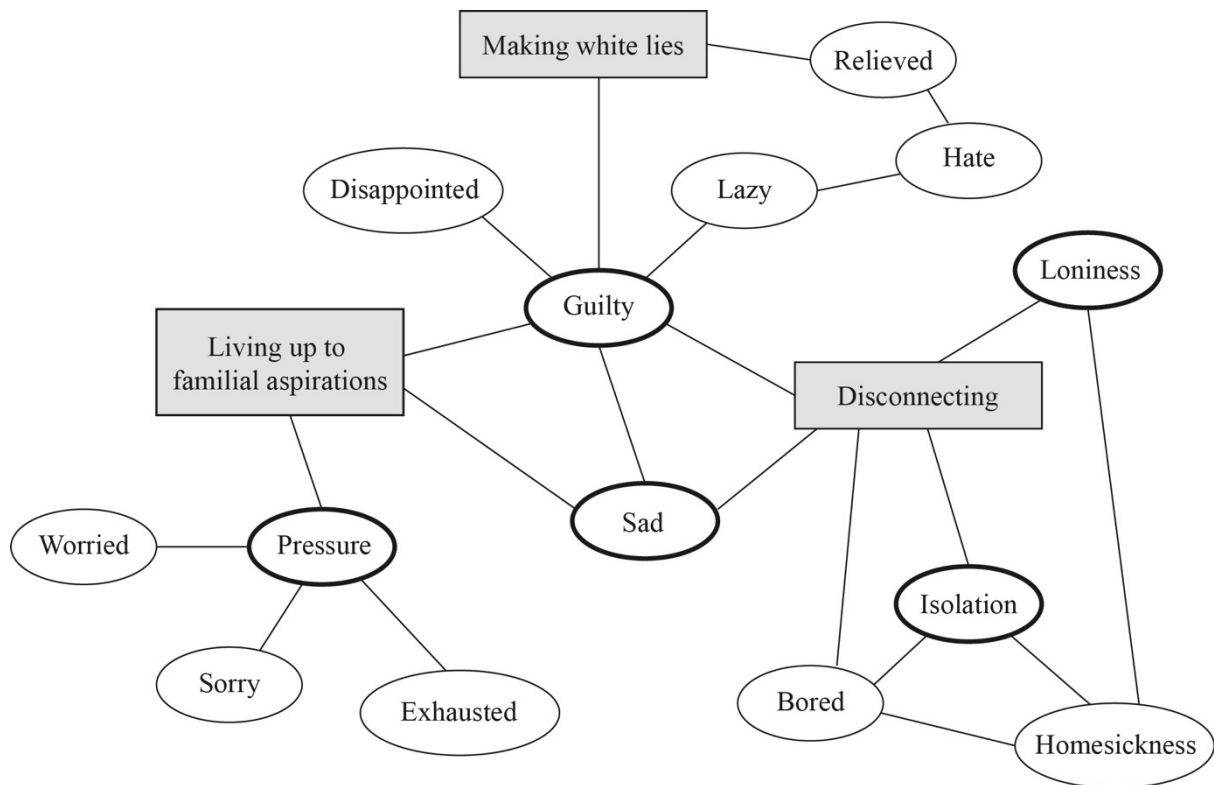


Figure 4.04. An illustration of thematic map for the diary study presenting the list of codes and their relationships to the theme.

themes, including living up to familial aspirations, making white lies, and disconnecting (See Figure 4.04). These especially focused on the challenging moments of long-distance communication.

4.2.2. Findings

According to the set of data, I have explored the (both communicational and relational) tensions that the South Korean students face in the UK while maintaining their relationships with their parents over long-distance.

4.2.2.1. Living up to familial aspirations

There was a strong familial expectation to succeed (especially academically) that pervaded the relationships between our participants and their family in South Korea. For example, D4 described her mother's sacrifice of her own aspirations in order that her children could be 'successful':

Make a list of things your parents care about you

1. In your view, what do your parents care the most about you?
2. Ask parents, what do your parents care the most about you?

1 is what they care most about, while 6 may be a less urgent care

1 is what they care most about, while 6 may be a less urgent care

My view

note	
1	건강 Health
2	학업/미래 Grade/Future
3	신앙 Faith
4	돈 Money
5	인연관계 Relationship
6	생활습관 Life Pattern

Parents' view

note	
1	건강 Health
2	신앙 (믿음) Faith
3	바른 가치관 (올바른 신념) Right belief
4	좋은 친구 Good friends
5	자신감 Confidence
6	긍정적인 마음 Positive mind

Figure 4.05. An image of D4's 'thought-bubble' exercise: the participants filled out a form with the things they anticipated their parents would say they cared about them (left) before asking their parents for their actual answers (right).

"When I was a child, I hated my mum as she gave up her own dream for her children, me and my brother. But even now, I cannot complain about her because I know she has been doing her best for us." (D4, Exit interview)

She felt gratitude for her mother's support in giving up on her own dream to support her children's studies, but also a sense of burden from it. Thus, D4 felt she had to be a 'good' child and studied hard to pay back her mother's sacrifice as a dutiful daughter. This manifested as a pressure she feels to ensure she achieves high grades and how she ties this to her mother's happiness:

"I should not live this way for the sake of my mum. She always says that she believes me and I am the only one in her life. I feel so sorry when I think of my mum and also feel pressure when she says like this." (28/04/16, D4's diary)

This can impact her desire to maintain a close connection to her mother and in turn, this can sometimes lead her to conceal how she feels. She noted in her diary:

“I, sometimes, want to cry in bosom of my mother but I can’t... I cannot because I should be a strong kid for her. I just want to say I am tired, but I will never say that to her. I do not want her to be disappointed at me.” (28/04/16, D4’s diary)

She also found that avoiding contact with her mother was helpful, which she inadvertently discovered when her internet connection suffered technical difficulties for an extended period of time:

“I couldn’t call her for a long time because the Internet connection was really bad, but it was actually good for me not having a call with my mum.” (19/05/16, D4’s diary)

These types of tensions were also seen in other family relationships. D1, also expressed feeling pressured due to her parents’ support in her education, which is a mixture of financial support, emotional support and sacrifice:

“My parents are paying for my school tuition, accommodation and monthly pocket money. The tuition fee is already more than my family’s year expenses, but I am just keep spending all their money.” (03/05/16, D1’s diary)

Perhaps one of the most worrying aspects of this matter is that the parental expectations are not necessarily what their children think they are. After the thought-bubble exercises, D4 explained that her parents were concerned more about her wellbeing than academic achievements:

“I realised I did not know much about my parents. ... I thought my parents would care about my grades and money as the first priorities, but I was surprised that they did not even mention it. This made me surprised and, at the same time, happy.” (D4’s 3rd weekly meeting)

This suggests that the LDR has the effect of sometimes creating significant and upsetting misunderstandings in respect of parental expectations.

4.2.2.2. White lies

The expectations of family members based in South Korea often create a significant tension between the parties to the LDR. An important way for managing this issue was effectively to tell ‘white lies’; that is misleading their parents with the intention of masking problems or difficulties.

D1 decided to find a part-time job at a café to reduce the extent to which she was financially dependent on her parents. However, her father did not want her to do anything other than studying, so she kept it a secret from her parents:

“I cannot tell this because one thing that my parents hate me to do is working at either restaurants and café, or any service related jobs. Especially because I am in abroad for the study purpose.” (07/05/16, D1’s diary)

This indirectly brought about a conflict between D1 and her parents. Her father called her (through KakaoTalk; most popular instant messenger in South Korea (Kim and Lim, 2015)) when she was at work but she could not answer it because she was scared that her father would be upset. Yet, her father still became upset with her because he felt a loss of connection by not being able to speak with her. D1 expressed an embarrassment about her parents wanting to share her private life with them:

“My mother asks me to send at least one photo per one day to them. So I am trying, but you know... this is not really easy.” (D1, exit interview)

Her diary illustrates that it took quite a long time for her to reconcile with her father afterwards, and that made her very stressed:

“The first thing I have done at the moment I woke up is to check the group chat to see whether my dad replied me back or not, but yeah....sadly he didn’t. I really feel like I made my dad so sad and disappointed him so badly.” (16/05/16, D1’s diary)

Even at the weekly meeting, she showed so much stress and frustration that she was crying as she talked about the conflict with her father. She felt guilty about what she had done for her parents made her parents sad. In D2's diary, she also noted that she does not want to disappoint her family:

"What I really really don't want to see is my family's disappointed face, so I should try my best until the end." (23/05/16, D2's diary)

As a result, she always focuses on sharing only positive moments, a joke, or a funny story so that they think everything is okay. When D2 is sick, she avoids telling them so that her parents are not worried. However, D2 wants her family's support and care and wishes that she did not have to mislead them:

"I feel pathetic about myself that I am just stuck in the sorrows and not going forward. I know I should not betray my parents' supports and expectation on me, but now I feel exhausted to handle all the pressure. I am so confused now. Confused [about] everything, my future, careers, dreams and reason for being here." (24/05/16, D2's diary)

Whilst this form of 'white lie' is very different to what D1 was hiding, it is perhaps more worrying, in that she feels unable to discuss her own life difficulties with her parents. D3 also conceals herself from the family and just waits for when it is all done. It looks unhealthy for her relationships as she noted in her diary:

"It's very hard and stressful being away from the family. I tended to bury my head in the sand and pretended like everything was okay. Maybe it wasn't the greatest tactic, but I believe this could end soon and I hope it will get better." (23/05/16, D3's diary)

4.2.2.3. Disconnecting

Unsurprisingly, given that these are all long-distance relationships, disconnection was an emergent theme from the analysis. Sometimes this can be *intentional*, as with the case of D4:



Figure 4.06. Picture of two buildings taken by D2. The silhouette of the building divided in two resembles the separated situation between her and her family.

“My exam wasn’t good, so I don’t call my mom these days. I will be upset if she keeps asking me about the results and the score during the short phone call.” (29/04/16, D4’s diary)

By contrast, D2 talked about the *physical* disconnection with her family, which was particularly acute when there was a family gathering:

“When I talk to my family through Skype, it usually made me feel good, but today I felt really lonely when I saw my family staying all together without me over the screen. I strongly felt that I am the only one alone here. I was trying to hanging out with my friend to refresh my mood, but I even felt lonelier after.” (11/05/16, D2’s diary)

On that day, she took a picture of a building structure divided into two parts in a very dark night (Figure 4.06). D3 had a similar experience. She explained that she cannot join any family events in South Korea and she also cannot invite her family to the UK:

“One of the moments that I miss being at home is when I see other people going home for a weekend or when they host their family up here. None of my family has ever visited me here.” (27/04/16, D3’s diary)

In addition, she and her family have a totally different life pattern and there are not many experiences to share. D3’s daily life is monotonous and unchanging as a student, so her conversation with her family becomes increasingly tedious.

“It’s extremely hard to find something to talk about with the family when you don’t have physical contacts.” (D3, exit interview)

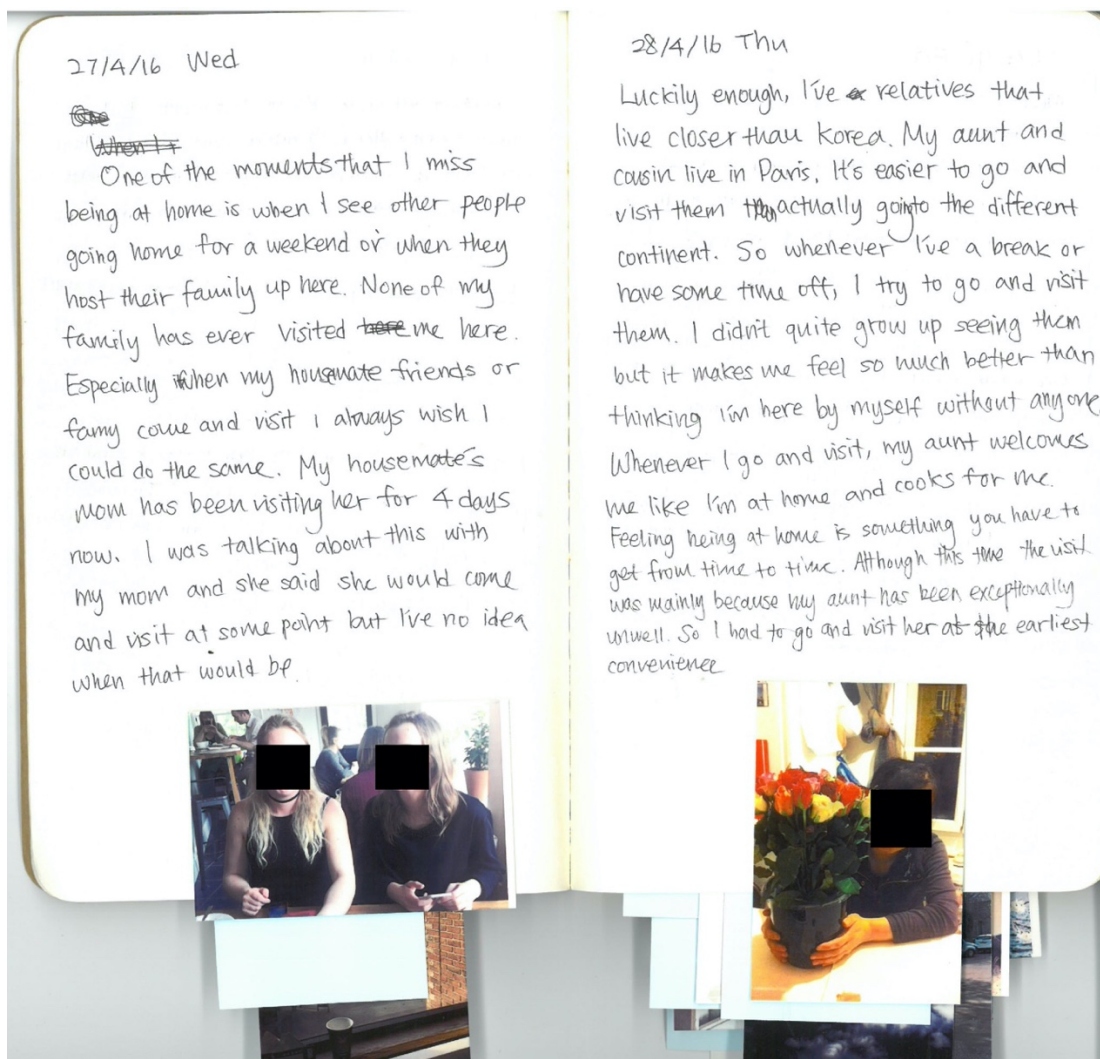


Figure 4.07. Example of diary note written by D3. Faces in photos were covered for personal data protection.

So, it is not just the geographical separation, but that combined with the nature of her day to day activities that generate a sense of disconnection. Because of this, she sometimes feels it is easier when she and her parents are separated:

“I have thought that I’ve better relationship with my mum when we are apart but that doesn’t exactly mean that I don’t miss her.” (08/05/16, D3’s diary)

D3 has also found that familial long-term relationships are particularly challenging, especially with respect to relationships with her older relatives:

“Another hard part of family long-distance relationship is the relationship with grandparents. We all know that their clocks are ticking, and sooner or later it won’t be possible to meet them or talk to them again ever. But it is hard to keep in touch with them because a) they are not familiar with technologies so they cannot text or video call and b) they are not used to talking on the phone as well.” (30/04/16, D3’s diary)

The effect of disconnection was particularly tragic from D3’s perspective. When she got news from her mother that her grandfather may pass away soon, it was impossible for her to go home to see her grandfather before he passed away. She noted in her diary:

“I have been trying as hard as I can to stay unaffected, but it was really hard last night...and I am just trying to convince myself that it wouldn’t have been possible to make it on time and I’ve made a right decision.” (22/05/16, D3’s diary)

The physical disconnection from her family really hurt her and seemed to be playing on her mind and ultimately gave her considerable regret:

“...rather than sadness, I will live with great regret in my life for nothing I could do for my grandfather.” (22/05/16, D3’s diary)

In effect, this is ultimately a failure of existing LDR technologies. A more effective means for engaging with older or infirm relatives might need to be considered.

4.3. Case Study 2: The Extended Interview

4.3.1. Method

4.3.1.1. Participants

Participants		Method	Setting	Gender	Age	Time in abroad (years)
Group	Name					
Group A	I1	Conversation Only	Online	Male	24	2
	I2		Online	Female	35	6
	I3		In-person	Female	26	4
	I4		In-person	Female	28	8
	I5		In-person	Male	29	3
Group B	I6	Conversation with Sketching	In-person	Male	36	5
	I7		In-person	Female	25	3
	I8		In-person	Female	22	2
	I9		Online	Female	21	3
	I10		Online	Female	25	2

Table 4.02. Summary of participants in the ‘interview study’.

10 South Korean international students (i.e. 7 female and 3 male) studying in different parts of the UK were recruited (see Table 4.02). Recruitment occurred through online advertisement and word of mouth. Participants had not been involved in a previous study for this work. Participants had varying ages and lengths of time living in the UK. Specifically, they ranged in age from 21 to 36 (average age = 27). The shortest time living in the UK was 2 years, whereas the longest was 8 years (average = 4 years). Participants were given a £20 Amazon voucher as an incentive for their participation.

4.3.1.2. Conducting qualitative interviews

As a means to explore the South Korean students’ experiences in use of technology in their LDRs, I conducted a qualitative, semi-structured interviews (see Appendix B.1). In order to address one of my research questions (RQ3: how can HCI support participation in research across different culture?), I have randomly divided the participants into two different groups (5 participants per each group) and used different methods per each group, in order to compare the quality of data between two. The interviews in the first

group were conducted by conversation only, but the conversation in the second group were developed by the use of sketching. I propose to augment the traditional qualitative interview with the sketching to have more in-depth discussion, higher engagement and comprehensive understanding about their experiences in use of technology.

Sketching is quick, timely, a clear way of communication, with individual sketches forming part of a larger narrative (Buxton, 2007). It already plays a crucial role in the design process, particularly in terms of generating ideas and communicating them with others such as other designers and expected (future) users (Van Der Lugt, 2005; Baskinger, 2008; Chamorro-Koc, Popovic and Emmison, 2008). In his paper on Design Workbooks (Gaver, 2011), Gaver states “*sketching is a fundamental technique through which designers think*”, which in turn suggests that it may assist with the real-time analysis that must be performed in the interviews themselves. Sketch can be used to facilitate and trigger the interaction among people (Akama *et al.*, 2008), and it can be a useful tool to capture and illuminate lived experiences of the interview participants (Wright and McCarthy, 2010). Perhaps most fundamentally, sketches offer a new way to suggest and explore, providing a catalyst for further dialogue between the interviewers and the interview participants (Buxton, 2007): not only should they help the discussions that take place, but there is the potential to enhance the flexibility of the interview, and thereby enhance the breadth of and depth of insights gleaned. The use of Sketch is somewhat similar to illustration, which is already widely used in interviews. Many researchers in HCI use the cards with the image or the blank cards for sketch in the early stages of design process for idea generation as an artefact that express individual’s thoughts, experiences and ideas (Halskov and Dalsgård, 2006; Hornecker, 2010). This approach has been highlighted under the concept of value sensitive design as a means to share the same values between people (Iversen, Halskov and Leong, 2012; Wong *et al.*, 2017). For instance, image collage has been used to create a space for co-creation and co-exploration as an emotional toolkit (Sanders, 2000). Sketching as a visual element “*helps collaborators understand the current state of their task and enables them to communicate and ground their conversations efficiently. These processes are associated with faster and better task performance.*” (Kraut, Gergle and Fussell, 2002, p.31)

Researchers also carefully designed the imagery toolkit with colour coded by the number of themes and chose the right images as they illustrate certain meanings, and these would

provide some suitable inspiration to the participants (Hornecker, 2010). In this respect, sketching possibly be efficiently used in exploratory researching stage before developing design idea, e.g. interview. Sketch is not the same as ‘drawing’, but something simpler and more flexible. There is a misperception that communication through the sketch needs a high quality of drawing, but the form of sketch could be anything such as thumbnail, post-its, napkin sketches, doodles with text, and more (Baskinger, 2008). This flexibility makes it an accessible, quick, and comfortable approach. In addition, sketching supports non-verbal interaction, discussion, and idea generation through the communication, as a visual communication tool (Baskinger, 2008; Åkerman *et al.*, 2010; Rodríguez, González and Rossi, 2015; Zaman *et al.*, 2016). Therefore, I highlight more about the use of sketch in qualitative interview as a means to support interaction between the researcher and the participant and develop the discussion between them.

4.3.1.3. Use of situation-specific cards

Categories	Situations
Isolation	<ul style="list-style-type: none"> • I have my own way to comfort myself. • I, sometimes, just avoid my parent’s call. • Taking all the issues alone is quite tough. To be honest, I have no one to share my inner concerns. • If I look at this (it can be whatever), I long my home and my hometown. • Whenever I get ill, I miss home food cooked by my mother. • If arguments were made with parents, reconciliation is difficult. The most tragic point is that for us, we can only make calls or messages, but video calls are a bit too early. • When my mobile phone is broken down or lost, the first concern came up to my mind is how to contact with my parents now on.
Loneliness	<ul style="list-style-type: none"> • My home here is just too silence, especially when I had a busy day. • When I feel serious loneliness, having a phone call with my family makes me even lonelier. Hearing their laughter over the phone is not always making me positive.

Guilty	<ul style="list-style-type: none"> I feel guilty when I am not available to join my family events happened in Korea (e.g. wedding, funeral or birthday). I have a part-time job to obtain some pocket money, even though my parents think spending time to earn money without focusing on studying is such a waste. This makes me feel sorry and pressure for them at the same time.
Pressure	<ul style="list-style-type: none"> As a son (or daughter), there are times where I don't think I am pursuing enough responsibilities. If I tell my concerns with my parents, they will start to think that I am in a big trouble. Therefore, I have been trying not to share my concerns with them since I came here. My daily routine is too simple and boring. It means I don't have anything interesting to share with my parents. When I face certain issues such as money, health or academic, firstly I worried whether my parents are disappointed at me or not.
Sad	<ul style="list-style-type: none"> I had so many experiences to part with friends while I am studying in the UK, but this never comes easy. Grandmother and grandfather are also my parents. However, it is almost impossible making contacts with them. Also because of their old age, there are worries. I have too little time to spend with them.

Table 4.03. A list of situation-specific cards and the contents.

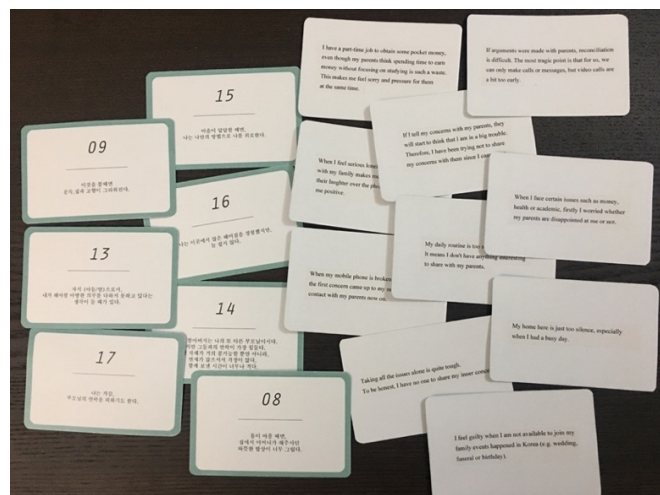


Figure 4.08. A set of situation-specific card. It presents the selected situations by both Korean (front) and English (back).

The interviews in both groups were developed based upon the 17 situation-specific cards (see Table 4.03 and Figure 4.08), which presents the students' communicational tensions identified in the diary study. Each card was designed based upon the themes developing to illustrate 5 different emotional responses (i.e. isolation, loneliness, guilty, pressure and sad), and those were made with a phrase selected from the diary note in both Korean and English (e.g. "I feel guilty when I am not available to join my family events happened in Korea"). Each participant was asked to select as many cards as they wished at the beginning of the interview, and then the discussion has been started based on the cards they chose. Using the situation-specific cards in the interview is advantageous to developing open-ended conversations while also meeting the interviews purpose of providing a flexible opportunity for our participants (Rowley, 2012b). The 'situation-specific card' was used as a supplementary artefact to develop the interview conversation by the interviewee with a high level of engagement (Jones and Rowley, 2012; Rowley *et al.*, 2012) and discuss issues that personally concern them (Sternberg *et al.*, 2002).

4.3.1.4. Settings

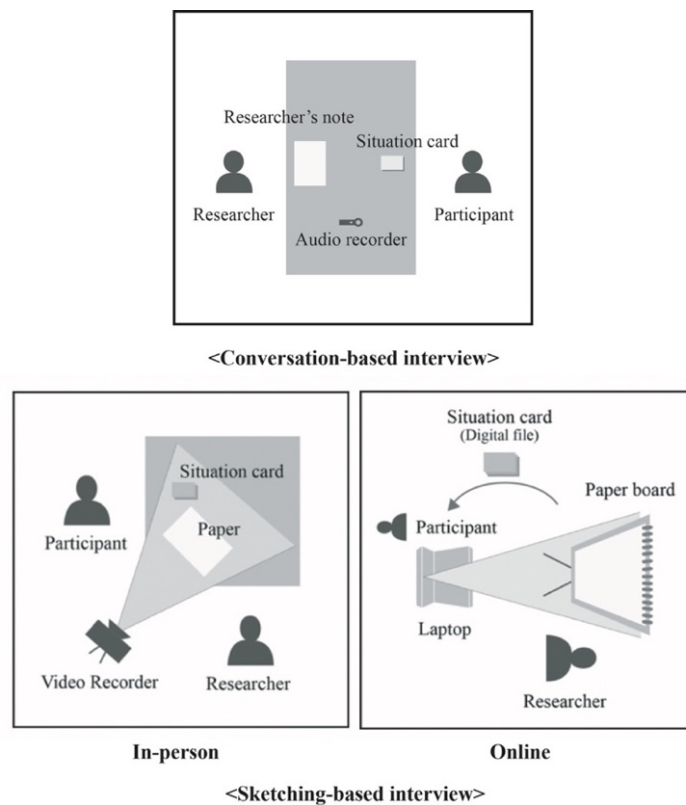


Figure 4.09. Different settings of the interview. Illustrations present both conversation-based interview (above) and sketching-based interview (bottom; in-person interview [left] & online interview [right]).

During the interview, I sketched out several important elements of the conversation. This included capturing social actors, places, objects, activities, and more abstract contents such as relationships and emotions. Examples of these are given in Figure 4.10. These elements proved crucial as facilitators of the conversation with participants and encouraged deeper conversation through the sketch.

4.3.1.5. Data analysis

The interviews were conducted in both Korean and English as needed. All of interviews mainly used Korean as they found it easier to illustrate their emotion with their native language. All of the interviews were audio recorded and transcribed in Korean as it is. Same as the first case study, I analysed them by Thematic analysis (see section 1.3.) and translated in English only for the selected quotes after analysis. the advantage of retaining the interviews in their original language is that nuanced aspects are not lost in translation (Regmi, Naidoo and Pilkington, 2010). Sketches developed in the second group

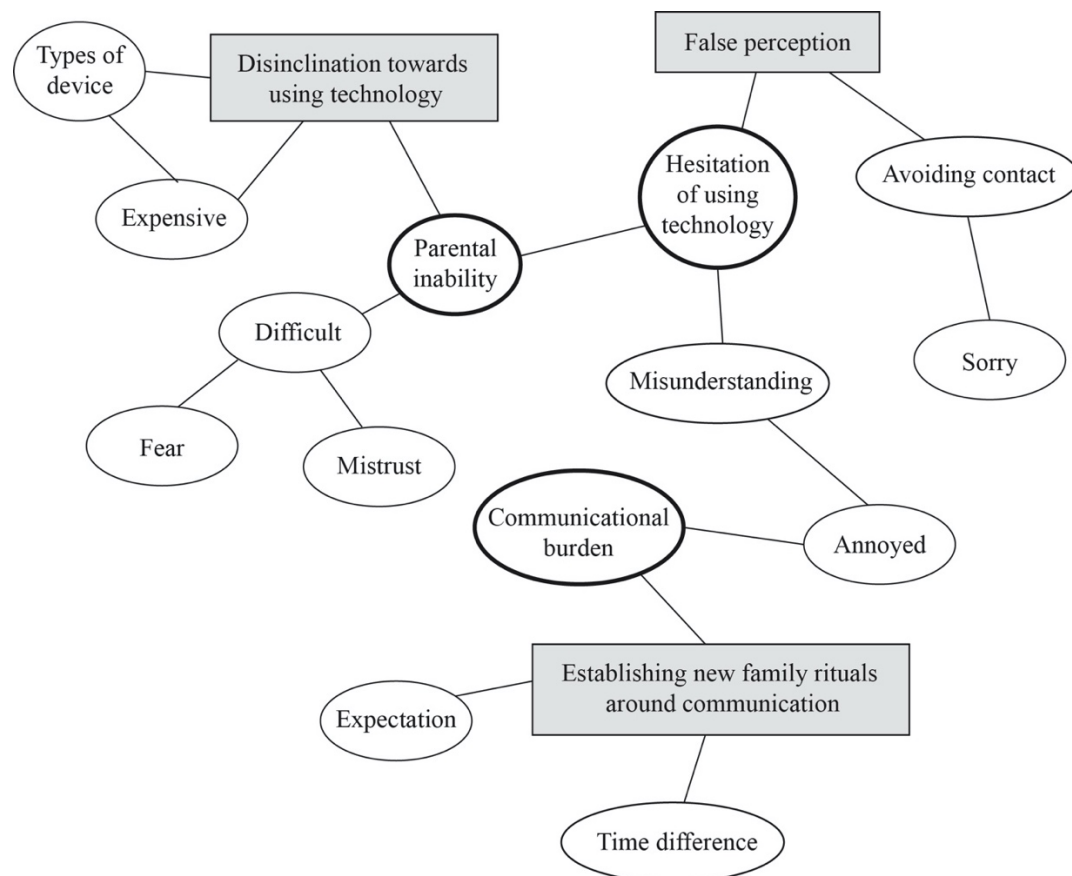


Figure 4.11. An illustration of thematic map for the extended interview presenting the list of codes and their relationships to the theme.

interviews had been considered as an interactive tool to support discussion, not as a data for analysis. Therefore, the types of the data I used for analysis from the sketching interview was interview transcript. I closely look at the data repeatedly along with coding some keywords based on the parental inability, communicational burden, and hesitation of using technology. I then developed a number of themes to find the patterns of the data I found interesting focusing on the use of technology: these are the disinclination towards using technology, false perception and establishing new family rituals around communication (see Figure 4.11).

4.3.2. Findings

From the second case study, I have developed an understanding about the use of technology in LDRs between South Korean families. The participants (students) shared about their lived experiences of technology (i.e. both benefits and challenges) in a way to address their difficult moments in LDRs.

4.3.2.1. Disinclination towards using technology

While there is a variety of technology intended to support people in different types of LDR, the participants did not always find it useful in their relationships. One participant, I6, complained about the difficulty of expressing himself when speaking with his mother. This was attributed to his mother's inability to use technology. I6's mother is over 70 years old and is not familiar with smartphones, using the internet, or technology more generally. As a result, making an international phone call is the only way for him to contact his mother. In his interview, I6 described the difficulty of this:

“My mother really doesn't like using any types of technologies even though she wants to contact me. She says it is stressful and annoying for her. That is why I only can make a phone call to my mother.” (I6)

In order to compensate for this situation, I6, drew upon his friends who remained in South Korea:

“Since my mother is alone in South Korea, she likes to have a guest and have some delicious food together. Sometimes I ask my friends to buy some food and visit my mother to make her happy. That will also be a chance for me to have video chat with

I2 does not like to contact her parents often, sending an occasional email instead of an instant message or phone call:

“Because whenever I contact them, our conversation ended up with some types of argument. Even now my parents keep saying me to do this or that, but I don’t want to listen to them anymore. I think I need some space from them and I don’t want to argue with them as well.” (I2)

Existing methods of LDR fail to cater for this uncomfortable family dynamic. For similar reasons, I9 also prefers to avoid using LDR technology to contact her parents. She considers that the technology cannot be useful or make anything better in her situation. I could see I9’s longing for her parents from the interview but also the driving reason why she is reluctant to use it:

“I miss my parents a lot. Especially when I am sick or tired. However, I am trying not to contact my parents because I don’t want them to see my weakness. Just having a phone call or sending a message doesn’t really help me. It actually makes me lonelier.” (I9)

Even though she does not get in touch with her parents often, she would show how much she thinks about her parents by planning a trip with them. She said,

“I am inviting my parents here and we will be traveling around together. They will love it, and I am really looking forward to seeing their smile as soon as possible.” (I9)

Ultimately, in I9’s case, technology has provided some small comfort, and it has enabled her and her family to build and look forward to a shared aspiration of meeting in the UK. However, it is plainly no substitute for an in-person, face-to-face, relationship.

4.3.2.2. False perceptions

A prominent theme from the findings was the concern of how the South Koreans felt about the opinion of others. There was a concern from both parties (the students and their

parents) to ‘keep up appearances’. South Koreans in the UK worried about how their relatives at home perceived what they had been doing in the UK. This aligns with (Oetzel and Ting-Toomey, 2003), which also found that people in a collective culture, such as South Korea, are more conscious of other people. The students were worried about the expectations and the evaluations that their parents would receive from the people around them because they provided financial support for their children’s study abroad. I8 noted that the fact she was being supported by her parents could be perceived negatively in her parents’ social circle:

“I am sorry for my parents because I am studying here and it is much slower than others to manage life as an adult. Most of the children of my parents’ friends have stable jobs and even got married, but I am still being supported by my parents. I am, to be honest, worried about how my parents will be seen by people around them.” (I8)

In I7’s case, she also considered her parents’ social evaluation from others as an important motivation for her to study hard. She mentioned in her interview:

“My parents think that sending me to study abroad is a kind of investment. So I have to work hard on my study here for my parents. I have to succeed after graduation, so my parents can get a good evaluation from other people. This is sort of my tacit duty as a daughter.” (I7)

In this cultural context, the student complained the limitations of technology could give rise to false perception from others. I4 sometimes uploads her photos on Facebook when she visits new places, but this means her friends in Korea think she just enjoys her life without any concerns:

“My friends don’t really know how I live and what concerns I have, but they tend to judge my life from the photos I posted on my Facebook page. They think I am the one who just enjoy my life as traveling around which is not really true.” (I4)

I9 talked about misunderstandings caused by text messages with her mother:

“Sometimes when I got a text from my mum, I feel bad and nervous as her sentences are so simple and dull, and she does not use any emoji. I feel like she may be mad at me. That’s why I prefer to make video call and see my mum’s face expression and voice tone.” (I9)

Turning to the actual concerns of parents in South Korea, I7 had a tension with her mother because of her profile picture on KakaoTalk. The photo showed I7 drinking a soda through a straw. However, her mother was concerned that others would perceive her to be smoking. This resulted in her mother telling her:

“You should have more graceful and gentle looking as a graduate student. Change your profile picture.” (I7)

Ultimately, I7 changed the photograph to avoid conflict but expressed frustration at having to carefully manage something so trivial as a profile photograph:

“I understand what she cares and why she asked me to change the photo, but it was stressful. How to be more graceful and gentle on my profile? I don’t know what to do really, but I just changed the picture because I know my words won’t make the situation better. It possibly would bring more nagging from my mum.” (I7)

This considerable intrusion demonstrates the potentially negative effects of Korean societal expectations and a parental concern for ‘keeping up with the Joneses’ upon these LDRs.

