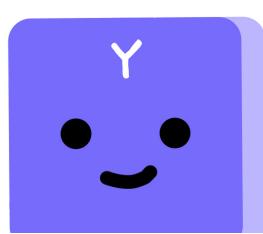




Computer, Easy Lah!

CS3216 Software Product Engineering for Digital Markets

AY23/24 Semester 1 Group 3 Final Report





Content Page

01 Introduction

Our Team	03
Project Introduction	04

02 Our Solution

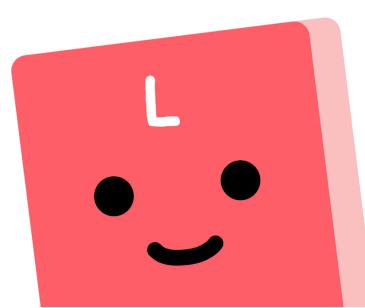
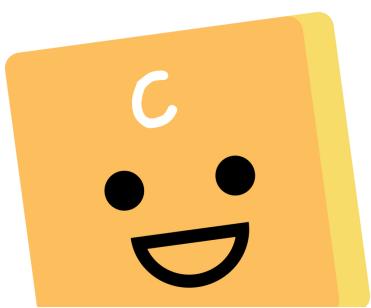
The Playground	05
Resources	07
Application Design	08

03 Our Journey

User Study	09
User Test 1	10
User Test 2	11
STePs	14
Our Timeline	15

04 Conclusion

Moving Forward	16
Our Takeaways	18
Acknowledgements	19



Our Team



Eugene Tang



Ting Yi Xin

Elvis Teo

Lau Zhan Ming

Ting Yi Xin

- Developed the landing page
- Enhanced UI/UX design for the Safety module
- Filmed recap video for Application module

Lau Zhan Ming

- Developed the Safety module
- Filmed recap videos for the Safety and Email modules
- Set up backend for the Contact Us form in the landing page

Elvis Teo

- Developed the Typing module (i.e. the Typing Game and its content)
- Created the promotional video for STePs and landing page
- Filmed and edited 10 videos for various parts of The Playground

Eugene Tang

- Designed UI/UX for the project
- Developed the Applications, Email and Dictionary modules
- Coordinated communication with third-party stakeholders
- Wrote the guides for the playground, curriculum and printables



Project Introduction

Technology is advancing at a rate that leaves many seniors adults struggling to keep up with the digitalisation trend. With 1 in 4 citizens aged 65 and above by 2023, digital inclusion is an issue closely monitored by the Singapore government.

“Just because someone has access doesn’t mean that they will be able to go online and use digital services **with confidence.** ”

Josephine Teo,
Minister for Communications and Information
At a Forward Singapore conversation regarding digital inclusion

Our personal experience inspired our project

In view of this, many ground-up movements have emerged to help bridge the digital divide, and Work Live Digital (WLD) is one of them. It is a ground-up movement that provides free computer classes to senior adults aged 50 and above.

During our volunteer work at WLD, we recognised a gap - participants lacked a guided, structured and safe environment to practice outside of class. There are resources out there such as typing games and YouTube tutorials on how to use basic computer functionalities like emails, but these resources are all over the place and are not designed to be senior-centric.

Thus, this got us thinking. Can we do more to support senior adults in practicing and learning computer skills outside of computer classes, even after the end of the curriculums? How can we make the process simple for participants, and how can we align it with the content covered in class?

These questions thus fuelled the development of our initiative: Computer, Easy Lah!. We have a simple mission: To build an interactive platform to better enable learning and practice.



Our experience at WLD!

The Playground



Our team has created *The Playground*, which is an interactive learning platform that participants of computer classes can visit to **recap**, **practice** and **test** the knowledge that they have learnt in classes.

It is designed to be complementary to WLD's computer classes, where the content is aligned with its curriculum. Also, we do not expect the participants to be able to immediately know how to use it, where instead, during or after the classes, the trainers would introduce *The Playground* and guide the participants through. They can highlight which activities are relevant to the topic covered in class, and encourage the participants to visit the corresponding activities.

In *The Playground*, our team adopted a simple three-step approach of **recap**, **practice** and **test** in order to support the learning that take place in class. We also made a range of design decisions to cater to the needs of senior adult participants.

Adjust font size

Font Size



Use familiar objects



Browser



Find these icons familiar?



