

# User Research for DoUm

## Section 1: Title

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## Section 2: Introduction

A smartphone is undoubtedly an essential asset living in an era of accelerated technological progress. Young generations can adopt new technology quickly but it is troublesome for seniors. Our target users are Korean seniors over the age of 70 years old who are neglected from internet technology; especially having difficulty in using applications on smartphones.

We came up with an idea that a tutorial website for seniors who are not familiar with recent technology will help them use their smartphones better. Our product will let users choose which applications they want to learn, and they can see very detailed instructions. The instructions will include screenshot and diagrams to help users to keep track of, and there will be a pop-up dictionary section in case of users having trouble with understanding some vocabularies. We plan on distributing our finished website in Senior Welfare Centers that provide classes where seniors can learn the basic use of websites. As a result, seniors will be able to learn how to use applications by themselves throughout our website. This can contribute to reducing the digital information gap and helping seniors live a better life with more benefits.

The first existing solution is to ask the younger family members. However, It is hard for the family members to explain by a call or message because they are unable to see the screen. Thus, they might not know what the exact problem is, or it can be hard to explain at the senior's level of understanding. Seniors can also attend IT teaching classes in community centers to learn about smartphone use. However, the classes might not teach what the seniors want to know and they have to wait until class to find out the solutions. Also, there may be no community centers nearby so it can be hard to access. The Q&A page is difficult to find for seniors and there can be no detailed explanations including screenshots. Finally, existing tutorial sites are another solution. Although there are existing tutorial sites that explain the use of applications, there are no websites where they show how to use applications Korean seniors frequently use. Also, the UI is not targeted for seniors. We plan on increasing the font size so that seniors can read easily and also include more images than words for easier understanding.

## Section 3: Background

These days, the world has become a place where one or more technologies are quickly replaced by another in a short period. The Korean government acknowledges this rapid change and follows this trend by providing technology education to young students. While the young generations get plenty of opportunities for these educations, some people don't; especially the seniors. This deepens a digital divide between the generation at both ends.

Since Korea is the number one IT nation, the senior citizens of Korea receive direct hits. For example, according to Digital Today's article, there is a problem that smartphone users can

reserve their time while seniors who are not familiar with a smartphone have to wait in line at the bank (Shin, 2018). In which cases, the seniors have to visit the bank in the morning and wait all day.

This can also be seen in the KTX reservation app (Go, 2019). During Korean traditional holidays, many people use the KTX to go to their home town to visit their families. According to Kyunghyang Shinmun, during these times it is a common sight where young people sit in the seats and the seniors mostly use the standing seat. This is because seniors are not able to easily use the reservation app and eventually they wait in the ticket office from dawn. However, even the seats available in the ticket office are approximately 7%, which is a very small percentage of the entire tickets. As a result, even if seniors can get a ticket from the ticket office, standing seats are only available and those who weren't even able to get a standing seat ticket, have no way of seeing their family.

One existing product is a blog on "who is hosting this" (Engel, 2018). This blog provides a detailed manual to use the internet for grandparents (seniors). This website is relevant because we plan on designing a website that provides a guide for seniors but only with smartphone applications. The difference from our website and this blog is that, as mentioned before, the blog focuses on the use of the internet. Also, the UI is not user friendly for the seniors because the text size is small and there aren't a lot of actual screenshots or pictures. Instead, there is a lot of text, thus, seniors who are beginners can have difficulty following these directions. Our website will provide lots of screenshots and short text descriptions.

Another existing product is reference apps such as Naver ("Naver"). This is a common way for not only seniors but all generations when they are trying to search for anything; such as find a guide for the use of applications. However, typing the appropriate search word can be difficult to think of for seniors. Our website will provide categories of applications so the users can easily find the guide they want. Also, information on these websites can be incorrect or un-updated. Seniors who just started to use smartphones can have a hard time telling the difference between trustful information and non-trustful information. Thus, our website will provide correct information that will be updated.

Wiser Helper is an application that connects its users' phones so they can have remote control over other users ("Wiser HELPER"). According to the applications' advertisement, Wiser Helper targeted children and their parents, so children can solve some technical problems that their parents are going through. However, Wiser Helper can be used to invade the privacy of the other user's phone. When the application is first started, users have to agree that the app can access the camera, gallery, contacts, and call. Thus, people can connect to other user's phones and hack out personal information, bank accounts, etc. Moreover, since another user solves the problem instead of their parents; which means that the parents don't actually learn how to use applications and have to ask their children again.

