U-STEMist Optimization and Characterization of Pre-existing Geriatrics Online Survey
Caring Society GP3 - Caring Suppliers

Carmen Cheung Ka Man ,Cynthia Chan Ka Yi, Heidi Fung Hei Lam, Kelvin Ho Kit Tang & Bruce Pang Tak Keung

Introduction to Service Target and Project

__Service Target: CUHK Jockey Club Institute of Ageing__
- Established in 2014.
- Director: Professor Jean Woo, Henry G Leong Research Professor of Gerontology and Geriatrics, The Chinese University of Hong Kong.
- The institute serves as a platform to synergize research efforts and promote knowledge transfer, for more in-depth understanding on the multi-faceted impact of ageing population to the society.
- The institute also reach out to the society through community outreach programmes to enhance the well-being of older persons.
- To make Hong Kong an age-friendly city in the world.

__Project: Well-being Survey__
- Goal: Adopting an innovative approach to promote preventive healthcare among the elderly and empowers them in health management
- 3 major components: Tele-care Programme, Project Evaluation and Big Data Analysis and Well-being Survey.

__Motivation__
There is room for improvement for the well-being survey currently in use. We expect to utilize STEM skills in enhancing the format of the questionnaire, so to make it to be clearer, easier to understand and more interesting. Moreover, to further promote elderly health management by promoting a simple exercising video to them for training muscles.

__Application of STEM skills__
Developing the new questionnaire with HTML, basic CSS and JavaScript languages, and incorporate it with jQuery.
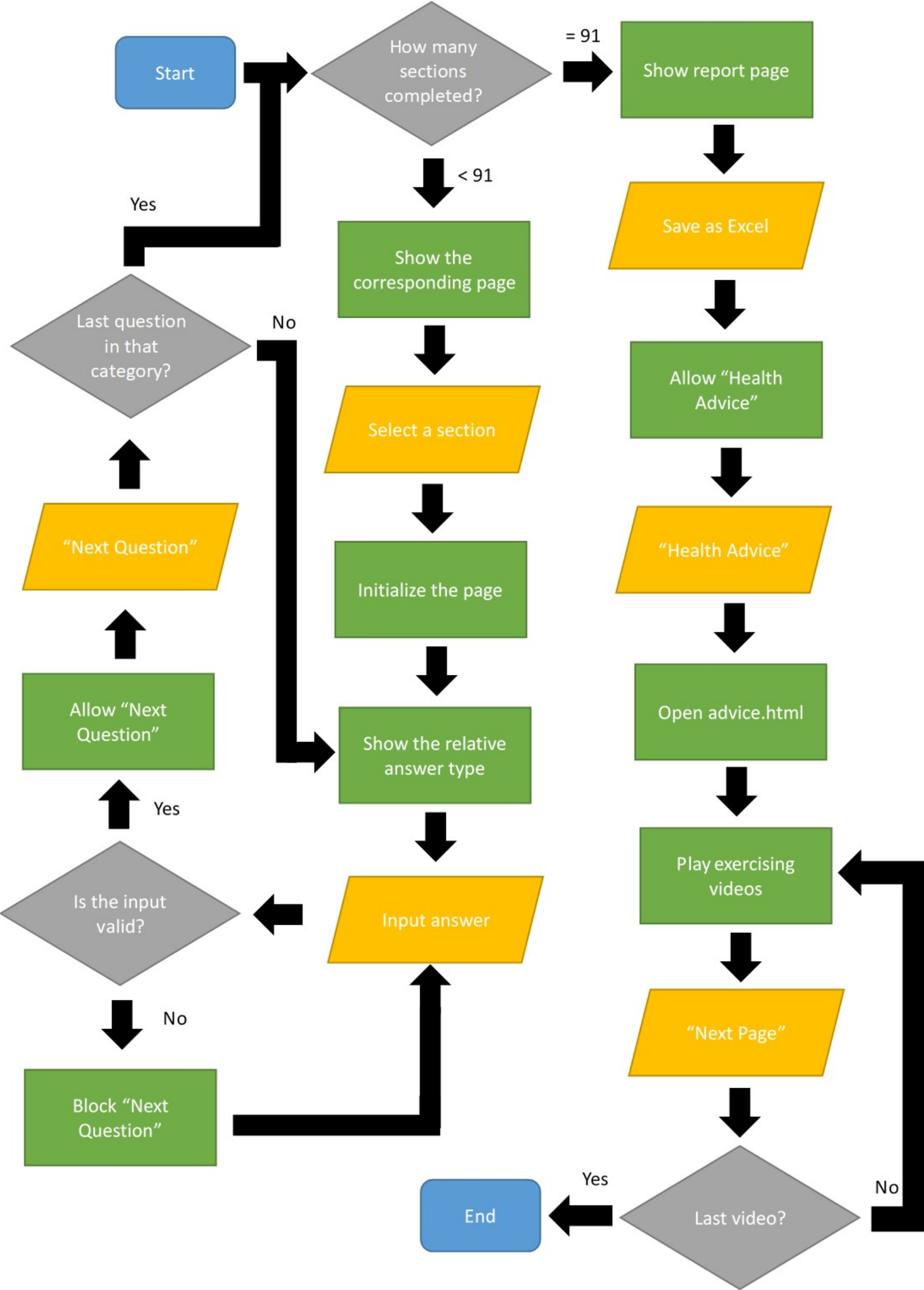
Optimizing