4.3.2.3. Establishing new family rituals around communication

There is an 8- or 9-hour time difference between the UK and South Korea, depending on the time of year. Most participants felt that this time difference was a significant challenge, especially in terms of managing expectations from those relatives based in South Korea. I1 said in his interview:

“I often miss my parents’ phone calls in the morning when I am in the class. If this happened continually, my parents will get worried a lot.” (I1)

Moreover, it takes a long time, especially for the parents, to get used to when would be a good time for having a phone call with their children. I7 mentioned that during the first two months, her parents did not really care about I7's schedule and would call at any time, often when she was in class or sleeping. She said:

"This made it very difficult for both me and my parents." (I7)

Fortunately, as time went on, most participants and their parents began to understand each other's patterns of life and made their own rules to ensure better communication. I10 calls his parents every night at 11 o'clock in the UK, as this coincides with the time his parents start their day in Korea. Often these calls involve sharing a prayer together for a positive day. The connection between him and his parents is largely determined by him. This was because of his parents' limited aptitude for using information technology:

"I am the one who make contacts. My parents are not familiar with using any types of machine. I have taught them before how to use the smartphone, but as time goes, they easily forget it." (I10)

This is the new way his family communicate over distance. I3, similarly, developed new communication rituals with her family:

"Every morning on the weekend, both Saturday and Sunday, we do Skype. This is our routine. We just see and catch up with each other. We don't need any special reasons to do it ... We sometimes just turn on the Skype and put it there, and each of us just do whatever our daily routine is." (I3)

I8 expressed her satisfaction about her new rituals of communication with her parents. When she first arrived in the UK, she was not interested in contacting them to share each other's day and she and her parents called each other just for technical contact ignoring time differences:

"When I came here at first, I was busy adjusting to school, so I only had to contact my parents once or twice a week, and it was very short. I felt like I just call my parents to

say I am still alive rather than talking to each other. So it was getting annoying for me to contact them.” (I8)

As time moved on, she and her parents became more accustomed to each other's schedules and tried to have conversations at the right time for each other:

“I think there are some positives from having a time difference. We have to make an effort to contact each other by agreeing on a time. It means we can empathise with each other a bit more.” (I8)

This made her communication with her parents more meaningful and fun because it became something more than just checking in on each other. It shows that carefully planning around the time difference should be supported to make a more positive LDR.

4.4. Reflection on South Korean International Students' LDRs

4.4.1. Protection from unhealthy communications

In most cases, the existing technologies and digital services being used to facilitate LDRs were either of limited value or counterproductive to the maintenance of good relations between family members. The data revealed that many South Korean students were pressured to be 'always connected' through such technologies by their parents. As a result, they make excuses to avoid the parents' calls or use other means of communication to introduce delays and undermine the 'liveness' of communication technologies that their parents preferred. A key challenge – whether perceived or actual – was that many of these relationships were markedly domineering in character. Often this was implicit, with a parental desire for intensive communications disrupting the routines and lives of their participants (as shown by D1 and D4's separate experiences). In many cases, technology often served as a form of surveillance and unwanted intrusion (Palen and Dourish, 2003; Wisniewski, Lipford and Wilson, 2012; Baumer and Adams, 2013), rather than as a mode of providing support: in effect, the relationships became inherently disrespectful of the needs of each party. In this respect, students' perceptions of being remotely monitored by their parents led to behaviours that impacted on their local social relations. For example,

in their self-presentation through social media channels, students were acutely aware of how any changes made would be perceived by family members in South Korea, with I7's experience of being forced to change her profile picture being a particularly concerning instance of this. Accordingly, future LDR technology in this context should be designed to help shield its users (especially the students) from protracted intrusion.

4.4.2. Enabling 'white lies' and student control

Given the distinctive cultural context, and the fact that many of the participants came to the UK to gain independence, it is inevitable that a degree of 'white lies' and misrepresentation underpin these relationships (e.g. D2, D3 and D4's separate experiences). This is especially true when one considers the often-contradictory expectations of the parties, with the younger generation wishing to be disconnected, whilst their parents often expected them to be constantly available for communication. Well intentioned dishonesty is part and parcel of the human right of freedom of expression and an integral part of relationship management: as the adage goes, "*Saints may always tell the truth, but for mortals living means lying*" (Wright, 2011). As such, an integral part of communicational disconnection must be *designing for well-intentioned dishonesty* as this is the means through which existing participants have found helpful (although additional features would be beneficial as well, given the intellectual and emotional burden that can arise in maintaining 'white lies').

4.4.3. Designing for temporal management and 'rituals'

It is evident from the exploratory study that the temporal management of relationships is crucial, not just because it could be a means for facilitating the necessary 'white lies' (e.g. moving communication from times where there is particular risk), but also because having regular and structured communication could in and of itself bring comfort (and certainty) to the parties of the LDR, such as I10's practice of having a general prayer with his parents. Whilst it is true that most participants ultimately fell into 'rhythms' and 'rituals', there was evident discomfort in many of these LDRs from the outset, as the parties got used to their new circumstances. This was a substantial and unsettling additional burden. The South Korean international students prefer to make contact with their families only at the agreed time as a respectful means of communication for them: in part this is for pragmatic reasons (which relate to their new life and time differences), but also this is due to the limited support (and even harm) from the lack of a 'feel at home'

relationship, and sometimes, the lack of common topics to discussion, risking overly regular communication descending into monotony. However, these ‘rituals’ made it difficult to communicate freely, as they had to wait until late at night or the weekend to get in touch with the other (separated) party (consider the separate experiences of both D3 and I3). Existing technologies fail to include effective measures for temporal management, or perhaps even guidance that would enable a more effective negotiation of when the participants could be contacted (and when would be less appropriate). Future LDR systems for this context should take account of the comfort that can arise from creating rhythms of communication, and strongly emphasize this from the outset of the relationship.

4.4.4. Accessible communication technologies (parents)

The participants often described their parent’s fear and mistrust of communication technologies: perhaps the most striking example of this was I6’s use of his friends in South Korea to overcome his mother’s difficulties in this regard. This manifested in their parents’ inability to communicate their feelings and concerns through existing digital communication channels, and their attempts to support their parents in this respect. In many cases, parents’ limitations in using digital communication channels had a knock-on effect for the students, in that they themselves (the students) reduced the richness of expression in the accounts of their lives to their parents. This reciprocal throttling-back of communication also gave rise to deliberate acts of under-communication. For example, a number of participants reported how they used positive, but un-explicit, statements as to their personal wellbeing, when the realities were more complicated. Their awareness of their parents’ inability to comfortably engage in complex discussions through voice and text communication technologies led them to avoid such topics through the telling of positively oriented ‘half-truths’ and ‘white lies’. This leads to a requirement for *technological simplicity*.

4.4.5. Concept of Respectful Disconnection

The tensions in LDRs that I observed from the exploratory study demonstrated the needs for *disconnection* in long-distance communication as well as the technological support. From the study, the value of disconnection was identified within two perspectives, which are the separate needs for physical and emotional independence.

Firstly, the South Korean international students tend to have a desire to live their own life as an independent adult away from the control of their parents – and this is often a significant reason for studying abroad. One student (i.e. I2) decided to come to the UK to understand what she truly wants to learn (although she already obtained master's degree in South Korea) and has intentionally tried not to make too frequent contact with her parents while away. However, the ease with which her parents could reach her, and their expectation that she does the same, meant that this proved challenging. Another student in the diary study (D1) experienced some tension with her parents about her having a part-time job while studying abroad. Her parents did not want her working in a café or restaurant because it was not related to her study. However, she wanted this job and tried to foster a disconnection from her parents by avoiding their calls and messages so that she could avoid the tension. However, this only served to cause further tension as her father became frustrated with her lack of contact and how difficult it was to speak to her. The students also struggled to be emotionally independent from their parents, especially if they felt unwell. However, they were well aware of the fact that their parents could not do anything from afar, meaning the students often tried to avoid speaking to their family when they were not well, so as not to concern them.

Respectful Disconnection is a concept that aims to help with this unmet need for space and separation experienced by the South Korean international students. It identifies a new approach for more healthy communication with their parents in a long-distance setting. It illustrates a curious mix of respect, well-intentioned dishonesty, mediation and temporal management. These requirements might be perceived to be contradictory, especially in respect of the combination of dishonesty and respect. However, this is especially true when the younger generation wish to be disconnected, whilst their parents often expected them to be constantly available for communication. I have learnt that the conventional LDR technology, in some cases, served as a form of surveillance and unwanted intrusion, rather than as a mode of providing support: in effect, the relationships became inherently disrespectful to the needs of each party (i.e. both students and their parents). Therefore, the concept of Respectful Disconnection suggests a new technological mediation to support intended, well-balanced disconnection in communication between individuals while supporting their communicational needs.

4.5. Summary

I have conducted two interrelated but separated in-depth studies (i.e. diary study and extended interview) to gain rich account of South Korean international student's lived experiences in long-distance family relationships and their use of technology. The participants of the two studies are not the same. These explorations have identified that the communication patterns of the existing technologies and processes are insufficient or inappropriate in maintaining LDRs in their cultural setting. From the first case study, i.e. diary study, I have observed a number of communicational tensions that the students face from the distant relationships with their parents. Beyond the previous identified situational challenges, e.g. living in different time zones and lack of presence, I have closely looked at the relational challenges influenced by Eastern culture. Interestingly, South Korean students are expected to be always connected with their parents. It was an expected communicational form of their culture, tradition and duty as a child under the concept of filial piety. They need a disconnection in their long-distance family communication. Results show that South Korean students tend to make white lies to be avoided their communicational tensions, but it brings another concern at the same time, such as feeling guilty and shamed. Therefore, it seemed important to make a balance between connection and disconnection in their communication. The second case study, which is interrelated but separated study, i.e. extended interview, was followed to understand their use of technology in dealing with those tensions. I also developed the concept of Respectful Disconnection, which is the main resource for designing future LDR technology in this work to support long-distance communication between South Korean family. In following chapter, I present design workshops conducted to discuss in what direction the technologies might be useful for the healthy LDRs.

Chapter 5. Brainstorming for Future LDR Technology

5.1. Introduction

In Chapter 4, I have identified a series of communicational tensions that the students faced, caused by their parents' expectations that they remain always in contact, despite living in a different time zone. Modern communication technologies can be a source of intrusion and conflict for them because they are torn between a desire to be independent and a sense of cultural duty to be family-oriented, often receiving constant messages, reminders, and requests from home. These surfaced South Korean students' need to find ways to be *respectfully* disconnected from their parents and led to the development of the concept of Respectful Disconnection to support their healthy family communication. In this chapter, I present two design workshops conducted with 10 South Korean students in the UK (i.e. 5 individuals per each workshop) to explore the design of future LDR technologies. These built upon the work presented in Chapter 4, using the findings of the two exploratory studies as the basis for the design of potential technologies in this space. The workshops followed an Invisible Design (Briggs *et al.*, 2012) approach, which uses an ambiguous film to generate discussion with, and between, workshop participants in the early stages of the design process. Working with a film maker, I created a film to effectively share a series of situations, derived from the exploratory studies presented in Chapter 4, that illustrate the design challenge. This was used as an inspirational artefact to brainstorm new ideas with workshop participants, who is a potential future user of the system, responding to the challenge. This provided an opportunity to have critical and creative dialogue around what a future interactive system might look like, along with their experiences and concerns in use of the technology.

In this chapter, I (a) test the concept of Respectful Disconnection with potential future users of the system through an Invisible Design workshop and (b) identify the core design requirements for this kind of system with those who might use it. This chapter presents the details of design workshops underlying its method and the findings. The process of film development is presented ahead of the method section as it formed part of the preparation for the study. The Invisible Design workshops show that disconnection can be of

significant value to the students, helping them adapt to a new culture, country, and education system while still affording sufficient respect to their parents. Furthermore, four design considerations for a future disconnection-based interactive system are discussed, which highlight minimal, asynchronous interaction and avoiding push notification.

5.2. Preparing Invisible Design Workshops

To explore the design of technologies within the LDR space, I conducted two Invisible Design workshops. Invisible Design is a participatory design approach, using ambiguous films to support the development of a shared understanding of context and to provide a basis for workshop participants to respond to and discuss the design space (Briggs *et al.*, 2012). Two separate design workshops were conducted with two different groups of South Korean international students living and studying in the UK. These workshops afforded participants the opportunity to explore the design space together, situating their response to the provocation (the film) within their own lived experience. In following section, I explain how I develop an ambiguous film under the concept of Invisible design approach.

Ambiguous film has been suggested as an approach to find an efficient means to engage participants in design process, especially for a group of people who may be disinterested, mistrusted or hostile to new technology (Coleman *et al.*, 2010). As a tool to support discussion, the film should clearly communicate the design challenge through scenes depicting daily life and direct the participants' attention to the topic. It is also important to ensure it is the right duration, has moments of humour, is easily understandable, and something the participants can empathise with. Achieving these can ensure that participants can discuss their own experiences in light of the film scenes and explore together what design ideas might be feasible.

The process of making the film was guided by three aspects identified by Briggs *et al.* (Briggs *et al.*, 2012) (see Figure 5.01): (a) communication of project goals and key concepts, (b) script-development and (c) film-making. These are further discussed below.

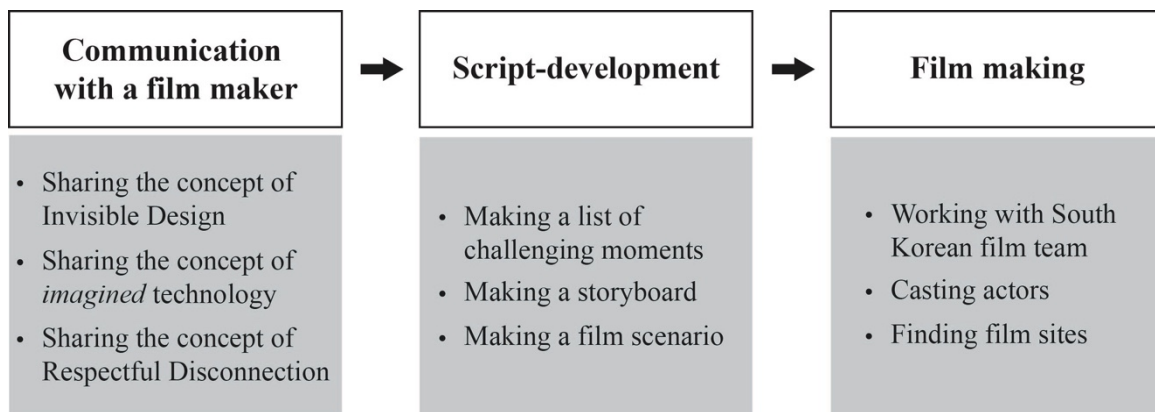


Figure 5.01. An illustration of the film development process.

Communication of project goals and key concepts

The film has been developed with a professional film maker. This was a crucial first step to ensure that the film is high quality and has a strong enough narrative to clearly communicate the challenge and goal of the project with workshop participants.

Development of the film began through conversations with the filmmaker. This began by explaining the concept of Invisible Design, sharing a relevant research paper, and previous examples of film development as part of Invisible Design research (Briggs *et al.*, 2012), especially focusing on the value of an ambiguous film as a way to illustrate *imagined* technology and its role to facilitate discussion in workshop.

Following this, we discussed the findings of the in-depth diary studies and extended interviews to ensure the filmmaker can understand the goals and background of my research. This took the form of a document presenting a number of communicational tensions between South Korean students and their parents, sharing selected quotes that best conveyed the challenges the students were facing. These tensions included parents being unwilling and sometimes unable to use new technology to communicate, the students needing to be disconnected from their parents so that they have their own time, space, and independence, and potential misunderstandings between the students and their parents when communicating about different, unknown lives over a distance, and a significant time difference. Furthermore, key requirements for the film, based on the concept of Respectful Disconnection, were also shared to ensure film communicated the research findings appropriately.

Firstly, to address the need for disconnection, space, and an individual boundary, an emphasis upon providing *uninterruptable space* would inevitably enable the students to be shielded, but to achieve this, a system would need to be based on features that do not force any types of reactions in communication between individuals. This will also address the issue of time differences between geographically separate parties. Secondly, the shape of the relationships from the use of imagined technology would ideally avoid an emphasis upon live conversations to address the concerns of time difference, but instead place emphasis upon *asynchronous communication*. And lastly, a simple and easy way of interaction would be ideal for an efficient communication with the parents, however nothing was specified in advance of the film. These would be the key themes for discussion between the workshop participants.

Script-development

The development of the script focused on how the usability of the *imagined* technology could be shared in an ambiguous way, along with the situations illustrating the challenges South Korean students face in their long-distance communication. This was to ensure that the participants can clearly understand what the design challenges are, while opening up the space to be creative when brainstorming ideas for the invisible (*imagined*) system. In what follows, I present how I develop the script by working together with the film maker.

Firstly, I listed the typical challenging moments the South Korean students often face during their day, which were based on the findings from the previous exploratory study (Chapter 4). These included having vastly different life patterns, moments that do not allow connection (such as being in class, working, or spending time with friends), and students wanting to reach out to their parents but not finding the time to. Figure 5.02 illustrates a number of moments that the students think of their parents during their day. However, they do not manage to make contact due to time differences, being too busy during the day, being too tired, or just forgetting to contact them. The image below shows a thumbnail sketch used when planning the story by myself, and eventually became the basis of the storyboard.

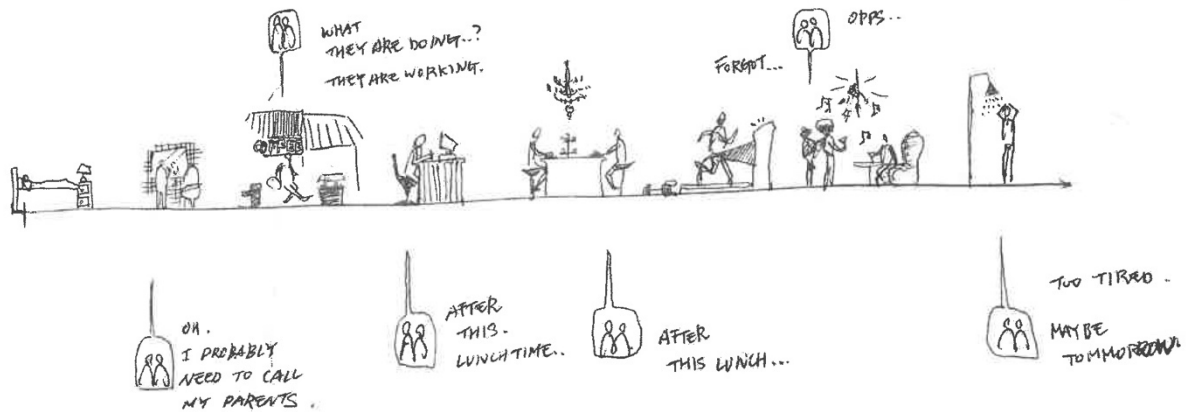


Figure 5.02. A series of moments that the South Korean international student think of their parents but not ideal for making contact into an action.

Secondly, I developed those challenging moments into a storyboard (see Figure 5.03), so that I can clearly share my thoughts on the film composition (e.g. how the challenges faced by students should be seen in the film) with the film maker. It was important to share the concept of Invisible Design at the beginning of the work, and make sure the filmmaker fully understand the value of ambiguity for supporting creative discussion (within a group) through the film that he would make. I led the development of the script as I wanted to ensure it remained faithful to the challenges, ideas, and opportunities identified in the earlier research. The challenge for the filmmaker was to develop the script into an effective film scenario by considering the components of the film and the detail, including characters, shooting techniques, essential equipment, places and the cost.

Lastly, the film scenario was developed. The scenario was written in Korean as the main characters in the film are supposed to be South Korean students and they use Korean when they are communicating with their parents. English subtitle was added afterwards for better communication with other people who want to watch the film but do not understand Korean.

Film-making

The film aims to help the workshop participants (i.e. South Korean international students) to empathise with the challenges facing the main characters in the film and be able to imagine the technology used in the given situations, which was not clearly visible. In this respect, there were two major concerns in making the film; casting actors and finding

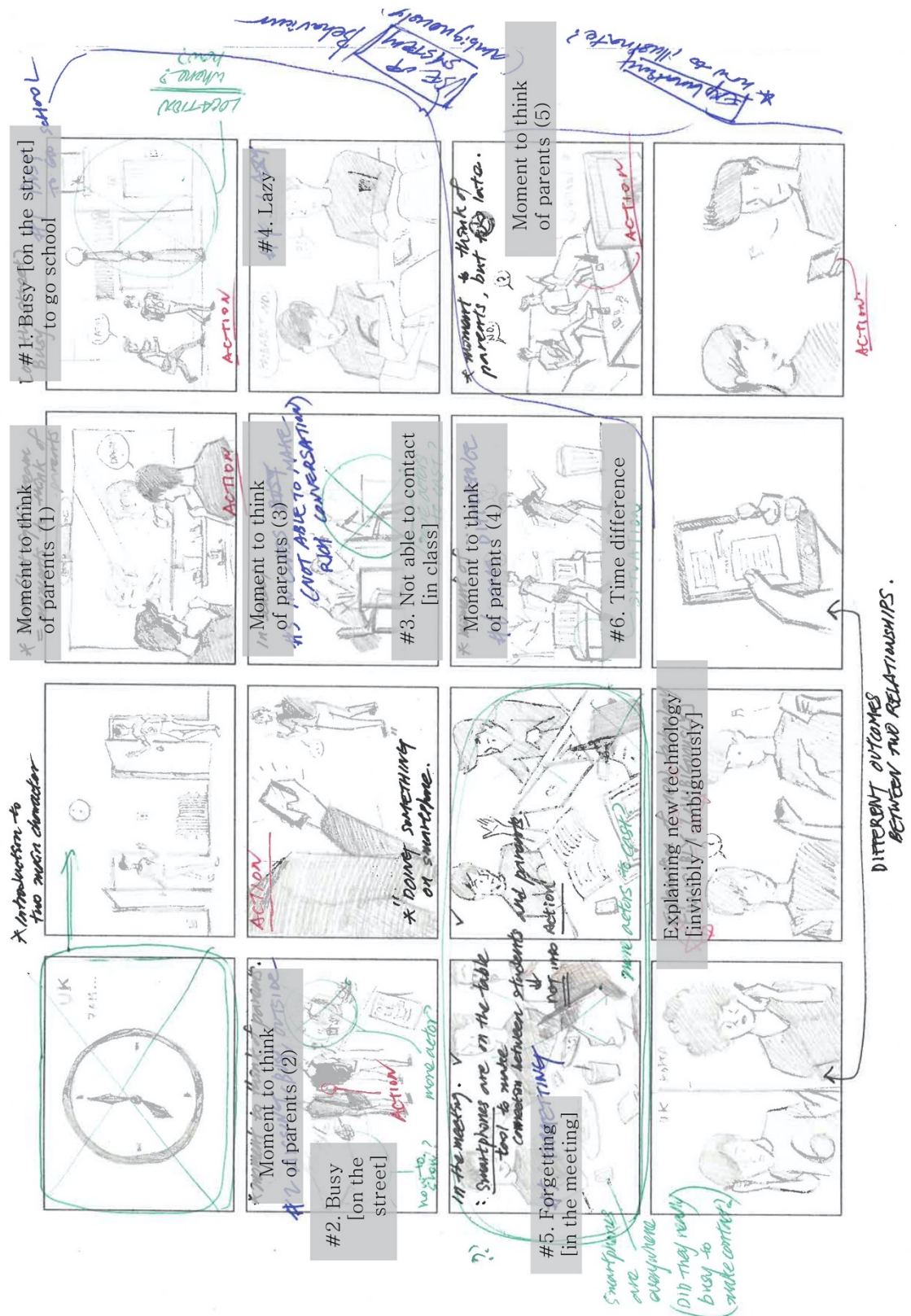


Figure 5.03. The researcher's hand-written storyboard to communicate with the film maker and discuss about the concept of film and scenario (e.g. the story, scene composition, and the highlights).

suitable filming sites. Firstly, the film illustrates the stories of South Korean students studying in the UK and shows the challenges they face in their daily lives in communicating with their parents. Therefore, it was important to find actors who are South Korean, in their 20s, so that they represent the participants in both the case studies and the workshop. It was also important that the film accurately represents South Korean culture and the language and convey the situation correctly. Therefore, the film was recorded in South Korea and with a South Korean film team.

However, this led to another issue: finding suitable filming sites. Although this film shows the stories of South Korean students, the background of each scene should be the United Kingdom in order to clearly illustrate the situation of long-distance communication with the parents. However, it was difficult to find a suitable place that was similar to the place international students in the UK live and where they spend their time. Therefore, we modified some parts of film scenario so that it fit with environments we could easily find in South Korea. The number of characters in the film also had to be adjusted. Previously, it had been planned to cast English people in the film. However, it was not easy to do so in South Korea, so we reduced character numbers.

The film¹ consists of 6 scenes in total, illustrating the challenges South Korean students in their LDRs. The time has been shown at the beginning of each scene, allowing the workshop participants to assume that the film shows the students' daily routine. In the film, two students who are living in the same house in the UK spend their day together, but they are communicating with their parents in different ways. One uses the *imagined* technology, which is invisible in the film, and the other does not. The film shows how the use of the *imagined* technology affects their long-distance family relationships. I aimed to make the film short and humorous, so the participants do not lose their attention while watching it. Therefore, the film runs for about 5 minutes and often provides humorous elements through the actors' behaviours and their facial expressions (e.g. use of snoring sounds and embarrassing face expressions). In the following part, I will describe each scene along with the script.

¹ <https://www.youtube.com/watch?v=LQQumEWwhhY>



Figure 5.04. Selected situation from the scene 1. It introduces two main characters in the film and provides a situation that they are busy to prepare the school in the morning.

Scene 1 can be considered as the introductory stage of the film. Two main characters (i.e. A and B) are introduced as housemates who study in the same university in the UK. It begins with providing a main theme, which is long-distance family communication, and illustrating one of the challenges when trying to make contact with their parents. In this case, the cast are too busy preparing for school, especially in the morning, to reach out to their parents. Below is the full dialogue of the scene 1:

[07:30]

A: Hey, did you sleep well?

B: Yeah...

A: We are late. Hurry up!

B: By the way, I had a dream last night.

A: What dream?

B: My mom cooked for me. I should call her today.

A: Yeah, you should contact her more often.

B: Okay. Maybe later after class.

A: Oh, I haven't actually called my mom for a while either.

(A does 'something' on his phone)

In this scene both students are in a rush to prepare for school in the morning. The first communicational tension is given by student B when he says he had a dream about his mother. This provides a motivation for both students to make contact with their parents, but the film shows the difference in the behaviour of the two students (see Figure 5.05).



Figure 5.05. Different behaviours between student A and B when acting on the motivation to make contact with their parents.

One student (B) delays contacting his parents until later because he is busy, while the other one (A) takes a moment and does “something” on his smartphone while preparing for school. This is just one of the different behaviours between the students in the film, and it will show a continuous comparison of the two as the scene moves on. However, the film does not clearly show what A is actually doing with his phone. Instead, it shows behaviour from afar as he makes contact with his parents without hesitation.

The film illustrates a situation where the students may momentarily think about their parents from time to time during their day. In scene 2, for example, A sees a parcel at the entrance door, and he surprisingly think of his parents for a moment. Then he does “something” on his smartphone quickly, but as same as the scene 1, it does not show clearly what he is doing with his phone. In this film, the *imagined* technology will be shown ambiguously but will continue to be illustrated by showing what the system user is doing with it. In addition, this ambiguousness aims to be the space for discussion among the workshop participants about the meaning of the parcel, different behaviour between A and B, and the similar situations in their lives.

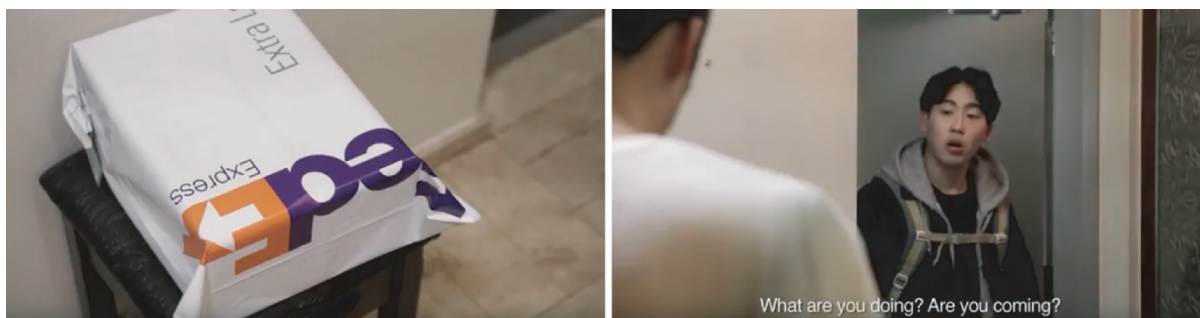


Figure 5.06. Selected screenshots in scene 2, which is showing the inspirational object to think of the parents in daily.

Below is the script for the scene 2:

[08:00]

B: Hey, hurry up!

A: Wait for me!

(A finds a parcel at the entrance door and does 'something' on his phone)

B: What are you doing? Are you coming?

A: Okay.



Figure 5.07. Selected screenshots in scene 3, which illustrate the situation in class. It pointed out one student's lack of willingness in making contact with his parents.

Conventional communicational tools, which are familiar and commonly used between South Korean students and the parents, e.g. instant messenger and video conferencing tool, tend to support synchronous conversation. Therefore, it may not always ideal for the South Korean students to make contact with their parents, especially when they are busy or in class. Scene 3, on the other hand, pointed out a different concern, which is related to the student's willingness to make contact. Based on the script, a random phone vibration reminds A that his friend B needs to make contact with his parents, and he asked if B

made it. B, however, made an excuse that he had too many classes and said he would contact his parents later. The film shows the irony of this as he does not seem to be studying and is distracted. Below is the full dialogue for the scene 3:

[11:00]

A: Did you phone your mom?

B: Pardon?

A: Did you call your mom?

B: No, not yet. I have too many classes. I will call her after class.

(after a moment, he fell asleep)

A: ...

This scene aimed to provide a discussion point about what actually makes communication difficult for the students. This may need to be considered beyond the situational difficulties.



Figure 5.08. Selected screenshots in scene 4 illustrating busy day of the students.

Scene 4 highlights two situations. Firstly, it shows how busy the students' daily schedules are because of their study, meetings and social life. This means that it is not easy, practically, for them to be always connected with their parents. On the other hand, it also illustrates the situation that the students are always with their phone, which can use to connect with their parents. Here, the film aimed to give a hint for the workshop participants that the *imagined* technology may need to support very quick and simple interaction. Below is the full dialogue for the scene 4. However, the actors' behaviour is more important for this scene:

[14:30]

B: *Where do we have the meeting?*

A: *Library.*

B: *Library?*

A: *Yep.*

B: *(looking at his phone) Oh, we are late. Let's run!*



Figure 5.09. Selected screenshots in scene 5 presenting student's concerns on making contact.

In scene 5, the students are sitting in the park on their way back home after a busy day. Both of them are relaxed for a moment, but B suddenly remembered that he ended up not making contact to his parents. He worried and, at the same time, blamed his busy schedule, which seemed (only) partly true. Three tensions are presented here. He finally has some time to make contact, but he feels that the time is not right due to the time difference between the UK and South Korea as his parents are probably in bed and sleeping already. He also worries that the push notification of a text message might disturb his parents' sleep. Furthermore, he also blames the situation that he keeps forget to make contact with his parents in a right timing. Below is the script for the scene 5 illustrating student's concerns on making contact:

[17:30]

B: *Oh gosh. I totally forgot to call my mom. What should I do?*

A: *You didn't call her?*

B: *No, I forgot about it. I was too busy with the class and the meeting...*

A: *Oh dear. Why don't you do it now?*

B: *It's too late. They might be sleeping. I don't want to wake them up.*

A: Then, what about sending a message?

B: Not sure. Text alert is also an alarm for my mom.

A: Yeah yeah. What a nice excuse...

B: Ewww, whatever. I'll call her tomorrow morning.

Hey, remind me.

A: No

B: Please, I'm worried I might forget it, again. I am really bad at remembering to do things.

Scene 6 is the last scene for the film scenario. In this scene, some tensions are shown between B and his mother. After coming back home, both students relax while watching TV. However, B still feels bad as he did not contact his parents. After a short time, B receives a phone call from his mother, who gives out to him for not making enough effort to contact her. B finds the situation very stressful. Throughout this call, A continues doing ‘something’ on his smartphone, which again was obscured. In this scene, A explains the concept of imagined technology in more detail to B, but it is still invisible. This helps the workshop participants understand the concept of the system more clearly and how it might be used.



Figure 5.10. Selected screenshots in scene 6 illustrating some tensions between B and his mother (two images in above) and A's explanation on imagined technology and its use (two images in below).

Below is a segment of the script explaining the technology in this scene:

A: Well, I always get in touch with my mom.

B: No, you haven't. I've been watching you!

A: I am. Even now.

So, let me tell you something. This is connected with my parents' home.

B: How?

A: It shows how much I think of my parents even though I don't directly contact them.

B: What?! Every time you use your phone?

A: So, when I think of my parents, I do 'this'.

B: How?

A: ...like 'this'.

Basically, you can do this whenever you think of your parents. For example, when you go to school, or when you have a meeting or a class...

B: Oh, I see. But does your mom like it?

At the end of the film, it also raised a question about the imagined reaction of the parents. This is another discussion point for the workshop participant thinking about their parents and the communication with them.

5.3. Conducting Invisible Design Workshop

5.3.1. Participants

Group	Participants	Gender	Age	Number of years abroad
A	ID1	Male	24	3
	ID2	Female	22	2
	ID3	Male	31	4
	ID4	Female	26	2
	ID5	Female	23	2
B	ID6	Female	22	3
	ID7	Female	21	2

	ID8	Male	23	4
	ID9	Female	27	1
	ID10	Female	22	5

Table 5.01. A table illustrating age, gender, and years lived abroad of workshop participants.

