

Department of Computer Science  
University of Hong Kong  
Final Year Project

## **Interim Report**

### **Project title:**

‘A journey called growing up’  
A 2D puzzle game that raise awareness of  
youngster’s mental health

Supervisor:

Dr. Schnieders, Dirk

Student:

Li Cheuk Yin (UID: 3035789588)

## **Abstract**

This project focuses on addressing the escalating mental health issues among the young generation in Hong Kong. It is important to raise the awareness of the public towards the problem in order to provide appropriate support and help to the youngsters. This project aims to provide an interactive and entertaining 2D puzzle game to help the youngsters reveal their difficulties. This interim report will first give an introduction with the background, motivation, objectives and deliverables of the project. The report will then discuss the methodology of the project including the technology used, a brief designed of the game and the development process. The current progress which is an analysis of existing games related to mental health and the implementation of the core gameplay will also be reported. For the next step, it will be mainly polishing the game and conduct final test for the product. Players' feedback will be collected at the end as the result of the project. A detailed schedule is provided in this report.

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## 1. Introduction

This section introduces the background, motivation, objectives and deliverables of the project. An outline of this report is also provided.

### 1.1 Background

In Hong Kong, the mental health of young people has been a serious concern in news coverage and the issue has worsened in recent years. The Hong Kong Jockey Club Centre for Suicide Research and Prevention recorded 22 suicide attempts and death cases among youngsters who were younger than 18 or students of tertiary education from August to October 2023 [1]. The number of cases was doubled compared to 2022 [1]. According to a survey conducted by the Hong Kong Federation of Youth Groups (HKFYG) in 2021 [2], over half of the surveyed secondary school students had symptoms of depression. From another survey conducted by The Chinese University of Hong Kong (CUHK)'s Faculty of Medicine from 2019 to 2023, near one fourth of the surveyed children or adolescents revealed that they struggled with at least one mental health issue including difficulties in staying focused, behavioral disorders, anxiety and depression [3]. These research findings suggest that mental illness has been prevalent among youngsters across different age groups, including children, teenagers, and young adults.

There are many factors pushing to the current mental problem among youngsters. The typical reasons include the difficulties and stress from their studies, pressure from work, insufficient time and social issues [4]. With the competitive education system and public examination (Diploma of Secondary Education exam (HKDSE)) in Hong Kong, some youngsters express that they feel uncertain about their career and worry about their academic performance [5]. COVID-19 is also

considered as one of the factors of the current mental health issue especially due to the impacts of school suspension [6].

Meanwhile, there is a number of video games that try to dive into the topic of mental health. For example, Mental Health Awareness Game is an educational game that gives accurate knowledge and information about mental health to players [7]. However, there does not appear to be a game that particularly focuses on the current situation of the Hong Kong youngsters. Also, video games are found to be valuable in delivering serious messages, but there are some considerations such as the game design and if the game itself being engaging to players which will affect the effectiveness of conveying message [8]. Therefore, a well-designed video game can be a starting point to tackle the current situation by raising more concerns towards the topic.

## 1.2 Motivation

With the background suggested in the previous section. The mental health challenges faced by the young generation in Hong Kong is commonly caused by external factors and the people in their immediate surroundings. Identifying the sources of tension faced by youngsters and offering appropriate assistance become important, especially for the public and individuals who are closely connected to the youngsters. To ensure the well-being of the young population in our society and prevent any instance of self-harm, it is essential to enhance the awareness of mental health issues experienced by the youth.

## 1.3 Objectives and deliverables of the project

### 1.3.1 Objectives

This project aims at helping youngsters to express their difficulties and raise public awareness towards the mental health issue among youngsters in Hong Kong.

According to a survey conducted by KELY Support Group in 2021 [4], 60% of the surveyed young people chose not to seek assistance for their mental well-being. The survey revealed that young people tended to conceal their problems. However, these issues can progressively worsen without being handled properly. That is why it is crucial to help youngsters to express their difficulties. As they may feel uncomfortable to discuss the problem directly, it would be beneficial to have an alternative to expose the issue and uncover the factors contributing to the current situation as mentioned in the project background.

