

# SOP Game: Using Game as a Platform to Spread Awareness on The Standard Operating Procedure of Covid-19

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*Abstract— Two years that have passed since Covid-19 was first found in Malaysia. Malaysia has faced a catastrophic loss of life and strange challenges to public health, food systems, and the labour market in the past. To avoid the problem from worsening, a standard operating procedure (SOP) for managing people's everyday lives is required. Creating a game in the style of Monopoly but shifting the emphasis to the SOP is practical. Rather, understanding and remembering the SOP throughout the epidemic will be far more enjoyable and approachable for the younger generation. This game's objective is to teach and continually remind young people about the SOP. The project's goals are to raise awareness about SOP, build a game that would teach and remind the younger generation about SOP, and assess the game's efficacy as a means of spreading SOP knowledge. Adobe Animate will be utilized to create the game. The Game Development Life Cycle Model (GDLC) served as a guide for the development of this project, which included Initiation, Pre-Production, Production, Testing, Beta, and Release. A test involving 30 participants aged 6 to 18 years old was conducted to evaluate the gaming application. The results and conclusions demonstrated that raising awareness through gaming applications is highly successful, and that learning SOP through games is far more engaging and amusing than through other platforms. Therefore, recommending the use of games in education is necessary in this field.*

**Keywords—Covid-19, SOP, Game, Spreading Awareness via Game**

## I. INTRODUCTION

Today, the globe is attempting to survive while battling the Covid-19 epidemic. Prior to the present, there were few statistics on the knowledge, attitudes, and behaviours of the Malaysian people on Covid-19. Due to the unfamiliarity and unpredictability of this disease, it is imperative that health authorities develop appropriate policies for preparing and managing the public [1]. To effectively combat the pandemic, it is crucial that the knowledge, attitudes, and behaviours of the SOP be thoroughly examined. Aside from that, video games play a significant role in teaching the younger generations, especially during this epidemic, when they are forced to stay at home and are unable to see their friends at school because of the virus. Games-based learning increases not just one's motivation

and engagement, but also their visual abilities, their interaction and cooperation with others, and their ability to apply game ideals in the real world [2]. The purpose of using games in education is to assist younger generations retain what they have learned as game participants. Rather than relying just on memorization, students may utilize games to retain the information they need to succeed in real-world settings. Using games may also assist capture the attention of younger generations since they can learn in a much more enjoyable manner.

### A. Problem Statements

The first issue is that the majority of young people lack complete awareness of the SOP. They must recognize that they are accountable for not aggravating the pandemic scenario. However, they should do their part in ensuring that everyone may live securely and healthily by adhering to the SOP and using it in their everyday life. The second issue is that contemporary adolescents are indifferent in reading, especially during this pandemic when their social activities are limited. Compared to 2020, the impact of the pandemic on students' capacity to learn and read is four months behind [3]. Therefore, using a video game is an opportunity to teach younger generations about the new lifestyle without forsaking conventional operating procedures during the epidemic. During this epidemic, there are scarcely enough video games about the SOP. According to the second sentence, the younger generation enjoys playing video games. Consequently, producing a video game that focuses mostly on the SOP will be far more enjoyable.

### B. Research Objectives

Regarding the research aims, the primary goal is to raise awareness of the SOP of Covid-19 using a game. Next, create a game based on the SOP of Covid-19. Lastly, to evaluate the game's efficacy.

### C. Research Questions

The first research question is will the younger generations be aware of SOP of Covid-19 in a form of a game And will the game improve their knowledge more efficiently through a game on SOP of Covid-19? These are the questions that the project seeks to reveal. Additionally, will spreading awareness on SOP of Covid-19 be more effective through a game among the younger generations?

## II. LITERATURE REVIEW

The literature reviews are based on papers regarding Using Video Games to Spread Awareness, Video Games in Education and case studies of related projects

### A. Overview of Using Video Games to Spread Awareness

There are various ways of spreading awareness and one of it is by using video games. Using video games is the key element in raising awareness regarding the SOP during pandemic. Because we live in a technologically advanced world, it is believed that the use of video games to raise awareness is viable possibility. One of the techniques for raising awareness is through the use of serious mini games. They excite and drive players to learn more about a certain subject, yet the need minimal time to complete them [4]. It is important that the games are focused on a specific topic or aim and that they are methodically designed.