10 South Korean international students were recruited by both online advertisement and word of mouth. Similar to the previous study, more female students took part than male (i.e. 3 male and 7 female). They were all taught students studying in the UK, who had not taken part in the previous study, and most of them were in their mid 20th (i.e. they ranged in age from 21 to 31, with the average being 24). Their background experiences, area of study, and personal interest did not influence their recruitment. Rather, I looked for someone who has been in the UK at least one year so they had their own long-term lived experience of an LDRs. I randomly divided them into two separate groups so that there was a smaller number of participants and more room for everyone to contribute to the discussion (5 individuals per each design workshops). The study was approved by the relevant University Ethics Committee, and participants were provided with £15 amazon vouchers to compensate their time and effort at the end of the workshop session.

5.3.2. Ice-breaker activity

The workshop begins with a short introduction to the aim of the session and the concept. An ice-breaker activity (Preziosi and American Society for Training and Development., 1999), which is well known technique to get people involved immediately in the workshop, was then conducted. In his book (Eitington, 2017), Eitington identified it as “a start-up activity that help participants ease into the program”. Workshop organisers are encouraged to use the ice-breaker activity because of its merits to support interaction between participants, stimulating creative thinking (Forbess-Greene, 1983). It is especially useful for conducting group discussion between individuals influenced by Eastern culture. According to a research on the impact of culture on levels of participation (Lee and Lee, 2009), South Korean participants tend to be passive in expressing and communicating their thoughts with other people with whom they do any pre-existing connection. Therefore, the icebreaker, mediated by the researcher, has been highlighted as

supporting the interaction between Korean participants, building up their closeness, and providing fair opportunities to each individual to join the discussion (Lee and Lee, 2009).

An effective ice-breaker activity needs to be simple, fun and lightweight in order to quickly engage the participants into the activity. In this respect, I have asked following three questions and provided 10 minutes to answer and share them within the group.

- When is the “best” moment you have had in a distant relationship with your family?
- When is the “worst” moment you have had in a distant relationship with your family?
- When is the “funniest” moment you have had in a distant relationship with your family?

Throughout the activity, I could understand their experiences of long-distance family relationships, while also building closeness between workshop participants. This became an important basis for me to understand where people's ideas come from.

5.3.3. Group discussion

Following the ice-breaker, the participants then watched the film. As noted earlier in this chapter, the film illustrated several moments the students could empathise with, while also ambiguously referring to a concept that can aid communication. The discussion divided into three different themes based on the interactions around the technology shown in the film (see Figure 5.11); (a) interaction between the students and their parents, (b) interaction between students and their smartphone, and (c) interaction between the parents and their home device.

Interaction 1: between the students and their parents

I explored how the use of technology will affect the relationship between students and their parents and how much communication is appropriate for them. This sought to build on some of the stories shared from the ice-breaker activity. Participants were asked to reflect on what they think about the student's motivation to use the system, the parents' motivation, the kind of information and frequency of contact that would be appropriate. The questions provided were not there to drive the discussion. Instead, the discussion was kept open to allow participants to explore the concept and their own experience broadly.

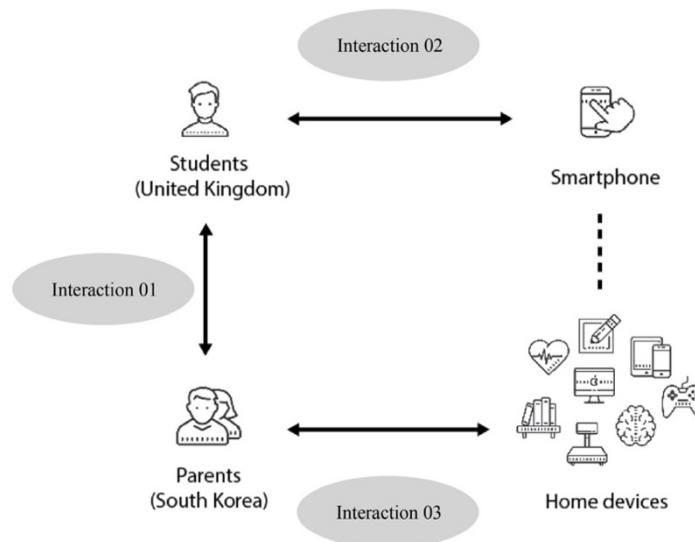


Figure 5.11. Three types of interactions around the use of imagined technology.

Questions were shown on a screen in the workshop space and offered some prompts for reflection or to spark discussion if the participants needed some encouragement. I only focused on managing the schedule of the workshop, letting participants lead the conversation unless they asked me some specific questions directly or when I felt that the discussion needed some fresh impetus.

Interaction 2: between students and their smartphone

This explored ideas for how student's might interact with their smartphone to connect with their parents in a less obtrusive way, ensuring students could maintain a respectful disconnection. I provided several specific questions related to the film, including asking what they think student A is doing on his smartphone, why student B has no direct contact with his parents, and the key considerations that would make this kind of interaction useful. This allowed participants to empathise and apply their experiences into the situations of the characters in the film.

Interaction 3: between parents and home device

I also explored the ways that their parents might interact with their home device. I mentioned the technology as a "home" device, without specifying further what this might be. As the discussion was conducted only with the students, concepts would be developed based only on the students' imagination and their expectations of the type of technology their parents might have at home. Questions provided to encourage discussion included

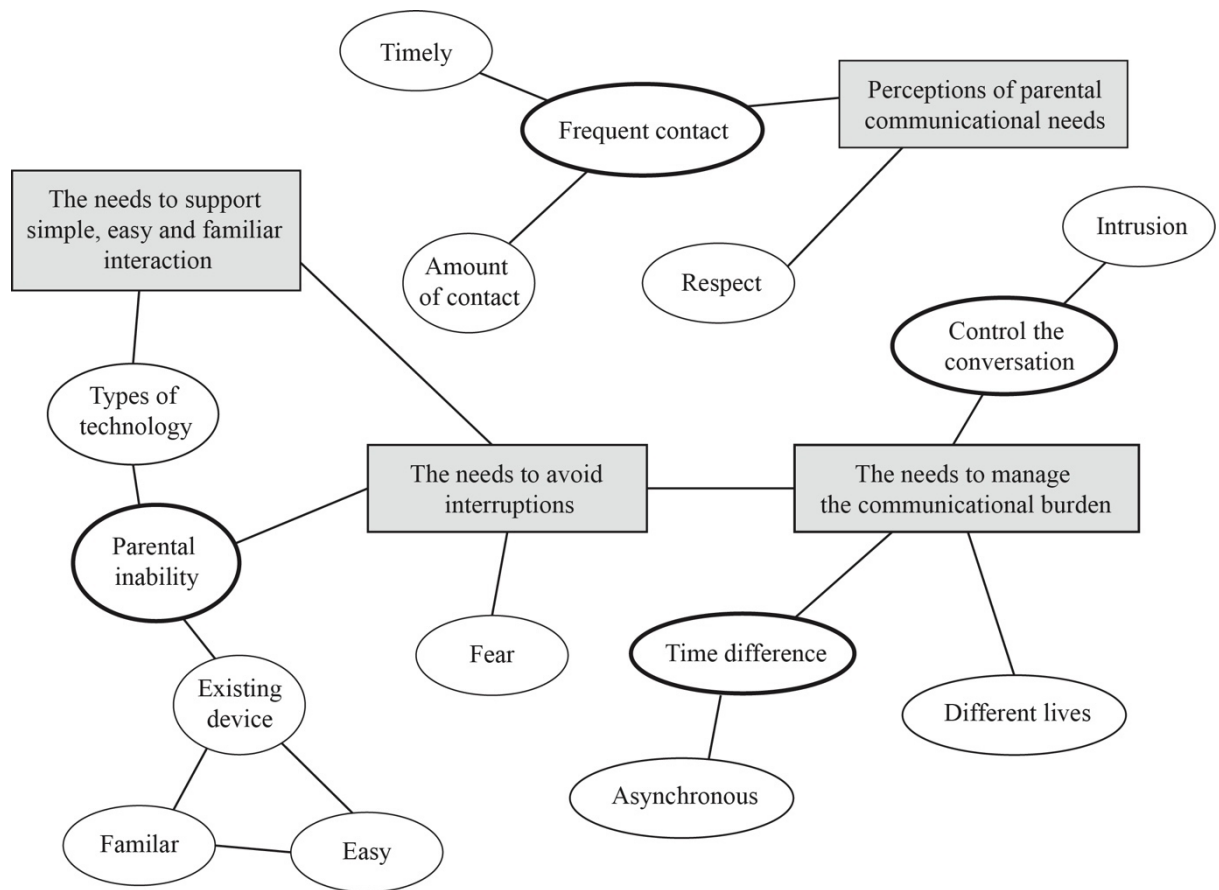


Figure 5.12. An illustration of thematic map for the discussion in the design workshops presenting the list of codes and their relationships to the theme.

how A's mother may feel in the film, what would be an appropriate device for the parents, and what would parents see from the device?

5.3.4. Data analysis

The workshops were conducted in Korean as the participants found it easier to discuss their ideas and experiences in their own language. The workshops were audio recorded and transcribed in Korean. Thematic analysis (Braun and Clarke, 2006) was used to analyse the data, with selected quotes translated into English after analysis to illustrate significant insights from the research.

5.4. Findings

In this section, four design considerations have been identified from the discussion as findings. This describes how the participants think the value of the future technology and the expected roles of it. It does not present a clear vision of the technology, but it inspires me to design a working prototype highlighting the concept of Respectful Disconnection. In this section, I presented the selected dialogues to share how actually the participants illustrated their ideas within the discussion.

5.4.1. Students' perceptions of their parents' information and communication needs

The workshop also highlighted a range of perceived communication needs among the parents of the students who took part and reflections on how these might be met. These are:

- Parents needing frequent contact from their children to show how much they are thinking of their parents
- Parents wanting to know that they are being listened to and that their children are following their advice
- Parents wanting to understand their child's life in the UK.

The participants identified how their parents wanted frequent contact, both brief and more in-depth. This focuses on showing how much they appreciate their parents and how often they think of them, while studying abroad, rather than engaging in more in-depth conversation:

“Well, for a better relationship with them (i.e. parents), it is necessary to show how often I think of my parents” (ID2).

For the students, this was more a performance they felt compelled to provide, rather than how they would most like to engage with their parents and that failing to maintain a high frequency of contact has often led to difficulty:

“Yes, I think it's more important to keep in touch with parents consistently even if you are busy. I think, to make them happy, it is necessary to give some sort of impression

that I miss them. Also, if how much we love them or think of them is evaluated by the amount of contact, it can lead to a misunderstanding as my parents might not understand that I am too busy” (ID1).

Therefore, the students perceive that their parents prioritise the frequency and amount of contact as a way to feel valued, appreciated, and loved by their children. However, students’ motivation for communication was more purpose-driven. The students highlighted how they mostly contact their parents when they need something or have something specific to tell them:

“I feel sorry that I often get in touch only when I got a problem. My parents may possibly be sad as I only contact them when I need some specific things from them.” (ID5)

This highlights a potential friction in both parents’ and their children’s experiences, as they do not have a shared understanding of each other’s needs around communication. The students do not see a relationship *“between making more attempts at contact and having a good relationship” (ID2)*. Instead, they fall into patterns of communication that lead to discontent both for the students and their parents.

The parents also sometimes used conversation to ask their child to do something and wanted to know that it was being done, as they had asked. For example, the students highlighted a shared experience in terms of their parents encouraging and asking them to do more exercise:

“My mom always asks me to do at least an hour of exercise per each day” (ID5)

This highlights a need for the students to be able *“to show how much they listen to their parents” (ID4)*, a different kind of communication need from frequency of contact. The students explored ideas around sharing how much they are exercising in the gym as a means to communicate with their parents. However, this may present another challenge for the students as it becomes almost like a ‘daily assignment’ that must be completed, increasing their burden in terms of communication.

A third communication demand being placed on the students by their parents is the need for parents to feel that they know and understand what life is like for their child. For example, students highlighted how their parents would ask about what they were doing and who they spent time with, wanting to understand the detail of their lives:

“My parents have never been here, so maybe that’s the reason they always ask about how I live, who I meet and what I cook.” (ID10)

Here, the participants explored how they could meet that need through a video diary and how that might help their parents understand their lives in the UK better:

“If you take the video in your phone, they will go to your parents’ automatically with some simply well-organised information, such as when and where you were at the moment, or something like that” (ID9)

This idea aimed to tackle situations illustrated in the film where the students found it difficult to make contact during the day, either because they lacked time or it slipped their mind. However, the students remain keen to find ways to be better connected to their parents, so their needs are met. However, this might again raise the demands on the students and provide another task that they must complete during their day, ultimately increasing the stress associated with communication. The students felt that it seems to be a kind of report you have to send every day and a concern that their parents would want increasingly detailed video from all parts of their life, causing more tension.

The students were concerned that more rich media could increase their parents’ expectations (and the “control” (ID2) they might try to exert through requests for videos), which they would struggle to meet, and result in increased tension. Other students worry about how they might meet this on the days when they do not want to talk to their parents, such as when they are feeling unwell:

“When I was stressed or in a bad mood, I could not be friendly to my parents, and my attitude causes a trouble with my parents. So, the longer conversation makes our relationships worse.” (ID5)

Ultimately, the workshop suggests that constrain communication with their parents and focusing mostly on demonstrating they are thinking of them is a rich opportunity to improve the students' wellbeing related to communication. This can meet a core need of the parents' while limiting negative impact on the students. In this respect, ID6 shared an idea of future technology supporting one-way, asynchronous communication tool, which avoids further interaction between each other:

“Personally, I wish my parents could only be able to receive my contact. Therefore, it may not be a tool for two-way of communication, but a tool that sends something from one side only.” (ID6)

This one-way, asynchronous communication tool may make their relationships healthier. Furthermore, disconnection may bring some special experiences that people may not feel when they are together. ID4 said the physical distance *“makes the communication warmer”*. While this may seem controversial or ungrateful towards their parents, the students' focus is not on ignoring their parents or having distance from them just for the sake of it. Instead, it is about finding balance between parents' diverse needs from communication and their child's need for space to adapt and develop in a new place.

5.4.2. Managing the burden of communication

Currently, the students face a challenge to meet these needs of their parents and struggle to manage the burden of communication, meaning they often avoid communication and create tension in their relationship. One way they are managing this burden is through carefully weighing which method of communication to use at different time points, based on controlling the speed and length of the conversation. This is especially important given the time difference, where often the parents will want to be connected late at night in the UK, as the student may be spending time with their friends, or in the late afternoon or early evening in the UK, when the student may be running to a class or having dinner with friends. Extensive conversations at these times may feel like they are preventing the student from adapting and so the student seeks to control them in response.

The desire to control conversation impacts the method of communication they choose. Mostly, the students compared text message or voice call as a means to control the

conversation. Text messages were considered easier to communicate because they offer an opportunity to *“finish the conversation whenever she wants”* (ID7). However, these support shallower interaction and connection between parents and their children. Voice calls offer a better way to share information, express emotion, and feel connected, due to the richness of verbal communication. However, this was not the main determinant for choosing a method of interaction. Quite often, students would highlight the difficulty of in-depth conversations at key points of their day in the UK. For example, one said that for a voice call, *“I should solely focus on the conversation at least 20 minutes, and that’s not easy”* (ID9) because of how it fits with the rituals of his day. Consequently, the students want to communicate with their parents but are mindful of choosing a method that will not negatively impact with what they are doing at the time.

This highlights a challenge with supporting students to manage communication and conversation with their parents, so it still meets parents’ needs for connection while limiting intrusion into the lives of the students. However, predominantly the students are trying to meet these through voice calls and text messages, which can be very time consuming. These methods ensure that parents understand their child’s life in the UK, are able to give advice, and check that their child is listening to them. Despite this, the students identified that frequent, short bursts of communication that show that their child is thinking of them are most important. However, it is arguable this need is not being met.

5.4.3. Needs to be simple, easy and familiar

The main aim of the discussion is to find a way to support students' LDRs through the design of future technology. Consequently, the students highlighted the importance of focusing on their parents’ digital literacy and comfort with technology. In particular, the parents seemed to have *“difficulty in using new types of technology, which have various functions and unfamiliar patterns of communication.”* (ID3) Therefore, the interaction should be simple and easy with *“a few things that their parents have to manipulate.”* (ID1) In addition, it seems necessary to consider the use of existing device such as smartphone that are already familiar to the parents in order to ease their system usability. ID5 added her idea from the economic point of view:

“I don’t think it is very efficient to increase the device some more. I don’t think it’s a good thing to make them buy anyways. We may keep stick into the use of smartphone.”
(ID5)

However, this simple, easy and familiar interaction is not just for the parents. The film has highlighted the value of being able to act immediately once the student thought of their parents. In the film, student A made a simple and quick interaction through his smartphone between busy moments, which is described in contrast to student B's behaviour which had been delayed contact with his parents. The workshop participants have a busy life, and so they have sympathized with the situations in which they had been delayed or missed contact.

“Especially in the exam period, even if I haven't contacted my parents for a long time, they will understand me of course. However, I will just feel very sorry for my parents, or stressed out by myself from the situation I'm not contacting them because I'm busy although I know they are worried.” (ID2)

From the students' point of view, there is a need for *“simple but lasting communication”* (ID4) that could be shared with each other as if they were living together at home, rather than intermittent but rich communication.

5.4.4. Avoiding interruptions

Time difference has been considered as a serious concern in long-distance communication. In the film (i.e. scene 5), the student B struggled to make contact to his parents when it was night time in South Korea as he worried his parents might be in bed and his text message would wake them up. The workshop participants were sympathetic to this situation. The participants often hesitated to make contact with their parents at what are more natural times for them because of the fear of waking their parents up.

“It is actually a problem because I cannot send any single message when Korea is late at night even if I want to. I don’t understand the fact that my parents are sleeping without turning off the push notification on their phone. I told my parents several times to turn the notification off at night, so I can easily get in touch with them whenever I

am available. They just need to tap one single button on their phone, but they just don't." (ID2)

The participants have been discussed this as not just a situational concern. Despite having a simple function to turn on / off the push notification on the smartphone, the parents did not well-use it. This shows that the existence of useful functions is not a practical solution for them.

"Well, parents may be worried about forgetting to change back in the next day..."
(ID5)

As ID5 said, the user's psychological factors have also been taken into the consideration. The students assumed that their parents do not know how to manipulate it, or they are worried about forgetting it. However, their discussion has been a level in which the students anticipate their parents' situations. Looking back at the previous study (Chapter 4), the parents have always been worried about what may happen to their children, and so they have always wanted to be connected with their children. It is more plausible that they are worried about something happening to their children in the UK and wanting to be able to respond them immediately if they get in touch. Therefore, both behaviours occur as both parents and their children try to do what is best for the other side in the relationship. However, this may actually be harming the relationship. Ultimately, it can be seen that these concerns about each other limit their opportunities for contact.

Consequently, the participants explored ideas which avoid push notification between the interaction. It is worth presenting the selected dialogue at length as it illustrates the participants' excitement with the idea in discussion:

ID10: *I've been thinking of some interaction with really simple and no bothering them. For example, if you are tapping the smartphone screen, some things can be sent to your parents without push notification.*

ID6: *So even if I use it at night, my parents will not wake up?*

ID10: *Yes.*

ID6: It will make me easy to contact with my parents as I can use it whenever I want really?

ID7: Well. So, when they woke up in the morning, they will just see how much I was thinking of them. Good, I like it!

This speaks to the need for connection to be unobtrusive. If the contact does not wake their parents up, the students will not hesitate to contact, and that would naturally meet the parental desire to be more connected between each other. In addition, having no push notification would be positive because their communication is not aiming for sharing urgent conversation.

5.5. Summary

To address RQ2, I conducted two design group workshops with 10 potential future users of the technology. The workshops tested the concept of Respectful Disconnection with the potential future users and involved them in the design process of future LDR technology. Participants reflected on the situation presented in the film and explored together their different needs in communication with their parents, value of disconnection, how they disconnect currently, and the challenges their parents face with technology. This discussion did not seek to provide a clear articulation of future technology in this space. Rather, it provided principles to inform what future technology in this space should be: simple, easy and familiar interaction that connects them with their parents, offers some space and individual boundaries, and is simple for their parents to use. Based on these design principles, a smartphone-based research tool, Silent Knock, was designed. Silent Knock is a working prototype, which aims to support asynchronous, minimal interaction for healthy disconnection in communication. This is presented in the next chapter.

Chapter 6. Design of Silent Knock

6.1. Introduction

Four design considerations have been discussed in the previous chapter, including (a) their perceptions of their parental needs in long-distance communication, (b) technological needs to manage the burden of communication, (c) needing simple, easy and familiar interaction, and (d) avoiding interruption. I designed a smartphone-based interactive system, Silent Knock, by applying these design considerations. The system was developed by Dalia Al-Shahrabi, who is a member of development team in Open Lab. Silent Knock is a communication tool that allows people to show they are thinking about their friends or family in a simple and lightweight way and one which does not demand immediate attention or response. In other words, individuals have minimal level of interaction within the system to maintain their relationships over long-distance. The communication through this system might be ambiguous, unclear, and make users feel disconnected at some moments, but this has been designed as an effort to support a balance between connection and disconnection. In addition, Silent Knock is a experiential prototype to explore how South Korean families use the technology and how it impacts their relationships when separated by distance. This chapter illustrates how I designed each element of the system in order to address the two aims and the reasoning behind my decision making.

6.2. Silent Knock as a Communication Tool

Silent Knock has been designed to support South Korean families, separated by geographical distance due to the children becoming international students in the UK, to maintain their long-distance communication. Through the system, they can show their recipients that they are on their mind, without initiating any further, rich interaction. In Silent Knock, each user is provided with an individual ‘door’ when they register, which represents their private space (i.e. boundary of the self (Whitfield, 1993)). They are then assigned a ‘door number’ which they can give to other people to begin connection. Each

user makes connection with other users as ‘neighbour’ in the system by sending an email invitation or responding to the other’s request. Along with the concept of ‘having an individual door’, the term ‘neighbour’ was also used to emphasise an individual’s social boundary, even if they are family members. If they are not a system user, people are invited to download the application through the link provided in the email. Interactions occur through tapping on the individual door on the screen, mimicking a knock on the door. Knocking on someone’s door sends a heart so that the recipient can see the person has knocked on their door. However, the user would not know when they have received a knock (timely), how many they have received, nor are they able to engage in any further interaction within the system. Following the tradition of Slow Technology (King and Forlizzi, 2007; Odom *et al.*, 2012, 2018), it is solely designed to facilitate minimal interaction between individuals to support balanced communication from the unwanted connection.

6.2.1. Providing a tutorial

As a communication tool within more realistic settings, Silent Knock needs to be accessible to use with their friends, partners or colleagues. Therefore, it needs to be opened for public and available for both iOS and Android, so anyone could download the application on their own smartphone. In addition, the system design must be realistic for practical evaluation of the system. The system also needs to be descriptive enough so that someone who is unfamiliar with it is able to understand how to use it. In this respect, a short tutorial has been provided to quickly help people understand how the system works. This appears automatically on the screen when a user first registers on the system. In addition, they can re-visit the tutorial from the menu at any time. The tutorial summarizes three key interactions of the system. It illustrates (a) how to connect with friends or family as a neighbour, (b) how to send knocks to them and (c) how to check the knocks received from them. Some users (especially the parents) might not be familiar with a smartphone or any new types of technology. Therefore, the tutorial needed cater to people with very different technology capabilities and be appropriate for all users. Each screen of the tutorial has been supported by a visual indication (e.g. a finger-shaped illustration) and a short text-based description to efficiently show how to use the system (see Figure 6.01). The tutorial images provide a ‘preview’ of the system as a way to encourage interest to download it.

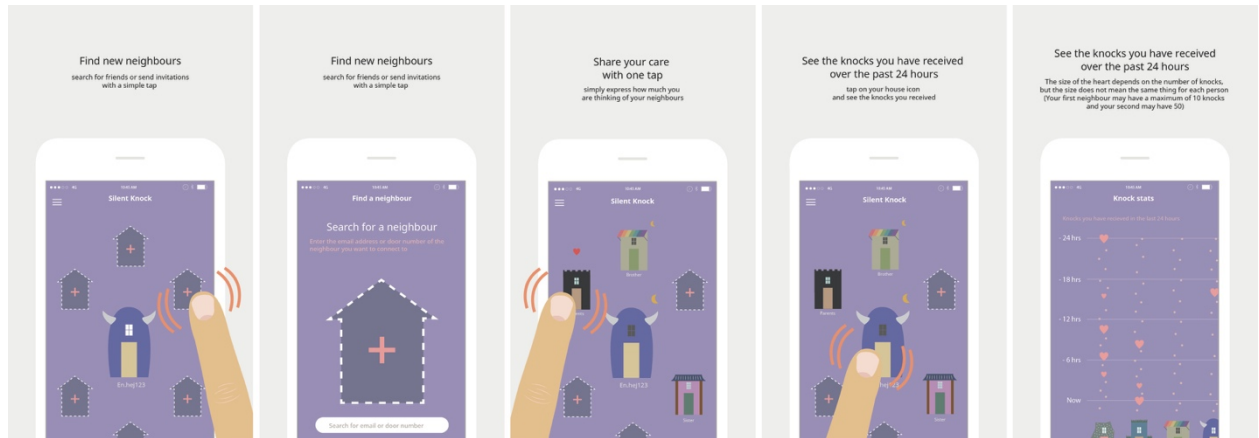


Figure 6.01. Tutorial illustrates three main interactions of the system along with short text-based description and the visual indication.

6.2.2. Building a door

Each user has to ‘build a door’ as a means to create (or sign-up to) their account in the system. This is a required action to get started using the system. There are two simple steps to build their door (see Figure 6.02). Firstly, the user needs to choose one of the doors the system provides, which are the *basic* doors that are available to everyone.. The user then needs to enter their personal email address, so a verification link can be sent through via email. This is the process to identify individuals, asking for only the least information to input. As soon as the user confirmed the verification link from their inbox, they would get the ‘door number’, which acts as their account number on the system.

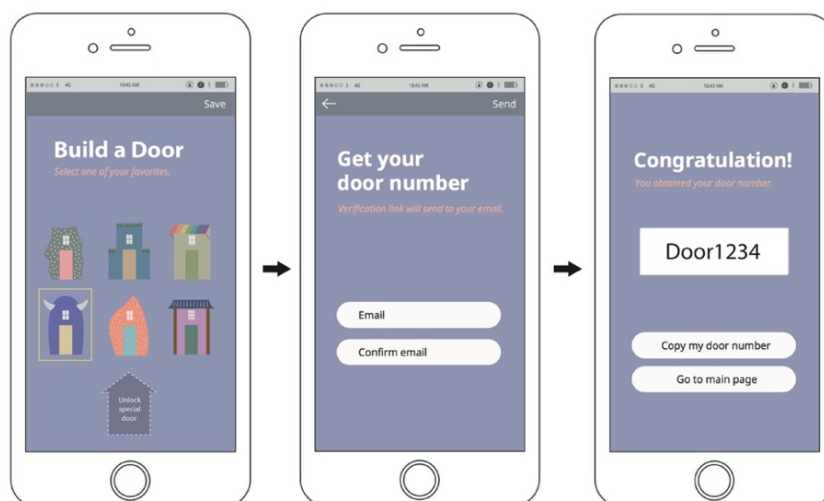


Figure 6.02. Two steps to create the door and the door number in the system.

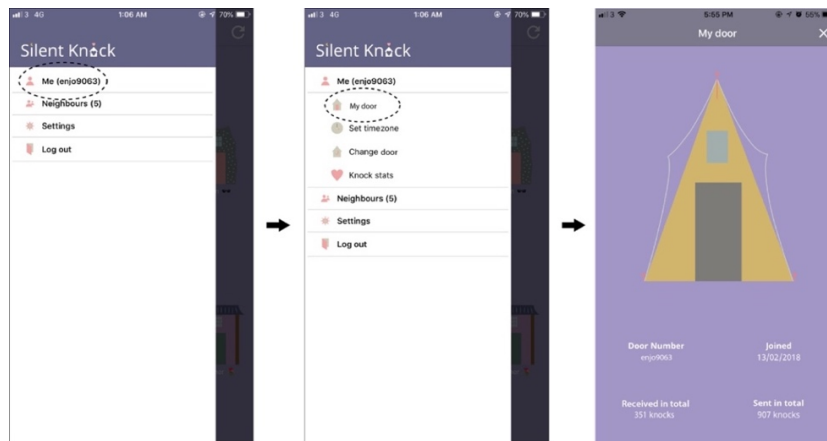


Figure 6.03. Illustration of ‘My door’ page and its location in the system.

The door number consists of the combination of first four letters in their email address and four random digits, and it is automatically created and given by the system. Through this rule, therefore it is possible to assign an individual unique door number to each new user. This door number cannot be changed and offers a means to connect to family or friends.

Once the user builds their door, the system keeps them logged in on their smartphone. This allows the user to communicate with their neighbours quickly and easily without having to log in continuously every time they open the system. If they have not used the system for a long time or restarted the smartphone, they may need to log in again, in which case they will have to verify their account via the link to the email they used. This is same if they reinstall the application. Through the ‘my door’ page in the menu bar, users can check their account information along with the status of their system usage, e.g. door number, when they joined the system, and how many knocks they have sent or received (see Figure 6.03). This is not an important element for developing interaction, but for their own values through the system usage (Boztepe, 2007). In order to avoid the communicational burden from the quantifying data of the interaction between users, it tells the total number of knocks (from all users) rather than the specific number of knocks per each time.

6.2.3. Making connection with a neighbour



Figure 6.04. A step-by-step guide to send a friend request by ‘door number’.

According to Choi *et al.*’s cross-cultural research on a social relationship, South Korean university students prefer smaller and denser networks compared to the university student from Western culture, and they identified this has been related to South Korean collective culture (Choi *et al.*, 2011). Silent Knock therefore aimed to support a small number of private relationships. It provides only 6 spaces to add friends or family as a neighbour. This limits the number of people they can connect to, but it gives the users the opportunity to organise their own unwanted relationships. Even if they disconnect from their relationships, there is no push notification to the other party.

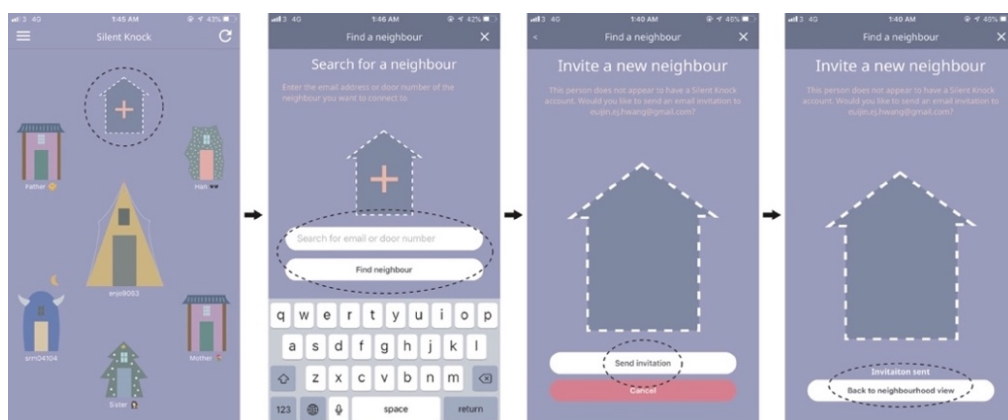


Figure 6.05. A step-by-step guide to send a friend request by ‘email’.

There are two ways of making a connection with the friend (or family); the users can either send friend request to them or accept one they have received. In order to send a

friend request, they firstly need to find their friend or family member through their door numbers or their email address. If the friends or family are already registered on the system and they have their door numbers, the connecting process is simple (see Figure 6.04). However, if they have not registered in the system, the request needs to be sent to their email and a link will be attached, which invites them to install the system on their smartphones (Figure 6.05).

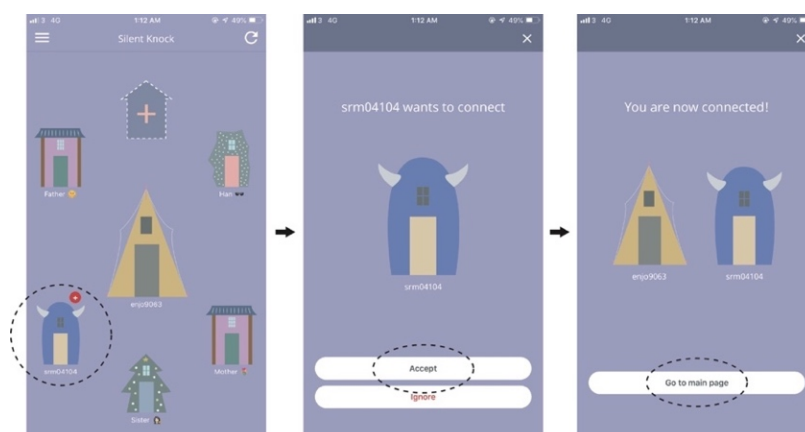


Figure 6.06. A step-by-step guide to accept a friend request from others.

Accepting a friend request is easier than sending a friend request. When someone sends a friend request, for example, his or her door will appear on your main page with a ‘plus-shaped’ red icon to ensure it is easily visible (see Figure 6.06). The process of connecting is very simple as the user only needs a simple tap on the ‘accept’ button. There is an ‘ignore’ button to decline the request for connection.

6.2.4. Sharing knocks

Silent Knock removes all of the potential features of developing rich conversation between the system user such as text messaging, voice call, media sharing to avoid communicational burden between each other. Rather, they communicate with each other through an ambiguous, but simple and lightweight way that each individual could only send a knock to make contact with other people. In this work, the behaviour of knocking on someone’s door is a gentle way to let someone know you are thinking about them, without intruding on their space. For example, if I want to talk to someone in an *offline* space, but there is a door between me and the other person (and also if it is firmly locked

from the other side), I will probably need to knock on the door. However, the conversation will only happen if the other person accepts my request.

I argue that this kind of approach is also required for communication *online*. The invasion of privacy from the unwanted communication is already a serious, well-known problem in social networking (Ellison *et al.*, 2011). This can often be exacerbated due to specific cultural differences, such as South Korean students feeling a duty to always be available and respond to attempted connection from their parents, regardless of whether it is an opportune time or not (i.e. Chapter 4).