While our team was thinking about a UI that presents visual effects to help elders use smartphones, we found a representative app for it, BIG Launcher ("Big Launcher"). It is an application that provides a simple home screen for the elderly and people with vision problems. Those with poor eyesight or discomfort can use easy-to-read features. There is no worry about losing information by mistake with uncomplicated navigation. It also has an SOS button that can save people. The developer added simple features and made the app icons bigger to increase the accessibility of the app to adults. However, there is a limit that it cannot make elders use existing apps. Since it does not provide tutorials on how to use applications and just makes them look bigger, this application has not solved the fundamental problem of seniors having difficulty in using smartphone applications.

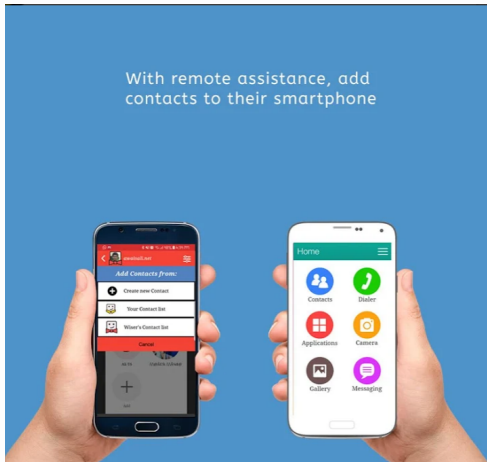


Figure 1: <Wiser Helper>

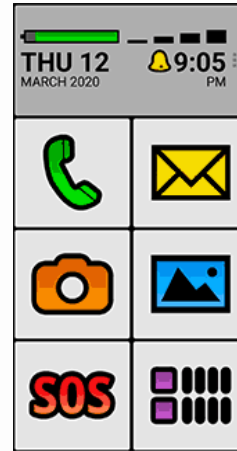


Figure 2: <BIG Launcher>

## Section 4: Target Users

Our primary and the only target users are seniors over the age of 70 who experience technical difficulties in using their smartphones. The rapid change is unstoppable, but we can help the seniors to keep up with it. Therefore, by providing a website on the use of smartphone applications, the inconvenience and alienation can be reduced and so the digital divide in seniors' daily lives; eventually, guide them to live a smarter life.

## Section 5: Formative User Research

### 1. Interview: Seniors (3 people)

#### 1) Participants

We recruited seniors by asking our grandparents. These participants were selected because we thought that meeting the actual target users for our website was necessary to understand their situation exactly to solve the problem they are actually going through. Thus, we decided to ask the target users who are easy to access around us, which is our own grandparents.

#### 2) Procedures

We conducted the research by calling the interviewer and asking for an interview. After introducing ourselves, we asked for permission to record the interview and took notes during the interview. We analyzed and synthesized the information by comparing the interview results of the three seniors with each other.

#### 3) Results

All three participants' ages were the 70s and all of them owned a smartphone. Using their smartphone, they were commonly satisfied that smartphones made their lives easier and good for communication. They had a problem with physical dissatisfaction such as the size of the phone, but they were good with the features of a smartphone.

Their most used applications were call, message, KakaoTalk, Youtube, and Naver in common. In addition to this, P1 used banking applications, P2 used SNS and Naver Band, and P3 used religious applications. Applications that participants felt easy to use were different; P1 picked Naver, P2 and P3 picked KakaoTalk. Interesting was that any design features didn't affect their decisions.

Participants preferred to learn a new application or website by asking close people. P1 and P3 answered that they usually ask carrier employees. P1 and P2 also preferred to search online. They were satisfied with their strategies, that they answered they would use the same strategy when they face another problem. P2 was the only participant who was interested in learning new features such as Bluetooth.

All interviewees answered that our product, a tutorial website, would be helpful. P1 answered it is beneficial to see all instructions in one place, and P2 answered that through our website he can learn everything. Lastly, all of them were willing to recommend our product to their friends.

