**CHAPTER 1**

**THE PROBLEM AND ITS BACKGROUND**

**1.1 Introduction**

On March 11, 2020, the World Health Organization identified COVID-19 as a pandemic [1]. Due to the COVID-19 pandemic, multiple quarantines around the world had occurred and had changed people’s accustomed lives. Many schools have adopted online methods of teaching while most employees were asked to work from home and participate in more virtual meetings.

The COVID-19 pandemic is affecting poor people the hardest, uncovering imbalances in getting access to health care. In the Philippines, President Rodrigo Duterte announced on March 16, 2020 that the entire Luzon archipelago will be on enhanced community quarantine [2]. During the early phase of the pandemic in the Philippines, one-fourth of respondents reported moderate-to-severe anxiety and one-sixth reported moderate-to-severe depression and psychological impact [3]. Numerous individuals are arrested for violations related to lockdowns and curfew orders, in reaction to the pandemic. Many people have also lost their jobs due to lockdowns shuttering thousands of businesses.

The purpose of this study is to raise awareness regarding the circumstances the pandemic has fostered. By simulating the COVID-19 pandemic as a visual novel game, users will be able to apply their knowledge about the situation and turn it into real time actions. Simulations facilitate fast learning by providing immediate feedback on the outcomes of their decisions. The visual novel game will assist in equipping users with realistic knowledge so that they can better respond to real-life situations during the COVID-19 pandemic.

**1.2 Background of the Study**

The coronavirus disease-2019 (COVID-19) pandemic, caused by the new coronavirus SARS-CoV-2, has spread around the world, wreaking havoc on the health of millions of people. Although the pandemic is still ongoing, and new events are recorded every day, the global society's resilience is constantly being tested [4]. WHO first learned of this new virus on 31 December 2019, following a report of a cluster of cases of ‘viral pneumonia’ in Wuhan, People’s Republic of China [5].

Among those who develop symptoms, most (about 80%) recover from the disease without needing hospital treatment. About 15% become seriously ill and require oxygen and 5% become critically ill and need intensive care. Complications leading to death may include respiratory failure, acute respiratory distress syndrome (ARDS), sepsis and septic shock, thromboembolism, and/or multiorgan failure, including injury of the heart, liver or kidneys [5].

The study was conducted in order to help raise awareness regarding the real-life problems the COVID-19 pandemic has facilitated. This was implemented through narrative simulations from a visual novel named Quarantine Life. A visual novel is an interactive fiction video game genre that features a text-based story with a narrative style like literature and interactivity aided by static or sprite-based visuals, or video game footage. The gameplay in visual novels differs from that of other game genres in that it is generally minimal. Most of the player interaction is usually limited to clicking to keep the graphics and narrative going, as well as making narrative choices along the way.

Novel, a visual novel on COVID-19 [6], is a similar visual novel that informs about the COVID-19 pandemic. The game teaches children about COVID-19 and how to avoid it. To tell the story and engage young children, it relies on the "choose your own adventure" gameplay mechanism. Educators in Singapore used it, as did parents who shared it with their children.

Another similar study is the game, “COVID-19–Did You Know?”. The study met the proposed objectives of developing a serious game and making it available to young people, as well as providing reliable information on COVID-19 prevention topics [7]. This game's learning content was divided into six topics that presented specific WHO recommendations for the population, with an emphasis on issues related to teenagers' daily lives.

**1.3 Objectives of the Study**

The aim of this study was to develop a visual novel with interactive and dynamic stories that focuses on realistic themes from a person’s daily life during quarantine, consisting of branching paths with multiple endings. The intention was to create a realistic, relatable casts of characters and themes drawn from daily life teaching facts about COVID-19 and personal responsibilities. The purpose of this project is to increase awareness on the circumstances that the pandemic has created, and on how people can better respond to the real-life issues during the pandemic. By simulating the COVID-19 pandemic through a visual novel game, users will be able to apply their knowledge about the situation and turn it into real-time actions.

The study was aimed to achieve this through the following objectives:

* To build a story where the player guides themselves into different scenarios and situations possible in the game through dialogue choices.
* To develop various characters that reflects different kinds of people in the real world and the type of personality they possess.
* To create decent looking backgrounds and sceneries to immerse the player into the game’s world and leave a strong impression on their mind.
* To add music and sound effects that fits in the current game scenario to make the game more compelling for the player.
* To implement small puzzle elements to add challenge and playability.
* To create a variety of endings which either lead to a positive (good) or a negative (bad) outcome depending on the player’s choice of actions and dialogue during the game.

**1.4 Scope and Limitation**

The scope of this study was to primarily focus on the design, development, testing, and evaluation of Quarantine Life – A Visual Novel Game for Mobile. The visual novel game is created using Ren’Py, a visual novel engine that uses words, images, and sounds to tell interactive stories [8]. The game supports Android 5.0+. It was intended to be a single player game and allows for offline usage.