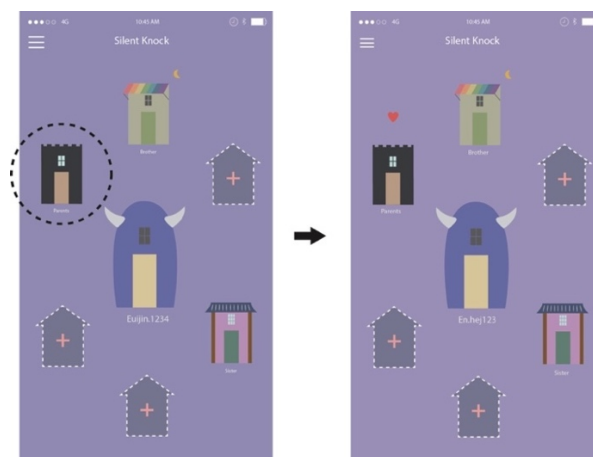


Figure 6.07. The illustration of sending a knock.

Knocks can be sent with a simple and lightweight way. If the user taps a neighbour's door, which is shown on the main page of the system, a knock will be sent. The knock is presented as a heart-shaped illustration (see Figure 6.07). This is the only form the knock takes, regardless of what personal meaning users may apply to it, meaning it is possible miscommunication may occur. However, the experiential prototype explores meanings attached to the interaction. There is no limit to the number of knocks that can be sent, but knocks are set to be sent only once every two seconds to avoid meaningless interactions (i.e. tap on the screen). If the user taps more than once within two seconds, there will be a vibration that warns of this.

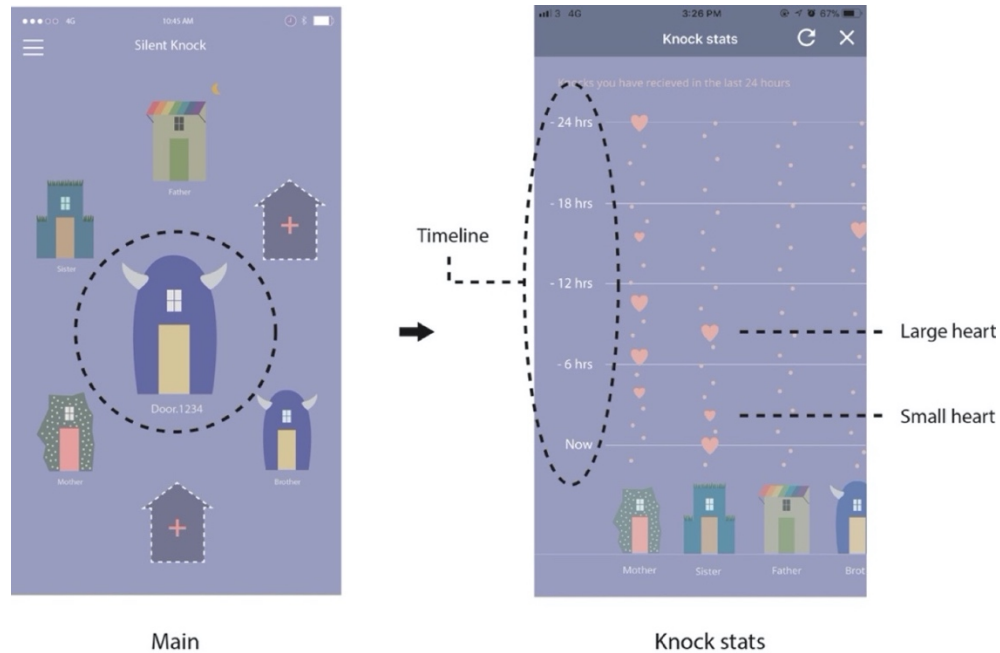


Figure 6.08. The illustration of ‘knock stats’ page and its location.

In order to view the knocks received from the other people (i.e. neighbours), the user simply needs to tap the large ‘door’ icon in the centre of the screen, which represents ‘my door’ (see Figure 6.08). Then, the user will move on ‘knock stats’ page showing the knocks sent by the neighbour. The user can swipe the screen from the left to the right to see all of the neighbour and the knocks from them.

The system has no push notification, so it avoids forcing people to have unwanted communication, as well as synchronous connection between individuals. In addition, only knocks from the last 24 hours are shown, meaning knocks gradually disappear. This has been designed to avoid the day-to-day comparison of knocks. The combination of these two features give a behavioural (or communicational) consent between the system users that your knocks could be missed (or possibly ignored) by others if they do not use the system at the moment, and individuals might not get any responses from others. Therefore, they could not force their neighbours to respond but just to gently express ‘how often’ they think of their neighbours without any communicational expectation. Through the system, I encourage the user communicate with other people only when they want to.

From the previous chapter (Chapter 5), I learned that the number of contacts would not represent how much the students love their parents. Rather, it causes a communicational pressure that the students need to make enough amount of contacts to their parents. Therefore, I get rid of the feature quantifying the communication. The users would not know the exact number of knocks they have sent or received, but only roughly know how often they have received from which neighbours. The heart represents the attempts of making contacts, along with two different sizes (see Figure 6.08). The size would be changed depending on the total number of knocks over the last 24 hours, so the number of knocks kept being shown in ambiguous. For example, the current biggest heart could be re-shaped into the smallest in few hours if more hearts come next.

6.2.5. Managing time differences

The time difference between the UK and South Korea is 8 or 9 hours, depending on Daylight Saving Time (DST). The previous chapters, and other research, illustrate that this has been a significant stumbling block to communication between the students and their parents (Cao *et al.*, 2010). It is challenging to find a mutually agreeable time to communicate and to adjust to knowing the time in the other country e.g. if either parents or students might be sleeping.

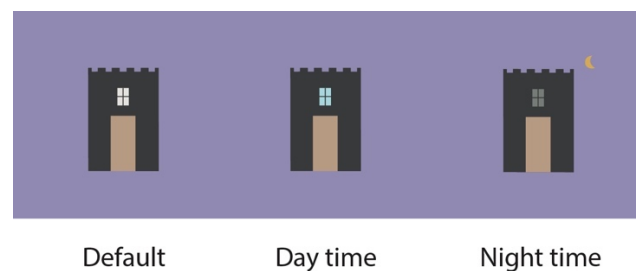


Figure 6.09. Different shapes of door icon depending on the local time.

Silent Knock supports users to recognise the time gaps with their neighbours. Each door has a window, which changes the colour of the window according to the local time, showing whether the other party is currently day or night. For a clearer distinction, a moon-shaped icon was created next to the door at night (see Figure 6.09). It is designed to make it easier for the users to share their status with each other, although the time difference does not play a major role in communication within the system.

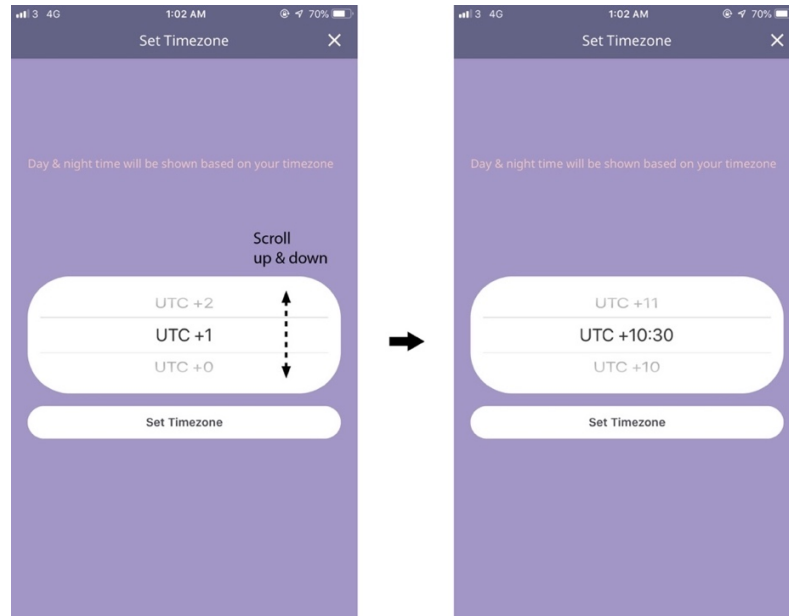


Figure 6.10. The illustration of the ways to set the time zone.

When users register the system, it is automatically set to their local time, but it has been designed to be adjusted manually in case of moving the area while using the system. This is available by entering the "set time zone" in the menu (see Figure 6.10). The local time needs to be manually calculated based on Coordinated Universal Time (UTC). Since I do not want to make users have too much responsibility on the system interaction, I designed the system to automatically change their icons between day and night. The night icon will be appeared from 7pm to 7am in their local time.

6.2.6. Designing menu

Silent Knock has been mostly designed with the visual element for intuitive interaction, but it provides 'menu bar' that the users can search for all of the main functions in the system through text-based categories. Each element in the menu contains simple visual cues. The combination of text and images improves the learning ability of the people who are not accustomed to the use of new technology and the people who are not familiar with visual communication (Foster, 1979). Text-based menu may avoid ambiguousness of the parents' understanding of the system and support clear communications with their children.



Figure 6.11. Two versions of menu which support both English and Korean.

Silent Knock supports both English and Korean (see Figure 6.11). This will be helpful for the South Korean family (i.e. the main targeting user of the system), as some of the parents may not be proficient in English. However, since the system encourages using it with other people (e.g. partners, friends and colleagues) who may not be Korean, supporting English is required.

6.3. Summary

In this chapter, I have presented the design of Silent Knock and the rationale behind that. This explores the critical features of Silent Knock, what they are informed by, and how I considered them in the design of the system. In following chapter, Silent Knock has been deployed for 5 weeks with 9 South Korean families and explored their system experiences in maintaining their LDRs.

Chapter 7. Understanding the Use of Silent Knock among Families Separated by Long-distance

7.1. Introduction

In this chapter, I explore the deployment of Silent Knock with 9 South Korean families over a period of 5 weeks. Semi-structured interviews were conducted with both the parents and their children to better understand their experiences of the system and how it impacts communication over long-distance between parents and their UK-based children. I have collected and analysed two types of data: interview scripts and the system usage. The findings have been presented in two parts; (a) their communicational challenges with conventional technology and (b) the experiences with Silent Knock. This chapter presents the lived experiences of the parental LDRs, which illustrates the different needs for long-distance communication with their children. It also highlights how the Silent Knock has been used to support their LDRs (both the students and their parents): how it supports them to feel free from the communicational burden, how it supports them to share their cares between each other, and how it supports the strained relationships and opens up new space between the father and the children.

7.2. System Deployment

The deployment of Silent Knock was conducted between April and May, which is from the beginning to the end of the exam period in the UK. In this section present how I designed and conducted the deployment study.

7.2.1. Participants

I recruited 9 South Korean families by using a combination of online advertising and word of mouth. This was a total of 22 people, including 9 students and 13 parents. The students were aged between 21 and 24 (average = 22) and the parents were aged between 51 and 62 (average = 55). None of the participants had taken part in previous studies

Participants (* for the remote interview)			Gender	Age	Number of Knocks	Days of Use
Family 1	Student	S1	Female	21	1,075	20 / 35
	Mother	S1M	Female	53	2,255	33 / 35
Family 2	Student	S2	Female	20	229	17 / 35
	Father	S2F*	Male	56	67	19 / 35
Family 3	Student	S3	Female	23	156	10 / 35
	Mother	S3M	Female	54	18	11 / 35
Family 4	Student	S4	Female	22	347	16 / 35
	Father	S4F	Male	52	469	22 / 35
	Mother	S4M	Female	50	629	29 / 35
Family 5	Student	S5	Female	22	140	23 / 35
	Father	S5F	Male	57	28	11 / 35
	Mother	S5M	Female	55	9	4 / 35
Family 6	Student	S6	Female	23	722	31 / 35
	Mother	S6M*	Female	51	41	4 / 35
Family 7	Student	S7	Female	22	203	9 / 35
	Father	S7F	Male	62	48	11 / 35
	Mother	S7M	Female	57	66	13 / 35
Family 8	Student	S8*	Male	24	28	8 / 35
	Mother	S8M	Female	58	23	17 / 35
Family 9	Student	S9	Female	22	471	25 / 35
	Father	S9F	Male	55	121	17 / 35
	Mother	S9M	Female	54	56	12 / 35

Table 7.01. A table illustrating age and gender of the participants and their number of knocks and days of system use.

presented in this thesis. In four families, both parents (i.e. both father and mother) participated and only one of the parents (i.e. either father or mother) participated in the remaining 5 families. All 9 students are South Korean nationals who had been studying at a UK university for more than two years, with their parents are living in South Korea. Despite my desire for maintaining a gender balance, only 1 student is male, with the remaining 8 being females. The participants received a £30 Amazon voucher as compensation for their time.

7.2.2. Study method

This study was approved by the university research ethics. After recruiting the participants, I held an in-person group orientation with the students to help them understand the study and introduce Silent Knock. I then asked them to teach their parents afterwards. In the orientation, I explained the concept of the study including the study plan and the functional features of Silent Knock. Afterwards, the student participants

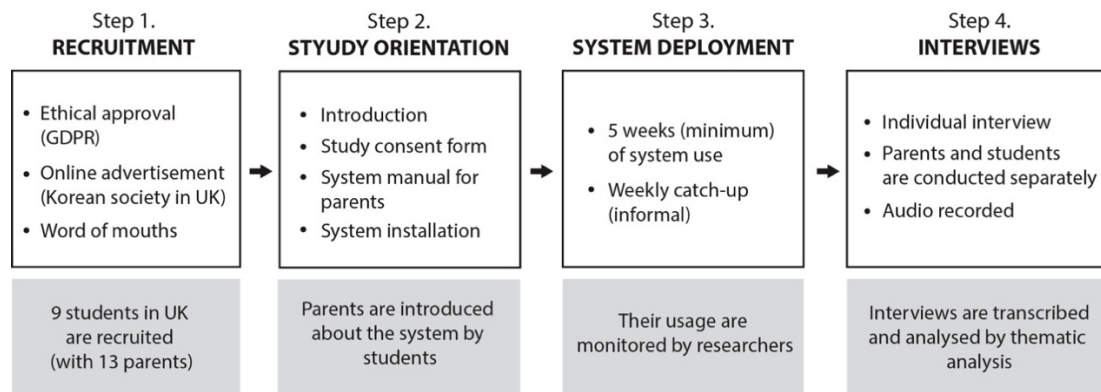


Figure 7.01. A study process illustrating four steps from recruitment to exit interviews.

downloaded and installed the system on their smartphones in the session, so they could have the chance to ask me questions. I also provided a digital copy of system manual (both Korean and English versions), so the students could send those to their parents and explain it appropriately. In addition, the students were asked to help their parents to download and install the system if needed.

The deployment study began at the end of April to match the beginning of the exam period in the UK and before summer vacation. This was a conscious decision as it was likely to be a more challenging time for students to maintain communication with their parents. The participants were asked to use the system from April until the end of May. As the majority of students planned to return to South Korea for the summer holidays, I visited South Korea during this time so that I could conduct interviews with both the parents and their children.

I conducted semi-structured interviews as this has the advantage of obtaining a substantial body of new insight from the interviewee (Seidman, 1998; Rowley, 2012). The interviews were mostly conducted in person at a place of the participants choosing. However, three of participants (one student and two parents) were interviewed over Skype due to not being in South Korea at the same time or difficulty finding an appropriate time to meet in person.

The interviews focused on understanding their experience of LDRs before using Silent Knock, positives and negatives of being separated, and the challenges they faced. This was especially valuable to gain the parents' perspectives on communication in their

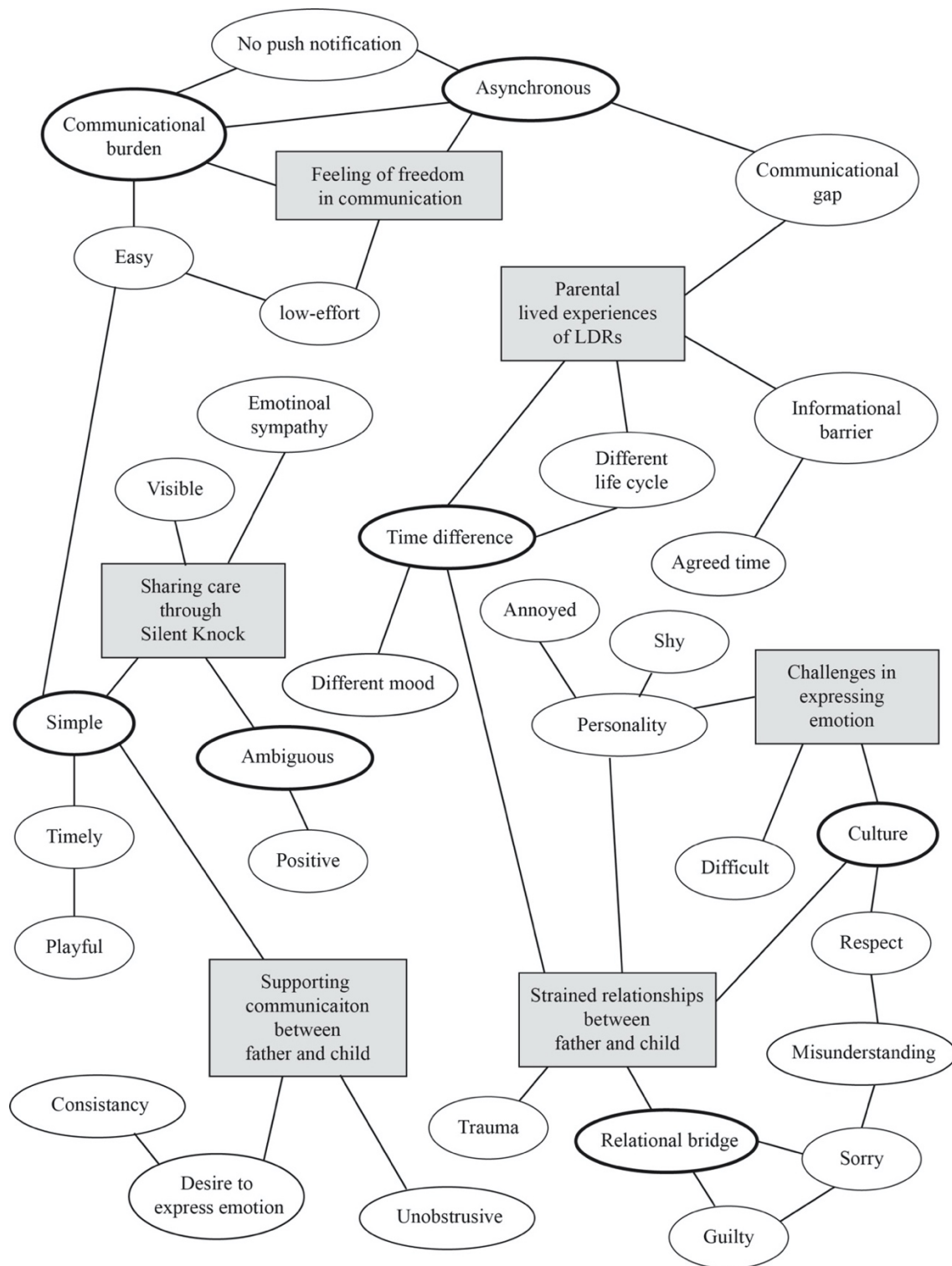


Figure 7.02. An illustration of thematic map for the use of system in deployment study presenting the list of codes and their relationships to the theme.

relationships to supplement the understanding of their children's experiences gained through the earlier studies in this thesis. Interviews were conducted separately so that parents and their children might feel more comfortable openly sharing experiences. I also

explored their use of Silent Knock and its impact on communication within their LDRs, exploring their usage data of Silent Knock together while discussing how they used it for communication. Separate interviews ensured that I could develop my understanding of how the students and their parents have used the system and the similarities and the differences in their experiences.

7.2.3. Data analysis

I have collected two types of data from the system deployment: (a) system usage and (b) interviews. Usage data showed the number of days of use, number of knocks they have sent or received, and the times they open the system. This usage data was crucial to designing the interview questions, ensuring that interviews were framed through real use of the system. In the interview, I provided the opportunity for the interviewee to use either Korean or English depending on their preferences, with all participants choosing Korean due to it being their native language. This could also ensure that misunderstandings were minimised and that they could provide more nuance around their experiences during the deployment and use of the system (Squires, 2009; Regmi, Naidoo and Pilkington, 2010b; van Nes *et al.*, 2010). The interviews were audio recorded, conducted/transcribed in Korean and translated into English after analysis for only selected quotes. A thematic analysis was conducted (see Section 1.3), with key themes and illustrative quotes translated into English afterwards. The data has been coded based on six different themes (see Figure 7.02).

7.3. Findings

Findings are divided into two folds: (a) the challenges of long-distance communication with conventional technology, and (b) the practical experiences of using Silent Knock; how the users used it and what were the value of it addressing their challenges.

7.3.1. Challenges with the conventional technology

This section illustrates the users' challenging experiences 'before' using Silent Knock. This includes some intersectional insights with the previous chapter (especially 7.3.1.1), but these are supplementary insights from the understanding of parental lived

experiences. I categorised three different challenges with conventional technology as follows: (i) the challenges in long-distance communication from the parental point of view, (ii) the challenges of expressing emotion in parent-child relationships, and (iii) strained relationships between father and their child.

7.3.1.1. The challenges in long-distance communication from the parental point of view

From the previous chapter (Chapter 4), I have identified the time-related concern that the students often missed their parents' contact because they are in other schedule (e.g. class, meetings or part-time job), and it caused significant trouble with their parents along with the matter of distrust in their relationships. Indeed, there is very limited *agreed time* to make contact between the students and the parents, especially in cases where the parents have full-time jobs in South Korea (see Figure 7.03).

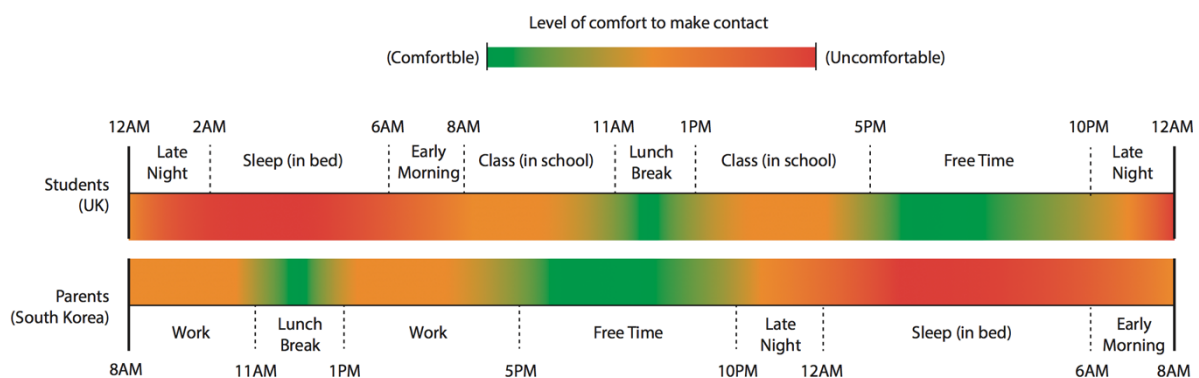


Figure 7.03. Representation of different time zone between UK and South Korea on the weekdays: the pattern of their (i.e. both the students and the parents) daily lives is visualised by the researchers based on the interview with the family 2 and 8.

In the interview with the parents, they also complained about finding a good agreed upon time to get in touch with their children. S9M mentioned her difficulties in her interview:

“Time difference makes us live in totally different worlds. When I am relaxing at home after work and think of my daughter to get in touch, that is about the time she is very busy at school.” (S9M)

Interestingly, some parents address the issue of time differences by (intentionally) adapting their life rhythm, and so they could have more opportunities to get in touch with their children. Here is the example from a parent:

“Sometimes my daughter doesn’t want to hang up until 2 or 3 AM in South Korean time. That day is then going to be a special day for me. I am listening to my daughter until she hangs up the phone. Of course, I will be tired next day, but it doesn’t matter.”
(S7M)

The parents tried to actively create an opportunity to make contact with their children through giving them intentional changes in their life cycle. S5M showed how much she lives for her daughter in her long-distance setting:

“I made my phone bell the loudest, so I won’t miss the call from my daughter whenever she gets in touch with me. It is not an exaggeration to say that I am on standby 24 hours a day for her. I’ve been trying to be there with her on that way.”
(S5M)

This could be shown as a form of sacrifice. Even if they have a full-time job in South Korea and need to get sleep at night for the next day, they are willing to (temporarily) give up their *balanced* life cycle for the sake of their children in order to have more chances to be with them. S4M mentioned her difficulties in adapting her life cycle:

“I have a full-time job, and so the truth is that I do not feel absolutely free to stay late at night, but I am trying to be awake late for my daughter. In the employee’s point of view, however, it would be disturbed in the next day.” (S4M)

Some parents are more active, and this illustrates different approaches of the parents to manage this issue. Instead of just waiting for their children to contact them, some of them tried to be in contact with their children whenever good time for them. S8M tries to get in touch with her daughter as often as possible when it is easier for herself to make contact. She said:

“Basically, there are huge time differences, and I don’t know when to call my daughter really. However, I am not a person who just waiting for my daughter’s contact, so I just get in touch with her when I like to.” (S8M)

It is not just a matter of finding an agreed time together, but they might not have an opportunity to make serious conversation. The parents said living in a different time zone also affects the types of topic or the depth of conversation they can share. Depends on the time of the day, they possibly have a totally different mood (i.e. physically and emotionally). S4F shared his concern in relation to that:

“Even though we are connected through the phone in the morning (in the UK time), we wouldn’t have a proper conversation with each other. It’s too early for her to talk about something serious, and she is busy in the morning as well.” (S4F)

They have physically and geographically separated by long-distance, and this causes another key challenge for the parents to maintain their LDRs, such as little understanding about the lives in the UK. This means that the parents have lack of information: e.g. who are the people their children live with (or spend time with), and how is their school life and their schedule. And so, along with the issue of time differences, it also makes them difficult to find agreed time. Indeed, they *“confused about when to make a contact with their child (S8M)”*, and therefore they *“should make an appointment in advance to have a phone call with them (S4M)”*. This makes the parents difficult to maintain their relationships with their children as their communication does not happen within a simple process.

Unfortunately, parental concerns about their children are not properly solved by communication with their children. According to S3M, all of her wonder about her child is just whether her daughter is doing it right or not, but this simple wonder seemed not easy to be addressed. She said:

“Sometimes I ask some questions about the life in the UK, but I couldn’t get a proper answer from her (her daughter). She just simply said I do not need to worry about her,

but this is not that simple question, at least for me (...) Probably, all the parents would worry about their children forever, like me.” (S3M)

S3M thought that making contact with her daughter was *“the least thing that the parents could do for their children.” (S3M)* In addition, the parent considered this as a way to express how much they love their children. Therefore, it might be the natural behaviour that the parents are *“more likely to contact their children frequently.” (S4M)*

Some parents believed that their children *“would wait for their contact.” (S9M)* However, there is a perceptual gap between the students and the parents for their connection. I have explored the different experiences of the students in their long-distance communication with their parents: unlike the parental expectation, the students possibly be annoyed from the parent’s contact (Chapter 4).

7.3.1.2. The challenges of expressing emotion in parent-child relationships

Traditionally, South Korean people tend not to share their emotions openly with each other, as *“hiding emotion could be considered as a good manner in how we treat other people (S7M)”*. In this respect, S3 mentioned that she is *“not a person who can easily express her feeling of love with other people”, and some of the parents just “feel awkward and difficult with the situation itself to show their emotion.” (S5F)*

Interestingly, in the relationship between the students and the parents, the emotional expression came to be more challenging than other relationships. This has been explored that the students *“feel much more difficult to express their thoughts with the parents than the friend” (S4)*. Furthermore, S5 shared how much she is not used to sharing her emotion with her parents:

“If I suddenly express my feelings like ‘I am sorry’ or ‘I miss you’, I think they (i.e. her parents) will get confused. It’s literally difficult (for me). I feel easier with my friends, but not with my parents.” (S5)

Difficulties in delivering emotions through the words is another challenge between the parents and their children. S7M talked about how conventional communication tools,

such as WhatsApp and KakaoTalk, might not make it easy to express emotion due to their reliance on words:

“I do not know if it is a problem with my writing skills, but the fact that it is very difficult to describe and convey my feelings correctly in words.” (S7M)

S5F also mentioned that he “*doesn’t know how to describe his emotion properly (in words)*” to his daughter, while others worry about their children misunderstanding their sentiment:

“I think the message could make the other party understand it in their own way. So sometimes, I do feel my intention is not really well communicated with them.” (S7M)

While emojis are often used to communicate emotion, fears still exist about the interpretation of these symbols. S6 said:

“An emoji changes its meaning differently depending on how you use it and when. So, for the better communication, we have to understand the situation and the context of dialogue well.” (S6)

S6 mentioned she could not always use emojis in conversations because it can “*reflect the attitude of the sender to the situation in their conversation (S8)*”. As Confucian culture places such emphasis on hierarchies, participants were concerned that “*it may be rude to use the emoji for people who are younger.*” (S4) In other words, even though there are many social networking platforms (e.g. WhatsApp, Instagram and Facebook) and the tools (e.g. emoji and stickers), that are designed to support communication between people, those are “*still not easy for many of us to share our emotion with others (S5)*”.

7.3.1.3. Strained relationships between father and their child

There are notable differences in the relationship between mother and child when compared to father and child. All students reported closer relationships with their mother rather than their father, with the mother often identified as a “*bridge between father and child.*” (S5F) This means that, in all cases, the student and father would interact with each

other through the mother, as illustrated in Figure 7.04 below. This includes the father asking the mother how their child is, as opposed to asking their child directly. Similarly, the student would come to learn their father's thoughts through their mother. This is a long-standing facet of their relationship. I observed that it is even difficult to find the presence of the father in their family relationships as the students have no regular contacts with their father in their lives.

One potential explanation of this might be how mothers have actively tried to facilitate a closer relationship between their husband and child. S5M explained how she made an effort on building a bridge between her daughter and husband and encouraging them to be closer. However, this might not be the best way to make them closer as she mentioned:

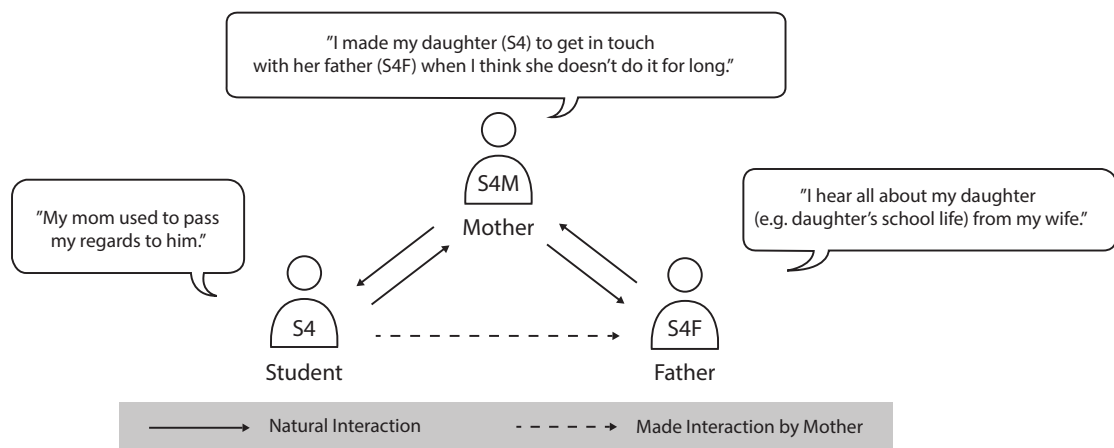


Figure 7.04. Representation of the family relationships between S4 and her parents (S4M and S4F). The quotes are extracted from their interviews.

"It seems like it was my fault. In the middle of them, I shared too much about my daughter with my husband, so he would not need to have a personal contact with S5 anymore." (S5M)

Despite of the effort from the mother, the students and their father do not have enough interaction between each other. Many students were getting uncomfortable with the relationships with their fathers, and so they had little contact with them. S3 talked about a

communication style of her father, which often leads to tensions as *“he has a very abrupt manner”* (S3)

Students even had a feeling of fear from their fathers, often causing an emotional distance with their father. Some students had bad memories of their relationships with their fathers over time. It was felt that *“bad memories of my childhood”* (S8) had damaged their relationship and led to an ongoing disconnection with their fathers. S5 also mentioned her traumatic memory with her father and explained why she seldom makes contact with her father:

“It seems to have become a bad habit since I was a child. If I did something wrong, I used to get scolded by my dad and I couldn’t even get a chance to explain why I did that. So since then, I guess I have just closed a door to my dad. Maybe I used to that type of relationship.” (S5)

The students also worry about not having anything to talk about with their fathers. Even though the students tried to initiate making contacts with their father, they *“had no idea what to talk with father”*. (S2) Therefore, the students *“made a contact only when they have some special events for their father, such as birthday or Father’s Day (S4)”*, or they *“were communicating only in the group chatting room that the whole family normally use (S5)”*, but they do not have any personal conversation with each other. For some students, they *“do not even get in touch with their father for more than 6 months”*, as shown by S8’s experience.

Some fathers felt that they were supposed to be distant from the children as a ‘father’, that he should be the *“serious head of the household”* (S9F), while his wife would take care of the emotional labour. One tried *“not to make a casual (and personal) conversation with my daughter (S9F)”*, and that was the type of figure he needs to be. In the similar context, there is other experiences from the fathers that they tried to be conservative in their relationships with their children. As an example, S4F said:

“I do care about my daughter, of course, but I am just not showing this up to her.”
(S4F)

For others, an introverted, shy personality made it difficult to create a close relationship with their children:

“[...] I am just not very good at talking, and also it is awkward for me to have a conversation with my daughter in person.” (S5F)

The interviews indicate that the students have a strained relationship with their fathers. This was often facilitated by the mother acting as a bridge between father and child, which removed the need for direct communication. Fathers often felt their role was to be provider or felt too shy to build a close, caring relationship with their child and so did not engage with their lives. The students also felt this tension, relating it to communication styles or historical tension from their childhood.

7.3.2. Experiences with Silent Knock

This section presents three valuable experiences of using Silent Knock: (i) feeling of freedom, (ii) showing care through Silent Knock, and (iii) supporting communication between students and their father.

7.3.2.1. Feelings of freedom through communication

Both parents and their children felt different types of freedom by communicating through Silent Knock. This included the freedom to contact with each other at any time (which was especially valuable to parents who had been waking up at all times of the night to speak with their child), freedom to avoid unwanted communication and freedom to communicate in a low-effort (but positive) way. This section presents how the Silent Knock addressed their communicational burdens.