## **2. Interview: Student volunteer at Senior Welfare Center**

### **1) Participants**

We found out that in October 2019, the students of Incheon University collaborated with the Songdo Senior Welfare Center to provide seniors with smartphone education (Im, 2019). Therefore, we contacted the president of the student club via Facebook messenger and asked for an interview by a call. These participants were selected due to the reasons that they have actually seen seniors use smartphones and helped them with it. Hence, they relate to our project because they can provide us with information on difficulties seniors are facing when using smartphone applications.

### **2) Results**

The student volunteer noticed problems regarding “smart aging” in Incheon society and this led to his volunteerism. Since senior welfare at Songdo is fine, he thought it would be a great opportunity to help seniors. The student club he belongs to is UNI, from the community service center at Incheon University. They receive a certain budget every semester and decide which problem to focus on. Since UNI members wanted different areas to volunteer, they picked one main theme.

There were 25 participants at first, then 15~16 participants came regularly. The participants were seniors over 60 years old. All of them had their smartphone and divided the class into two groups; a group with an iPhone and another group with Samsung phones. The participants' familiarity with their phone varied but used basic functions such as call, message, YouTube, Kakaotalk mostly. Some of them were using their phones great. UNI decided to teach Playstore, movie, map, finance applications to nourish their life.

The participants were interested in UNI's lecture. Although UNI was short on volunteers, participants still asked many questions. According to this interviewee, seniors took about 4 to 5 hours a week to learn a new application/feature. UNI teaches them an application in a lecture for about 2 hours, review in the next session for an hour, and another review on their own. The seniors were capable of entering a browser and using a website if they were guided. The interviewee said the most important thing is repeatedly practicing. He said our product will be great but the marketing approach will be important. He also mentioned that it might be great if we could go to Songdo Welfare Center and teach there.

## **3. Survey: 10s and 20s who have a close senior acquaintance (friend or family)**

### **1) Participants**

We sent out our Google Form link via KakaoTalk group chat rooms, such as SUNY group chat and CS group chat. We collected 45 responses. We also contacted our friends individually and asked to take our survey. These participants were selected because all three of our group

members have experienced our grandparents asking us to help them using smartphones. We wanted to see this experience was common to our generation.

## **2) Procedures**

Before sending out the survey, we asked a few of our friends to try out first. The wording and participants were adjusted after their feedback. We were going to send out the survey to any 10s or 20s but this could hurt feelings of participants who had lost their grandparents. The adjusted final survey was sent out via KakaoTalk with instruction saying this survey is only for 10s and 20s who have a close senior acquaintance as a friend or family member.

## **3) Results**

We got 3 responses that their senior acquaintances are in their 90s. Two of them did not own their smartphones and one uses a Nokia phone. Out of 45 responses, 34 answered that their senior acquaintances use a smartphone and 11 answered they did not. Out of 34 responses, 26 of them use Samsung phones. Thus, it would be beneficial to focus our tutorial website on Samsung users. The interesting part was that 31 out of 34 senior acquaintances who use their phone ask for help. Out of 34 responses, only one answered that he/she is capable of using their phone very well. Thus, seniors acquaintances required help for using smartphones. This shows that a problem exists and our project can help solve that problem. We also found out that seniors did not use shopping apps, food delivery apps and stock & exchange applications. They mostly focus on using basic apps such as Call, Message, SNS, etc, and have difficulties in using various apps. Many of the answers that our tutorial website will help seniors were distributed broadly. The reason for low ratings was mostly that if seniors can use the application they also have difficulties using the internet for the website. We found that our product can be sent to the 31 people who were asked for help. The application that seniors had asked most about was Kakaotalk.

## **Section 6: Conclusion**

As a result of four interviews and surveys, many seniors had trouble with using their smartphones. However, they showed interest in using smartphones better. The seniors have approached their close people such as their grandchildren to ask for help. According to the result of the survey, approximately 91% of participants had the experience of helping close senior acquaintances. The young generation was able to help the seniors, but our group thought there must be another way to resolve the problems; a solution that users can access easily, anytime.