The protagonist of Quarantine Life portrays the player as an adult living in the state of the COVID- 19 pandemic. The player’s job is to read and understand the game dialog and tapping the screen after reading the character’s line and repeat. At some points in the game, the player will be prompted and shown two or more dialogue choices. At this situation the player must choose a dialogue that they think is the best way to respond to the scenario or they can also choose a dialogue that they are just curious about. Their choice may change the course of the story and the final outcome (Ending) of the story.

At the Main menu (The first screen to appear to the player), the player is presented four buttons named [Start], [Load], [Preferences], and [About]. [Start] will ‘start’ the game from the starting point of the story. [Load] will allow the player to choose a save slot they have saved to in their previous playthrough and continue their progress in the story. [Preferences] gives the player various options to adjust certain aspects of the game such as audio volume and text speed. [About] are simply notes from the developer such as current version, licenses, and credits.

In the main game (The screen where the [Start] and [Load] buttons lead to), character sprites, background, and the dialogue boxes containing the characters’ names and lines are displayed. At the bottom part of the dialogue box, are four buttons named [Back], [Skip], [Auto], and [Menu]. [Back] returns the player to the previous line of dialogue, [Skip] quickly ‘skips’ the dialogue until it reaches a point in the game where the player chooses a decision, which is useful for skipping already read text and testing out other story routes. [Menu] when pressed shows the same buttons as the Main Menu screen: [Load], [Preferences], and [About] except that there are four new buttons present: [History] for reviewing previous dialogue, [Save] for reserving a point in the game and continuing it later with [Load], [Main Menu] to return to the main menu, and [Return] to simply close the menu.

**1.5 Significance of the Study**

The significance of awareness during the COVID-19 is important in minimizing the spread of COVID-19. Public awareness must be improved to be prepared for epidemic and pandemic situations [9]. One of the most critical aspects of COVID-19 awareness is the various modes of virus’ transmission from an infected person. Demonstrating good understanding of preventive measures, particularly social distancing, and seeking medical help if symptoms persist will help Mabalacat City in its combat to the pandemic.

Beneficiary of the study are as follows:

**The Students**

The output of this study is beneficial to the students, especially to those who are having face-to-face classes. Through this study, students will understand the importance of the COVID-19 guidelines in school and in their houses.

**The Community**

The results will help the community combat the COVID-19 pandemic. This study serves as their reference which will give them a background about the challenges and the preventive measures on the pandemic.

**Future Researchers**

The ideas presented may be used as reference data in conducting new research or related findings about the COVID-19 pandemic. It can also serve those that aims to develop a visual novel game as its focus of the study.

**1.6 Definition of Terms**

The operational meaning of each terminology is italicized.

**COVID-19**

An infectious disease caused by a coronavirus discovered from Wuhan, People’s Republic of China. *The main theme and the motivation behind the development of Quarantine Life.*

**Quarantine Life**

The title of the app the group will develop. It is named as such because the game’s story revolves at time where the characters are in the quarantine period of the virus.

**Ren’Py**

Ren'Py is a visual novel engine – used by thousands of creators from around the world – that helps you use words, images, and sounds to tell interactive stories that run on computers and mobile devices [8]. *The game engine the group will use to develop Quarantine Life.*

**Route**

In Visual Novels, decisions determine how the story plays out, typically with different major plot points differing. Those different major events and outcomes are each considered a "route". *In Quarantine Life, routes represent the choices the player has taken in the current playthrough and the final outcome it produced.*

**Visual Novel**

An interactive fiction video game genre that features a text-based story with a literary narrative style. *It is the game genre where Quarantine Life is based on.*

**CHAPTER 2**

**REVIEW OF RELATED LITERATURES AND STUDIES**

The visual novel named Quarantine Life, is inspired by many different factors. One of which is the COVID-19 pandemic in the Philippines, and another is the benefit of simulations in facilitating fast learning. As the number of COVID-19 cases rises in the Philippines, researchers noticed the value of video games in spreading information and used it in spreading awareness about the pandemic. The researchers had chosen visual novel as its game genre due to its abilities to tell narratives while also allowing user interactivity.