Words instead of icons

Back

Home

Search Computer Term

We show icons that senior adults are familiar with on their phones when explaining what a browser is

A browser is an app that you use to surf the Internet. It allows you to visit different websites. When you click on any of the above icons on your phone or computer, you are using a browser!

Recap concepts in previous topics

Quit Accuracy 5/0 - 100% Progress: 2/20

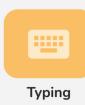
Font Size



Keyboard

In the topic of Typing, we recap computer terms that were covered in the topics before Typing

Computer, Easy Lah!



Typing



Applications



Email



Safety



Dictionary

Our Solution - 05

The Playground currently offers **4** different topics, plus a self-curated dictionary of computer terms.

Typing



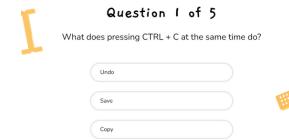
Typing Recap Video



Typing Practice (Words, Symbols, Sentences)



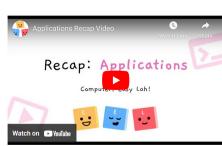
Keyboard Shortcuts Quiz



Applications



Apps Recap Video



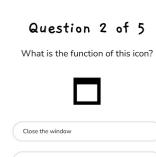
Interactive Tutorials (4 different Windows apps)

Use the snipping tool to snap a picture of the following text, save the picture and upload it.

Snipping tool is great

Choose File No file chosen
Previous Get Help Check

Apps Quiz



Email



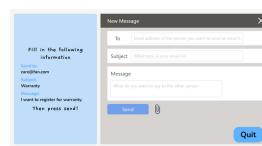
Email Recap Video



Email Safety Tips



Email Practice



Email Quiz



Safety



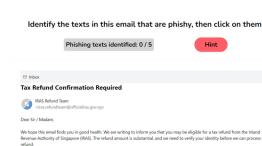
Safety Recap Video



Computer Safety Tips



Safety Practice



Safety Quiz



Dictionary

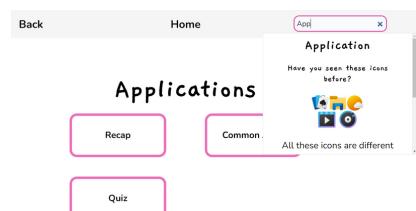


73 self-written computer terms



Have you shopped online before and realised that the website could recommend you things that you are interested in? Well, such websites use cookies! Cookies allow websites to remember your preferences and browsing history so they can provide a personalised experience for you.

Search up a term when using The Playground



The terms are the words that are taught in WLD's curriculum. We chose to write our own definitions instead of calling a dictionary API as we wanted to phrase it ourselves and relate it to images/things that the senior adults are familiar with.

Our Solution - 06

Resources

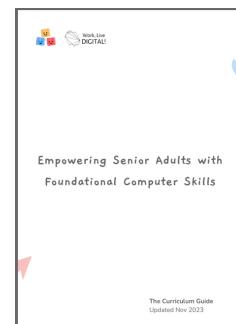
While we have designed *The Playground* in tandem with WLD's curriculum, the content is suitable for any senior adults who are learning foundational computer skills. This means that course providers of computer classes or even any individual who is interested in teaching senior adults how to use computers can utilise *The Playground* for the participants to recap and practice.

Therefore, we have prepared the following resources.

Curriculum Guide



Want to start your own computer workshops for senior adults? Consider Work Live Digital's Foundation Class curriculum and learn how to weave *The Playground* into it.



Playground Guide



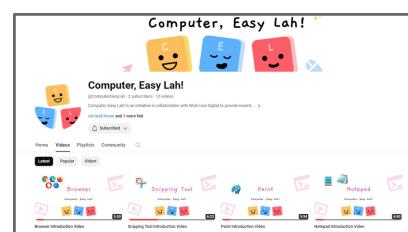
Interested in the details of *The Playground*? Check out this guide to understand what each activity is designed for.



Video Playlist



The educational videos in *The Playground* are publicly available on our YouTube channel. Feel free to browse through them!

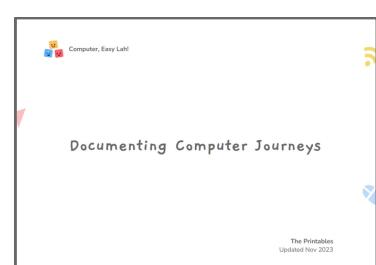


The Printables



Printable cards for participants to manage their computer journeys during and after classes.

More details in the section of
User Test 2!