Firstly, the system freed students from the concerns about disrupting their parents when making contact. S7 said:

“Actually, I am getting free from the parental contact as there is no push notification, and it is also making me just care about my own schedule when I am contacting them as the knocks did not have to be sent at agreed time with my parents.” (S7)

S1 also felt that Silent Knock removed the “*communicational burden and pressure*” (S1) for both herself and her parents. In this respect, the system provides them more opportunities to express how often they think of each other in their daily lives. S6 mentioned in her interview:

“I used the system every single moment where I suddenly thought of my parents during my day.” (S6)

This is same for the parents. S9M found the system was “*handy*” (S9M) that she could make a contact to her child whenever she is free. As she said, thanks to the feature of no push notification, she and her child were able to communicate “*more freely so they could communicate more frequently.*” (S9M) Similarly, S4M was positive in being able to make contact with her daughter silently through the system as describing it as a very “*sensational*” (S4M) to be able to communicate her feelings freely beyond the time differences.

Silent Knock also makes the student freed from the parental expectation that they need to be always connected. It supports the students feel emotionally connected by sharing knocks with their parents and also relieves the burden (and guilty) that the students feel from the lack of making phone call. S5 said:

“Even if it was still difficult to call back when I receive the knocks from my parents (because of the time difference), I felt the connection between us was already made through the knocks.” (S5)

Furthermore, Silent Knock provides a chance to avoid the unwanted connection while maintaining a good relationship between the students and their parents. In other words, the system creates a situational excuse in which they “*could be hiding from the parents by avoiding their responsibility to make follow-up contact as they would not be expected real-time connection in the system.*” (S1)

Looking at the system usage data (see Figure 7.03), the students and their parents have not been in contact with each other synchronously, but they have made their contact when they are comfortable (see Figure 7.04).

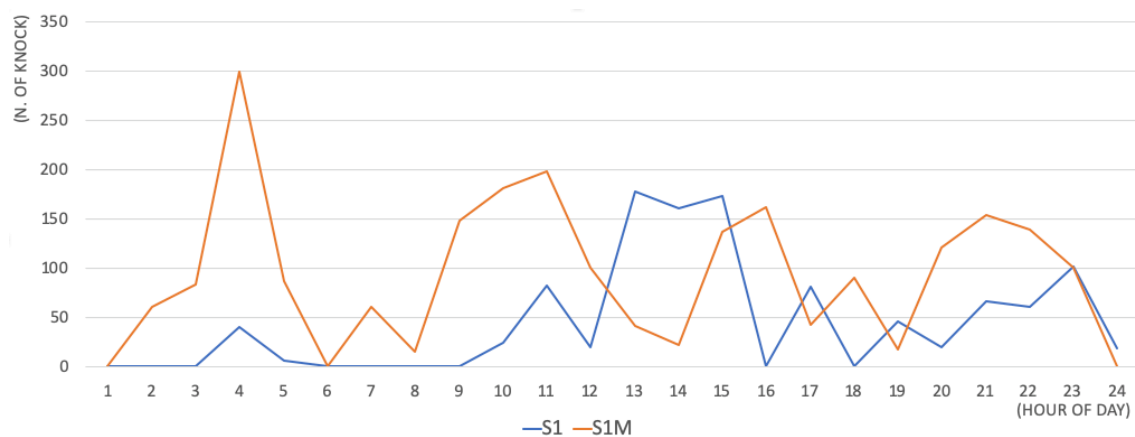


Figure 7.05. Hourly statistics in use of Silent Knock between S1 and S1M.

Figure 7.05 presents hourly statistics on the number of knocks sent by student (S1) and the parent (S1M), showing their system usage patterns. In the graph, the student shows a usage pattern focused at a specific time (i.e. her knocks are mostly sent between 12 and 16 o'clock). On the other hand, the parent's usage shows the intermittent usage patterns. Both of them seemed free to use the system at any time when they find comfortable, not the way they expected to be synchronously connected. This may provide a good means to be connected with each other regardless of time difference, but it also provides a good excuse to avoid unwanted contact.

Indeed, they do not care about making direct communication with each other. In her interview, S9M said she is just *"satisfied to have an opportunity to express her emotion to her daughter as much as she wishes"* (S9M) even if her daughter does not show any responses on it. In addition, S1M highlighted the expressional freedom on the system. She shared her experience on reducing the feeling of hesitation on making contact with her daughter. She mentioned:

"If you use KakaoTalk, the conversation usually goes back and forth like a ping pong. But here, the number of knocks I sent is not shown to the other person, and there is no notification too... So it seems like there is no burden when you send your heart as a sender. No matter how much I send, it's my heart. Like knocking, if you send over 150 messages, will your daughter not run away? (laugh)" (S1M)

Figure 7.06 below presents the daily patterns of system usage between S1 and S1M:

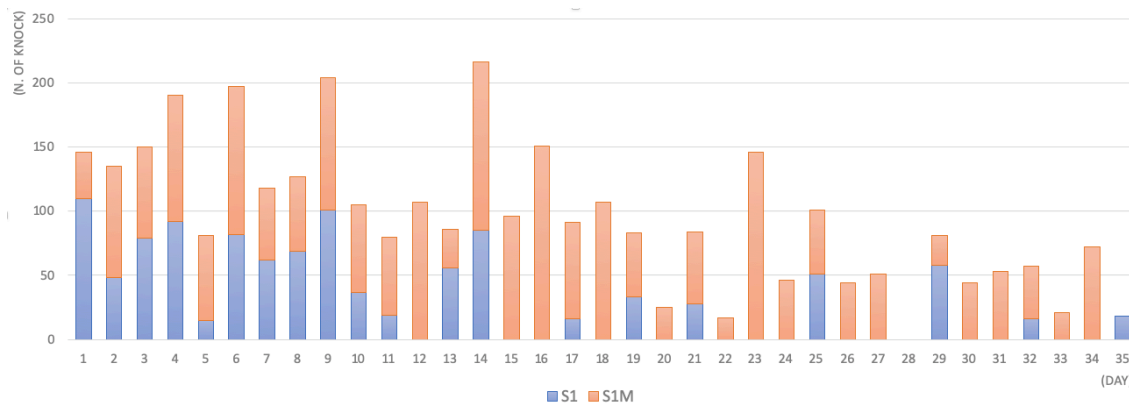


Figure 7.06. Daily-based analytics in use of Silent Knock between S1 and S1M.

According to the Figure 7.06, until the first 14 days, both S1 and S1M have been used the system daily-basis, but from day 15, only S1M has been used the system consistently. S1 was used it intermittently but not every day. From this figure, I was identified that the important value of Silent Knock might be a providing a freedom to the system user from the synchronous, bidirectional communication.

7.3.2.2. Showing care through Silent Knock

Silent Knock offers an additional form of lightweight interaction designed to show moments of thought and care, without synchronous response. As such, it is not intended to replace other communication tools, but provides another mechanism of connection that enables lightweight interaction that helps maintain individual boundaries. Therefore, the participants were able to directly contact each other through existing tools if they wish, with the study seeking to understand use of Silent Knock and how it impacted communication practices. Silent Knock could provide an indirect but useful way to share the care between individuals. As section 7.3.1.2. shows, there is difficulty in sharing emotions with words. By sharing knocks, however, both the student and the parents could efficiently share their cares. In other words, the system supports their ambiguous emotion to be more visible to each other. S9M expressed how much she loves her daughter by sending knocks *“as a means to show her regards to her daughter.” (S4M)*

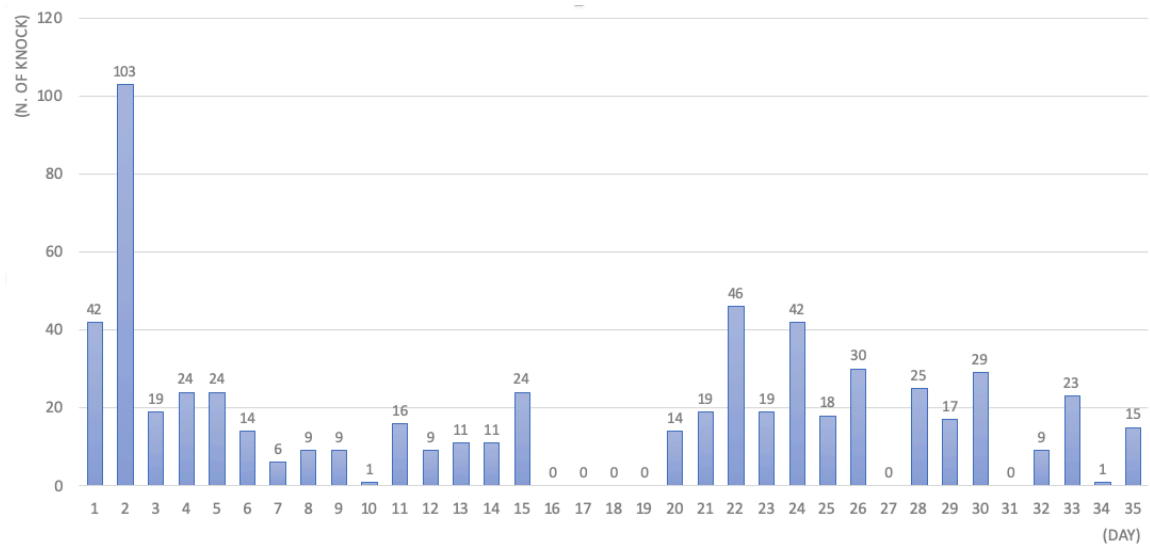


Figure 7.07. Daily-based analytics in use of Silent Knock of S4M.

According to the S4M's usage (see Figure 7.07), she uses the system for 29 days out of 35-day period. She sent a total of 629 knocks, on average 18 knocks per day. The second day sees a spike in use, where S4M was trying to become accustomed to using the system and *"did not really mean to communicate"* (S4M) with her child. Excluding this day, her average changes to 15 knocks a day. During her interview, she also highlighted how day 16 through 19 was an especially busy time in work meaning she found it hard to communicate. In addition, during the unused period of time (from day 16 to 19), she said she was too busy for work. On the day 22 and 24, there were nothing special, but she was *"felt sorry that she couldn't contact her daughter much on the last week"* (S4M) so she tried to contact more.

Many of the participants spoke about how because of being an introvert by nature, actions were more important than words to show their emotion. S3, for example, contacts *"her parents more and more as a means to show how much she loves them"* as she finds it difficult to express her emotion through words (S3). Similarly, S6 noted that a knock helps her to show that she is thinking about her parents:

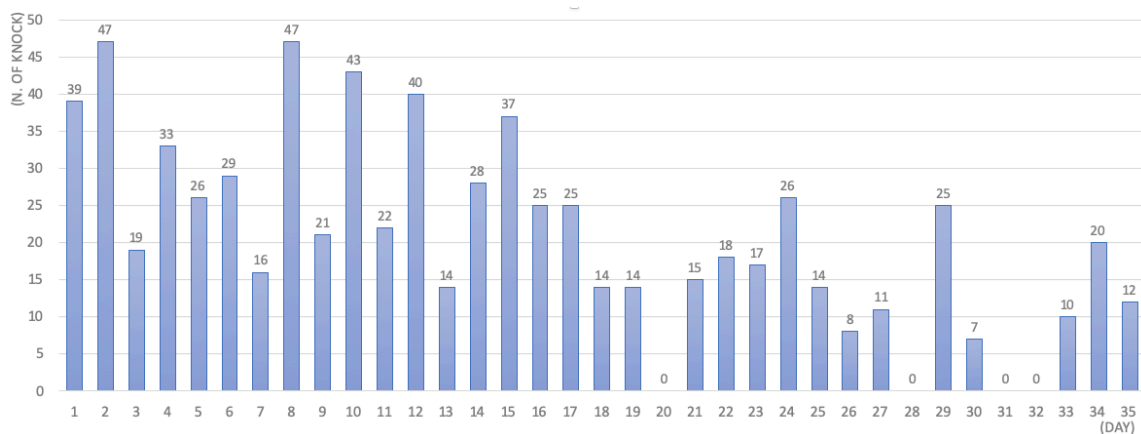


Figure 7.08. Daily-based analytics in use of Silent Knock of S6.

“Because I am the person who cannot express myself very well, this knock would represent my emotion in better way.” (S6)

According to Figure 7.08, S6 shared her cares to her parents every day through the system. She used the system for 31 days out of 35 days. A total of 722 knocks were sent, an average of 21 knocks per day. Data shows that she used the system more in the first half of the deployment (days 1 to 15) and continued to use it, albeit less frequently, for the remainder of the study.

Knocks could also be interpreted in a personally meaningful way, with participants noting how they *“carry multiple meanings in one simple action (S7M),”* while the parents and the student have different meanings on their knocks.

S1M talked about how she considered the knocks and used it to express the amount of her love for her daughter:

“It's not just greetings like 'hello' or 'how are you', I sent knocks with full of my love. I sent knocks to pray for my daughter and to cheer up. I literally said while sending my knocks, 'I love you, my daughter. I love you. Do you know how much I love you?' That's how I used it...” (S1M)

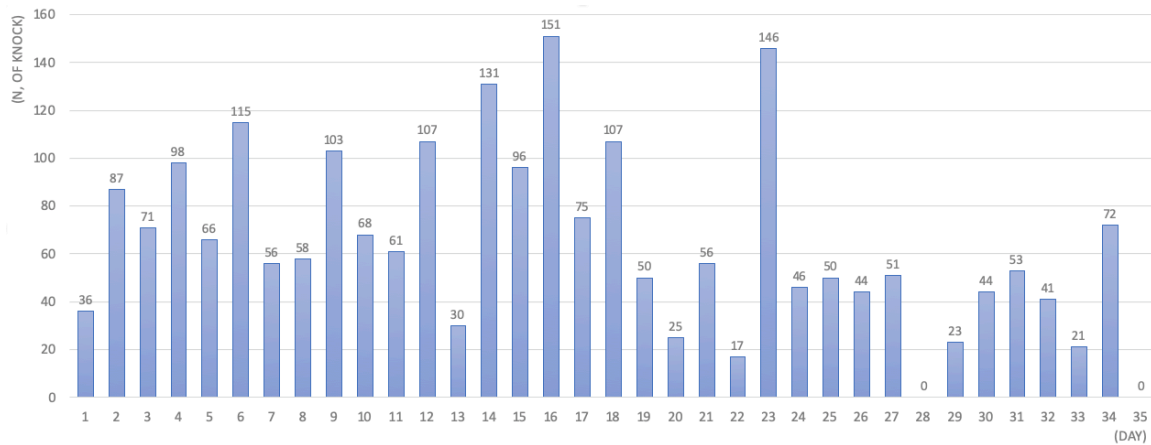


Figure 7.09. Daily-based analytics in use of Silent Knock of S1M.

Figure 7.09 presents the system usage of S1M. S1M is the user who sent the most knocks among the participants. She used the system for a total of 33 days out of 35 and sent knocks for a total of 2,255 (average 64 per day). However, the interesting thing is that the frequency of use of the system is relatively low. She shows 37 system usages during the 33-day period. In other words, she used the system only once a day on average and spent a huge number of knocks on it. In her interview, she said *“the main purpose of using the system was to send knocks, rather than checking the knocks”* (S1M) from her daughter. Indeed, she used the system while *“praying for her daughter's comfort.”* (S1M) She also said that she rarely checked the knocks sent from her daughter when she opened the system.

The knocks could be more diversity of its meaning, and it could be changed depending on the relationships. S5 shared her perspective on knocks:

“Knock is not necessarily the meaning of ‘I love you, I miss you or how are you’. It might be an expression of interest to somebody, but the meaning could be different depending on the relationship... I remember mine was mainly to send my regards rather than to ask how other people are doing.” (S5)

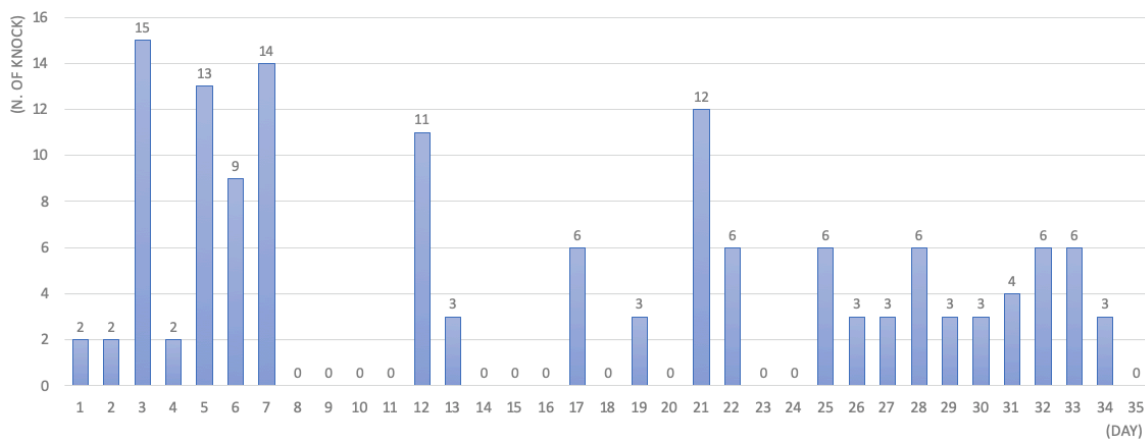


Figure 7.10. Daily-based analytics in use of Silent Knock of S5.

Figure 7.10 shows the system usage of S5. S5 used the system for 23 days out of 35 days, sending 141 knocks in total, which sends averaged 4 knocks per day during the study period. S5 sent relatively few knocks compared to S1M but seems to be used from time to time. She has opened the system a total of 117 systems in 23 days, and on average, open the system for five times a day to either send or check the knocks. This different behaviour has been seen from the difference in the purpose of using the system depending on the user. In her interview, S5 said *“most students may have different purposes with their parents.”* (S5) They wanted to tell their parents that there is no need to worry. And at the same time, they want to keep their own personal space and the feeling of freedom from their parents. A student, S8, mentioned:

“I usually send knocks for the purpose of showing I am still alive. Sometimes I played with it for fun, but mostly, I send it as a means to send my regards to my parents, so they wouldn’t worry about me.” (S8)

This can be identified by his patterns of system usage (see Figure 7.09). Unlike the S8M's regular contact, S8 uses the system as a means to report his survival at regular intervals.

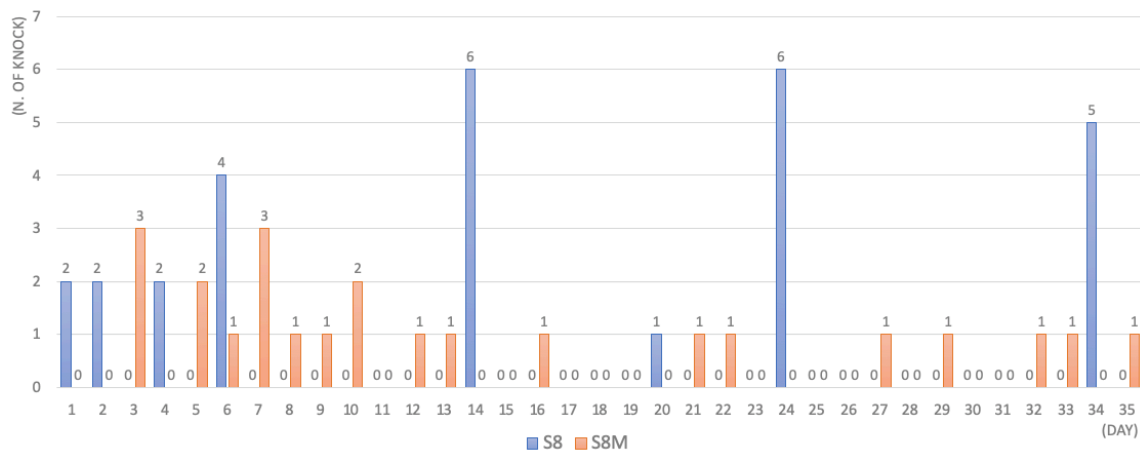


Figure 7.11. Daily-based analytics in use of Silent Knock between S8 and S8M.

Figure 7.11 shows that he sent a number of knocks on day 6, day 14, day 24 and then day 34, except for the First week he got started using the system. The day after he sent the knock, there was no record of S8M usage, so his mother may not be found the knocks coming from her son. But she seemed to have used the system regularly, rather than expecting to receive the knocks from S8.

In this respect, the system has also played a positive role in LDRs by supporting emotional sympathy:

“Sending knocks is different to other means of communication (e.g. text message). When I send knocks to other, it might be no more than say hello, but it was much more special and personally meaningful when it comes back.” (S6)

Some of our participants pointed out uncertainty of its meaning, but it has not negative influences on their relationships. S5F mentioned in his interview:

“I do not know exactly what it (i.e. knocks from his daughter) means, but I could imagine something positive. It makes me feel good.” (S5F)

Similarly, even if they might not get the meaning correctly, they tend to have the different (but positive) feelings from the knocks. S7M shared her experience:

“Sometimes the knocks give me really the best feeling as a present. I don’t know what exactly the knock meant, but I couldn’t compare that to any words.” (S7M)

Sending knocks possibly appears to be used for oneself rather than other people. The students tend to use the system for the sake of themselves, neither for the parents nor for the communication with them. We found that they have a feeling of self-satisfaction to make an action of getting in touch with their parents for good relationships. Interestingly, they have the feeling of proud, achievement, and comfort from the interaction within the system. For example, S3 has *“been proud of himself by sending the knock more than doing nothing (i.e. not even trying to get in touch with the parents).”* (S3) Similarly, S6 mentioned:

“By sending knocks, I felt a sort of achievement with the feeling that I have done something I supposed to do today.” (S6)

This shows an interesting different behaviour between the students and the parents. The parents seemed to use the system to think about their children and show their cares, whilst the students used it more instrumental. They tend to think that making contact to their parents is the must-do task for their day and be proud of themselves for completing the activity of sending knocks.

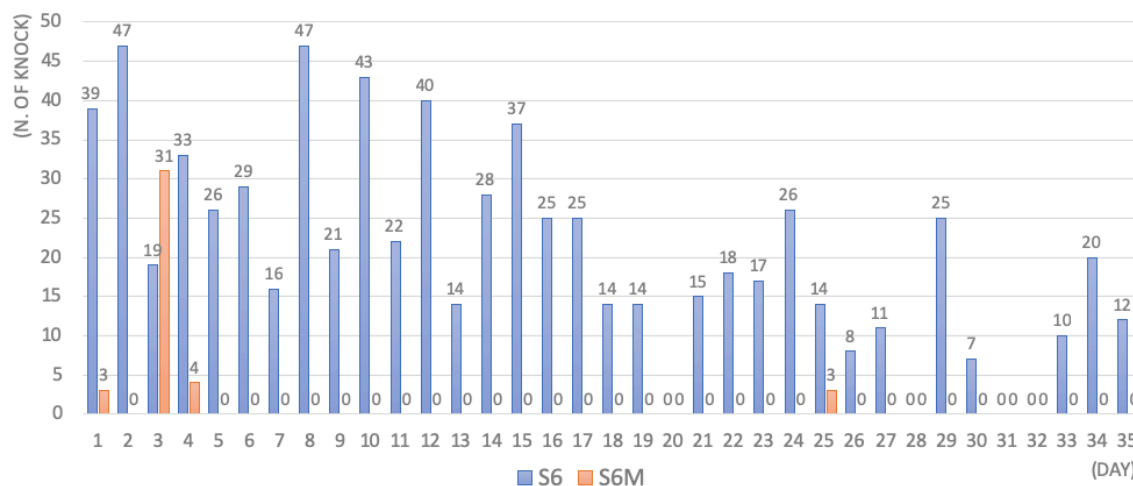


Figure 7.12. Daily-based analytics in use of Silent Knock between S6 and S6M.

In the Figure 7.12, it presents S6’s usage pattern. Regardless of the use of S6M (i.e. 4 days usage and 41 knocks in total), S6 kept in touch with her mother through the system. She sent 722 knocks for a total of 31 days and 21 knocks per day during the study. In her

interview, S6 “does not know exactly whether her mother uses the system and checks the knocks she sent, but she feels something better by sending the knocks.” (S6)

This also shows the students feel better because they have shown how much they care the parents through their action.

7.3.2.3. Supporting communication between students and their father

In previous section, I explored how fathers and children had a strained relationship. This section presents how Silent Knock provides a new direct way for fathers to simply, unobtrusively communicate with their child through a more comfortable medium. For example, one father talked about how much he loves his daughter, and how the system supports him. He said:

“My daughter might think that I don’t care of her because I don’t express very well. [...] I wanted to say, ‘I love you a lot, but I am just not used to express myself.’ So instead, I sent knocks to her at least twice a day.” (S2F)

Similarly, students also have a clear desire to express how much they think of their father. S5 shared her experience of using the system to address her concern:

“Even though I don’t t get in touch with my father a lot, but (through this system) I just wanted to let him know that I am not a person who never think their father at all.” (S5)

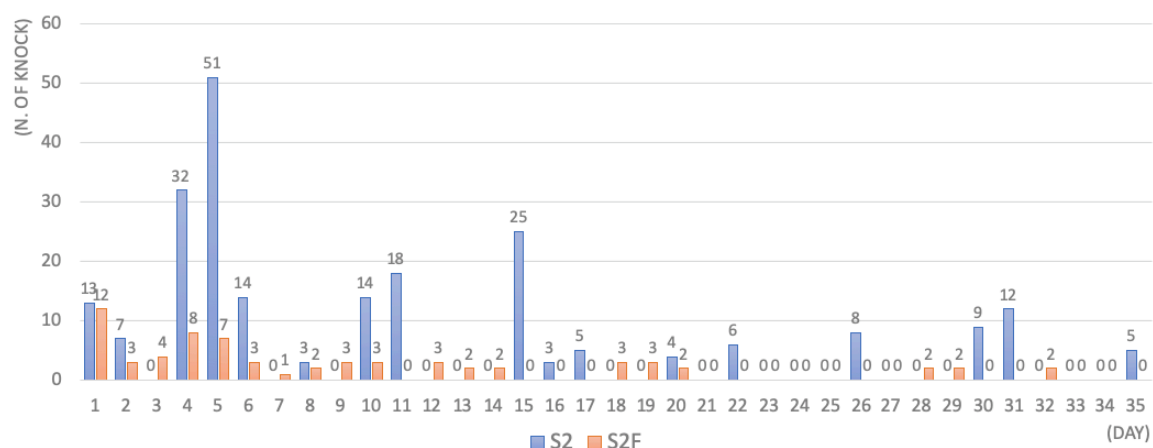


Figure 7.13. Daily-based analytics in use of Silent Knock between S2 and S2F.

Figure 7.13 presents their communication through the system between S2 and S2F. According to their interview, they have had little interaction with each other before using the system. However, they have been started to obtain more opportunities consistently expressing their regards to each other through the system. S2 sent 229 knocks in total, and S2F sent 67 knocks in total. The number of knocks on S2F is much lower than that of S2, but regardless of the number, I can see that they have been steadily knocking with each other while using the system for 17 days and 19 days, respectively. Both of them created more opportunities for communication with each other than before.

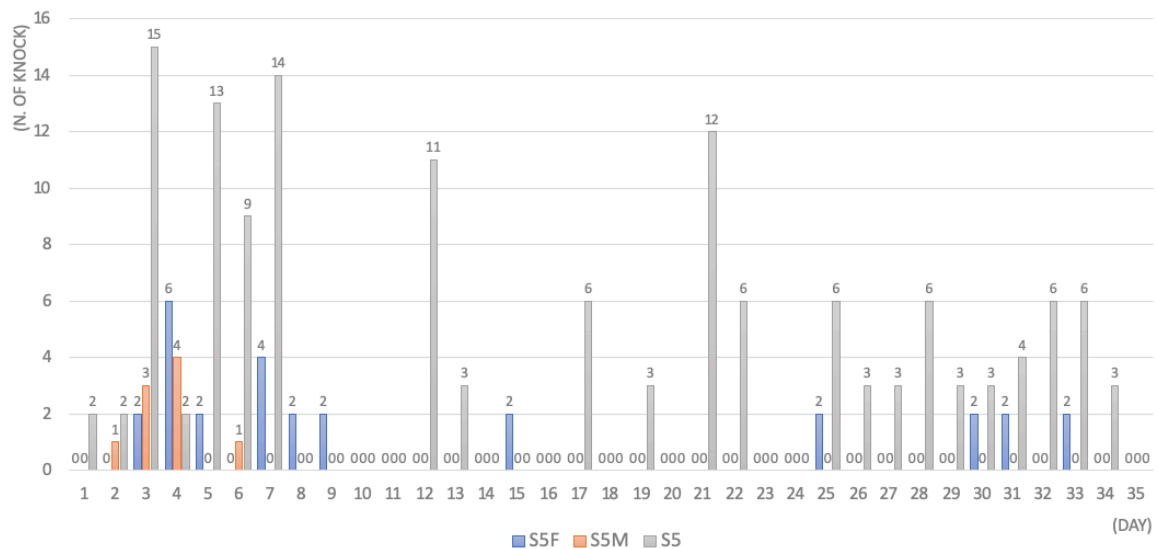


Figure 7.14. Daily-based analytics in use of Silent Knock among S5, S5F and S5M.

Figure 7.14 shows the usage pattern between S5 and her parents (both mother and father). According to their interviews, S5 and S5F had no direct communication between each other, but after using the system they could have created a lot of chances to get in touch. Even S5F had more usage than S5M. In their interviews, S5M said she *“does not find the value of the system because she often makes contact with her daughter by phone”* (S5M), while S5F said he found *“the system was helpful to express his loves to S5.”* (S5)

In this respect, the relational changes between the student and their father have been identified. The system supports the sense of connection between them. By using the system, they could have more emotional connection, and this brings more chances to make contacts between each other. It actually increases the contacts daily-basis between them. As S9 said:

“It was so good to see how much my father miss me. We used to be connected once or twice a week, but (while using this) knocks make us be connected daily basis.” (S9)

S9 meant that, through the system, they could simply visualise their emotion and easily share that with each other. The system could be compared with other communicational tools, especially some present messaging tools (e.g. WhatsApp). S5F talked about the value of ambiguous interaction, and its positive impact on their relationships:

“Compared to other messaging tools which support intuitive communication, this system supports an ambiguous communication. We need to assume the meaning of knocks. We need to think more about our relationships. I think that is a big difference between the Silent Knock system and other communication tools. When I looked at the Knocks from her (i.e. his daughter), I was just glad as this is the evidence that my daughter is thinking of me.” (S5F)

Even though Silent Knock has been designed with simple interaction to support parents' usability, this might be still challenging for them to adapt a new system. By this reason, however, students could *“feel grateful from the fact that their father uses the system only for them (S4)”*. Through the knocks from their father, students became aware of the efforts and love from their fathers. And so, they gave more significance to the act of knock than the meaning contained in the knock. Therefore, the knocks from their father gave them *“a greater meaning than other interaction (S2)”*. I have noticed the perception that the students have for their fathers has been changing. They could have a new sense about the love from their father that they have not known before. In this respect, one student said she was able to relieve her sadness in terms of her father's love that had been accumulated over the years:

“I was thinking he doesn't miss me at all... he was even sleeping when I first left for studying abroad. So, I was surprised by his knocks, which comes to me daily-basis.” (S9)

The fathers seemed really appreciative of their own, direct communication line with their children and the children seemed appreciative (and surprised by) the fact their fathers

actually thought of them and communicated. Even though the fathers found out the system is not familiar to use, they found its merit to make them closed. So that makes them happy to use the system. I have observed that from S4F’s experience:

“I do not have anything to interact with my daughter except this, so it’s appreciated.”
(S4F)

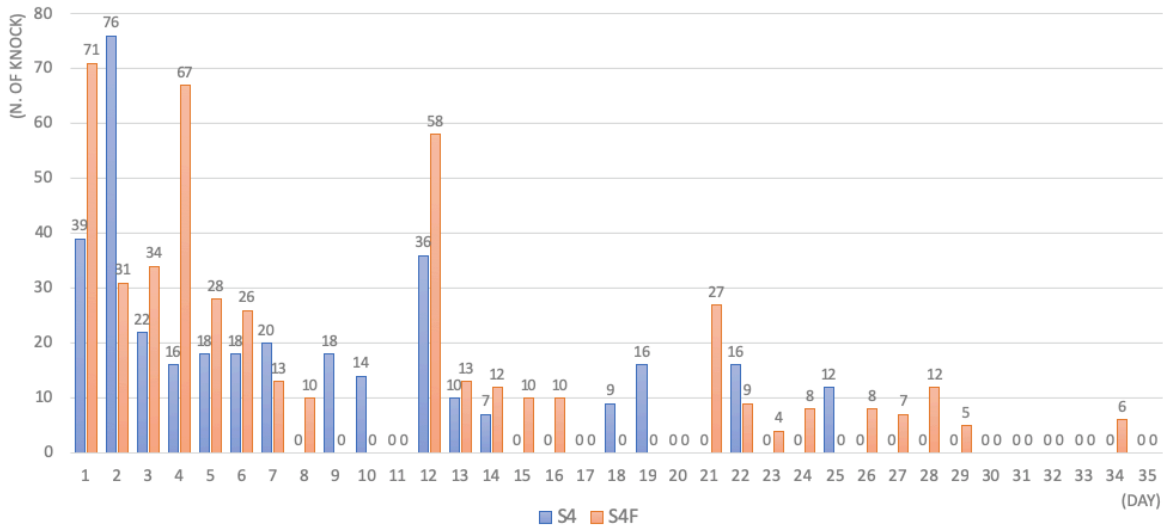


Figure 7.15. Daily-based analytics in use of Silent Knock between S4 and S4F.

This can be seen by the system usability between S4 and S4F (see Figure 7.15). Before using the system, there was no connection between S4 and S4F. However, using the system, they shared 816 knocks in total between each other (347 knocks from S4 and 469 knocks from S4F). This is opening a space where children and their fathers can communicate in a very simple, action-focused way that is helping them better understand each other.

7.4. Reflection on the Use of Silent Knock

The implementation of the concept of Respectful Disconnection used a simple but abstract way of interaction: the ‘knock’ as the means for communication between individuals. This was found to be a particular benefit for the South Korean families, who highlighted concerns over how their words (in text messages) and even emojis would be

(mis)interpreted by the recipient when reflecting on their communication before using Silent Knock. This highlighted the importance of simplifying the symbolic representation used in the prototype to ensure that communication could be lightweight, quick, and easy. This removes some of the concern over the (mis)interpretation and meaning-making of messages. There was a particular fear that the meaning of these would be lost in translation as shown by S6 and S8's separate experiences. One specific fear was that the students worried that their way of communicating (including their tone, choice of words, and use of emojis) might be perceived as rude by their parents. This meant they hesitated when communicating with them.

Using an ambiguous way of communication (i.e. knock) might be especially useful when people do not know what to say and how to say something. As shown by S7's experience, she was satisfied with just sending knocks to her parents as she found it difficult to express herself in words. Sometimes the students would have an expectation that their parents would be able to feel how much they love their parents without words (as shown by S3's experience). Similarly, the parents (e.g. S5F and S7M) did not mind exact meaning of knocks they received from their children, but they understood it simply something positive.