**2.1 History of Visual Novels**

Visual novels originated in and are particularly popular in Japan. Many people credit ‘The Portopia Serial Murder Case’ in inventing visual novel as a genre [10]. In an interview with Retro Gamer, he recalls adventure games as the dominant narrative genre in video games at the time. As a result, he developed Portopia in an effort to introduce American adventure games to Japanese audiences. Portopia, Famicom Tantei Club, and Mindseeker all used the “sprite on background” approach that visual novels are known for today. They did not, however, emphasize this approach as later visual novels would; the sprites would not shift across the backgrounds, nor would they move in a specific way to imply action. Visual novels, like manga and comic books, rely on a combination of text and visuals to convey narrative. Because text alone would not provide enough context for the plot, some of the storytelling had to take place within the visuals. While this does not always lead to manga-esque narrative strategies in early visual novels, the art in these games certainly does. Because their art was so rigid, it only made sense to compare them to manga panels. As a result, when we look at early visual novels, we see them using the same kinds of panel transitions that comics and manga had been using for years. Panel transitions are not the only strategy borrowed from manga by early visual novels. Dennou Tenshi features subjective motion lines, and both manga and visual novels depict movement in similar ways, albeit for different reasons. Panel transitions, however, have proven to be the most useful of all the techniques early visual novels borrowed from manga.

Though there are now a wide variety of VNs available, the genre has its origins in eroge (erotic games), especially bishōjo games, in which the presumed straight male player may have romantic and/or sexual experiences with different female characters [11]. Lolita: Yakyūken, developed by PSK and released in 1982, was the first graphic novel. Lolita was basically a strip rock-paper-scissors game in which the onscreen girl would remove an item of her clothing each time the player won a round. Fortunately, VNs weren't all for thinly disguised softcore pornography for long.

Chunsoft's Sound Novel series, which started in 1992 with the Super Famicom release of Otogirisou and achieved widespread success with 1994's Kamaitachi no Yoru, was the first to incorporate the new visual novel genre's gameplay framework [12]. While the word "visual novel" is Japanese in nature, it is used much more often in the western gaming world than in Japan, with the two regions having distinct interpretations of the genre. Many titles called visual novels in the West are known as "adventure games" in Japan. Jiro Ishii, the director of 428: Shibuya Scramble, previously stated that the Japanese adventure genre can be divided into two groups. Classic "command-based" and "novel style" adventure games fall into these two categories. Command-based games give the player direct control over their character through verb commands or other means, and they need some kind of problem solving in order to progress through the story. In terms of structure, these games are very similar to western point-and-click adventure games. "Novel style" games, on the other hand, uses the presentation of an adventure game to tell a story that does not require the player to solve gameplay difficulties and has limited player involvement. In essence, command-based games are about "solving a puzzle," while novel-type games are about reading a story.

**2.2 Coronavirus Disease-2019 (COVID-19)**

On December 31, 2019, the WHO Country Office in China received the first warning of an outbreak of cases with unidentified low respiratory infections in Wuhan, China's Hubei province's largest metropolitan city [13]. Dr. Tedros Adhanom Ghebreyesus, the Director-General of the World Health Organization, declared on February 11, 2020 that the illness caused by this latest CoV was dubbed "COVID-19," which stands for "coronavirus disease 2019." Two more CoVs epidemics have emerged in the last two decades. SARS-CoV triggered a large-scale outbreak that started in China and spread to more than two dozen countries, resulting in approximately 8000 cases and 800 deaths (fatality rate of 9,6%) [14]. MERS-CoV, which started in Saudi Arabia and has caused nearly 2,500 cases and 800 deaths (a fatality rate of 35%), is now causing intermittent cases [15].

This new virus is highly infectious and has rapidly spread around the world. The WHO declared the epidemic a Public Health Emergency of International Significance (PHEIC) on January 30, 2020, in compliance with the International Health Legislation (IHR, 2005), since it had spread to 18 countries and four countries relaying human-to-human transmission [16]. It is predicted that one out of every five people in the world is at risk of developing extreme COVID-19 disease if contaminated, owing to underlying health issues [17].

A research [18] found that SARS-CoV-2 can be found on plastic for up to 2-3 days, stainless steel for up to 2-3 days, cardboard for up to 1 day, and copper for up to 4 hours when it comes to the time of contamination on items and surfaces. Exposure seems to be higher in ICUs than in general wards, with SARS-Cov-2 contained on ground, machine mice, garbage cans, and sickbed handrails, as well as in air up to 4 meters from patients.

The Journal of the American Medical Association reported clinical and epidemiological evidence from the Chinese CDC, which contained 72,314 case reports (confirmed, suspected, diagnosed, and asymptomatic cases) (JAMA). The authors of the Chinese CDC study [19] graded the seriousness of the disease's clinical manifestations:

* Mild disease: non-pneumonia and mild pneumonia; this occurred in 81% of cases.
* Severe disease: dyspnea, respiratory frequency ≥ 30/min, blood oxygen saturation, and/or lung infiltrates > 50% within 24 to 48 hours; this occurred in 14% of cases.
* Critical disease: respiratory failure, septic shock, and/or multiple organ dysfunction (MOD) or failure (MOF); this occurred in 5% of cases.