Application Design

In terms of implementation, our solution is fairly simple where it purely consists of a front-end tech stack.

For the concept and hi-fidelity designs of our landing page and *The Playground*, we utilised Figma to do the mockups. Our Figma design file can be found [here](#).

After designing, we built our site using Next.JS, a React-based framework suitable for modern web applications. The site is continuously deployed using Vercel, and we hosted it using a domain bought from Hostinger.

Primary Logo

SilverBytes

Font: Nunito

Technology is advancing at a rate that leaves many older adults struggling to keep up with the digitalisation trend.

Learn and practice basic computer skills

Font: Nunito

SANS-SERIF
CLEAN AND NEAT FONT
EASY FOR OLDER ADULTS TO READ
ROUNDED AND SOFT FEEL

Primary

#FE357D #FFB9B3 #FFBED5 #12497C #4794DC #98C7F2

Rebranding →

Primary Logo

Computer, Easy Lah!

Color Palette

Orange - Energy, fun
Blue - Trust, Reliable
Red - Passion, Excitement
Purple - Wisdom, Knowledge
Pink - Creative, Exploration

Typography

Gaegu

Nunito

Design Elements

Keyboard Keys Computer Screen Mouse

Main reasons for rebranding:

- “SilverBytes” is harder to remember and much more formal-sounding
 - We want to choose more bright colours to bring about a fun and relaxed vibe, so that participants feel more welcomed
 - Graphics revolve around computer parts instead of planets, having a more direct link to our cause



User Study

The start of our journey - Understanding what senior adults want

Before we designed and developed the first iteration of *The Playground*, our team conducted semi-structured interviews with **4 senior adults**. We engaged a total of 2 participants from past WLD computer classes, 1 participant from a computer class organised by another organisation, and a senior adult who has not participated in any computer classes before. The main objective is to understand the perspectives of senior adults and delve deeper into their needs and wants when it comes to learning and practicing computer skills.



Thereafter, our team consolidated our insights into an Affinity Diagram, revealing key themes and insights that need to be tackled in our solution. The results helped us develop the core philosophy that guides the design of *The Playground*.



Refer to [Progress Report 2](#) for more detailed analysis!

Core Philosophy



Bite-sized

Short and sweet chunks of content, designed for easy absorption



Relatability

Avoid complex explanations, use images and concepts that senior adults are familiar with



Recap

Encourage recaps of previous topics' content, whenever possible



Guided

Provide clear instructions and guidance on how to use the platform

User Test 1

The first exposure - Getting a feel of participants' responses

We conducted our first round of user testing to get a sense of what participants of computer classes feel about *The Playground*. We organised 2 x 2 hour sessions of introductory computer classes with 4 senior workers from St Luke's Eldercare (SLEC) Chong Pang Centre.

Session 01

Introduction, How to use a computer, Typing

Session 02

Applications and Email

To obtain feedback, we weaved activities of *The Playground* into the classes, with some activities held in the middle of the sessions while some were held nearer to the end. While the participants enjoyed practicing on our platform, we also obtained the following key learning points:

01 Accessibility

Our original site was computereasylah.vercel.app/playground. It was tedious to type and hard to remember. We had to wait very long for the participants to type in the full address.

02 Usage in Class

There is value for some of our activities to be used in-class. For example, when teaching email, we went through step by step for sending an email, but because Gmail has many buttons and message prompts, participants became easily confused. We could have used our email practice first to introduce the key parts of sending an email, allow them to familiarise with it before letting them try out on the actual interface.

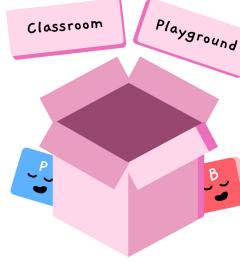
03 Value in Physical Aspects

We observed during the sessions that participants wrote down notes on physical notebooks. They kept referring to their notebooks!



We gave them this on 2nd day as we saw they kept referring to their notebooks!





User Test 2

The second exposure - Refining prototype and validating ideas

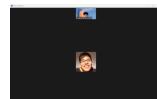
From User Test 1, we recognised the value of physical aspects. Thus, our team thought about how we can exploit the potential of physical aspects to further encourage learning beyond the classroom setting. We want to better motivate participants to recap what they have learnt, and more strongly associate this process with *The Playground*.