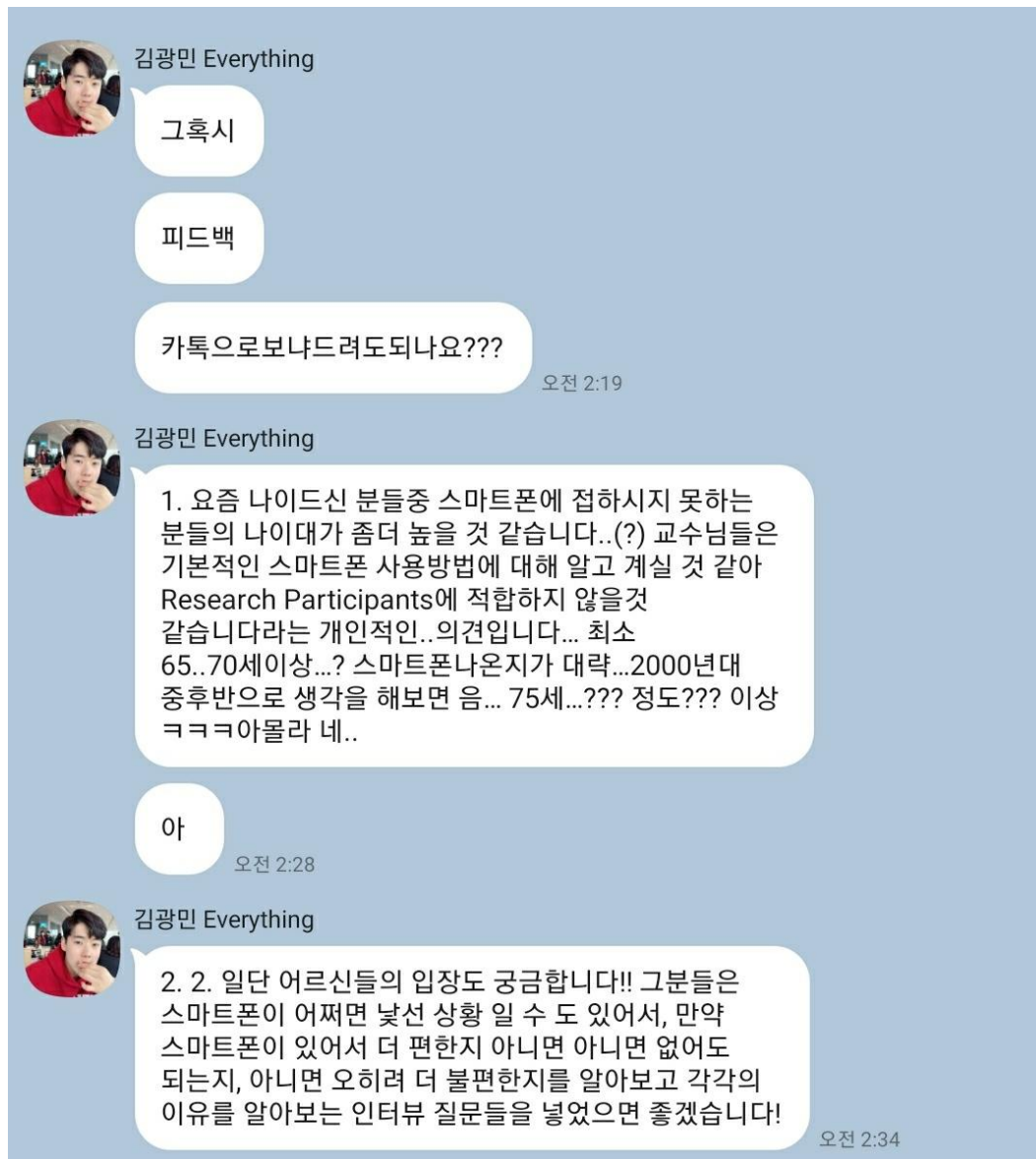
At first, when we started the project, we were planning to produce a website that offers tutorials through pictures and large fonts. Based on interviews and the survey, we agreed that a video or direct help interface would be helpful, and thought that too long tutorials would likely cause more difficult problems for seniors, so we found out that we should focus on visual effects priority. Most of the seniors do not use various applications as usual. Choosing applications that we need to give tutorials is the most important part before making the website. So, our team decided to choose 5 applications in the first place. It was chosen based on the previous survey. Those were Kakaotalk, Call, Message, Settings, and Naver. Furthermore, we are going to deal with various applications as the pop-up event of every week.