In addition to assisting youngsters in expressing their concern, it is important to ensure that they receive proper care and understanding. Therefore, the game aims at raising public awareness and promoting a positive attitude towards mental health problems. It will be grateful if people can pay more attention on the youngsters and offer appropriate support especially for parents and teachers who play vital roles in reducing youngsters' stress and pressure. Apart from the public, individuals being aware of their problems is also the key to treat mental disorder. By playing the game, youngsters may find themselves experiencing similar difficulties as those demonstrated in the game and hopefully, they will be encouraged to seek help in real life. The primary objective of the game is not to treat their mental illness since that should be handled by the professionals, but to increase the number of youngsters seeking and getting help for their conditions.



### 1.3.2 Deliverables

To achieve the project objectives, a 2D puzzle game will be developed to provide an interactive way for the public to understand more about the youngsters. The primary platform of the game will be Windows, but since Unity support exporting a game project to multiple platforms, the game may be published to more platform like Mac, IOS and Android depending on the schedule. A survey will also be conducted to receive player's feedback including the overall comment on the game and to what extent the game can address the mental health issue.

### 1.4 Outline of the report

The remaining parts of this report will first discuss the methodology of the project in section 2. The section includes the technology used in this project, a brief design of the game and the development process. Next, the current progress which is an analysis of existed games and the implementation of core gameplay will be reported in section 3. A future plan for semester 2 will be mentioned in section 4. Finally, there will be a conclusion in section 5.

## **2 Project Methodology**

This section discusses the methodology of the project. This includes the technology used, draft design of the game and development process.

### 2.1 Technology used

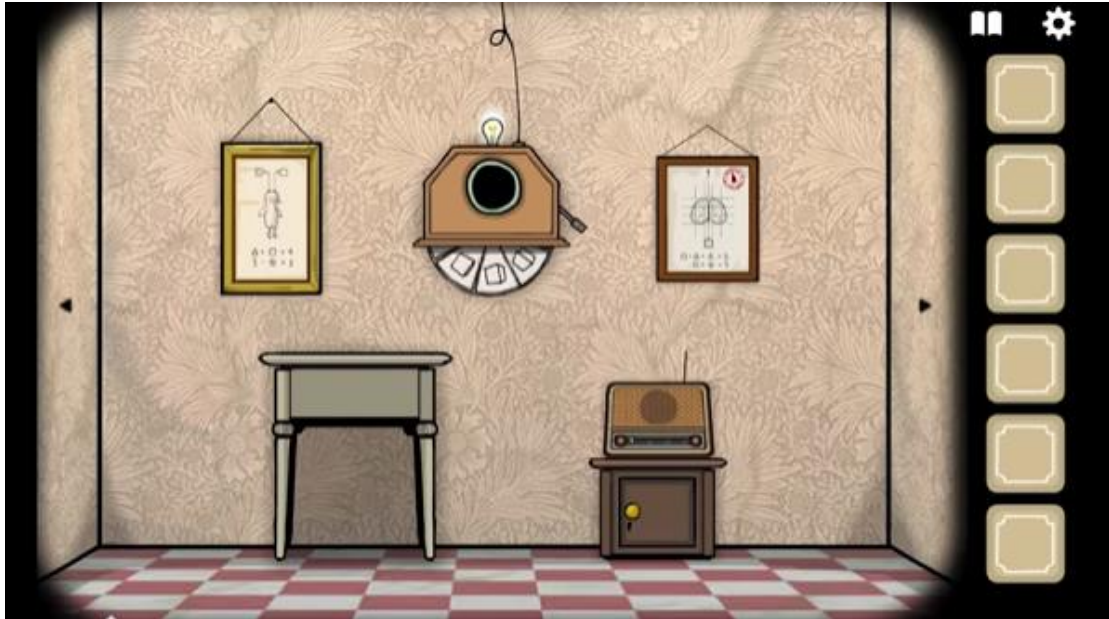
There are two main game engines which are the software for game development, Unreal Engine and Unity. Unity will be used in this project since it is a more friendly game engine for indie games (games with relatively simpler graphics and lower budget) while Unreal Engine focuses more on sophisticated graphics. Also, Unity supports game development for multiple platforms including both personal