**2.3 Social and Economic Impact of COVID-19 in the Philippines**

On January 30, 2020, a 38-year-old woman arrived from Wuhan with the first case of novel coronavirus (2019-nCoV, now COVID-19) in the Philippines [20]. On the first day of February 2020, the Philippines registered the first death outside of China. Following an increase in new reported cases and local dissemination, the Philippines government announced a health emergency on March 9, 2020. The step would free up money for city municipalities and hospital officials to deal with any additional cases that arise. On March 12, 2020, the COVID-19 Code Warning system was upgraded to Red Sublevel 2.

COVID-19 is projected to have a major impact on the tourism industry [21]. International tourism accounted for 1.5 percent of Philippine GDP in 2018. Chinese tourists make up the second-largest group of international visitors to the Philippines, accounting for 22.0 percent (1.8 million arrivals) of all foreign visitors in 2019. (24.0 percent share; 2.0 million arrivals). In 2018, Chinese visitors invested about PHP 110.8 billion, accounting for nearly a quarter of total tourism receipts. Koreans, on the other hand, invested PHP 126.6 billion. The tourism industry is projected to be severely impacted by the Philippine government's travel bans to and from China and its administrative areas, as well as a partial ban to and from South Korea. Philippines is projecting a 0.3–0.7% slowdown in the country's full year GDP [22].

As a result of the economic consequences of COVID-19 [23], the nation has entered a deep recession, with over 3,000 businesses shutting and over 100,000 families losing their jobs. Although the government has a policy to assist these households, it is often insufficient for those who have lost their income over time. Few workers were able to return to work after the lockdown was lifted on May 31, but not all. For example, public utility vehicle (PUV) drivers were out of work for months until June, where only a limited percentage of them were permitted to resume driving. The Philippines' schools have also undergone significant changes. The biggest fears of parents during school lockdowns are their children falling behind in school (34%) and being ill (33%). Reflecting these pressures, 60% of respondents said their children had already re-enrolled in school, while 88 percent of those who said they would not re-enroll their children in school cited worries about school safety [24].

**2.4 Solutions to Fight COVID-19**

Since near person-to-person communication continues to be the primary mode of dissemination, social distancing remains an important strategy for limiting spread. If you must go out for something, keep a 6-foot (2 meter) distance from other people. You will spread the infection by talking to someone who is in near proximity to you [25].

The quarantine alternatives are determined and defined by local public health authorities. Quarantine is used to isolate anyone who has been subjected to COVID-19 from the rest of the population [26]. Quarantine assists in the avoidance of disease transmission that can occur before a human discovers they are ill or whether they are sick with a virus but have no symptoms. Quarantined individuals should remain at home, isolate themselves from others, monitor their welfare, and adhere to the instructions of their state or local health department. People who have been in direct contact with someone who has COVID-19 must be quarantined, with the exception of someone who have had COVID-19 during the last three months or who are entirely vaccinated.

To avoid the spread of SARS-CoV-2, it is also important to exercise proper hand hygiene [27]. Both health-care facilities should have routine programs encouraging good hand hygiene and ensuring the provision of the appropriate resources (equipment and supplies), as well as service and repair procedures.

**2.5 Developing Informational Games in Response to the COVID-19 Pandemic**

Numerous games have tried to help raise awareness to the COVID-19 pandemic. One of this is a game named “COVID-19 - Did You Know?”. On April 1, 2020, the game “COVID-19–Did You Know?” was made available for free on a public university website. As of September 2020, the game had been accessed 17,571 times. The research accomplished its specified goals of designing a serious game and making it available to young people, as well as providing detailed information on COVID-19 prevention topics. The learning material of this game was categorized into six topics, each of which provided unique WHO suggestions for the general public, with a focus on problems that affect adolescents' everyday lives [7].

Using human-centered design and game design methods, another game called “Stayed at Home” was developed. Hygienic Measures, Body Scan, Stay Safe, Personification and Corona Sorting were the five micro-games included in the game. As users play the different elements, the avatar starts to feel better or ill based on the points and scores in the game. The “Hygiene Measures” were created by arranging the various steps involved in properly washing your hands. “Body Scan” featured a human body infographic in which researchers had to pick out the virus's most infected regions and areas where the first signs appeared. “Stay Safe” is divided into two parts, the first of which is a MythBusters quiz. The “Personification” saw players put themselves in the shoes of someone who deals with a high-risk individual. Finally, “Corona Sorting”, in which participants would equate the context of terms like "internal distancing" and "asymptomatic" with the appropriate image in order to comprehend what they say.

During the coronavirus pandemic, a university professor created the video game "Can You Save the World?" to teach children the importance of social distancing [28]. He believes that games that foster good social behaviour will have an effect on people's behavior in the real world. Governments, classrooms, and health agencies could use the game to promote social distancing, which is a crucial step to hold the virus in place as countries recover from lockout, according to the developers, who are now working on an app.