1. Restructure the flow of the questionnaire and optimizing the algorithms

Recategorize and reorganize the questions in the existing questionnaire and restructure the flow
1. Placing demographic questions like personal information and overall health assessment data in the first part of the questionnaire
2. Categorize health assessment questions according to health issues for elderly's easier viewing
3. Move on to questions related to aspects of life after health assessment questions
4. A report in Excel is generated after completing all questions, for recording the answers provided by the elderly and follow-up actions
5. Towards the end, a demonstration video on muscle training is included for elderly to conduct muscle training exercises
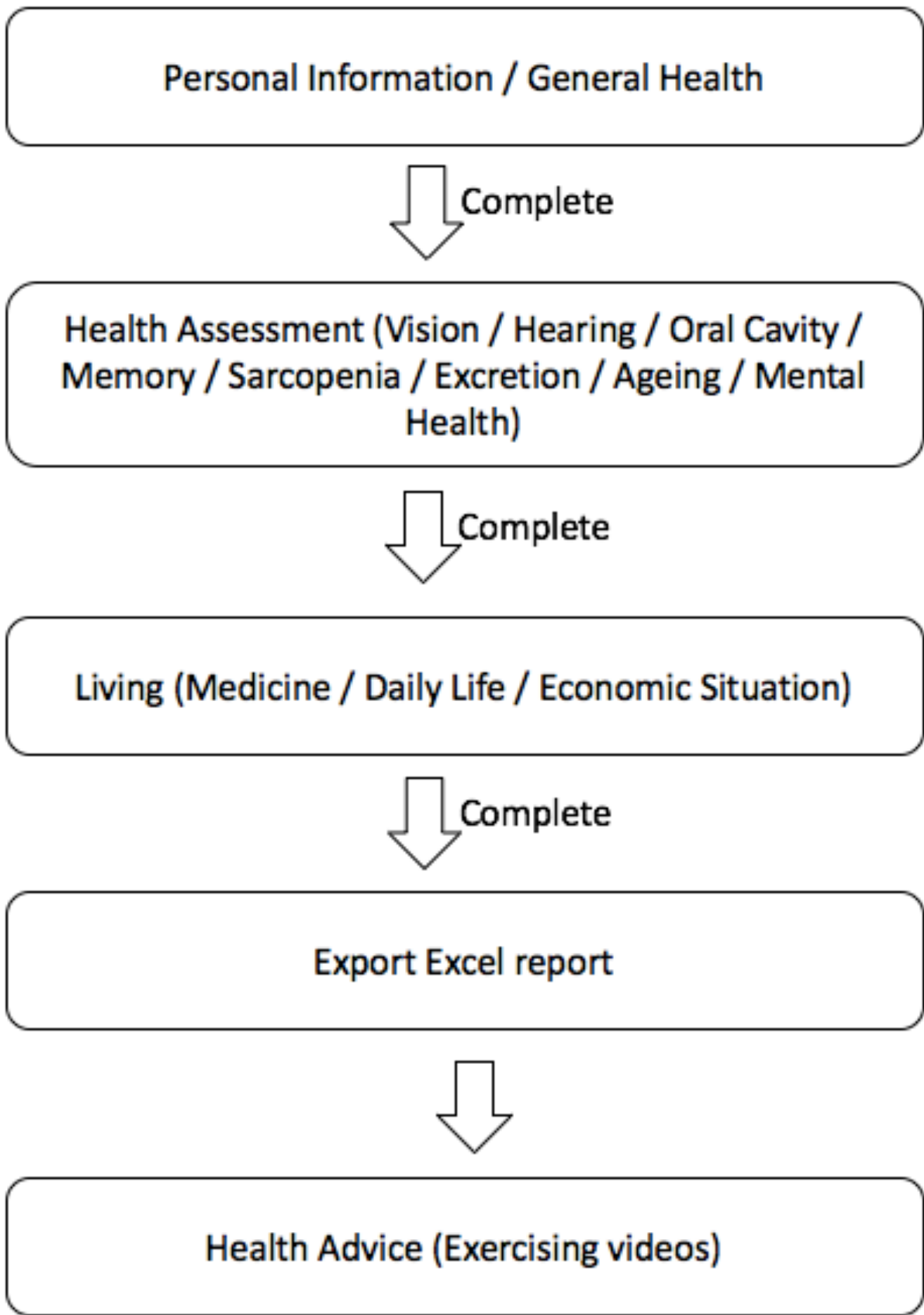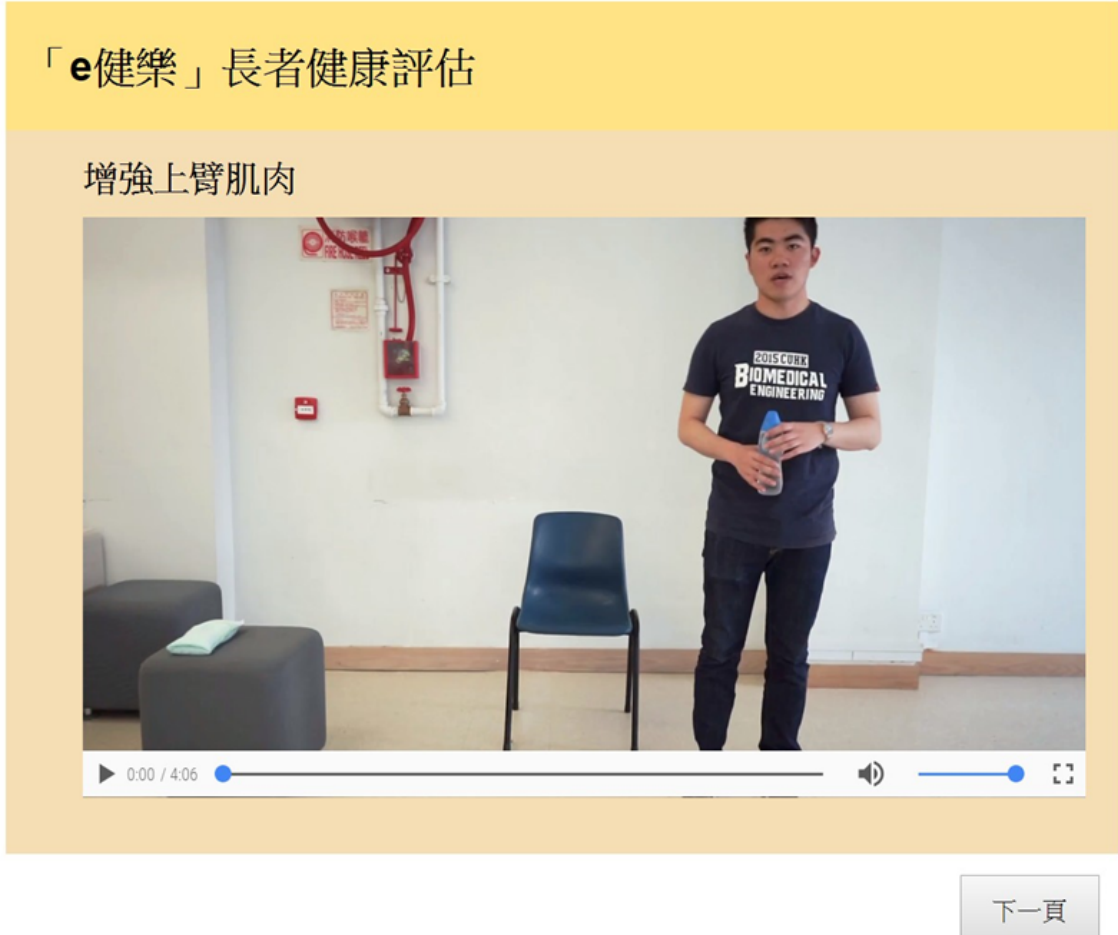