computers and mobile phones with minor changes to the codes and export settings. This will enable the game to be published to a wider audience which aligns with the objective of raising more awareness.

Windows will be the primary platforms for the game and the game may also be published on Mac, IOS and Android depending on the schedule. The programming language for development will be C# which is the language used by Unity. For the graphics, in order to focus more on game design and development, generative artificial intelligence like Bing Image Creator and other online resources will be used.

## 2.2 Brief design of the game

The genre of the game will be 2D point and click puzzle game. Since the target player is the general public, the gameplay will be designed to be simply point and click without complicated game mechanics. The game interface will be similar to Rusty Lake Hotel which is a 2D point and click puzzle game in the market (Figure 1). The screen will be separated into the game scene and the item list. Each game scene will consist of puzzles and items. There will be a sequence of solving the puzzles since some puzzles will require certain items to solve and some items can only be unlocked with certain puzzles being solved. The collected items will be shown in the item list. The items can be used by clicking them in the item list and interacting with the game scene. The main challenges for players will be solving the puzzle in a correct sequence and choosing the correct items for the corresponding puzzles. Player will be required to solve all the puzzles in a game scene with the collected items in order to proceed.



(Figure 1: Gameplay of Rusty Lake Hotel. Adapted from [9])

The puzzles will be designed to reflect the challenges faced by youngsters.

Additionally, there will be a story to help convey the core message of the game:

‘youngsters need external help for their mental health issues’.

### 2.3 Development process

This project will adopt an agile approach for development. After the preparation work including analysis of existing games and draft design, the developing process will be mainly a loop of game design, implementation and playtest.

Interim products which are individual puzzles will be created. Playtest will be conducted on each puzzle. Changes may be made to the puzzles from time to time according to the feasibility and playtest. Individual puzzles will then be combined into different game scenes. Playtest will be conducted again on each game scene. Since this stage will focus on the feasibility of creating the puzzles in Unity, only simple graphics will be used.

After the core gameplay being finished implementing, the game will be polished

with detailed graphics and other game elements (e.g. sound effect, menu, end scene, background music, etc.). A final playtest will be conducted on the whole game.

There will be a survey for player's feedback about the game to review in what degree the game has achieved the objective and the overall comment.

### **3 Current progress**

This section discusses the current progress which is an analysis on existing games about mental health and the implementation of the core gameplay.

#### **3.1 Analysis on existing games about mental health**

It is found that there are two types of video games about mental health during the research. The following analysis is the summary of game reviews online and my personal review after watching the gameplay videos online.

The first type is directly providing information and knowledge about mental health in an interactive way. An example is Mental Health Awareness Game developed by Focus Games [7] (Figure 2 and Figure 3). It is an online board game with questions assisting players to understand more about mental health issue. It is informative and educational, but since the gameplay is only about answering questions, it may not be appealing enough. Therefore, it is important to strike a balance between being educational and engaging in the project. Puzzle game will be a suitable genre for providing an interesting gameplay and a sense of accomplishment to players without being too complicated and stressful.