Thus, we came up with the idea of *The Printables*. For every topic in the curriculum, we will prepare physical cards for the participants. There are 2 types of cards:

1. **Classroom Cards**, which are cards that have content related to what was taught in class, with blanks that the participants can fill in.
2. **Playground Cards**, which are cards that provide instructions on which activities on *The Playground* are relevant to the topic that has just been taught.

Coupling the classroom and playground cards would allow us to explicitly mention the activities that participants can go through after each lesson. This reminds them that "*This is what I have learnt today, I can read through it. It comes with the Playground Card, so I know what exactly to practice based on what I have learnt today.*". The cards for each topic will be placed in an envelope and given to participants after each lesson. The envelopes are then inserted into a box for collection.

Sharing with Dr Dennis Ang



The idea of having physical cards is very much related to crafting a user experience that we want participants to go through during and after the computer classes. We had the opportunity to share our project and the idea of *The Printables* with Dr Dennis Ang, a lecturer at the the Department of Communications & New Media (CNM), National University of Singapore (NUS) who specialises in interactive media design.

Held over a Zoom meeting, Dr Ang mentioned that having physical cards is a good idea, where it can act as a form of collectibles and encourage participants to complete the curriculum. However, he also encouraged us to think about **what should our product mean to participants in the long run**. In the short-term, they may read the cards and visit *The Playground*. However, in the future, will they want to revisit the cards and *The Playground*? What would motivate them to take out the cards and the box?

Getting Input from Senior Adults

Dr Ang's comments were insightful and got our team to further reflect about the form and design of *The Printables*. However, it is also equally important that our team gets input from senior adults themselves regarding what they think of the idea, as well as to get further feedback on *The Playground* after we had fixed usability issues based on pointers obtained in User Test 1.

To recruit participants for the second round of user testing, our team went down to the Digital for Life (DFL) Festival 2023 held at Bedok. Apart from recruiting participants who were unfamiliar with computers, we also wanted to share with senior adults who already knew how to use computers about *The Playground* as a platform for practice. At the festival, we handed out flyers and introduced our project to interested senior adults.



While we managed to talk to about 10 senior adults who showed interest in attending foundational computer workshops taught by us, things did not go smoothly for our team. We wanted to hold the workshops on the week after we went down to the festival, but the timeline was very tight and none of the senior adults whom we talked to were able to make it. Thus, we decided to publicise our 2nd round of workshops with our families and friends to see whether they know of any senior adults whom would be interested in attending the basic computer workshops.

We managed to recruit a total of **5 participants** for our second round of user testing. Eugene's parents had some initial knowledge of computers but wanted to learn more about the topics of email and computer safety since they were not familiar with it. Elvis was also able to seek participation from his father and grandparents, all of whom were not well-versed with foundational computer skills.

For the second round of user testing, we conducted it in 2 separate sessions. One instance was for Eugene's parents, and another instance was for Elvis's family. Each instance was 2 hours long, and it involved us teaching the content, followed by allowing the participants to practice and explore *The Playground*.

Instance 01

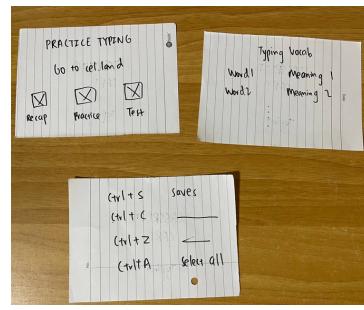
Email, Safety

Instance 02

Introduction, How to use a computer, Typing



Apart from practicing on *The Playground*, our team also discussed with the participants about the idea of having physical cards. We prepared low-fidelity cards to better illustrate what we had in mind to the participants, and sought their input regarding whether they would be receptive to such an idea.



The following are our key learning points from this user test:

The Playground

- Dictionary was good, but inconvenient to access as one needed to return to the homepage first.
- Some of the hints in *Symbols* do not match the keyboard that they were trying on.
- In the interactive tutorial for *Browser*, sometimes the question does not appear.
- In quizzes, the button labelled *Check* was not very intuitive, where they thought that something like *Confirm* or *Submit* would be more direct.

The Printables

- Liked the idea of having something physical. As with the users from User Test 1, they appreciated physical cards and found them more convenient to access. Likely to associate the cards with their experiences and would be more motivated to revisit them.
- We originally had the idea of creating a Classroom Card that contains explanations of the key vocab taught in the lesson. However, participants felt that it was redundant as *The Playground* already has the dictionary.
- Font size must be large on the cards.
- Instead of just giving the link to *The Playground* on The Playground Card, participants felt that providing more detailed instructions would be better.
- Felt that a box would be bulky to bring around.