## Section 7: References

- Big Launcher. (n.d.). Retrieved March 29, 2020, from <http://biglauncher.com/ko/>
- Engel, K. L. (2018, December 6). Grandparents, Here's How To Use The Internet. Retrieved March 29, 2020, from <https://www.whoishostingthis.com/blog/2016/04/27/grandparents-internet/#social-media>
- Go, H.-jin. (2019, February 4). When I got on the train on Lunar New Year...senior citizens were at the standing table. The Kyunghyang Shinmun. Retrieved from [http://news.khan.co.kr/kh\\_news/khan\\_art\\_view.html?art\\_id=201902040900011](http://news.khan.co.kr/kh_news/khan_art_view.html?art_id=201902040900011)
- Im, J. (2019, October 23). Incheon National University conducts 'Smart Ageing Program' with UNI Student Social Contribution Group. Dehak Journal. Retrieved from <https://www.dhnews.co.kr/news/articleView.html?idxno=113262>
- Naver. (n.d.). Retrieved March 29, 2020, from <https://www.naver.com/>
- Shin, M.-kyung. (2018, August 17). Living as an IT alien in Korea 'Senior 4.0'. Digital Today. Retrieved from <http://www.digitaltoday.co.kr/news/articleView.html?idxno=202005>
- Wiser HELPER, remote assistance for parents phones. (n.d.). Retrieved March 29, 2020, from <https://play.google.com/store/apps/details?id=com.uiu.companion&hl=ko>

## Section 8: Appendix

### Appendix 1: <Feedback on our research outline from classmate Kwangmin Kim>



### Appendix 2: <The features that seniors had problems with>

Kakaotalk ++++++

- Adding friends on Kakaotalk +
- Kakaotalk Group Chat
- Opening link in Kakaotalk
- Hide friends list on Kakaotalk
- Sending pictures through Kakaotalk ++++

Settings ++++

Touch Mechanism(copy & paste, typing, etc) +++

Sending pictures through a message +

Search on Youtube +

Sending message +

Turning on and off Wifi or cellular data

Download applications  
Adding contacts  
Voice recognition feature  
Connecting health band with smartphone  
how to remove the spam  
Deleting message  
Making gallery files  
Data storage maximum  
Browsing internet  
Finding news on reference apps  
Kakao map

### Appendix 3: <Opinions on our website from the survey>

#### Pros

Had a need for these apps +++++++  
They need smartphone using tutorials ++++++  
Adding image will be effective ++  
If they are interested, it is useful +  
They can learn without help in a person

#### Cons

Has difficulty using the internet or websites ++++++++  
Not interested ++++  
They do not want to read some long introductions +  
Adding videos will be effective  
Adding interactive design will be effective  
It's better to do in person



## Survey Analysis

Q05 - total 3 [ 2 smartphone x  
1 // 0 → uses NOKIA

Uses phone? [ 34 Yes ≈ 3:1 ratio NOKIA: LG: SAMSUNG = 1: 7: 26  
11 No ≈ 1: 4

Have got asked for help? [ Yes 31  
No 3 [ doesn't use phone  
already use very well

Experience - shopping / food delivery / Stocks & Exchange / mail / map etc  
↳ doesn't use well

- call, SNS, Camera & gallery / Settings, Playstore  
1st 2nd 3rd 4th 5th

⇒ has trouble with basic apps

Able to give help? [ 30 Yes  
1 No ⇒ phone brand was different from his

Will a tutorial site help seniors?

⇒ answers are distributed broadly. Will have hard time getting into site.

~ Not only for seniors. Our product can be sent to the 31 people who were asked for help. The portion is pretty large.

App that seniors had the most difficulty = KakaoTalk

Will our products be helpful?

### Pros

- had a need for apps
- need smartphone using tutorials
- adding image will be effective
- if seniors are interested, then the product will be useful
- seniors can learn without in-person help

### Cons

- have difficulty using the internet / website
- not interested
- seniors don't want to read long instructions
- adding videos will be effective (opinion)
- adding interactive design will be effective (opinion)
- in-person is more effective

→ How to Solve?