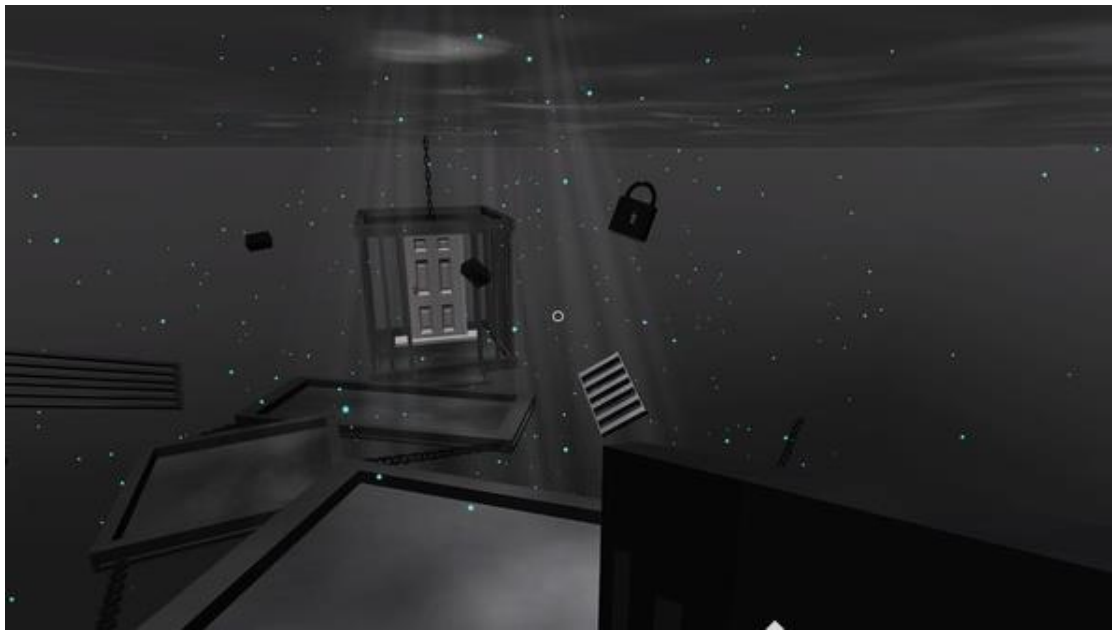
(Figure 2: Gameplay of Mental Health Awareness Game (1). Adapted from [7])



(Figure 3: Gameplay of Mental Health Awareness Game (2). Adapted from [7])

The second type is delivering meaningful messages about mental health by storytelling and gameplay in a subtle way. An example is *Fractured Minds* by Emily Mitchell. It is a 3D puzzle game that uses the game world to present the feelings and emotions of mental health illness patients [10] (Figure 4). Another example is *Sea Of Solitude* by Jo-Mei Games [11] (Figure 5). It is an adventure game that guide players to go through the feelings of loneliness by the story and game world. Both games use the approach of conveying messages by the elements of the game instead of directly providing information to players. It is found that serious presentation fails to convince players to accept the meaningful message contained in the game [8]. This type of game gives players an immersive experience and allow players to understand the message throughout the game

instead of being presented directly. This also gives more flexibility to the game which can have a more attractive and interesting playing experience.