Using the learning points from our user testing and Dr Ang's input, we refined our prototype, and came up with a final design for how our team envisions *The Printables* to be like. Do refer to [The Printables guide](#) for more details.

Design: A binder with plastic folders

We want to encourage participants to visit the materials even after the curriculum. Thus, such design attempts to instil a long-term value to the physical entity, where it represents the participants' computer journeys. They can add new folders as they continue to learn new things about computers even after the end of the curriculum.



i *The Printables* would incur cost in printing. We understand that not all providers of computer classes would be willing to print them out. However, it is a resource that we have created as we find that it would bring value to the participants. It is optional whether the providers wish to use it or not.

Content for each Topic

Each topic would have both Classroom and Playground cards that complement one another.



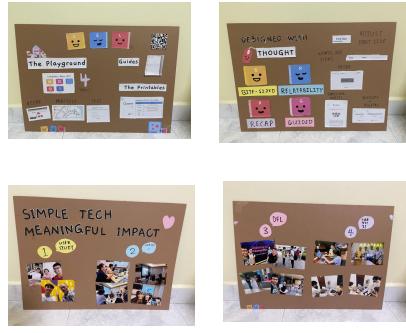
STePs



The showcase - Sharing our project with the public

Our team showcased our project at the 23rd STePs held at NUS School of Computing on 15th November 2023, introducing to others what our initiative is about. In preparation of the showcase, we prepared the following, and we were glad to see our visitors enjoy listening to us at our booth!

Created our own poster boards from scratch



Coded a twist to our Typing practice

(We changed the keyboard bindings!)



What is the rationale?

The reason why senior adults find learning computers hard is not because they are bad in technology. Instead, it is because they are unfamiliar with it. We wanted to have a catchy hook for our visitors, and thus created this challenge to allow them to empathise with the senior adults. They would find it difficult to type and have to keep referring to the layout, which is an issue senior adults face when they first start familiarising with the keyboard.

Prepared rewards for visitors



Self-packed snacks!

DIY a physical prototype of The Printables



We made all 13 cards by ourselves!





Our Timeline

The entire journey - A 6-weeks long adventure

Looking back now, the past 6 weeks had been really meaningful for all of us. We did not just develop a solution, but we also obtained valuable input from relevant stakeholders.



Things we pursued that were not in our original plan

- Applications topic
- Getting in touch with organisations other than WLD that would find value in our solution
- The Printables
- Redesign of landing page (needed to have a clearer purpose and objective for visitors of our site)

Things we wanted to accomplish but did not have time to do so

- Backup Phone to Computer tutorial under the Applications topic
- Wanted to host User Study 1 in Week 10, but the liaising with SLEC took longer than expected
- Wanted to organise a small workshop with Family Central in the course of CS3216, but timeline was too tight for them to recruit participants

Moving Forward

We are just getting started!

Our initiative has managed to obtain a total of **3** project study partners, whom we would work with moving forward as we continue to develop our initiative.

01 Work Live Digital



The *Playground* was particularly developed to complement WLD's computer classes, addressing the gap that the participants had no structured and guided way to recap and practice what they have learnt.

Throughout our project, our team was in contact with WLD's founders and updated them regarding our progress. They are satisfied with how our project turned out, and would be looking into integrating our resources (*The Playground* and *The Printables*) in their next run of computer workshops (projected to be early 2024).

Also, due to the project's timeline, we were only able to cover 4/8 of the topics in WLD's curriculum. Hence, we would be looking at curating content for the remaining topics (e.g. File Management and Internet) for our platform to be more complete in complementing the classes.



Ms Petrina Yeow
WLD Cofounder





02 Family Central



a service by Fei Yue Community Services

Family Central is a service offered by Fei Yue Community Services that provides short courses for seniors aged 50 years and above. It is currently organising a Youths for Seniors initiative where youths organise workshops for seniors, allowing them to learn new life skills while promoting intergenerational bonding.

Our team got in touch with Ms Amanda Soon from Family Central who is in-charge of the Youths for Seniors initiative. We wanted to organise computer workshops for the senior adults in the course of CS3216, but due to a tight timeline, we were unable to do so. However, Family Central is interested in having us host workshops sometime around March 2024, and we are in the talks of discussing the details.