In this respect, the knock could be considered as a simple sign or manners expressing the mind that thinks of the other person, rather than a means of communication. For example, father-child relationships had not been the closest one, often with the mother as the bridge between both as highlighted in findings (see Figure 7.11). But the effort made by the fathers to reach out meant that their children added significantly more value to those attempts and led to improved relationships as S6 described the knocks as *"much more special and personally meaningful"* than other communications.

Crucially, it is apparent that a very simple interaction such as a 'knock' can have substantial influences in providing effective emotion sharing. This finding complements research on the expression and transmission of emotions through media over the distance, and they have highlighted diverse ways to support that such as the use of haptic link (Eichhorn, Wettach and Hornecker, 2009), emoji (Derks, Fischer and Bos, 2008) and non-verbal cues (Desmet, Overbeeke and Tax, 2001): the important distinction with this approach might be that it does not require any special hardware and it provides a single

option (in other words, it is a simpler interaction). The implication of this could be shaped in other communication tools with (intentionally) providing a limitation in system usage, e.g. word limits for text messages and allowed (limited) time for phone call. Therefore, this may produce a new form of communicational behaviour in sharing contents and emotion.

7.5. Summary

In this chapter, I conducted a system deployment of Silent Knock for 5 weeks with 9 South Korean families. I have collected two types of data from the study, system usage and interview data. I have further developed my understanding of their LDRs along with the parental lived experiences and identified three different values of Silent Knock system in supporting their LDRs, which are designed based on the concept of Respectful Disconnection: providing freedom to the communicational burden, providing simple, unobtrusive way to share their cares between each other, and addressing the strained relationships between the father and the children.

Chapter 8. Discussion

8.1. Introduction

This chapter revisits three research questions that guided this thesis (Chapter 1) and discusses their interpretation considering existing HCI research in this field. This chapter begins by answering the first research question (RQ1), discussing the values of communication inherent in LDRs in this context and identifying a new space for HCI research in this field to address. Specifically, both students and parents want to see action from the other – that they have tried to be in contact – rather than making synchronous communication for conversation. Current research in HCI addressing the design of LDRs is dominated by Western perspectives and cultures. However, through the literature review, I highlight how non-Western cultures are marked by different values and behaviours, such as the influence of Confucianism on Eastern culture. This provides new avenues for HCI to expand the design space when supporting communication in LDRs, particularly attending to the influence of culture on values and behaviours. Through discussion of the second research question (RQ2), exploring the role of technology in supporting communication for non-Western cultures, I unpick the impact of South Korean culture on communication in LDRs and the pivotal role of disconnection to maintaining healthy relationships. Finally, responding to the methodological question (RQ3) posed, I discuss the value of novel methods when engaging participants from Eastern cultures, a relatively less researched population group than Western participants and often more reserved. This leads to recommendations for future work, building upon the limitations of the research presented in this thesis.

8.2. Reconsidering LDRs in a South Korean Context

In this section, I respond to the first research question, which asked *what values are important in maintaining LDRs between international students and their parents who stay in their home country in a South Korean context*. I have designed a series of experience-centred studies to obtain rich accounts of the lived experiences of South Korean

international students in the UK and their parents at home in South Korea while living in separate counties, and this has been pointed as the first research contribution of this work. Through exploratory studies and design workshops (Chapter 4 and 5), I was focused on understanding how the students shape, manage, and maintain their LDRs with their parents over long-distance. This was supplemented with the deployment of Silent Knock (Chapter 7), through which I could understand the parents' perspective and the role of technology in facilitating their relationship. This also explored the limitations of existing LDR research and presented a new vision of LDR technology design.

A prominent concern of South Korean society is the stringent social expectations imposed on all members of a family relationship (Kang, 2006). Parents and children are always expected to act in line with the concept of 'filial piety'. This is a sacred cultural value in Confucianism (Nuyen, 1999), which highlights a reciprocal relationship between parents and children (Ho, 1996), where parents are expected to provide for their children, while the children are later expected to return that favour to their parents as the children become adults (Ho, 1996). This, in turn, likely breeds the obligation both parents and children felt to be in contact regardless of distance, time, or situation. According to the parental experiences (Chapter 7), the parents took every opportunity to be connected with their children, including having their ringtone up to the loudest setting during the night in case their child would contact them (Figure 8.01).

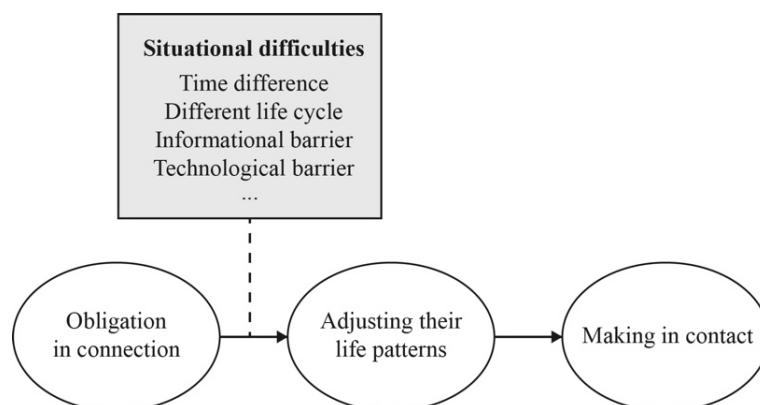


Figure 8.01. An illustration of the parental long-distance communication.

Commitment to communication places a burden on the formation of individual boundaries for students, which is necessary to establish a healthy relationship with their parents. The students made considerable effort to be in frequent, regular contact with their

parents. However, their communication patterns are more complicated than their parents. Unlike the parents, the students experience a form of burden when married to the reality of living in a different time zone, making it difficult to maintain their relationship and creating tension with their parents. In Chapter 4, for example, one participant (D1) expressed her embarrassment at feeling forced by her parents to stay in touch with them at all times. This involves their internal conflict between a sense of duty to be a good

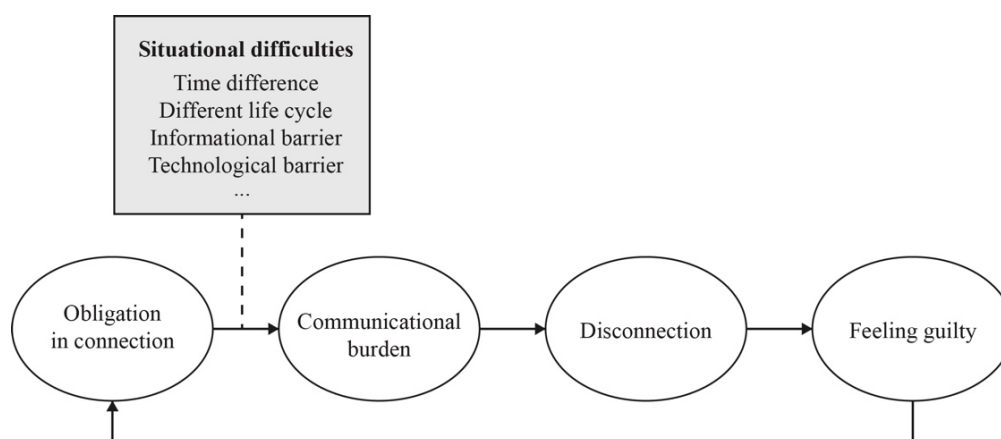


Figure 8.02. An illustration of the student's long-distance communication.

child and the desire for being independent or keeping their own boundaries. Indeed, some participants were sick of being connected and made white lies for disconnection from their parents, but they felt guilty afterwards (see Figure 8.02). Through this, I have been able to define two different values, one for the students and another for their parents, that are implicit to communication in their LDRs. Communication for the students involved finding balance between communicating enough so they could show their parents they care about them, while still ensuring their own space and independence. The students had a desire to be independent and were taking their first steps into adulthood. Communication, for them, could be an obstacle to this independence, offering their parents a way to surveil them. Consequently, the crucial value of communication for them was that it gave them space to grow into adulthood and develop their independence (or individual boundary). Their parents, on the other hand, needed more constant communication and wanted to see their children making an effort to connect with them rather than developing their own independence. This often took the form of leaving their phone volume at its highest level throughout the night as they believed their children needed constant support and contact from them. The parents were willing to make any

sacrifices needed so that they could be there for their children, changing their own life patterns, so that they could better match the lives of their children (Chapter 7).

In the literature review, I reviewed previous LDR research in the field of HCI and illustrated that most LDR research aims to facilitate closeness among people separated by distance through the use of digital technology. However, in responding to the RQ1, I explored how previous HCI research in this field has predominantly focused on supporting communication in LDRs from a Western perspective. The majority of this work has been conducted in North American or European settings (Guldner and Swensen, 1995; Kaye, 2006; Kirk *et al.*, 2016). However, Eastern, and more collective, cultures exhibit significantly different values and behaviours, which change the nature of communication. Furthermore, as demonstrated in the literature review, culture can have a significant impact on relationships, changing their values, inherent behaviours, and the types of communication needed (Pistole, Roberts and Chapman, 2010). Therefore, I argue that HCI research needs to explore non-Western cultures to develop a more nuanced understanding of communication in LDRs and to expand the design space of the discipline. In this study, the participants' experiences were driven by East Asian, Confucian values that underpin South Korean society and significantly influence behaviour in South Korean culture. Confucian society is generally marked by a conception of the *self* as indistinguishable from relationships with others (Bond and Kahn, 1968; Markus and Kitayama, 1991), in which human beings are considered to be fundamentally connected to each other. In such a culture, a 'good' person is expected to be strong and thoughtful, to put their own internal feelings or desires aside, and to act in a way that ensures harmonious social relations and the achievement of collective goals (Wessen, Weber and Gerth, 1951; Wong and Ahuvia, 1998). Surprisingly, therefore, the underlying motivation for studying abroad was often not solely for progression and enrichment of the students themselves, but for the social standing of their families, especially their parents. South Korean students accordingly have sacrificed their own individual desires and boundaries to better serve the goals of their family group (as perceived by that group).

This thesis therefore argues for expanding the research focus of HCI in LDRs beyond the current focus of supporting closeness through the design of digital technology to explore different culture perspectives. The work presented in this thesis highlights how, from a

South Korean perspective, two core values need to be supported in LDRs: visible action that shows effort taken to make connection and the opportunity to disconnect and have independent personal boundary (e.g. time and space) within the relationship. It has been developed as a concept of Respectful Disconnection, which is the second research contribution of this work. It is plausible that other cultures will likely prioritise different values as part of communication. Exploring different cultural perspectives can provide greater nuance in our understanding of communication in LDR. This also serves to expand the design space of HCI research when supporting communication in LDRs. It opens avenues of research beyond traditional approaches of supporting closeness, including disconnection and may highlight other important cultural variables that impact communication. Therefore, I argue that the design space for LDR research in HCI ought to be expanded beyond supporting intimacy and closeness but also facilitating disconnection and providing space. Furthermore, it is vital that HCI continues to attend to different cultural nuances on communication in LDRs to further expand the potential design space for LDR research.

8.3. How Can Technology Make Use of the Design Space?

The literature review highlighted previous LDR technologies in HCI that have focused on overcoming physical separation over long-distance across family, friends, and partners, including intergenerational communication. The emphasis of this has often been on providing new ways to support intimacy between geographically separated individuals and offer more of an opportunity for shared experiences. For example, video-mediated systems have been considered an efficient element to support individual closeness along with the chance to share voice and facial expressions over long-distance, e.g. it provides a chance to have shared experiences through the playful activities (Kirk, Sellen and Cao, 2010; Yarosh *et al.*, 2013; Hunter *et al.*, 2014). In addition, sensory interactions (e.g. visual, tactile, auditory and kinesthetics) have also been applied to enhance physical connectedness between geographically separated parties (Motamedi, 2007; Samani *et al.*, 2012). Smart devices have also been a focus of LDR research to improve intimacy and synchronous communication among people who are separated (Kontaris *et al.*, 2012; Kirk *et al.*, 2016).

According to the exploratory study, however, I identified the communicational disconnection does not always bring a negative experience in Confucian culture, which is counter to the majority of HCI research exploring LDRs (within a Western context). I have seen that the students' communication with their parents was often characterised by a form of communicational burden as they are expected to be connected with their parents at all time. According to the hedonic perspective on wellbeing (section 2.4.1), this is likely unhealthy relationships, due to having more negative experiences, reducing positive affect (Lee *et al.*, 2008). On the other hand, (but similar sense) making an effort to be connected or the appreciation of each other created by lack of connection can be considered as a potentially healthy, positive experience in their LDRs, which may increase sense of connection and purpose so prominent in Eudaimonic perspectives on wellbeing (Marshall *et al.*, 2014). Therefore, richer opportunities for communication can bring tension and negatively impact on healthy relationships, especially for junior family members.

This section responds to the second research question, *what is the role of the technology in supporting LDRs in Eastern culture*. The research presented in this thesis highlights a tension between making enough effort to show that you care and having individual boundaries among South Korean family LDRs. HCI is ideally placed to further explore this design space, leveraging approaches including Slow Design, to establish more mindful communication practices (Grosse-Hering *et al.*, 2013). For example, this approach can ensure that HCI researchers are not just seeking to support closeness. Instead, they are aiming develop a rich understanding of how the relationship works and how technology can support it in more meaningful ways. This provides a useful theory through which to explore an expanded, culturally-aware design space of HCI research focusing on LDRs. Digital wellbeing (Dauden Roquet and Sas, 2019) and Critical Design (Bardzell, Bardzell and Stolterman, 2014) also have a crucial role to play in helping technology make better use of this expanded design space. This tradition focuses on the role of design as a critical tool that prompts questions of the role design is to play in society and in the future. As has been highlighted in both the literature review and previous sections of this discussion chapter, HCI has a tradition of supporting closeness in LDRs. However, there is a need for more critical reflection on what an LDR is, the different values and behaviours engendered by culture, and on the role HCI can play

when designing technologies to support this. Adopting this approach can ensure I critically reflect on the values embedded in, and through, the LDR technology.

In this research, Slow Design has provided a lens through which to design technology to support LDRs in an Eastern context. The design of Silent Knock, which has been noted as the design contribution of this thesis, sought to embed and support the values identified in this research, namely action to show that each part of the relationship cares, but also providing space and disconnection for the students in the UK. A series of intentional design decisions imposed significant limitations on the capacity of Silent Knock for rich communication and instead focused on simplifying and removing complex communication. For example, Silent Knock does not support push notification, you can only access knocks from the most recent 24 hours, and there is only one single way of interaction. These limitations may make communicating through the system seem more challenging than conventional communication systems as it does not support stable, continuous and direct interaction. However, in practice, these limitations provide a form of consent between each party in the relationship to not need to respond immediately or to miss attempted contact, reducing the burden felt to remain in touch. This helped to make their moments of contact more meaningful and enjoyable rather than feeling a sense of obligation. The students could have their independent boundaries but also being able to send a knock to their parents met their own need for being able to show they care, removing pressure they felt to get in contact with their parents.

Communication between parents and their children actually increased through Silent Knock, despite the limited capacity for communication. Both parents and children described how they felt free of the burden to communicate and how removing that pressure ensured they enjoyed being able to contact each other through Silent Knock. They were comfortable to contact in their own time as they knew it would not disturb the other person. This offered a significant benefit as both the students and parents did not need to think about if it was the right time to communicate and no longer hesitated to do so, removing some barriers they had felt.

Key to limiting interaction and making it healthy within this culture was the ambiguous nature of interaction through Silent Knock. This reduced the burden of expressing emotions in conversation as there was one way of interacting with their family through

the application. Avoiding direct communication also reduced the obligation felt to communicate, such as returning a text message or phone call, and removing push notifications also reduced the burden participants felt from the time difference. This minimal interaction served to make communication more meaningful (Obendorf, 2009; Odom *et al.*, 2012). These may suggest an experience-centred definition of long-distance communication within an Eastern culture. Key to communication in this study has not been opportunities for synchronous communication and conversation. Instead, the key values of communication within the context of this research have been that it is focused on the action of showing that you care but with minimal effort. While HCI ought to continue to explore how technology can better mediate connection, this research suggests the importance of broadening our definition of communication within the context of LDRs. In relation to the first research question, it strengthens the argument to move away from Western-oriented focus on increasing opportunities for connection to supporting moments of disconnection and providing space.

Despite the benefits Silent Knock brought to the participants, there are some noticeable limitations of the system too. Silent Knock has not been designed as a replacement for other tools for communication, meaning that contact through other means may still create feelings of pressure and surveillance for the students. However, it does appear that the use of Silent Knock impacted how often other forms of contact occurred, but it is difficult to assess any generalisability of this due to the short nature of the deployment. There were also periods during the evaluation when usage of Silent Knock dipped significantly. Interviews highlighted how these coincided with periods where the parents were busy with work or students with exams. This may suggest that Silent Knock did not become central to parents' communication with their children, instead being a nice additional mode of communication and connection to use when possible. Furthermore, there are concerns about how engaging Silent Knock may be and whether such a simple interaction method affords the potential for long-term engagement. The deployment of the system lasted for just 5 weeks, meaning it is difficult to infer the potential for longer-term engagement. Use of Silent Knock actually decreased over the period of the evaluation, with more engagement in the first half of the evaluation than the latter half. Consequently, a limitation of the system may be that a simpler interaction method may not lend itself to longer engagement meaning that participants may revert to previous patterns of communication once the novelty of the system has worn off.

8.4. Supporting Participation in HCI Research

In this section, I respond to the third research question, which asked *how can HCI support participation in research across different cultures*.

Recently, research in HCI and interaction design has begun to look at methods to meaningfully engage participants from different cultures in research (Halskov and Dalsgård, 2006; Briggs *et al.*, 2012; Iversen, Halskov and Leong, 2012; Wallace *et al.*, 2013). For example, Lee and Lee (2009) highlight the impact of culture on the methods researchers choose and the importance of tailoring methods to suit the culture, as the majority of methods have been designed within a North American or European context (Lee and Lee, 2009). Their study was particularly important for the present research as it was a comparative analysis of students in the Netherlands and South Korean students' participation in focus groups as part of design research. They highlighted how South Korean participants exhibited significantly more passive participation and poor member-to-member interaction when compared to Western participants.

Literature review of this thesis has argued that culture plays a significant role in the behaviour of South Koreans in terms of their communication. However, cultural influence is also prevalent in participation (Wright and McCarthy, 2015). Specifically, South Korean participants tend to worry about sharing their opinion, especially if it is different to other people. They are also often uncomfortable to share their own personal stories, meaning they can be passive when it comes to expressing their thoughts (Lee and Lee, 2009). There is also a hierarchy in social relations and this is perceived to be the most important value in their culture, which is related to status, position, and loyalty both to those who are older and to their parents and family (Zhang *et al.*, 2005). This provided a significant challenge for my research, especially to engage potentially reticent participants to feel comfortable enough to open up about, and share, deeply personal stories and experiences from their most important relationships. A key contribution of this research is to highlight methods that are crucial to facilitating and encouraging engagement with more reserved cultures, such as participants from the East. These design-led research techniques build upon a rich legacy in HCI and interaction design research exploring how we can develop more engaging, sensitive, and appropriate design research methods (Wallace *et al.*, 2013).

Throughout this thesis, I have adapted existing methods to better suit the cultural context for this work. The first case study followed the HCI tradition of adapting cultural probes (Gaver *et al.*, 2004). Participants were provided with a bespoke diary that the researcher had embroidered by hand and asked to document their experience on a daily basis. They were also provided with a selection of photographs that were designed to act as prompts to facilitate the reflection, a wooden dreidel to support playful recollection, and stickers and calendars to theme diary entries. This aimed to overcome the likely reticence of participants to share deeply personal experiences, as frowned upon in South Korean culture, through the use of an engaging research tool. Similarly, I employed Invisible Design (Briggs *et al.*, 2012) to help explore the concept of Respectful Disconnection in detail. Research has highlighted poor peer-to-peer interaction among South Korean participants in a focus group setting previously (Lee and Lee, 2009). I aimed to create an engaging, enjoyable and different workshop experience that captured the imagination of participants and encouraged them to participate. By situating the concept of Respectful Disconnection in the scenes derived from the everyday experiences of participants in the diary study, it gave the participants tangible discussion points that they could refer to beyond traditional focus group and workshop methods.

Engaging participants proved to be the most challenging in the second case study, where I conducted one-to-one interviews with participants. Cultural influences may mean that participants are focused on presenting to the researcher what they think he or she wants to hear. In order to address this challenge, I developed a sketch-based interviewing technique, Sketching Dialogue, which provided a platform for engaging, empathetic, and in-depth communication with the study participants (i.e. the methodological contribution of this thesis). By placing the researcher and participant side-by-side, rather than face-to-face as can be traditional in interviews, a Sketching Dialogue can remove some of the formality and tension experienced in a traditional interview. In addition, note taking becomes a shared, sensemaking activity as opposed to an individual way to record the conversation. The sketch also becomes the point of focus of the conversation, as the researcher and participant create something together rather than the researcher extracting knowledge from the participant. As this removes eye-contact, this may be the most useful feature when engaging with a more reserved participant culture.

I argue this is especially useful to build a closer relationship with the passive (or shy) participants who are deeply influenced by hierarchical culture. Sketching Dialogue is not just a technique to support discussion between interviewer and the interviewee, but also a technique to build a closer relationship between them. In Sketching Interviews, the interviewee is more like a storyteller who can share their experiences and often a collaborator to co-create the output of the research, the sketch, with the researcher. In addition, Sketching Dialogue has greater value in situations where visual, non-verbal expression can be more advantageous than linguistic communication. It can provide a chance to engage the participants in dialogue, especially those who might be more passive when expressing their experiences verbally. For example, I gave participants a pen during the sketching interview and asked them to illustrate certain moments of their stories, especially when it might be difficult for them to illustrate in word.

This was more than just an opportunity to engage in sketches as an 'action', giving them more time to think about specific situations along with expressing my interest in their stories and encouraging them to say more. Furthermore, sketches could also serve as tools to help express one's emotion. Unlike regular interviews, where everything must be expressed in words, sketching interviews can express and convey emotions with the use of pens, paper, and sketches. Conversation through sketching therefore, allows both researcher and the interviewee to understand the meaning behind the words, responding to the feelings and communicating with non-verbal cues (Rogers and Farson, 1987; Robertson, 2005). This resonates with existing research in HCI and interaction design which highlights how focus on a creative process can often aid the participant to express their views, removing weight from the verbal interaction (Wallace *et al.*, 2013).

I have designed and modified existing methods to support engaging, active discussion with (or between) the participants who may be more shy or reserved – in this context participants from more reserved Eastern cultures. These research methods included a diary study with a set of bespoke designed tool kit, an Invisible Design workshops centred around an ambiguous film, and qualitative semi-structured interviews built around the use of sketching to provide a shared space to talk about, and make sense of, experience. These methods were crucial to develop a close relationship with the participants in the study and facilitated the collection of a rich data set through which to better understand the lived experience of communication in LDRs within the South

Korean context. This toolkit of methods offers a valuable resource for other designers who are working with participants who are more shy or reserved, especially those from the East, and can act as a starting point to create engaging, design-led research methods that can deeply engage participants in the work that we do. If HCI is to move into the expanded design space argued for in this thesis, it is crucial that researchers adopt appropriate methods to ensure they engage sensitively with participants.

8.5. Limitations and Future Works

In this section, I highlight three potential avenues of future research. These include: (a) further research engaging more men in the context of South Korean family LDRs, (b) expanding upon the concept of Respectful Disconnection and (c) further testing of the validity of Sketching Dialogue. These avenues of future work relate to potential limitations of the present research and could make valuable contributions to the field of HCI. I discuss each of these in turn in the following section.

Involving South Korean men in the research and design process

Throughout the research, I have conducted 4 case studies in total - two exploratory studies, a design workshop and system deployment. In total, 33 students (i.e. 7 males and 26 females) and 13 parents (i.e. 5 fathers and 8 mothers) participated in this research. However, recruitment proved a significant challenge in the current work, especially recruiting male South Korean students to take part. There were several constraints to recruitment in the study. These include that they must be current South Korean students studying in the UK whose family live abroad. I limited this to students living in or near Newcastle, due to the logistical challenges of travelling to meet other students around the UK so that I could meet them in person and have an in-depth conversation about their personal experiences. However, Newcastle has a small South Korean community and this impacted the potential participant pool. While I tried to advertise the study widely, both through online advertisement and word of mouth, my participants were predominantly female. This presents a challenge as Confucian traditions often have a gendered nature (Park and Cho, 1995), meaning that further research is needed to fully understand the experiences of male South Korean students in the UK. Further research could explore communication in LDRs from the perspective of male South Korean students in the UK,

ensuring a more accurate understanding of the impact of Confucian culture on communication.

Extending the concept of Respectful Disconnection

This study provided merely the first exploration of Respectful Disconnection in HCI research. There is an opportunity for further research to elaborate upon the concept of Respectful Disconnection, supporting more sophisticated definition and opening up new avenues for HCI research to better support communication in LDRs. Additionally, the genesis of the concept lies in Confucianism, which is also prevalent in a range of other East Asian societies (e.g. China, Taiwan and Japan) (Yum, 1988; Oetzel and Ting-Toomey, 2003; Zhou *et al.*, 2017). According to Yum (Yum, 1988), Confucianism has *“been adopted as the official philosophy of the Yi dynasty for 500 years in Korea, and of the Tokugawa shogunate in Japan for 250 years, as well as of many dynasties in China.”* The present research has provided an in-depth understanding from a South Korean perspective. However, there is opportunity to expand on this concept through studying other cultures. These might be other Confucian cultures or other cultures that differ from Western cultures, such as Middle Eastern cultures or more collective, non-individualistic cultures, such as some Pacific Island cultures, like Fiji and Samoa. There is also an opportunity to conduct comparative work to understand how disconnection may impact communication in Western cultures, shifting HCI’s focus on to improving the quality of relationships rather than focusing solely on increasing opportunities for connection.

Furthermore, the notion of reducing obligation in communication is also worth considering from a wider perspective. There are numerous relationships where existing obligations in communication are potentially harmful. Employment may be a particular example of this being problematic, where employees and employers can often have unequal relationships, and where the resulting relationships can be characterized by expectations being imposed on employees (Rothschild, 2000). For example, employees may receive messages, calls, or queries about work even when they are on holiday. This may lead to a conflict about whether or not to answer the received contact, or the conflict between personal values and public values, which may cause a sense of obligation in their communication. Other examples include the relationship between the students and teachers when using social media. Despite the substantial educational benefits of social media (e.g. synchronous communication, flexible time for learning and high level of

engagement) (Thomas, 2002; Chester and Gwynne, 2010), there is the potential of unwanted connection between student and teacher on social media (Hassini, 2006). This may mean that both students and staff are unable to escape their work/study life as it bleeds into their time off. This can potentially harm their privacy (Mazer, Murphy and Simonds, 2007) as their personal information becomes accessible online creating a feeling that their privacy has been invaded. This suggests the importance of disconnection as an element of healthy communication and the need for further research to further explore it.

Lack of validity of Sketching Dialogue

Sketching Dialogue has been developed based on my own experiences from the extended interviews. However, it is important that this approach is tested with other researchers (and other participants) who have different backgrounds (e.g. culture, experiences, skills, and research interest). This was the main aim of creating an online manual (see Appendix E). To begin this, I have recruited 6 other researchers who are using Sketching Dialogue in their own work through the online manual as a way to evaluate its effectiveness. Each researcher has been asked to conduct at least one interview applying Sketching Dialogue as part of their own research. Interviews will be conducted afterwards to better understand the role of Sketching Dialogue, whether it was effective, and the challenges faced when using it. Further research should focus on understanding the experiences of those who participated as interviewees, evaluating its effectiveness to help their participation and how it might do so.

8.6. Summary

In this chapter, I have revisited the three research questions set out at the beginning of the thesis and discussed the findings of my work in light of those, situating it within the landscape of HCI research. I have identified two values that are central to communication in a South Korean context, namely taking action to show you care and having the opportunity for space and disconnection. I have argued that this is a significant gap in the existing body of HCI research addressing LDRs, as these have traditionally focused on a Western context and increasing opportunities for communication. There is an opportunity for HCI research to better understand the impact of culture on communication in LDRs,

which will provide a more nuanced understanding of how designers and researchers can support communication in this context. I have highlighted how Slow Design and Critical Design are imperative to technology making use of this expanded design space for communication in LDRs, forcing researchers in the community to more carefully reflect on the role of technology to provide more meaningful opportunities for communication and connection. This has occurred through a discussion of how Silent Knock supported both action and communicational disconnection to improve the quality of LDRs, albeit with significant limitations due to the brevity of the deployment. I have rounded out this chapter with a discussion of the methods used throughout the research and how they offer a toolkit for other researchers seeking to engage more reserved and shy participants in creative design research in HCI.

Chapter 9. Conclusion

This thesis aims to understand the long-distance communication between South Korean international students in the UK and their parents in South Korea and define an important value in their communication. I have conducted a series of experience-centred design research to explore the lived experiences of long-distance relationships (LDRs) between South Korean international students and their parents and conceptualised the needs for disconnection in supporting their communication. This thesis set out to address following three research questions (RQs):

RQ1. What values are important to maintain LDRs between South Korean international students and their parents, who remain at home?

RQ2. What is the role of technology in supporting LDRs in Eastern culture?

RQ3. How can HCI support participation in research across different cultures?

Before responding to the research questions, I have reviewed previous research to understand the value of family relationships (especially parent-child relationships). I then expanded my understanding of the LDR research in the field of HCI. I recognised a number of gaps in this area. Firstly, most LDR research in HCI were situated in a Western cultural context, and little research has been reflected on an Eastern culture. However, there are significant differences between the two cultures in terms of the communication. One notable difference is that the Eastern culture highlights interdependent, harmonious interaction among group members, whereas the Western culture values more on independent of the self (Yum, 1988). People from the Eastern culture would have different needs for communication. Secondly, the previous LDR research mostly highlights providing physical connection between individuals as a means to support their closeness. However, this approach may lead the communicational tension between individuals especially for people from a collective culture (e.g. parent-child relationships in Confucian culture). Lastly, many LDR research have been designed to evaluate their designed systems, but I found the needs for more in-depth (and longer-term) research to understand the relationship itself before the design process.

Through this positioning, in Chapter 4, I have conducted two exploratory studies consisting of a-month-long diary study and the extended interview with the South Korean international students in the UK (i.e. 4 students for diary study and different 10 students for the extended interview) as a means to respond to the second research question. These two separate but interrelated studies have been designed to explore their lived experiences in the UK and their use of technology in maintaining LDRs. I recognised that the students have a burden from the communication with their parents, which means that the parents asked them to be always connected whilst the students need their own space away from the parents. The concept of Respectful Disconnection has been developed to alleviate their communicational burden.

In responding to the third research question, I have reflected Sketching Dialogue, which is one of the interviewing techniques adopted in the extended interview (Chapter 4). I have valued on the use of sketching in the qualitative interview as a means to support engaging, empathising discussion between researcher and the participants who are passive in expressing their stories. In Chapter 3, I illustrated the value of Sketching Dialogue based on my own experiences and presented its technical guidance.

Chapter 5 and 6 presented a design process of a smartphone-based experiential prototype, Silent Knock, as to respond to the second research question. As an experiential prototype, it has been designed to explore practical LDR experiences of South Korean families (i.e. both students and their parents). However, as a communication tool, the system needs to be realistic and works perfectly. Therefore, I have conducted two design workshops with 10 potential system users (i.e. the students) and obtained four design considerations about what a future system should look like.

Chapter 7 described the use of Silent Knock between 9 South Korean geographically separated families (9 students and 13 parents) for 5 weeks and their lived experiences in maintaining LDRs. At this stage, I was able to obtain parental lived experiences in their LDRs and be clear about the different communicational needs between the students and the parents. In responding to the first research question, I have conducted the qualitative interview with both the parents and the students along with their system usage data. Their experiences presented the important communicational values in their LDRs. One really struck me from their experiences was that they have more values on making action on

showing their efforts to think of each other, rather than having a synchronous communication through the content of conversation.

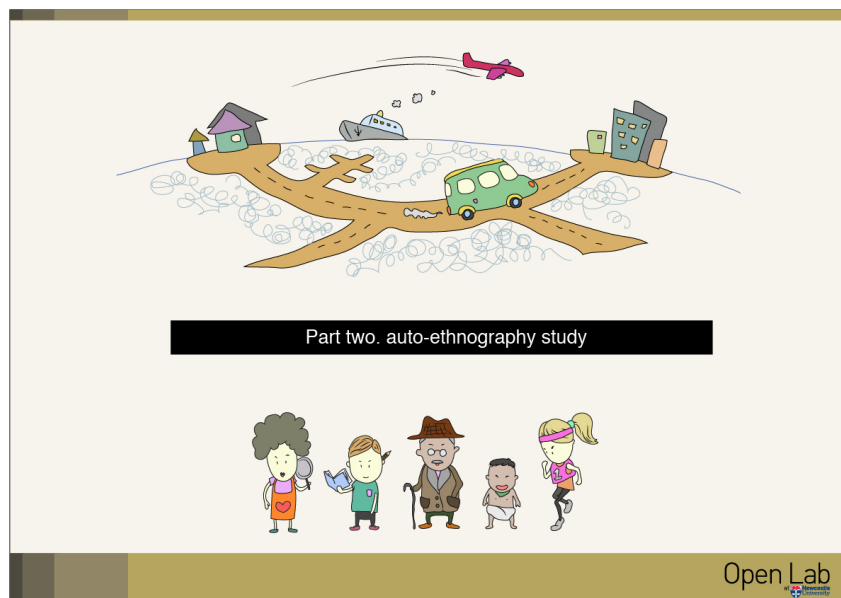
In Chapter 8, I reflect on the findings of this work, responding to the four research questions, and situating this in light of existing HCI research. This provides an avenue to explore potential limitations of the work and opportunities for further research in the future.

Appendix A: Diary Study Materials

A.1. Information sheet



Understanding Long-distance Family Relationships



Researcher

Period

Open Lab
School of Computing Science
Newcastle University

Study Information

Background to the Study

There has been a dramatic increase in the number of international students moving abroad to further their education in the past 20 years. A period studying abroad can bring numerous benefits for a student, including improving their knowledge of other cultures, language, and societies. They can also benefit from experiencing new approaches to learning, supporting their educational and professional development. Despite the many positives of being an international student, it is not without its challenges. For example, 41% of international students' experience substantial levels of stress. This can include challenges adapting to a new language and culture, alongside other personal barriers, such as separation from loved ones. Given the important role emotional support has in helping students overcome these challenges, it may be important to explore how international students can be supported to share emotions with distant families.

Purpose of the Study

This study follows the auto-ethnographic approach and uses autobiography to deeply explore the lived experience of being an international student separated from his or her family. Through this, we will examine what it means to you to be separated from your family, the challenges you face, and the moments you most wish for some sense of support and connection. These findings will be used to inform the structure of later interviews and workshops that will form the design process of technologies to aid emotional support and sharing between international students and their family.