*(Figure 4: Gameplay of Fractured Minds. Adapted from [12])*



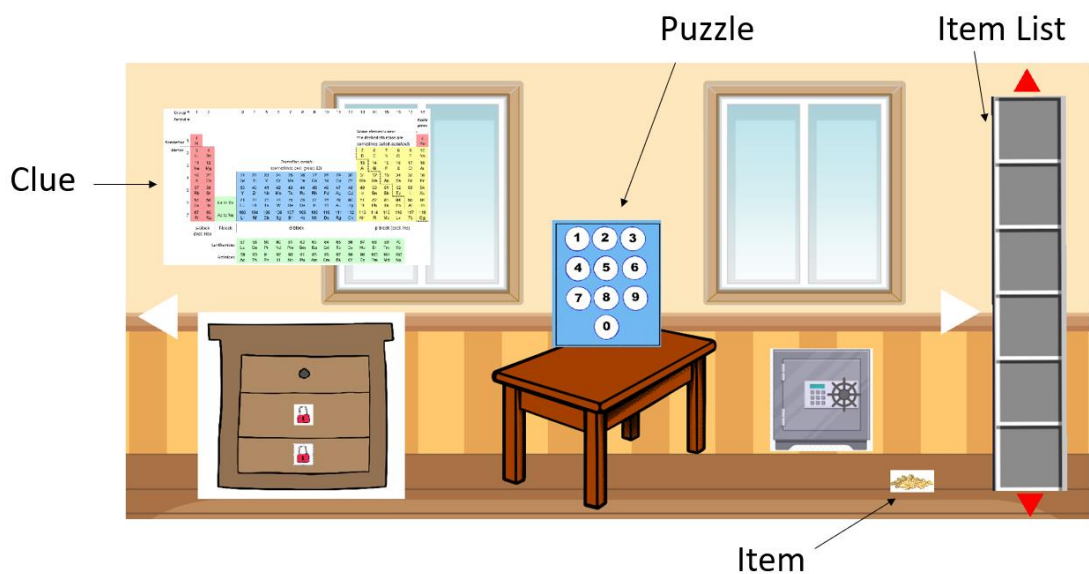
*(Figure 5: Gameplay of Sea Of Solitude. Adapted from [13])*

With the analysis above, the game will adopt the story-telling element from Sea Of Solitude. There will be a story about an older brother who has struggled with mental illness and left home alone. Player will act as his little brother and solve the puzzles left by him in order to uncover the difficulties faced by him and

understand more about his feelings. This will encourage players to immerse themselves in the characters and have a better understanding of the message behind the game. Information about mental health like useful hotlines and symptoms of mental illness will also be presented in the game. However, instead of presenting them directly like Mental Health Awareness Game, they will be inserted in the game subtly such as being decorations of the game scene in order to not affect the immersive experience. With such approach, the game can be both engaging and meaningful.

### 3.2 Implementation of core gameplay

The core gameplay has been finished. As mentioned in section 2.2, the game will be based on the design of Rusty Lake Hotel. Here is the interface of the game:

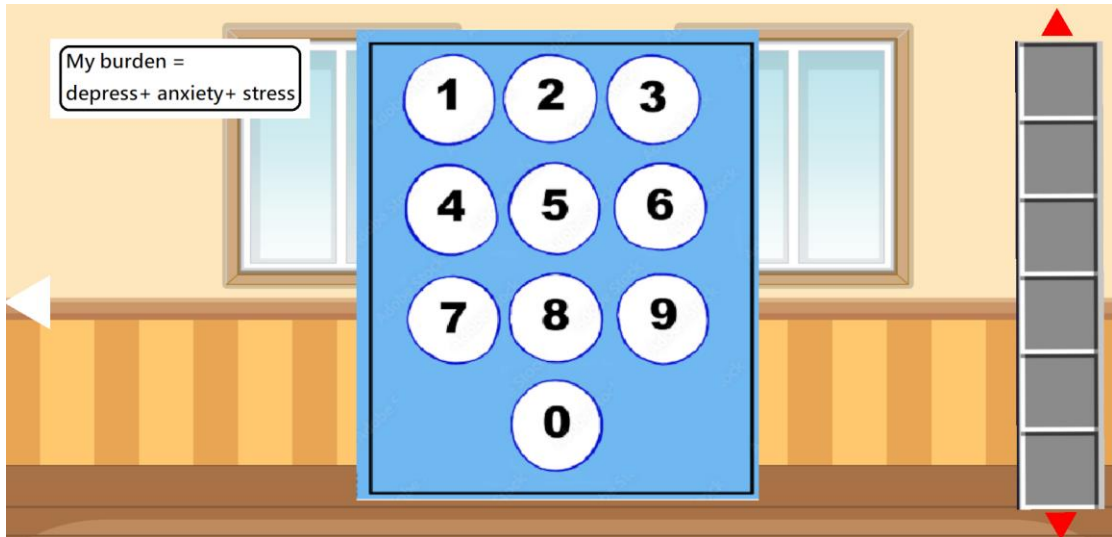


(Figure 6 Core gameplay of the project 1)