### B. Video Games in Education

With the emergence of updated technology, the learning technique is gaining worldwide popularity and advancing rapidly. Innovative teaching tools are crucial and alluring to pupils in today's technologically evolved society. Modern society requires the creation of new educational systems for the purpose of passing knowledge to future generations. In education, video games should be viewed as a supplement to conventional teaching and learning techniques. It acts as an impetus for the improvement of educational paradigms [5]. In most situations, the purpose of video games is to strike a balance between issue content and gameplay, as well as the player's capacity to retain and apply this subject matter in real life. Video games are not an adversary. Rather, they provide the greatest possibility to engage the younger generations in meaningful learning experiences [6]. The increasing integration of digital games and applied sciences into learning settings has had a substantial influence on both the teaching and learning of educators and the education of students in general.

### C. SOP Game: the case study of related projects

Several game applications and board games with similar purposes have been studied in order to get useful information on the features offered by the game applications and game boards as the foundation for the project's development.

### 1) Monopoly



Fig.1. Monopoly Board Game

There are several benefits to this project. Initially, it is an intriguing method for teaching youngsters mathematical and financial abilities. In addition, it teaches youngsters how to trade their goods with others, so contributing to the growth of their bargaining skills. Moreover, because the design of the board game is incredibly entertaining for youngsters, they are more inspired to play. Integrating learning goals with well-designed game mechanics might produce intrinsically enjoyable learning experiences for players [7]. Aside from that, the board game is simple to access and does not need an online connection. However, it must be purchased from a nearby toy store.

### 2) Can You Save The World?



Fig.2. Can You Save the World ?

The game is extremely convenient and relevant for the current situation, which is one of the project's advantages. Notably, the game's illustration of regular operating procedures and how to play the game is quite accurate. Due to this, participants have a clear understanding of what they should accomplish in the game and what they should avoid doing during their participation. Aside from that, the musical soundtracks are incredibly useful and impactful since they encourage the player when he or she does well, is at a disadvantage, or loses the game.

### 3) Pandemic



Fig.3. Pandemic

The primary benefit of the game is that it gives a variety of distinct roles, each of which may be specialized to satisfy the demands of individual players. The game's design is also noteworthy, since it intrigues players' interest and encourages them to continue playing. In addition, if a player is assigned a position or profession in the game that requires dealing with the epidemic, they will receive more information about the tasks they have been given. Then, players will learn collaboration abilities, as completing the game will demand their cooperation.

### 4) Fight Virus



Fig.4. Fight Virus

The game's advantage is that participants will learn extra knowledge about hospital operations, particularly during a pandemic. Additionally, the game's sound effects, and background music are rather amazing. It will have a significant impact on the gaming experience of the players. As though the player were physically there at the hospital and supporting the first responders. Soundscape contributes to the sensation of presence or immersion in a game by establishing the illusion that the game world is a real setting [8]. Sound may therefore create the appearance of a genuine setting by offering virtual off-screen resources.

## III. METHODOLOGY

Prior to commencing the construction of a game, it is essential to perform extensive preparation to guarantee that instructional and engaging games provide positive learning results. Creating a video game is a form of software intended to provide amusement. However, merely adopting the software development life cycle (SDLC) is insufficient, as developers encounter several challenges during the SDLC's existence.

Game development uses a system known as the game development life cycle (GDLC) to drive development [9] in order to address the issue. Due to the instructive and entertaining nature of the project, GDLC is the perfect match. In addition, GDLC is the preferable option because of the initiative's time restrictions.



Fig.5. Game Development Life Cycle Model

#### A. Initiation

Developing a basic concept for the sort of game you wish to create is the first step in the creation process. Initiation yields the game concept and a brief description of the game. During the initiation phase, an analysis of the requirements for creating an instructional and entertaining game centered on SOP during a pandemic is conducted. After analyzing the game SOP during the pandemic, the purpose of this project is to develop new learning methods for the importance of SOP during the pandemic in the form of a game, along with the points and content that will include digital elements such as music, animations, and graphics that will inspire the younger generation to play the game and be exposed to this new method of learning about SOP and can be implemented in their daily lives during the pandemic. The target audience of the game SOP during pandemic in Malaysia is comprised of younger generations between the ages of six and eighteen, since this project focuses on the younger generation and aims to ensure that they always follow SOP, particularly during a pandemic.

#### B. Pre-Production

Furthermore, a storyboard was developed to accommodate the visualization of the game's many pages. Creating storyboards is the most efficient method for visualizing all information that must be captured. In the storyboard, you can see the overall plan of the game, as well as its individual sections, as well as the overall idea and artwork. As soon as the design of the storyboard has been finalized, all aspects from the Pre-production phase will be included into the production phase, which will quickly follow. When the modification or revisions to the game's design have been confirmed, pre-production concludes.