## Appendix 5: <Interview Analysis>

# Interview Analysis

Age: all 70s

Use of smartphones: all of them used it

pros and cons of smartphone use  $\left\{ \begin{array}{l} \text{pros: makes life easier, good for communication} \\ \text{cons: no functional cons, physical cons exist (ex. size of phone)} \end{array} \right.$

Most used applications  $\left\{ \begin{array}{l} \text{common: call, message, kakao talk, youtube, naver} \\ \text{difference: } \left\{ \begin{array}{l} \text{P1: banking} \\ \text{P2: SNS, band} \\ \text{P3: religious application} \end{array} \right. \end{array} \right. \rightarrow \text{differs by person}$   
*corresponds with survey*

Easy to use apps  $\left\{ \begin{array}{l} \text{P1: naver} \\ \text{P2, P3: kakao talk} \end{array} \right. \rightarrow \text{not due to designs but due to features}$

strategy of learning apps/websites  $\left\{ \begin{array}{l} \text{P1, P2, P3: ask questions to close people} \\ \Rightarrow \text{P1, P3: asks carrier employees} \\ \Rightarrow \text{P1, P2: search on internet browser} \end{array} \right. \rightarrow \text{satisfied}$

next time facing problem  $\rightarrow$  use same solution  $\uparrow$

apps that participants are interested in  $\left\{ \begin{array}{l} \text{P1, P3} \Rightarrow \text{none} \\ \text{P2} \Rightarrow \text{x app, but bluetooth} \end{array} \right.$

Will our website be beneficial  $\Rightarrow$  P1, P2, P3: yes  $\left\{ \begin{array}{l} \text{P1: can see in one place} \\ \text{P2: can learn everything} \end{array} \right.$

All will recommend it to friends!

## Appendix 6: <Summary of interview of 3 seniors>

The first participant is using her smartphone currently. The reason why she bought it was that she recognized the smartphone's necessity since everyone uses it. Her experience with smartphones is great; she said Kakaotalk really enabled her to contact her friends and share their opinions and hobbies. She mainly uses the basic functions of smartphones such as call, message, NAVER, and several bank applications. The most-used application was NAVER; she could search for anything such as where to spend her weekend. However, design or font change features really didn't affect her use. When she tries to learn new applications, she said she goes through the application's tutorial since they are quite clear as well as personnel's explanation in-person. When she faces a problem with using her smartphone, she prefers to get an explanation in-person since getting a solution via phone is not effective to tell the exact problem. She is not interested in learning anymore new applications. Still, she said a website that has a tutorial of various popular applications would be helpful since she can find her solution within just one website. She is also willing to share the website with her friends.

The second participant is using a smartphone because his previous phone became too old and he was compelled into changing to a smartphone. He enjoys the use of his smartphone because they have many features such as being able to see data and share it. The participant uses kakaotalk, message, and band. The participant uses a Naver band to communicate with other members in his work out meeting. The participant thinks that the easiest application to use is kakaotalk because of the features that allow him to send and receive messages and videos. Whenever the participant faces difficulties with a new app or website he searches on the internet browser first and if that doesn't solve the problem he asks the younger people in his work out meeting. The participant wasn't interested in learning new applications but rather interested in learning how to use Bluetooth because he wants to listen to music with a speaker. He believes that a website that guides instructions of popular applications about their smartphone life will be helpful because he can go into the website and learn everything. He is willing to recommend the website to his close friends.

The third participant is using a smartphone. She changed her phone from the 2G phone. Now, she is really satisfied with her phone. She found nothing bad from smartphones. She is Catholic so most apps that she often uses are related to Catholic and additionally she uses Youtube, Naver, Daum news, Kakaotalk, Camera, Gallery, and Call. She chose Kakaotalk as the easiest application when she uses smartphones in usability. When she got questions from using smartphones, she asked her son, her daughter, and grandchildren. Also if she was not able to ask family, she brought the phone to the mobile carrier and solved the problem by asking carrier employees. She felt it was an effective method to deal with the problems. She is willing to use all the smartphone's features. She does not need to use Kakao Map or Kakao Taxi because she lives with her children. She thinks that publishing a new website that guides instruction of various popular applications will help you with her smartphone life. Also, after the website releases, she is going to recommend this website to her friends.

Appendix 7: <[Interview Questions for UNI Student Club](#)>

Appendix 8: <[Interview Questions for Seniors](#)>

Appendix 9: <[The survey "Application Use of Grandparents in Korea"](#)>

Appendix 10: <Consent Form>