Enhancing the basic algorithm of the questionnaire:

Exporting health report to Excel files:

Live demonstration on Muscle Training Exercise:

- System can record and generate a Health Assessment Report for the elderly. Related health suggestions, such as muscle training exercise, will be provided based on the health issues found from the screening questionnaire.

- Two videos on muscle training are produced: one on enhancing muscle strength of upper arm, and the other one on training Quadriceps Femur Muscles. The interactive demonstrations are for elderly to exercise independently and prevent them from Sarcopenia.

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Optimizing Questionnaire

2. Visualise the text for easier understanding and usage by elderly

To make the questionnaire be more interesting, and for easier understanding and usage by elderly, we have optimized the questionnaire by the following ways:
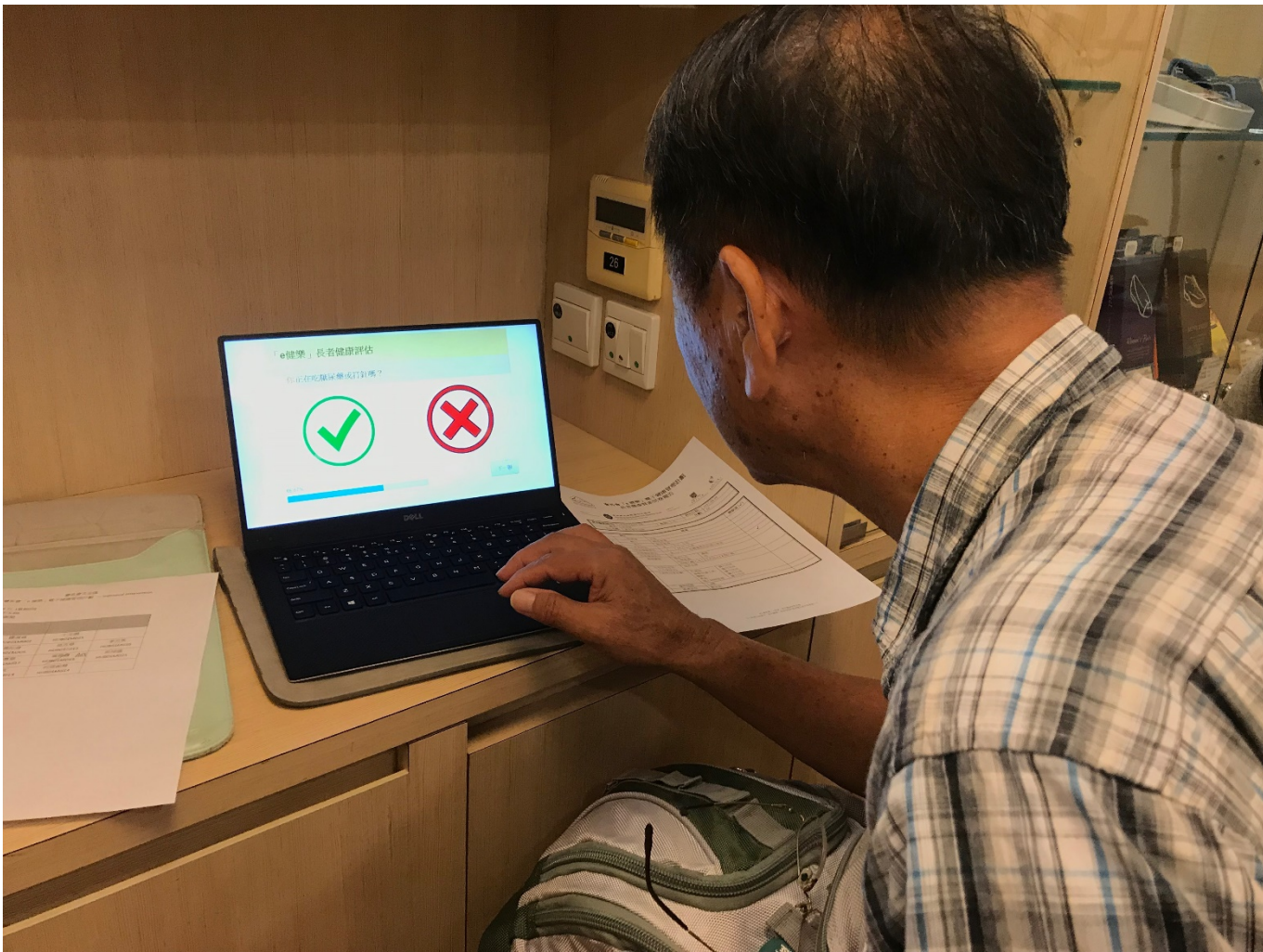
- Included a Main Menu
- Display answers to questions in icons
- Highlighting option selected
- Simplify wordings in some questions
- Enlarged text
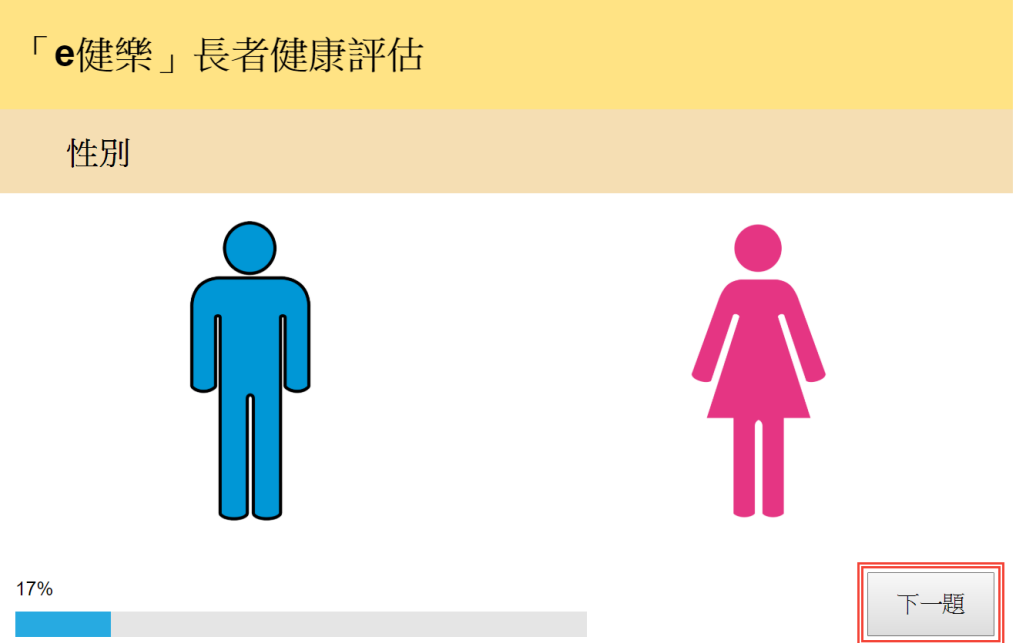- Automatic BMI calculations