#### C. Production

This phase started with the development of the SOP Game application, as well as the related content and learning components. This was determined by the prioritizing of components during the pre-production process. To utilize the prototype as the final product, all faults must be rectified at this stage. This project necessitates hardware and software for the development of the SOP Game application. The interface, buttons, and icons of the gameboard were developed and produced with Adobe Photoshop and Illustrator. The designs and drawings were then exported and integrated into Adobe Animate using Action Script 3.0 to generate its gaming functionality. At this point, an expert evaluation has been performed and any mistakes have been examined. Figure 6 shows the screenshots of some pages from the game application.

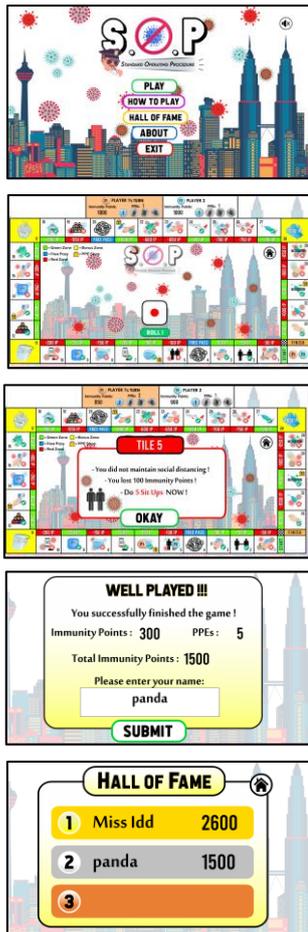


Fig.6. Screenshots of SOP Game

The top image shows SOP Game's Main Menu. Play, How to Play, Hall of Fame, About, Exit, Mute, and Unmute are on the main menu. The major menu buttons are clearly visible since their fill colour is white, but their outlines are spectacular. The SOP Game logo and backdrop virus are animated so the main menu is not really boring. Next screenshot is gameplay. Each player has a fixed colour. On the gameboard, players' Immunity Points and PPEs are listed. PPEs are a score multiplier for Immunity Points. When it's a player's turn to roll, their avatar's background colour will appear. The SOP Game logo, the background virus, and each tile symbol feature tiny motions that make the gameboard aesthetically engaging. Green Zone implies Covid-19 SOP compliance. The number of Green Zone landed gives the player Immunity Points. Green Zones have Immunity Points. Red Zone denotes a SOP violation. Losing Immunity Points is punishable. Popups display the punishment. Each Red Zone reduces Immunity Points and punishes differently. As seen in the third screenshot, the disobedient player must do five sit-ups. A player in a Bonus Zone receives a free PPE and Immunity Points. PPE increases Immunity Points. When a player lands on a PPE Shop tile, the popup appears. The player can buy a PPE using Immunity Points. Each PPE Shop grants various Immunity Points and charges different prices. Players can click No Thanks to decline. Last, the hall of fame

page. As shown in the fourth screenshot, after the game winner submits their name on the Win Page, it will appear on the hall of fame page. Only the top three Immunity Point earners can be inducted as depicted in the last screenshot in Figure 6. The winner will not be included into the hall of fame if they have negative immunity points.

#### D. Testing

This stage aims to ensure the instructional framework of the game is effective. This phase must result in the user's comprehension of the available resources and their capacity to have a positive experience. This project's .apk file will be downloaded and installed on an Android smartphone. After installation, the functionality of the system must be confirmed. The application was evaluated on a Samsung smartphone. After the developer has reviewed and validated the SOP Game application, it is ready for evaluation by the intended audience. Users would be able to explore individually with the user interface and gaming application.

#### E. Beta

The beta phase of playtesting examines the significance of beta testing, the many types of beta testing, and the playtesting methodology, checklist, and sample questionnaire applied. During the beta testing phase of the development process, an external or third-party tester is employed. The beta testing would then be undertaken through the distribution of questionnaires. The game application has been tested by users, and thirty sets of questionnaires will be given to the designated target audience so they may provide feedback on the product while playing the game application. The developer may utilize the information and data obtained from the assessments to aid in enhancing the application and ensuring that the objectives and goals of the project are properly met.

#### F. Release

The release phase addresses the distribution of the game bundle, post-production procedures, and the packaging of the game. The release phase includes product introduction, project documentation, information interchange, and planning for game maintenance and expansion. There will be a discussion regarding the design of the game's packaging, followed by the creation of the actual gameboard as merchandise for the SOP Game project.

### IV. RESULTS AND DISCUSSION

In this chapter, the findings and results of the study are analyzed and presented in relation to the goal of the study, which was to establish if the game application delivered the Standard Operating Procedure of Covid-19 in a gameplay mechanic. Including the other two main objectives, the first of which is to create a game that focuses primarily on the SOP of Covid-19, and the second of which is to assess the effectiveness of the game application in terms of creating awareness of the SOP of Covid-19. In the prior chapter, which explained the study's research methodology, these criteria were described.