Participants

You will be recruited as a visiting researcher by the Open Lab at Newcastle University. The position will require that they complete a daily autobiographical account of their Their salary will be paid as a position of research associate in the Open Lab (£15 per 1 hour).

Confidentiality & anonymity

The data we collect will be saved on a secured hard drive. Some part of this data may be published in academic journals and conferences. However, no identifying information will be included in those publications.

What is Involved?

We are looking for someone who will enjoy this process and be an enthusiastic and creative researcher. You will be asked to write one entry per day over a period of 1 month. Each writing period will take no more than 30 minutes per day. During this time, we would like you to take at least 1 photograph (i.e. anything that represents your emotion) per day. The position will also involve regular weekly meetings with the lead researcher, Euijin Hwang.

In your role as a researcher, you will narrate your own thoughts based on your experiences in the notebooks provided. These entries should reflect on aspects of your daily life here in Newcastle, including (but not limited to) your emotional and physical condition, situation, relationship with others.

- The experiences DO NOT have to be related directly with the family relationship.

- Narration can be any form but should involve some writing each day. Other forms can be included; drawing, pictures, text, physical object, and so on.
- During the weekly meeting, Euijin will ask you to reflect on your notebook entries, thinking about the emotions present at the time.

Further Questions

If you have any further questions, please contact the primary researcher, Euijin Hwang (PhD candidate at Open Lab, Newcastle University):

(E-mail) E.Hwang2@newcastle.ac.uk

(Skype) euijin.hwang

(Kakao Talk ID) EuijinHwang

If you want to learn more about the study, the outcomes, and future aspects of the work and would be pleased to include you in a meeting list to keep you abreast of this. If you would like to remain updated about the project, please let Euijin know.

A.2. Consent form



I, the undersigned, confirm that (please tick box as appropriate):

1.	I have listened and understood the information about the project, as provided in the Information Sheet dated _____.	<input type="checkbox"/>
2.	I have been given the opportunity to ask questions about the project and my participation.	<input type="checkbox"/>
3.	I agree to participate in the project as a visiting researcher.	<input type="checkbox"/>
4.	I understand I can withdraw at any time, ending my position as visiting researcher, and that I will not be penalised for withdrawing.	<input type="checkbox"/>
5.	The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, use of data, etc.) to me.	<input type="checkbox"/>
6.	The use of the data in research, publications, sharing and archiving has been explained to me.	<input type="checkbox"/>
7.	I understand that other researchers will have access to this data only if they agree to preserve the confidentiality of the data and if they agree to the terms I have specified in this form.	<input type="checkbox"/>
8.	Select only one of the following: <ul style="list-style-type: none">I would like (my name, initial of my name) used and understand what I have said or written as part of this study will be used in reports, publications and other research outputs so that anything I have contributed to this project can be recognised.I do not want my name used in this project.	<input type="checkbox"/> <input type="checkbox"/>
9.	I, along with the Researcher, agree to sign and date this informed consent form.	<input type="checkbox"/>

Participant:

Name of Participant Signature Date

Researcher:

Euijin Hwang _____
Name of Researcher Signature Date

A.3. Plan for exit interview

<Personal questions>

How was the exam? This you tell your parents? Did you have enough conversation with your parents during the exam period?

- Can you introduce a little bit about yourself and your family?
- Does your brother live in abroad as well? Do you have any special ways for having family conversation in all different situation?
- How long you have lived away from your family?

<Methodology>

- How did you find the objects you provided? (e.g. spin, pictures, calendar, notes, colour pens...) Were those comfortable to use? What was your favourite one? why?
- How did you take daily pictures? What pictures and why?
Does it reflect your thoughts? Can you give me some examples?
- How did you manage your time to write a diary note?
Was '30 minutes' enough? Can you explain your process to write a diary? Did you put any specific efforts on it during the day?

<Family relationship>

- What makes you have a conversation with your parents? When do you feel most to think about your parents?
- After doing the 'brain map' activities, how much do you think you understand your parents?
- Is there something you don't want to share with your parents?
- How can you define the 'your' family?

<Diary>

- What is the most important things you guess for your relationship with your parents?

When I look at your diary, you seemed like always waiting for topics that you can share with others, is that right?

- What technology do you currently use? What functions you hope to have?

Appendix B. Extended Interview Materials

B.1. Plans for interview

Planning for Extended Interview

I am planning a set of extended interviews with 10 Korean international students to obtain deeper understanding of their technology usage in terms of the family communications; what are the value of having communication with their parents and how they maintain the distant relationships. Before conducting the interviews, the participants would be provided and asked to fill out two different forms: one is to obtain their demographic information and another one, timeline, is to get better sense of their daily life (e.g. when, how long, and how often they contact with their parents). Based on those, I will modify the interview questions for each participant.

The interview questions would be designed based on three main themes: (1) technological ways of communication, (2) social interaction/supports around the family relationship, and (3) emotional wellbeing.

This semi-structured interview would not be take more than 45 minutes.

a. Technological ways of communication

- What types of technology?
- What are the benefits and the pain points of the technology?
- What are the value of the specific technology?

b. Social interaction/supports around the family relationship

- What makes them to have a conversation with their parents?
- When (what types of situation)? And why (what they expect from the communication)?
- How satisfied? Why?

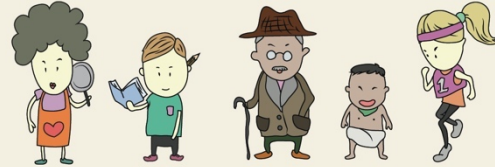
c. Wellbeing

- To what extent the technology has impacts on your life (e.g. social, academic, and sense of self...)?
- What are the key differences between living with family and being away from home in terms of the relationships?

d. Any suggestions for new system?

B.2. Advertisement for Interviewing South Korean international students (Korean version)

Join the Interview & Get £20 Voucher



Hello Korean International students!

저는 Newcastle University의 Open Lab에서 박사과정 연구를 진행하고있는 황의진이라고 합니다.
현재 Long-distance Family Communication에 관한 주제로 10명의 한국인 유학생 분들과의 인터뷰를
준비중에 있습니다.

특별한 사전 지식이나 정보는 필요없으시고, 지원자 분들의 나이, 성별, 전공 또한 무관한 간단한
대화형식의 인터뷰가 될 예정입니다. 간략하게는, 한국인 유학생분들이 멀리 떨어진 부모님과 어떻게
연락을 주고받고 있으며 어떠한 감정들을 공유하는지에 대한 내용입니다.

인터뷰는 8월 초, 중순쯤으로 (지원자분들과 시간 협의 후) 1시간 이내로 소요될 예정이고, 참가하시는
모든 분들께 원하시는 브랜드/매장 (e.g. M&S, Starbucks, Into, Amazon 등; 본인선택가능) 에서 사용이
가능한 20파운드의 바우처가 지급될 예정입니다. 많은 금액은 아니지만 참여하신 분들께는, 이 후에
연결된 스터디에 우선적으로 연락이 주어질 예정이오니 많은 관심과 참여 부탁드립니다.

그리고, 현재 방학기간인 점을 고려하여 인터뷰는 스카이프 등의 화상인터뷰도 무관하오니, 현재
여행중이시거나 한국에 계신 분들에게도 적극적인 추천 부탁드립니다.

인터뷰에 관련하여 질문이나 관심 있으신 분은 아래의 이메일로 문의해 주세요. 신청 양식과 함께
좀 더 자세한 인터뷰 정보 보내드리겠습니다.
감사합니다.

지원기간: 2016년 7월 29일 - 8월 5일
이메일: e.hwang2@ncl.ac.uk

-황의진 (Euijin Hwang)
PhD researcher
Open Lab, Newcastle University



Open Lab
Newcastle University

B.3. Information sheet



Information Sheet & Application Form

This leaflet provides information about the 'Technology for Distant Family Communication' research study and how you can take part.

Before you decide to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

About the Research

What are the aims of this research?

There are a growing range of apps, messengers, social network sites, and web-based applications that are used to communicate with family members in a variety of distant settings (e.g. business trip, national military service, divorced and studying abroad). Those communication tools have different target group based on the ability of technology usage, situation, purpose of the use and so on.

However, we're interested in the long-distance family relationship for Korean international students in western countries; what means to be separated from their parents, what emotional supports they share with each other, and what technology can address their challenges.

In this short interview study, we want to find out how they use technologies to communicate with their parents, especially their experience and emotions.

This is part of a wider PhD project about how Korean international students use digital technologies to communicate with their parents.

Who is doing the research?

This research has been organised and is being undertaken by Euijin Hwang, a PhD student at Open Lab, in the School of Computing Science, at Newcastle University.

The work is being supervised by Dr Patrick Olivier, a leader of Open Lab.

About taking part

Who is being asked to be involved?

In this study, we are seeking people who are either **international students originally came from Korea, or study in the western countries**. You do not need any experience, or expertise with any specific digital technologies to take part.

What would I have to do?

After signing a consent form, agreeing to take part in this research, I will conduct a short 30 - 45 minutes interview with you. The interview can be conducted either **in-person** or **Skype**.

In the first part of the interview I will ask you to draw a 'timeline' of your daily schedule in terms of your family communication.

In the second part of the interview I will ask you generally about your experiences and relationship with your parents, particularly in the distant setting. I'm also interested in the types of technologies you use for communication and emotional sharing.

With your consent, the interview will be audio recorded. This recording will not be shared beyond the research team (see above). Some part of the interview may be transcribed, but any quotes published or disseminated in the course of the research will be done so anonymously.

We will also ask you to fill in a very short questionnaire with basic demographic information.

Are there any risks to me taking part in this study?

This study is of minimal risk to you. We hope that discussing your communication matters of studying abroad, and other ways you might have recorded it will be an interesting experience. If at any point during the interview you feel uncomfortable, you may pause the interview, or withdraw from the study altogether if you feel you cannot or do not wish to continue.

Can I stop the study after giving consent?

Your participation is paid and is able to be discontinued at any time, but you need to provide a reason. You have the right not to answer any single question, as well as to withdraw completely from the interview at any point during the process.

How will the information you give be kept and used? Will your taking part in this project be kept confidential?

By taking part in this research you will be helping us to understand the present of technology usage for distant communication, and the technologies that can be used to do this. This short initial study, will feed into the design of a set of proposals for technologies to support distant family communication.

The interview data acquired in the course of this research may also form part of evidence reports, presentations, and academic publications. Research findings may be disseminated to academic audiences and also professional audiences. All research data will be anonymised and treated as confidential. You will not be identified by name. You will be assigned a unique research reference and any quotes attributed to you will be through this reference. Research outputs will be written up so as to prevent individuals, families or companies being identifiable in any way.

What if you change your mind or have any questions?

It's important that you know that at any time, even during or after the interview, you can ask questions, stop the research, or withdraw from the study completely.

Euijin is the first point of contact for this study (e.hwang2@ncl.ac.uk) but should you have any further concerns you can also contact Patrick Olivier (Patrick.Olivier@ncl.ac.uk).

Lead Researcher Contact Details:

Euijin Hwang
PhD Candidate at Open Lab, School of Computing Science, Newcastle University
e.hwang2@ncl.ac.uk
Tel: (+44) 07402095227

B.4. Consent form



I, the undersigned, confirm that (please tick box or type '0' as appropriate):

1.	I have listened and understood the information about the project, as provided in the Information Sheet dated _____.	<input type="checkbox"/>
2.	I have been given the opportunity to ask questions about the project and my participation.	<input type="checkbox"/>
3.	I agree to record this interview by either audio or video recorder.	<input type="checkbox"/>
4.	I understand I can withdraw at any time and that I will not be penalised for withdrawing, but I will need to give a specific reason that I withdraw.	<input type="checkbox"/>
5.	The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, use of data, etc.) to me.	<input type="checkbox"/>
6.	The use of the data in research, publications, sharing and archiving has been explained to me.	<input type="checkbox"/>
7.	I understand that other researchers will have access to this data only if they agree to preserve the confidentiality of the data and if they agree to the terms I have specified in this form.	<input type="checkbox"/>
8.	Select only one of the following: <ul style="list-style-type: none">I would like (my name, initial of my name) used and understand what I have said or written as part of this study will be used in reports, publications and other research outputs so that anything I have contributed to this project can be recognised.I do not want my name used in this project.	<input type="checkbox"/>
		<input type="checkbox"/>
9.	I, along with the Researcher, agree to sign and date this informed consent form.	<input type="checkbox"/>

Participant:

Name of Participant Signature Date

Researcher:

Euijin Hwang
Name of Researcher Signature Date

Appendix C. Design Workshop Materials

C.1. Information sheet



PARTICIPANT INFORMATION SHEET

Designing Technology to Support Long Distance Family Relationships in a Korean Context

You are invited to take part in a research study. Before you decide, it is important that you understand why the research is being done and what it will involve. This *Participant Information Sheet* tells you about the purpose, risks and benefits of this research study. If you agree to take part, we will ask you to sign a *Consent Form*. If there is anything that you are not clear about, we will be happy to explain it to you. Please take as much time as you need to read this information. You should only consent to participate in this research study when you feel you understand what is being asked of you, and you have had enough time to think about your decision. Thank you for reading this.

Purpose of the Study: This study is concerned with exploring how we can design digital technologies to support the relationship between Korean students in the UK and their family back in Korea. Family relationships can be an important source of social support for students when they are studying abroad. However, they can also be a source of tension, with the students feeling pressured to live up to their family's expectations or to being in contact as much as their parents wish. You have been asked to take part because significant insights can be gained from your experiences, helping us to design technologies that can better support both the student and their family. We will ask you to take part in a two-hour group workshop, called an invisible design workshop, where we will introduce our initial design idea through a short film and explore your thoughts and ideas in relation to this concept and how it may fit, or not, with your experience.

Taking Part – What it Involves

Do I have to take part? It is up to you to decide whether you would like to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect your rights in any way.

What will happen to me if I take part? If you decide you would like to take part, we will ask you to join a two-hour invisible design workshop, where we will show a film to a small group (i.e. 3-4 people) relating to our initial concept. Invisible Design has previously been used successfully in the early stages of concept development and has been shown to create a space for critical and creative dialogue as part of a user-centred and participatory design process. You will be asked to discuss the concept with the others in the group, thinking about how it would fit within your life, and exploring other ideas that you feel may be more suitable.

What are the benefits of taking part? While I cannot promise any immediate benefits for you, the information we gain from this experience will inform the development of new technologies that can support future International students as they seek to adapt to life studying abroad. We also hope that the experience will be enjoyable, getting to participate in a creative process with other people in a similar situation to you.

What happens at the end of the study?

At the end of the study, we will analyse the data gathered in the workshop and begin to design a prototype system for supporting Korean students relationship with their family while studying abroad. We will be happy to share a report of the workshop with you at the end of the study if you

wish to read it. This study will also form part of the lead researcher's, Euijin Hwang, PhD and other academic publications. We will, however, ask your permission before using any images taken and only general findings will be reported, without reference to identifiable individual results, or identifiable information.

What happens if I change my mind during the study?

Your participation is voluntary, and you are free to withdraw at any time without giving any reason and without your rights being affected in any way.

What if I have a complaint during my participation in the study?

If at anytime during the study, or after, you have any concerns or complaints arising from your participation you should contact the Researcher, Euijin Hwang, or his supervisor, Patrick Olivier.

Whom do I contact for more information or if I have further concerns?

If you would like further information or have concerns, you should contact the Researcher:

Euijin Hwang
Open Lab
Floor 3
89 Sandyford Road
Newcastle University
Newcastle upon Tyne
NE1 8HW
0191 208 4642
E.Hwang2@ncl.ac.uk

Patrick Olivier
Open Lab
Floor 3
89 Sandyford Road
Newcastle University
Newcastle upon Tyne
NE1 7RU
0191 2084 642
patrick.olivier@ncl.ac.uk

Confidentiality

All information that is collected about you during the course of the research will be kept strictly confidential and will not be shared with anyone else. The information collected in this research study will be stored in a way that protects your identity. Results from the study will be reported as group data and will not identify you in any way.

Summary

If you would like further information or have concerns, do not hesitate to contact the Researcher. Remember, your participation is completely voluntary, and you are free to withdraw at any time without giving any reason and without your rights being affected in any way.

THANK YOU

C2. Workshop plan

Invisible Design Workshop Plan:

Date: 27.05.2016

Time: A. 10 to 12 (2 hours) / B. 15 to 17 (2 hours)

Number of Participants: 5 - 6 participants per each session

Session Aims:

- To understand Korean students' long-distance relationships with their parents
- To explore how could we support their relationships with smartphone-based interactive system
- To understand students' experiences of involving in the design process through Invisible Design method

Time	Task	Description	Materials
10 to 10:25 (25 minutes)	Welcome and Introduction	Introduction <ul style="list-style-type: none">- Description of the session aims to workshop participants- Signing the consent forms Ice-breaker <ul style="list-style-type: none">- Share the best moments you have had in a distant relationship with your family/carers- Share the most stressful moments you have had in a distant relationship with your family/carers- Share the funniest moment you have had in a distant relationship with your family/carers	Consent form & Information sheet Video & Audio recorder Refreshment Paper board & Post-It stickers & Pen Name tag
10:25 to 10:35 (10 minutes)	Watch Film	Watch a short film (Invisible Design method) <ul style="list-style-type: none">- Share a series of moments when the Korean international students think of their parents, but do not get in touch with them- Share an initial concept of the interactive system without showing detailed feature of it- Provide three discussion points to the participants	Laptop (to play the film)

10:35 to 11:00 (25 minutes)	Discussion 1	<p>Interaction between students and their smartphone</p> <ul style="list-style-type: none"> - Explore the ideas of the interaction between students and the smartphone to show how much they think of their parents <p>Interesting questions Q. What do you think student A (a character in the film) is doing with his smartphone in the film?⁵ Q. What makes student B have no direct contact with his parents? Q. What are the key considerations to make the interaction useful?</p>	<p>Pen and paper</p> <p>Post-It</p> <p>Laptop (to re-play the film)</p> <p>Recording</p>
11:00 to 11:25 (25 minutes)	Discussion 2	<p>Interaction between the parents and their home device</p> <ul style="list-style-type: none"> - Explore the ways that their parents might have the interact with their home device <p>Interesting questions Q. What is the device? What could it be something existing/ something new? Q. How Student A's mother can feel how much her son think of her in his day? Q. What would you like to show your parents? Q. What is your parents' capability to use the technology? Would your parents have any problems of using it? Q. How much would you like to share the information of your day with your parents?</p>	
11:25 to 11:35 (10 minutes)	Discussion 3	<p>Interaction between the students and the parents</p> <ul style="list-style-type: none"> - Explore the pros and cons of the system 	
11:35 to 12:00 (25 minutes)	Reflection	<p>Reflection on method (Invisible Design)</p> <ul style="list-style-type: none"> - Explore their experiences of being a participants <p>Interesting questions Q. What was good (fun/interesting/useful) or bad? Q. Was the film helpful to understand questions? In what point? Q. Was the film helpful to develop the discussion in a group?</p>	

After workshop:

- Back up the recording files
- Charge the battery for next session
- Provide the voucher
- Send the email for future deployment
- Participant's profile

Check lists:

- () Consent forms
- () Information sheets
- () Presentation setting up
- () Laptop
- () Installation of recorders (video & audio)
- () 360 degree camera
- () Paper board (A2 size)
- () Post-it (2 colours)
- () Pen
- () A4 size papers
- () Tea and cookies (refreshment)
- () Vouchers
- () Name tag
- () Participant's profile sheet

Appendix D. Deployment Study Materials

D.1. Study information (Korean version: for parents)

Silent Knock: System Deployment

스터디 가이드

Researchers

Euijin Hwang / Dalya Al-Shahrabi / Edward Jenkins

Supervisors

Patrick Olivier / Andrew Monk

Open Lab
at  Newcastle
University

Background

오픈랩 소개

오픈랩 (Open Lab)은 2008년에 설립된 뉴캐슬 대학 컴퓨터 공학대학 산하의 연구기관으로서, human-computer interaction (HCI), 즉 인간과 컴퓨터의 상호관계에 관한 연구들을 주로 하고 있습니다. 오픈랩의 80여명의 연구원들은 본래 컴퓨터공학이 아닌, 심리학, 전자공학, 사회학, 의학, 교육학, 디자인 또는 순수 예술 등의 다양한 분야의 경력들을 갖고 있고, 이들이 함께 연구함으로써 사회에 보다 실용적이고 의미있는 연구를 하기위해 노력하고 있습니다. 이 분야의 연구들로는 최근 이슈가 되고 있는 사물인터넷, 인공지능, 그리고 빅데이터와 관련하여 새로운 서비스의 개발을 목적으로 진행하는 연구들이 있습니다. 또 한편으로는, 사람들의 삶의 모습이나 그들의 생각 및 경험에 대한 이해와 탐구를 목적으로 미디어나 컴퓨터를 사용하는 연구들도 이루어지고 있습니다.



[Urban Science Building at Newcastle University]

연구 목적

본 박사과정의 연구는 앞서 소개한 연구 카테고리 중, 후자의 성격을 지니고 있습니다. 큰 주제로는 long-distance relationship 에 관한 연구입니다. 즉, 거리상으로 멀리 떨어져 있는 사람들간의 관계 유지에 있어서 테크놀로지 (i.e. 모든 종류의 컴퓨터 장치를 포함)가 어떤 역할이 되어왔었고 (과거), 되고 있고 (현재), 또는 되어야 할지 (미래)에 관해 생각해 보고자 합니다. 저희는 본 연구를 통해, 테크놀로지의 사용에 따라 변화되고 있는 사람들의 삶의 패턴이나 그들이 새로이 갖는 경험 및 감정에

대한 이해를 넓히고자 합니다. 궁극적으로는, 컴퓨터가 사람들을 위해 나아가야 할 새로운 방향을 제시하고자 합니다.

연구 배경

지난 10 여년간, 인터넷과 스마트 폰을 포함하여 테크놀로지는 많은 발전을 해왔고, 이는 우리 삶의 패러다임을 다양하게 변화시켜왔습니다. 전 세계는 이제 서로 연결되어, 쉽고 빠르게 각자의 생활을 공유하며 소통할 수 있게 되었습니다. 개인적으로는, 스마트 폰이 만들어진 이후로 외국에서의 생활 또한 훨씬 수월해졌다고 느껴집니다. 멀리 타지에서 한국에 있는 가족 및 친구들과 자유롭게 연락 할 수 있다는 것은 서로간의 부재를 극복하게 해주고¹, 심리적인 거리감을 줄여줍니다². 그러한 반면, 너무나 쉽게 모든것이 연결됨으로 인하여 개인 사생활이 침해당한다거나, 단편적인 사회 관계망이 형성되거나, 거짓되고 허황된 삶의 모습이 조장되는 등 우려되는 부분도 많습니다³. 너무나 빠르고 쉽게 모든 것이 공유되는 지금, 오히려 일각에서는 다시 예전 (i.e. 인터넷이 덜 발달되어있던 시절)으로 돌아가고자 하는 움직임을 보이기도 합니다⁴. 이는 아날로그 감성이나 디지털 디톡스⁵, 그리고 슬로우 디바이스를 추구하는 분위기에서도 찾아볼 수 있습니다. 본 연구는 테크놀로지를 사용해 이루어지는 사회적 관계의 문제를 찾고, 이를 극복할 방향에 대한 고찰을 목표로합니다.



¹ Carman Neustaedter and Saul Greenberg. 2012. Intimacy in long-distance relationships over video chat.

² Gregory T. Guldner and Clifford H. Swensen. 1995. Time Spent Together and Relationship Quality: Long-Distance Relationships as a Test Case.

³ Eric Baumer and Phil Adams. 2013. Limiting, leaving, and (re) lapsing: an exploration of Facebook non-use practices and experiences.

⁴ William Odom, Richard Banks, Abigail Durrant, David Kirk, and James Pierce. 2012. Slow technology: critical reflection and future directions.

⁵ M. Emex. 2014. Digital detox for the holidays: are we addicted?

Silent Knock: 시스템 소개

시스템 소개

Silent Knock 은 스마트폰 기반의 어플리케이션으로서, 거리상 멀리 떨어져있는 사람들이 그들의 관계를 건강하게 유지할 수 있도록 고안된 시스템입니다. 본 시스템은 연구를 목적으로 디자인된 만큼, 새로운 방식의 실험적인 인터랙션을 담고 있습니다.



시스템 특징

1. 제한적인 인터랙션 (Lightweight interaction)

본 시스템은 ‘의사 소통’을 최우선의 목적으로 만들어진 다른 메신저나 소셜 네트워크 서비스들과는 달리, ‘연락을 하고자 하는 개개인의 의지’가 가장 중요하고, 또 유일한 연락의 동기가 되어야 한다는 원칙 아래 디자인 되었습니다. 우리는 시스템 개발에 앞서, 다음의 질문을 갖게 되었습니다:

“상대방의 리액션에 대한 기대감 없이, 사람들은 어떤 형태의 소통을 하게될까?”

우리는 이에 대한 답을 찾기 위하여, 기존의 미디어가 조장하고 있는 수동적이고 의무적인 연결, 그리고 상대방에게 특정 반응을 기대하게 만드는 요소들을 제한하고자 하였습니다. 즉, 연락을 주고 받음에 있어서 서로의 행동 (i.e. 커뮤니케이션 패턴)에 자극이 될수 있는 외부 요소들 (e.g. 푸쉬알람, 메세지, 그리고 실시간 연결 등)을 제한한 인터랙션을 사용하고 있습니다.

2. 소규모 커뮤니티

본 시스템은 본인 외 6 명으로 한정된 인원과의 연결을 지원합니다. 임의의 사람들과 커다란 사회적 네트워크 형성을 위한 플랫폼이 아닌, 소수의 사람들이 서로의 마음을 주고받으며 소통할 수 있는 사적인 커뮤니티임을 강조합니다. 본 시스템의 테스트를 통해, 사용자가 누구와 어떤 관계를 형성하고 있는지, 그리고 그 사용자의 경험과 의미에 대한 이해를 하고자 합니다.

3. 스터디 참여 및 시스템의 사용성에 관한 설문

본 스터디를 통하여, 시스템의 컨셉이나 방식을 사용자들이 어떻게 느끼고, 사용하는지, 그리고 본 시스템이 그들의 관계에는 어떤 영향을 미치는지에 관한 이해를 하고자 합니다. 시스템을 설치한 후 정해진 최초 인터랙션이 이루어진 후에, 연구의 참가를 요청하는 질문을 받게 됩니다 (i.e. Unlock special door). 참가자 분들은 이 요청에 동의를 해주시기 바랍니다. 동의 후에는, 각자의 사용성 (e.g. 사용일수, 연결된 이웃 수, 보낸 노크 개수 등)에 따라 하루에 1-2 가지씩의 질문들을 받게 됩니다. 질문은 사용자의 사용 패턴에 따라 자동적으로 구성되며, 이를 통해 얻어진 모든 정보는 학술지나 논문 등 오직 연구관련 목적으로만 사용될 것임을 알려드립니다.

스터디 안내

스터디 대상

본 스터디는 한국인 가족을 대상으로 하고 있습니다. 특히, 영국에서 공부하고 있는 19 세 이상의 대학생들과 한국에 남아있는 부모님들을 대상으로 합니다. 학생 참가자들의 성별이나, 전공, 영국 내 사는 장소 등은 무관하고, 부모님의 직업, 나이, 한국 내 사는 곳, 수입 또한 무관합니다. 본 스터디는 오직 해외에 떨어져 사는 부모와 아이들간의 관계와 그들의 테크놀로지의 사용을 보고자 함임을 다시 한번 강조드립니다.

참가 권한 및 혜택

모든 참가자는 본인의 결정에 의해서 연구에 참여하게 됩니다. 스터디에 참가를 하게되면 가족당 30 파운드의 아마존 바우처가 제공될 예정입니다. 연구 참가는 강요로 이루어질 수 없으며, 중간에 마음이 변할시 언제든지 참가 취소를 요청할 수 있습니다. 또한, 스터디 참여에 있어서 질문이나 불편사항이 있을 시 본 연구원 (황의진)에게 언제든지 연락해주시기 바랍니다. 최대한 빨리 조치를 취하도록 하겠습니다.

스터디 일정

1. 시스템 사용

본 스터디는 사용일로부터 최소 6 주간 (혹은 그 이상)의 시스템 사용을 원칙으로 합니다. 사용하시는 6 주간의 기간동안, 참가자분들에게 요구된 의무적으로 정해진 사용 횟수 및 날짜는 없지만, 연구 참가자로서의 자발적인 참여를 부탁드립니다.

2. 개별 인터뷰

시스템 사용이 끝난 후에는, 모든 참가자분들 (학생과 부모님 모두)은 본 연구원 (황의진)과의 개별적인 인터뷰를 갖게 될 예정입니다. 인터뷰는 1-2 시간 정도 소요될 예정이며, 시스템을 사용함에 의한 관계 및 소통 방식의 변화에 대한 간단한 대화를 할 예정입니다. 인터뷰는 온라인과 오프라인의 모든 채널을 고려할 예정입니다만, 부모님들과의 인터뷰는 원활한 소통을 위해 가급적 오프라인 상태에 이루어질 수 있도록 도움 부탁드립니다.

데이터 분석 및 공유

스터디가 끝난 후에, 저희가 발견한 새로운 인사이트나 연구 결과에 대한 리포트의 공유를 원하시면 본 연구원 (황의진)에게 요청해주세요. 정리가 되는데로 공유하도록 하겠습니다.

스터디로부터 얻게 된 모든 개인 정보는 연구소의 보안시스템아래 안전하게 보관될 것이고, 리서치 팀 이외에는 절대 공유되지 않습니다. 또한, 이 스터디는 박사과정 연구의 일부이기도 하여, 학술지나 논문 등에 게재가 될 수 있음을 알려드립니다. 하지만 개인 확인이 가능하지 않은 범위안에서 공유됨을 알려드립니다.

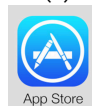
D.2. System installation (Korean version: for parents)

시스템 설치 방법 및 기능소개

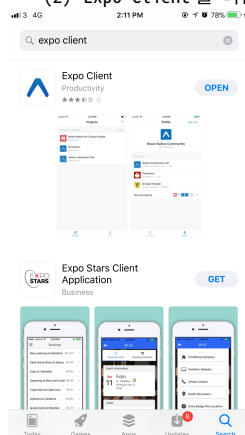
1. 어플리케이션 다운로드 및 설치

아이폰 (ios)의 경우- Expo 앱 사용

(1) 'App store'에 들어갑니다.

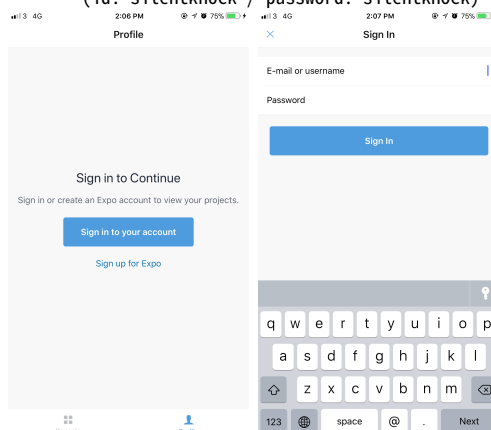


(2) 'Expo Client'를 다운 받습니다.

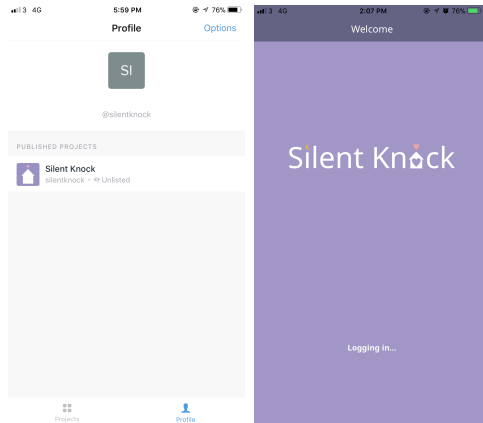


(3) Expo 앱을 설치하여, 할당받은 아이디와 비밀번호를 입력하세요.

(id: silentknock / password: silentknock)

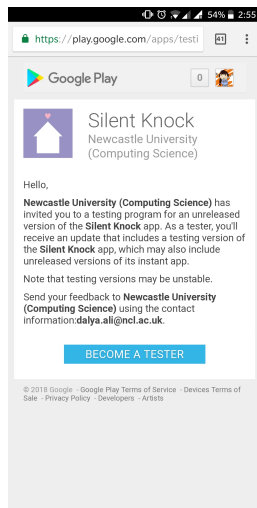


(4) ‘Silent Knock’을 실행합니다.

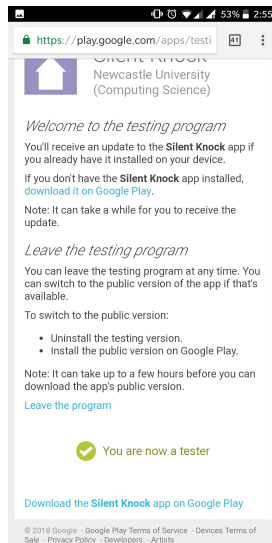


안드로이드 (e.g. 삼성, 엘지 휴대폰 등)의 경우

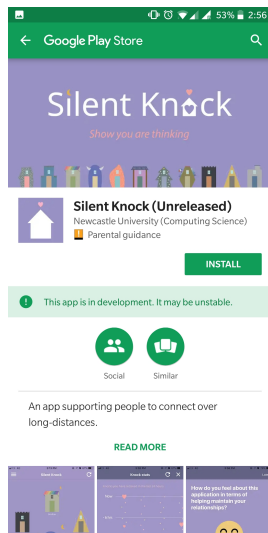
- (1) 참가자에게 보내준 링크를 클릭하세요.
(<https://play.google.com/apps/testing/uk.ac.ncl.openlab.silentknock/join>)
- (2) google 계정이 없는 사용자의 경우, 계정을 만들어야 할 수 있습니다. 구글계정을 만든 후, 로그인합니다.
- (3) “Become a tester”라고 쓰인 파란색 버튼을 누르세요.



(4) 페이지 하단의, 파란색 글씨로 된 “Download the **Silent Knock** app on Google Play” 버튼을 누르세요.

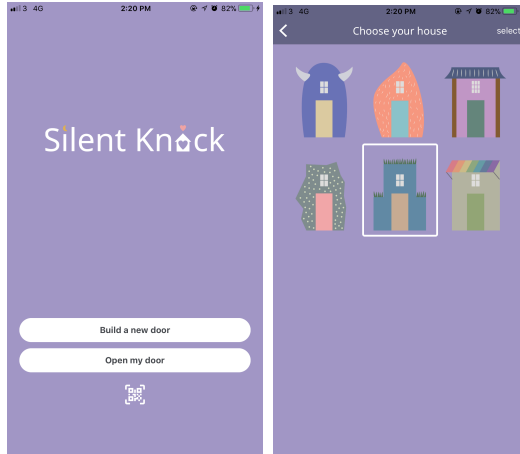


(5) Install 버튼을 눌러, 어플리케이션을 설치 및 실행합니다.