Results from Trial Run

After preliminary optimization to the questionnaire, a trial run was conducted on 24th May 2018 (Thursday).
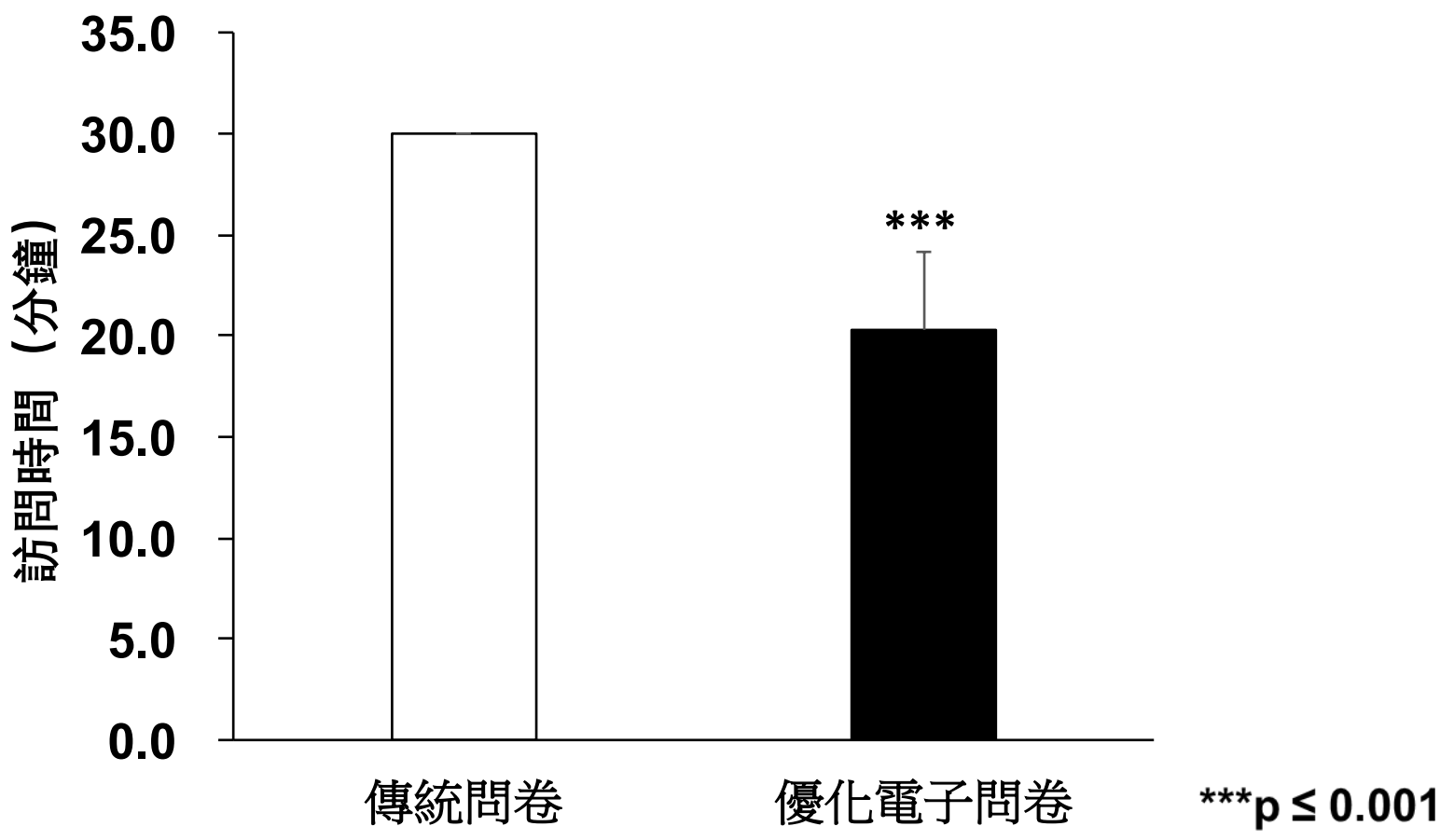
1. Snapshots of trial run

2. Preliminary analysis on experimental data

Comparison of completion time between conventional questionnaire and optimized e-questionnaire

***p ≤ 0.001

Optimized e-questionnaire is more interesting and easier to understand than Conventional questionnaire?