This chapter will also evaluate and elaborate on the survey data obtained during the phase of Beta Testing. The survey was

done by designing a questionnaire with three sections: respondent demographics, the user interface and user experience of the Standard Operating Procedure Game, and the Standard Operating Procedure Game's effectiveness in conveying information of Covid-19's SOP. Thirty responses were received from the target audience. The main findings were related to whether they gained awareness on SOPs of Covid-19, based on Figure 7, it demonstrates that 46.7% of respondents picked highly agreed and 46.7% chose agreed when asked if they improved awareness of Covid-19 SOPs by playing the game application. In contrast, the remaining 6.7% of respondents picked indifferent when asked if they were aware of the SOPs of Covid-19 after playing the gaming application.

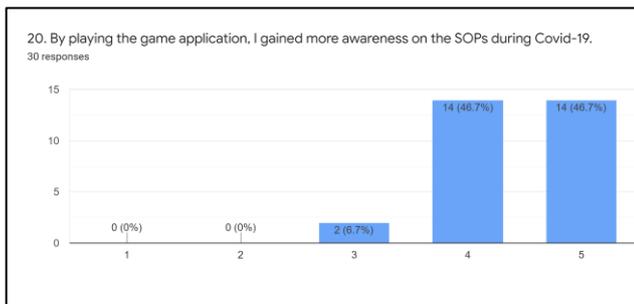


Fig.7. Bar chart of respondents' answers on whether they gained awareness on the SOPs of Covid-19.

Next, it was determined if the consequences for violating SOPs in the game would be reflected in real life and cause players to constantly remember to comply to SOPs. As seen in Figure 8, the majority of respondents, with a percentage of 53.3%, selected agreed that the consequence for disobeying the SOPs in the game will be reflected in real life and serve as a reminder to always follow the SOP, while 46.7% of respondents chose highly agreed.

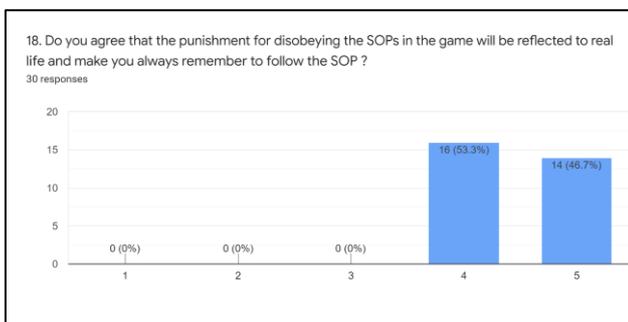


Fig.8. Bar chart of respondents' answers on whether they acquired extra knowledge on the SOPs of Covid-19.

Moreover, the next findings were related to whether they acquired extra knowledge on SOPs of Covid-19, based on Figure 9 it demonstrates that the majority of respondents, 60 percent, agreed that they had gained additional information about SOPs of Covid-19 by playing the game application, while 30 percent highly agreed. The remaining 10% of respondents selected

"neutral" when asked whether they gained better knowledge about the SOPs of Covid-19 by playing the gaming application.

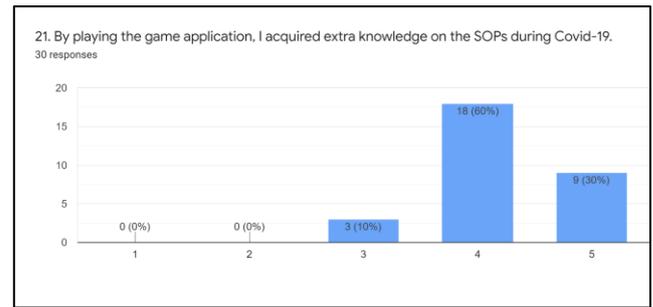


Fig.9. Bar chart of respondents' answers on whether they acquired extra knowledge on the SOPs of Covid-19.

## V. RECOMMENDATION AND CONCLUSION

Regarding future improvements for the application's research and development, further standard operating procedures can be introduced to the game, as well as automated updates to the standard operating procedure of Covid-19 whenever it is modified. Additionally, additional gaming applications or physical board games focused on the SOP of Covid-19 can be developed in the future to encourage users to play and efficiently learn the SOP of Covid-19. In addition, a feature that allows users to upload their own images and choose their own colour for their avatar might be an exciting method of luring people to the game. The availability of the Covid-19 gaming application's SOP on the iOS platform enables Apple users to study and investigate the game application. Therefore, recommendations have been made for further research in order to develop user-beneficial gaming application features.

In conclusion, based on the project's primary objectives and research questions, the standard operating procedure in gaming application development was favorably appreciated. The prototype was also tested to confirm that the gaming application worked as intended. The project's objectives were effectively achieved.

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