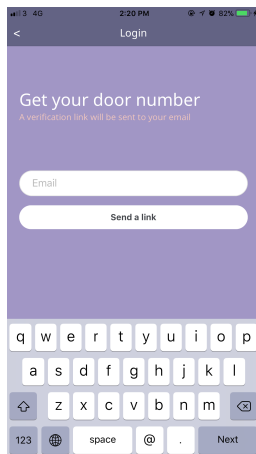


2. 계정 등록 및 인증

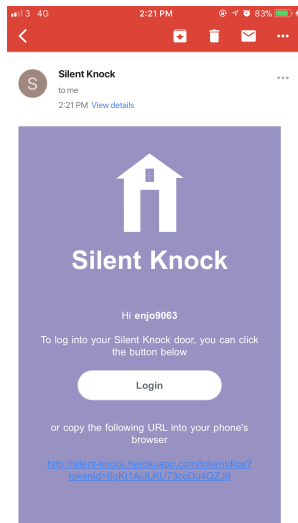
(1) 설치된 'Silent Knock'을 실행한 후, 마음에 드는 집을 선택합니다.



(2) 방 번호를 받기 위해서는 계정을 만들어야 합니다. 본인 이메일을 입력하면, 계정등록을 위한 링크가 자동으로 이메일로 보내집니다.

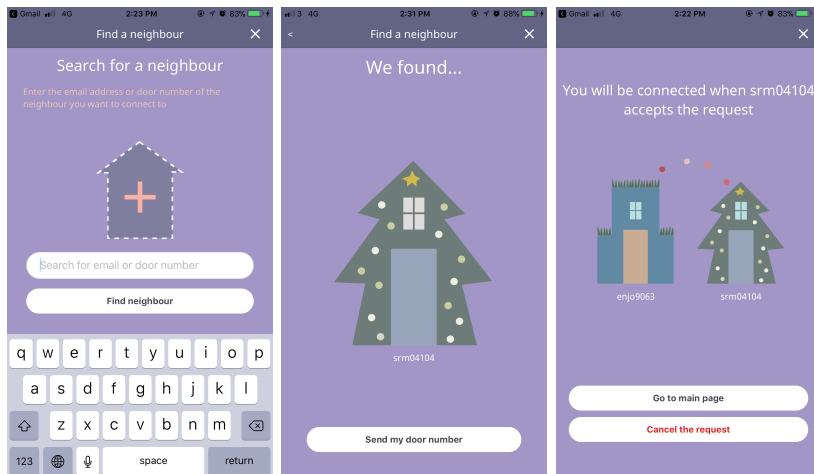


- (3) 휴대폰에서 이메일을 열고 Silent Knock 에서 보내온 링크를 클릭하면, 앱의 계정등록 절차가 완료되고 시스템을 실행하게됩니다.



3. 이웃 추가 및 연결

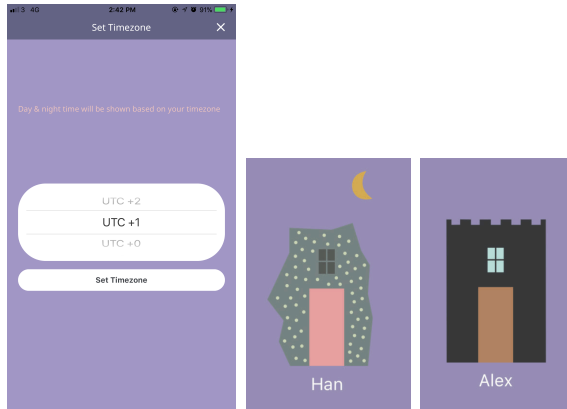
메인화면에서 빈 집 아이콘을 누르면 새로운 이웃을 검색할 수 있습니다. 시스템에 등록되지 않은 이웃의 경우 이메일을 통해 초대장을 보낼 수 있습니다.



4. 타임 존 세팅

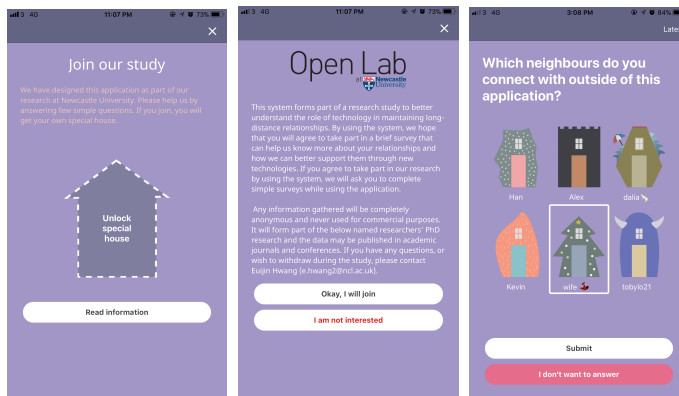
최초 설치시에는 자동적으로 본인의 위치가 세팅이 됩니다. 이것은 이웃간의 시차를 대략적으로나마 공유하기 위한 기능입니다. UTC 는 Coordinated Universal Time 의 약자로, 세계 표준 시각을 의미합니다. (동계: 영국은 UTC+0 이고, 한국은 UTC+9 입니다 / 하계: 영국은 UTC+1 이고, 한국은 UTC+9 입니다)

최초의 설치 이후, 해외로의 이동을 할 시에는 타임존을 개별적으로 조정해주시기 바랍니다.



5. 스터디 참가 수락 및 설문 참여

설치후 어느정도 앱을 사용하다보면, 'Unlock special door'를 선택할 수 있습니다. 이것은 스터디 참가를 물어보는 일종의 consent form 입니다. 모든 참가자는 이 요청에 동의를 해주시기 바랍니다. 동의 후에는, 자신만의 집을 한가지 고를 수 있게 되며, 사용함에 따라 몇가지 설문을 받게 됩니다.

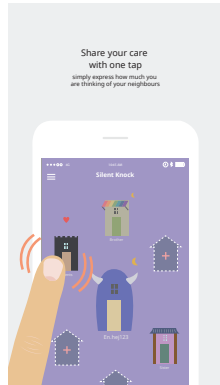


6. 노크 하기

메인화면에서 이웃의 집 아이콘을 tap 함으로서, 이웃에게 노크를 보낼 수 있습니다.

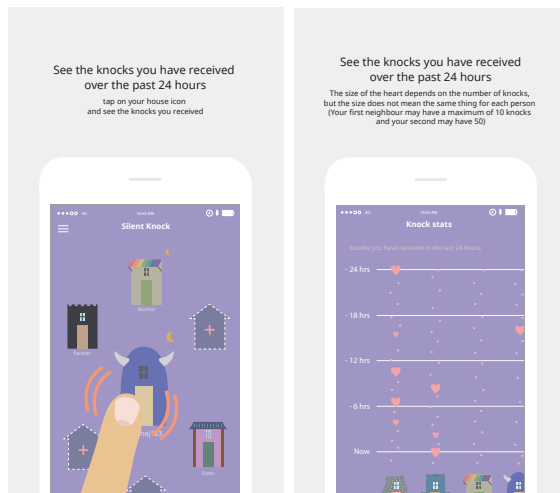
노크 1 개를 보내는데는 1.5 초의 시간이 소요되며 1.5 초가 지난 후에 다음 노크를 보낼 수 있습니다.

노크를 보낼때 상대방 (이웃)은 어떠한 알림도 받지 못하게 됩니다. 오직 어플리케이션을 열어 확인을 했을 때에만 노크를 확인할 수 있습니다 (이것은 사용자간의 강압적이고 의무적인 요소들을 제하고자 하는 본 시스템의 컨셉임을 다시 한번 알려드립니다).



7. 받은 노크 체크하기

메인화면에서 자신의 집 아이콘을 탭(tap)함으로서, 사용자는 이웃들에게 받은 노크를 확인할 수 있습니다. 시스템은 24 시간 이내에 받은 노크들만을 보여주며, 24 시간이 지난 노크는 자동적으로 밀려나게 됩니다. 하트의 크기는 노크의 수와 비례합니다. 즉, 가장 큰 하트는 24 시간 이내에 받은 가장 많은 수의 노크를 의미하지만, 이 숫자는 이웃마다 다를 수 있습니다.



D.3. Consent form (English version)



I, the undersigned, confirm that (please tick box as appropriate):

1.	I have listened and understood the information about the project, as provided in the Information Sheet.	<input type="checkbox"/>
2.	I have been given the opportunity to ask questions about the project and my participation.	<input type="checkbox"/>
3.	I agree to record the exit interview by either audio or video recorder.	<input type="checkbox"/>
4.	I understand I can withdraw at any time and that I will not be penalised for withdrawing.	<input type="checkbox"/>
5.	The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, use of data, etc.) to me.	<input type="checkbox"/>
6.	The use of the data in research, publications, sharing and archiving has been explained to me.	<input type="checkbox"/>
7.	I understand that other researchers will have access to this data only if they agree to preserve the confidentiality of the data and if they agree to the terms I have specified in this form.	<input type="checkbox"/>
8.	Select only one of the following: <ul style="list-style-type: none"> I would like (my name, initial of my name) used and understand what I have said or written as part of this study will be used in reports, publications and other research outputs so that anything I have contributed to this project can be recognised. I do not want my name used in this project. 	<input type="checkbox"/> <input type="checkbox"/>
9.	I, along with the Researcher, agree to sign and date this informed consent form.	<input type="checkbox"/>

Participant:

Name of Participant Signature Date

Researcher:

Euijin Hwang
Name of Researcher Signature Date

D.4. Consent form (Korean version: for parents)



본인 (양식 하단에 작성된)은 다음의 사항들에 동의합니다 (동의하는 사항들에 체크해주시기 바랍니다):

1.	본인은 연구에 대한 설명을 들었고, 스터디 에 대한 이해를 충분히 하였습니다.	<input type="checkbox"/>
2.	본인은 본 연구와 연구 참여에 대해 충분한 질문을 할 수 있었습니다.	<input type="checkbox"/>
3.	본인은 스터디가 마무리된 후 인터뷰에서의 녹음 및 녹화를 허용합니다.	<input type="checkbox"/>
4.	본인은 언제든지 스터디 참가를 취소할 수 있으며, 이에 대한 어떠한 패널티도 물지 않음을 알고 있습니다.	<input type="checkbox"/>
5.	본인은 개인정보 사용에 대한 설명을 충분히 들었습니다 (e.g. 이름 (가명) 또는 데이터의 사용 등).	<input type="checkbox"/>
6.	데이터의 사용, 논문 등재, 공유 등에 대한 설명을 충분히 들었습니다.	<input type="checkbox"/>
7.	하단에 명시된 연구원 외 다른 연구원들은 본 양식에 대한 내용 (개인정보 및 데이터 사용에 대한 사항 등)에 동의를 한 경우에만 공유가 가능합니다.	<input type="checkbox"/>
8.	다음중 한가지를 선택해 주시기 바랍니다: <ul style="list-style-type: none"> 본인의 이름 (본명, 이니셜)이 사용되길 원하며, 인터뷰에서의 나의 발언 등이 논문이나 리포트에 명시됨으로서 나의 공헌이 분명하게 나타나길 바랍니다. 	<input type="checkbox"/>
	<ul style="list-style-type: none"> 본인의 이름이 사용되길 원하지 않습니다. 	<input type="checkbox"/>
9.	본인은 연구원과 함께 이 양식에 서명합니다.	<input type="checkbox"/>

참가자:

이름 _____ 서명 _____ 날짜 _____

연구원:

이름 _____ 서명 _____ 날짜 _____

Appendix E. Sketching Dialogue Online Manual

E.1. Designing an Online Manual

Based on the reflection of using sketch in qualitative interviews, I designed an online manual to introduce this novel sketching technique to other (future) researchers who are looking for a new interview method². It was formatted as a website and supported by interactive media (e.g. short video clips) to clearly present the methodology. I provided a number of sketching skills and tips that I found useful based on my experiences of using Sketching Dialogue method in my interview study. In this section, I am mostly focusing on what is the manual designed for and how I designed the manual rather than describing the contents, which were already mentioned in the previous sections. The manual has been designed by considering three general factors, i.e. learner, environment and content, within the media selection model (Richey, Klein and Tracey, 2011), and this section was outlined based on them.

(1) Learner

Sketching Dialogue is a flexible approach which supplements a broad range of qualitative methods. As an inclusive technique, the emphasis is upon facilitating interaction and expression, rather than the quality of drawing. Therefore, there is no required skills or experiences about sketching. In this respect, this online manual is designed for anyone who is looking for new interactive ways of conducting qualitative interviews, and I have not targeted any specific group of people as a main learner.

This technique might be particularly useful for the one preparing their interview in the following situations:

- The situation where they need to facilitate the interview in natural and intrusive manner, e.g. for discussion of sensitive topic.
- The situation where they and their participants have a language barrier.
- The situation where they have a lack of experiences of conducting qualitative in-depth interviews.

² <https://www.sketchingdialogue.com>

(2) Environment

I have designed this manual in web-based environment so anyone can access without any boundaries (or limits) by time and space. Sharing knowledge and connecting with others in online has proven to be a powerful tool in education (Ng and Latif, 2011). Despite of some concerns identified, e.g. privacy issue, unwanted connection with individuals and lack of skills for internet use (Roodt and De Villiers, 2013; Lloyd, Dean and Cooper, 2015), there are a number of values in online learning environment.

Firstly, it supports learner's engagement. Chester and Gwynne argued that web-based learning environment allows the students to find a strong and confident voice and increases learner's participation rates (Chester and Gwynne, 2010). Online learning environment provides a comfortable and non-threatening peer learning environment where the learners can posit uncertainties while taking hold of the learning materials comfortably by having more chances to ask questions or acquiring different viewpoints from other learners (John and Richard, 2008). Furthermore, it allows the learners to be more independent and self-sufficient, especially in the space of online discussion (Thomas, 2002).

(3) Content

Content of the manual has been categorised by four main themes; (a) home, (b) overview, (c) techniques and (d) feedback (see Figure E.1):

Firstly, I considered a 'home' as an inspirational page for the learners who do not know about this technique. In this page, I presented an illustration (see Figure E.2) to give a brief visual description of the technique. I used my hand-drawing technique to draw the illustration for providing a sense that the sketch mentioned here is not requiring a high level of sketching skills, but it is more flexible and comfortable technique that anyone can use.

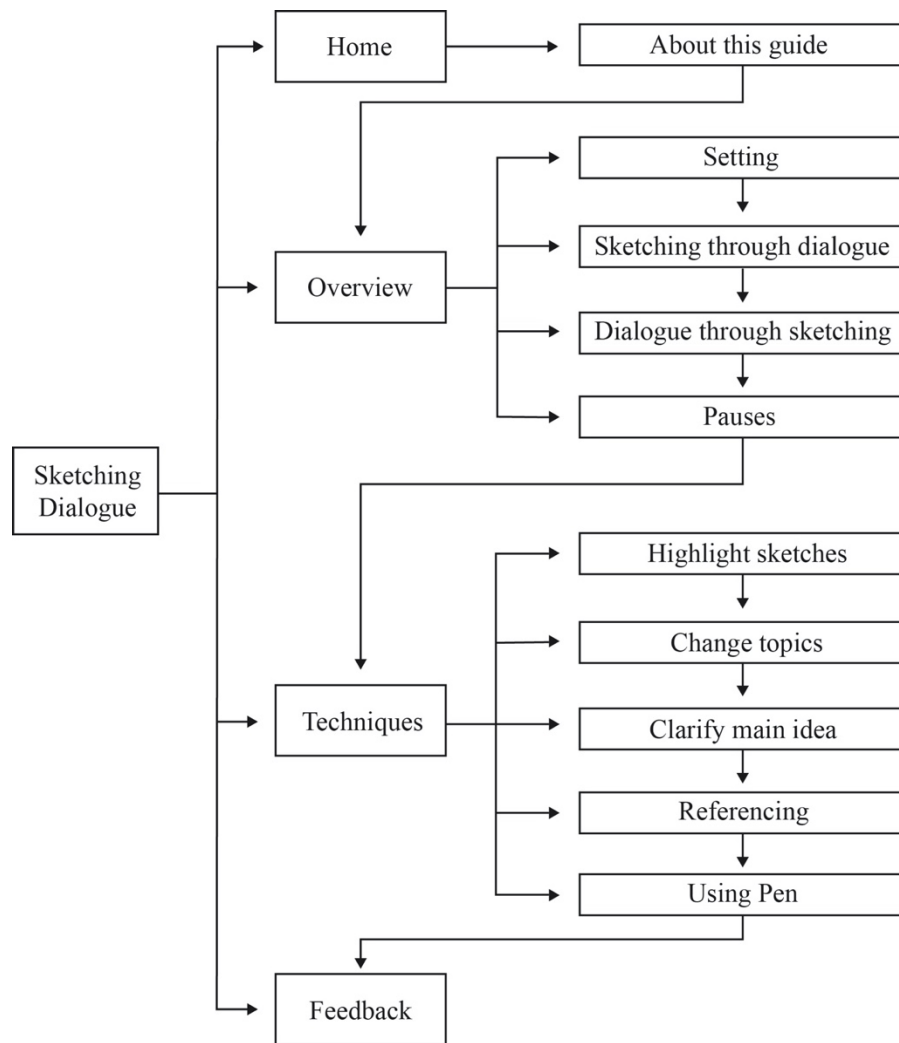


Figure E.1. A flow map of the content design for online manual. Arrow-type lines represent the direction that the learners can move on.



Figure E.2. Hand-drawing illustration in ‘home’ page of the manual. It illustrates visual description about the use of Sketching Dialogue in the interview.

Along with this, on the right side of the ‘home’ page, I gave an ‘information box’ providing a brief explanation about Sketching Dialogue, so people can quickly get an idea about the technique without any further efforts (e.g. exploring different pages). For more detail, however, there is a button right behind in the information box, which leads learners to ‘about this guide’ page (see Figure E.3). This is basically designed as an extended version of the explanation at the information box, but still wanted to make it simple and brief. It gives the learner more sense about the technique, i.e. what is it, when use it and who use it, as well as how this guide designed.

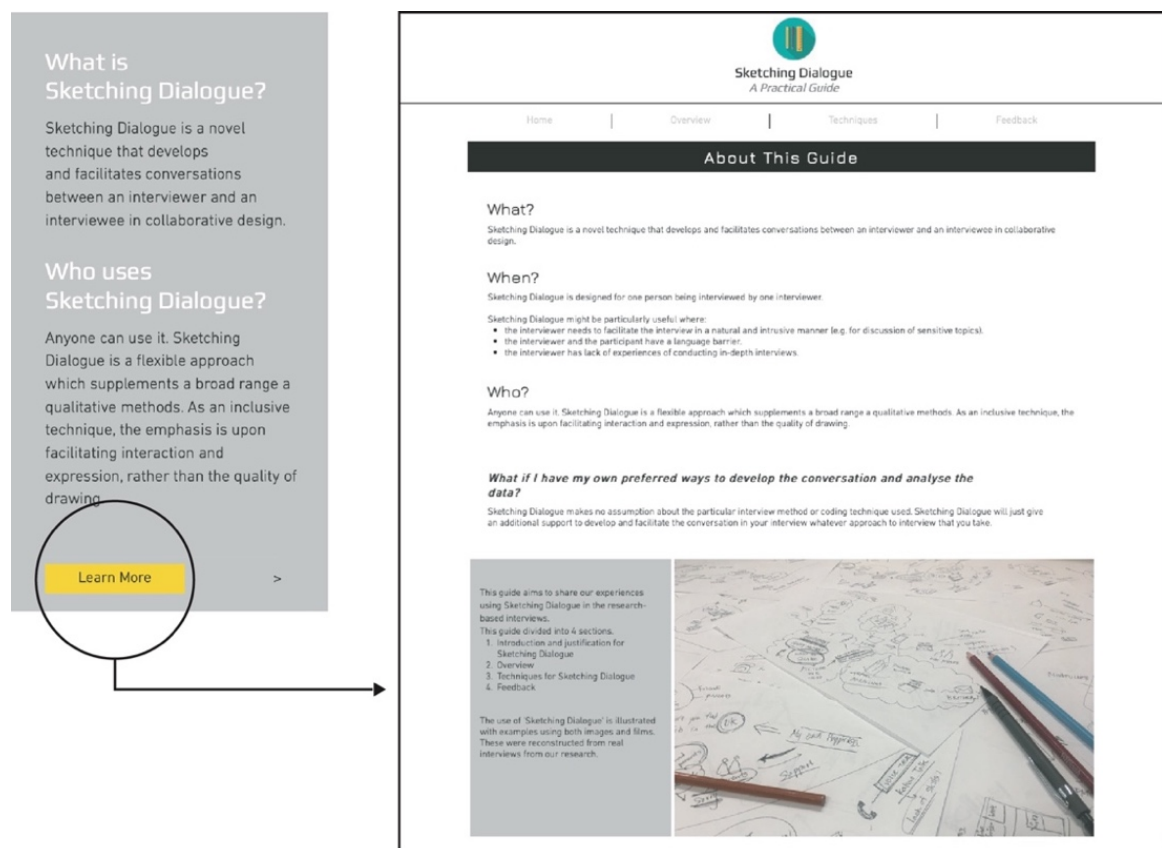


Figure E.3. Screenshots of the ‘information box’ and ‘about this guide’ page.

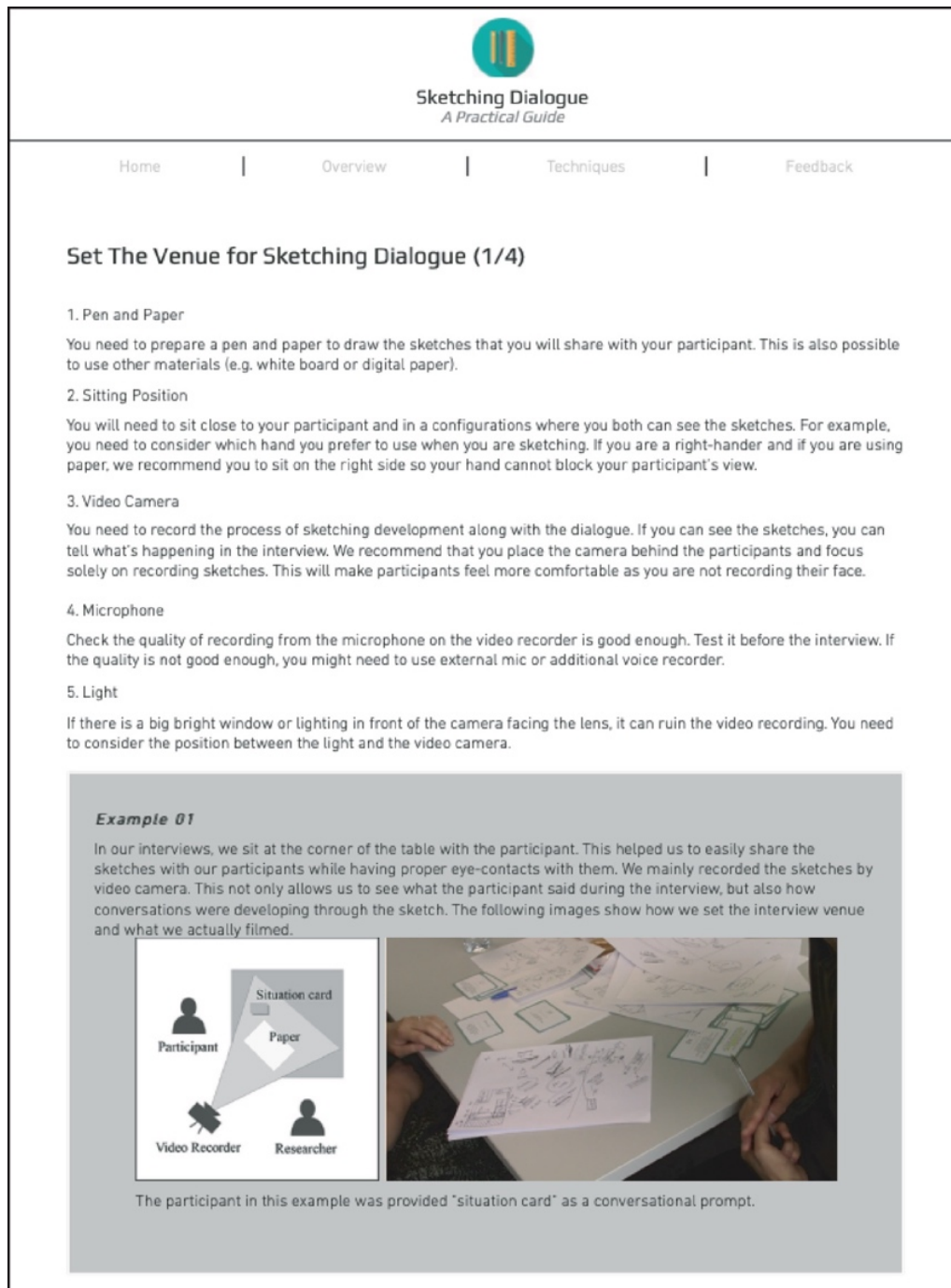


Figure E.4. Screenshot of ‘setting’ page in Overview. It provides a number of tips for interview preparation and share some visual examples illustrating how I set up the venue.

Secondly, in ‘overview’ page, I present four main features that the learner should know about this technique before getting started, which includes setting, sketching through dialogue, dialogue through sketching and pauses.

In terms of the first feature, i.e. setting, I shared the number of tips for preparation of the venue, such as how to prepare the pen and the paper, how to set the sitting position, and how to use the video camera and light in the interview, whilst also emphasising the flexibility of the method and the opportunity to adapt it to a given scenario or problem. I gave a list of artefacts with a simple description. Along with this, I showed how I set up my interview venue with a diagram and a photography took from the video camera as an example. According to the photography took from the video camera, the learners will see that I placed the camera behind the participants and mainly recorded the sketches rather than the whole environment of the venue, especially avoiding the shoot of participant's face (see Figure E.4).

For the second feature, i.e. sketching through dialogue, I described how the sketch could be developed based on the conversation. I shared one of my sketches along with the selected interview transcript, so learners could have an idea of its development based on the dialogue step by step. I highlighted in bold with a number of keywords that made impact on the sketch (see Figure E.5).

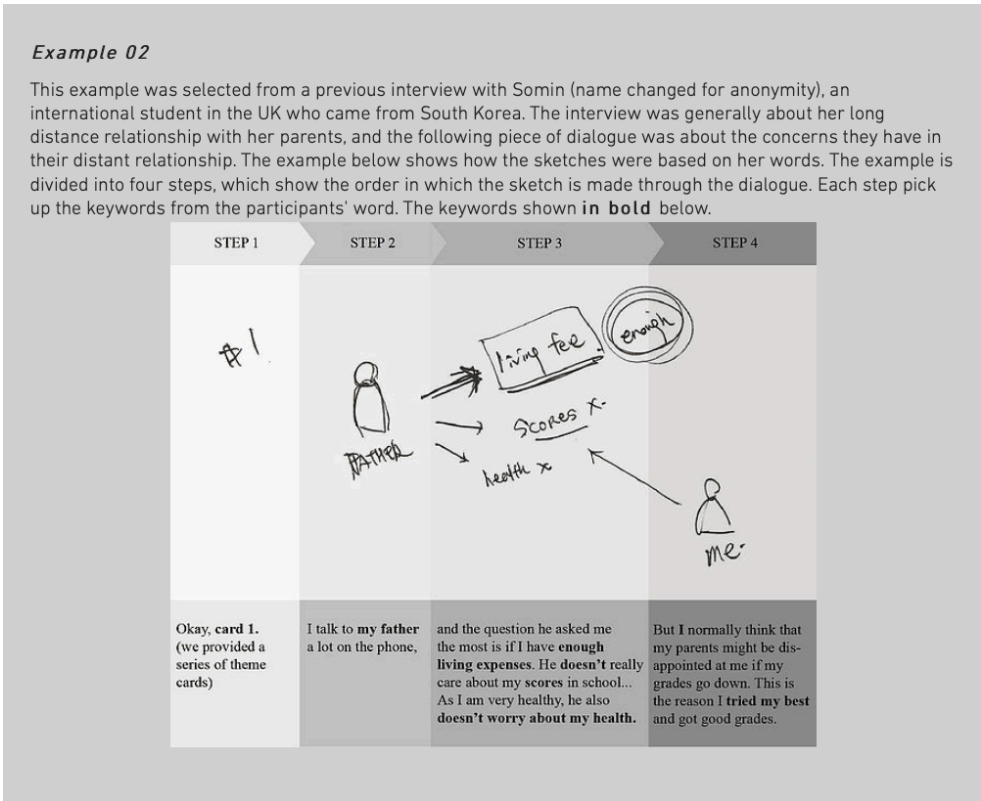


Figure E.5. Example of sketch developed by the interview conversation.

Similarly, the third feature, i.e. dialogue through sketching, shows how the dialogue could be developed based on the sketch. Both the second and the third features highlight the correlation between sketch and dialogue; how both elements have impacted with each other, and how those support researchers to develop the conversation and obtain rich understanding about the interviewee. I provided not only the example of sketches, but also a short description about the dialogue, e.g. what was the theme, who was interviewed, and where this example was captured. This would give some more idea what is happening in the interview. Following paragraph shows how I explained it:

“This example was also selected from our previous interview with Somin (name was changed for anonymity). The interview was generally about her long-distance relationship with her parents, and the following piece of dialogue was particularly about the types of conversation they have in their long-distant relationships. With the example below, we want to show how we develop the dialogue based on the sketches.”

In terms of the last feature, i.e. pauses, it shares a possible concern that the future interviewer might have while using this technique. Unlike the typical conversation-based interview, they might face a number of pause moments between time to time in their interview. Yet, this might be an inevitable moment, and sometimes, it is necessary to have for successful sketching interview. Therefore, anyone who use this technique should not be embarrassed at these moments, but rather they should know how to make good use of them. I located this feature in ‘overview’ page and wished people read this before learning techniques, because I considered this as an essential mindset the learner should have.

‘Techniques’ page shares another five important techniques that might be helpful to know, i.e. highlight sketches, change topics, clarifying main idea, referencing and provide ownership. I believe the best way to teach the technique is showing how I do. And therefore, each technique was presented with the number of short video clips along with sketches and the interview dialogue (see Figure E.6).

I carefully selected a number of valuable moments from my own previous interview, which could be appropriate for presenting the technique I highlighted. In other words, I

used an actual conversation and the sketches. However, the previous interview was conducted in Korean, and also there is a concern of the privacy protection, the video clips were recreated by English-speaking hired person and me, and adding the English subtitle. Furthermore, I provided short description in text about what is happening in the video, so therefore people can have better understanding about the content without misunderstanding. This might be especially useful when learners cannot hear the sound.

Highlight Sketches (1/5)

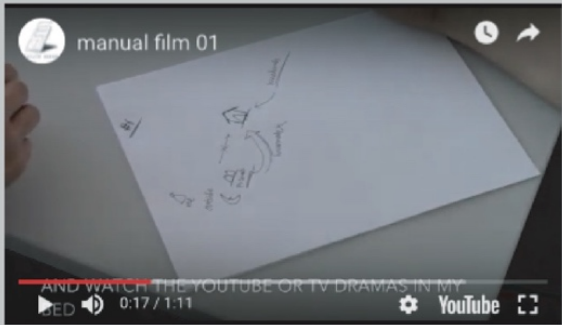
Sketching affords subtler cues that lead the participant closer to a topic, for example, the researcher highlights specific keywords to express their interest through the sketches, and the participants take the direction of their story by referring to highlights on the sketch. This emphasis has been expressed in various ways in the sketches by using a pen:

- (a) repeatedly underlines and drawing circles,
- (b) tapping,
- (c) marking with an asterisk on the sketches to keep the topic.

Example 04

These video examples show a number of ways to highlight the sketches in the interview by using pen. Please click and watch the video below.

(a) Repeatedly underlines and drawing circles



AND WATCH THE YOUTUBE OR TV DRAMAS IN MY
0:17 / 1:11

The film shows what Somin does on her weekends. According to her, she usually stays home and watches YouTube and TV dramas. As she mentioned, we jot down the two keywords, **YouTube** and **TV drama**, and highlighted them. Then, she added some more and goes deeply about those keywords.

(b) Tapping





Figure E.6. Screenshot of one of ‘techniques’ pages. This shows how I use the video clips as a means to illustrate the techniques.



Figure E.7. Screenshots of the video clip describing the moments of non-verbal interaction.



Sketching Dialogue
A Practical Guide

Home
Overview
Techniques
Feedback

Feedback

SHARE YOUR EXPERIENCES

Please share any comments/thoughts/feedbacks about your experiences using either this guide or 'Sketching Dialogue' as an interviewing tool.
Your feedback might be about:

- (a) How do you find out this guide? Was it useful (or not)? Was it easy to follow? How can we improve it?
- (b) How do you think about Sketching Dialogue as an interviewing tool? What was good (or bad)? Was it useful?
- (c) Have you found any other useful techniques you can suggest?
- (d) Could you tell us a little bit about your research? (e.g. interview topic, target group and the aim)

Please send us your feedbacks:

Name *	Feedback
Email *	
Position	

Send

Open Lab, Newcastle University
Corporation Street,
Urban Science Building,
Newcastle upon Tyne, NE4 5TG

Euijin Hwang
E.Hwang2@ncl.ac.uk

Figure E.8. Screenshot of 'feedback' page. It provides an open space that the learners can have a chance to share their experiences and suggestions.

Each video was made short to make it easy for the learners to concentrate (i.e. from 25 seconds to 2 minutes; average 1 minute). The video also explains the moments of non-verbal interaction between interviewer and interviewee (see Figure E.7). As I noted, there

are a number of ‘pause’ moments while sketching, and these are the one of the important moments that the learners should carefully be paid attention.

Lastly, this manual has been designed based on my own experiences, and it needs to be developed with more experiences in variety of situations (i.e. different perspectives on the method from other people). Therefore, in the ‘feedback’ page, I suggest the learners to share their experiences (see Figure E.8). In order to be clear with the aim of this page, I provided a number of questions as follows:

- How do you find out this guide; Was it useful? Was it easy to follow? If not, how can we improve it?
- How do you think about the technique, Sketching Dialogue, as an interviewing tool? What was good (or bad)?
- Have you found any other useful techniques you can suggest?
- Could you tell us a little bit about your research? (e.g. interview topic, target group and the aim)

Based on the feedback, both Sketching Dialogue method and the manual could have a chance to be developed as a reasonably appropriate interviewing method.

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