Some preliminary ideas discussed include us hosting workshops on ChatGPT and Midjourney. While these topics are not directly related to what *The Playground* focuses on, Family Central showed interest in our platform, and discussed about possible exploration of creating activities related to such topics in order to complement the workshops. Our team felt that it is something worth looking into, because if we are able to come up with such content, the participants of WLD's computer classes can also go onto *The Playground* to explore them after the end of the curriculum. This aligns with our goal of encouraging after-class practice and continuous learning even after the classes have ended.

03 Chua Chu Kang IT Centre

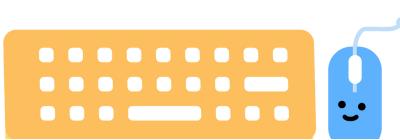


Chua Chu Kang (CCK) IT Centre organises basic computer classes. Examples of classes include *Basic Computer*, *Basic Email* and *Basic Typing*. They have classes all year round, and usually have senior adults as their participants.

Our team has pitched our product to them and they have agreed to be a project study partner of our initiative as they find that *The Playground* is a useful resource that complements well with the topics that they are teaching. Therefore, the trainers at CCK IT Centre would share *The Playground* with their participants after classes, and guide them through how to use it. Also, we would update them if we have new content delivered on *The Playground*.



Ms Amanda Cheah
from CCK IT Centre



Our Takeaways

Simple Tech, Meaningful Impact

During the initial ideation phase, our team brainstormed various features such as leveling systems, collectibles, and login functionalities which we thought would be cool for learners using *The Playground*. However, engaging with the actual senior adults for whom our platform is designed revealed a significant difference in priorities. Instead of the cool gamified features, the participants expressed a preference for simplicity. All they wanted was an easily accessible tool that allows them to practice what was taught in class, catering to their learning needs.

This realization became a pivotal learning point for our team. It underscored the importance of not rushing into feature development based on assumptions of what might be deemed "cool". Despite our project having a relatively straightforward tech stack compared to others, we take pride in the thoughtful content and design decisions driven by the specific needs and concerns identified through our user study. This is because we know that we have made the decisions that are most suitable for senior adults, instead of being driven by the latest technological trends.

While we may not have created the next revolutionary AI app or attracted a massive crowd at STePS, our interactions with visitors at STePS and with senior adults at user testing sessions validated the value of *The Playground*. We are glad to hear from them that they found the platform meaningful and useful. It is able to address a gap in existing computer classes, enhancing the learning experience for participants.

Therefore, our team has learnt that the success of a solution lies not in how cutting-edge the technology is, but in its ability to solve real problems and bring tangible value to people's lives. This aligns with the principles advocated by CS3216, and our team believes we have successfully met this learning objective.

In reflection, we also recognize the importance of early planning, especially in communication with third-party organizations. For our project, going back and forth with other organisations took longer than expected. The extended time required for interactions with external partners therefore taught us the necessity of planning ahead, allowing for potential delays in responses. Moving forward, we aim to adopt a more open-minded approach when collaborating with diverse partners, acknowledging their unique needs and preferences.

This project has been a journey of learning, adapting, and creating a solution that genuinely benefits our users. As we explore new content and opportunities for *The Playground*, we would stay committed to our user-centric approach and always remember for whom we are developing the solution for.

- The Computer, Easy Lah! team



Acknowledgements

A huge thank you from our team!

Computer, Easy Lah! is not just an initiative driven by our team's efforts. It is a collective endeavor made possible through the support of everyone who has contributed in various ways throughout our journey.

Our team would like to extend our heartfelt appreciation to the following people and partners. Thank you for being a part of our journey in bridging the digital divide!

01 Work Live Digital

Ms Deon Tan, Cofounder

Ms Petrina Yeow, Cofounder

02 St Luke's Eldercare

Ms Lee Jinq Yi, Assistant Manager, Innovation & Digitalisation

Ms Anita Koh, Centre Manager, Chong Pang Centre

03 Family Central

Ms Amanda Soon, I/C of Youth for Seniors initiative

04 Chua Chu Kang IT Centre

Ms Amanda Cheah, Manager

05 National University of Singapore

Dr Soo Yuen Jien, CS3216 Course Professor

Dr Dennis Ang, lecturer at the Department of CNM

06 Others

All of the participants from our user study and tests



You guys are superheroes in the
battle against digital divide!



Computer, Easy Lah!



computereasylah@gmail.com



<https://www.cel.land/home>



<https://www.youtube.com/@ComputerEasyLah>



<https://github.com/eugenetangkj/computereasylah>