Items to be improved：
- Some of the icons used can be further improved
- The narration for the muscle training video is a bit soft

Items improved：
- Highlighting "下一題" buttons
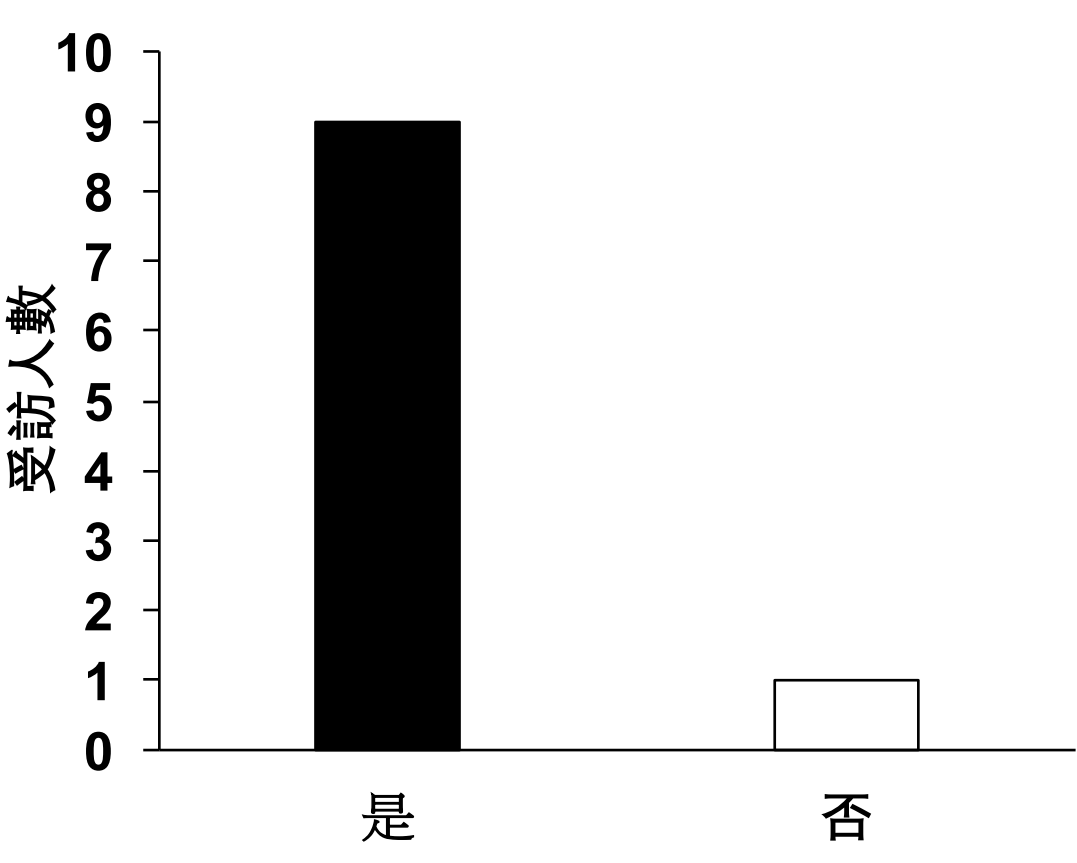
- Adding subtitles to the training video

Project Prospect

1 .Building a Fully-automated Personal Health Monitoring System for Elderly
Elderly can make use of any devices that are connected to the internet for completing the questionnaire. The system records and analyses the health status of the elderly for providing appropriate health advice and health service suggestions, reaching the vision of the project objectives.

2.Further optimization on the questionnaire
Understand the needs of the elderly through analyzing data collected from them. Ultimately, enabling different elderly centres and organisations to provide appropriate follow-up actions, with the aid of big-data analysis