The game mainly consists of 3 objects: puzzles, clues and items (Figure 6). The gameplay is basically finding correct clues and items to solve a sequence of puzzles which can be achieved by only mouse clicking. Clues are hints for player to solve a corresponding puzzle. Items are the tools for players to solve puzzles or discover more clues. Items can be collected by searching the game scene or







*(Figure 9 Core gameplay of the project 4)*

Since this is only a draft of the game that only includes the core gameplay, only simple graphics will be used. After polishing, the game objects especially the clues will blend into the background and become less obvious to the players which requires players to search the game scene carefully. The core message of the game will also be clearer after adding the story elements such as dialogue box when players interact with certain objects.

#### **4 Future Plan**

Currently, the preparation work including game analysis and draft design of the game has been finished. The development of the core gameplay has also been finished. In semester 2, the main tasks will be polishing the game with better graphics and other game elements such as sound effect, story elements and game menu. There will be a final test for the completed game in March.

After finalizing the game, a survey will be conducted in order to collect the results of the project. Since the project is about a game that delivers a meaningful message, the main result will be the feedback from the players especially on how they understand

the message behind. There are 2 proposed plans on collection the result. The first one will be using the WebGL package in Unity and the service provided by Netlify to deploy the game on a website. The link will then be posted on the Internet together with a Google Form for collecting feedback. Deploying the game through website will just be used for facilitating feedback collection. The final deliverable of the project will still be a standalone game application. In case the game cannot be hosted on a website due to technical difficulties or there is insufficient feedback from the Internet. The second plan is by invitation. Players will be invited to try the game and give feedback in Google Form or in person. For this approach, the proposed participants will be around 30 people with as various backgrounds as possible.

Here is the detailed schedule:

Date	Task	Status
September 2023	<ul style="list-style-type: none"> <li>- Confirm project topic and scope</li> <li>- Detailed project plan</li> <li>- Project web page</li> </ul>	Finished
October 2023	<ul style="list-style-type: none"> <li>- Research on similar games and game design</li> <li>- Game design (story, puzzle design)</li> <li>- Test feasibility of the designed puzzles in Unity</li> </ul>	Finished
November 2023	<ul style="list-style-type: none"> <li>- Game design (puzzle design)</li> <li>- Test feasibility of the designed puzzles in Unity</li> </ul>	Finished
December 2023	<ul style="list-style-type: none"> <li>- Preparation for first presentation</li> <li>- Combine puzzles into game scenes</li> <li>- Playtest on game scenes</li> <li>- Detailed interim report</li> </ul>	Finished
January 2024	<ul style="list-style-type: none"> <li>- Graphic design and story element</li> <li>- Game design for functionality (e.g. menu, end scene, setting page)</li> </ul>	In progress
February 2023	<ul style="list-style-type: none"> <li>- Sound effect, background music</li> </ul>	Pending

	<ul style="list-style-type: none"> <li>- Prototype of the game</li> <li>- Test and debug</li> </ul>	
March 2023	<ul style="list-style-type: none"> <li>- Final playtest on the whole game</li> <li>- Finalize the final game product</li> <li>- Final report</li> <li>- Survey on the game</li> </ul>	Pending
April 2023	<ul style="list-style-type: none"> <li>- Prepare for final presentation</li> <li>- Prepare for project exhibition</li> </ul>	Pending

## 5 Conclusion

This project aims at improving the current mental health issue of young people in Hong Kong through the development of an interactive and entertaining 2D puzzle game. The game will help youngsters reveal their difficulties and raise the public's awareness to the issue in order to encourage more people to provide appropriate help to the youngsters. Given that one of the most important features of a game is being engaging. The message of the game, 'youngsters need external help for their mental health issues', will be mainly delivered through a meaningful story and well-designed puzzles.

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