

Development of Media for Introduction and Prevention of Covid-19 Based on Role Playing Game for Elementary School

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ABSTRACT

This research aim to create game based on role playing game for introduction and prevention of Covid-19 in elementary school. In education, technology is needed to support the learning process, especially during the current Covid-19 pandemic, which requires students to study at home. Of course, in online learning between students and teachers, liaison media is needed to carry out the learning process, one of which is the introduction and prevention of Covid-19, which many children still do not understand. Therefore, games are needed to open and prevent Covid-19 from facilitating information for students in recognizing and knowing the prevention of Covid-19. The game is designed using Role Playing Game Maker MV in which there are characters. The game contains six grade levels. In each game, there are questions that students must answer to move up to the next grade level. Based on the questionnaire results using the Software Quality Assurance metric, the Monster Corona game has a value obtained from the results of the questionnaire, which is 82.6. At the same time, the value of the feasibility of the Monster Corona game quality is 80. The value obtained from the questionnaire is 2.6 different, and it is considered that the Monster Corona game is suitable for use. This game can be used as a student resource for the introduction and prevention of Covid-19.

1. INTRODUCTION

At the end of 2019, China announced a new disease, namely Covid-19, which more precisely came from Wuhan, Hubei Province. The disease, which originated in China, has spread to more than 190 countries and territories, including Indonesia. President Joko Widodo officially announced the first case of Covid-19 in Indonesia at the State Palace on March 2, 2020.

Revealed the case of Covid-19 in Indonesia after a report of a Japanese citizen tested positive where this Japanese foreign national had just visited Indonesia. The government then traced who had contact with the patient. Until now, many Indonesian citizens who have tested positive for Covid-19 have even died. In this case, many Indonesians have not followed the procedures recommended by the government to prevent exposure to the virus in their daily activities.

The government advises people to stay at home to break the chain of the spread of Covid-19. A few

months later, the government issued a policy to allow people to carry out activities and be productive. This activity is called "New Normal" which means the new order adapts to Covid-19.

In this problem, there is still a lack of understanding about Covid-19, especially in elementary schools, which are still very at risk of being exposed to this dangerous disease. The author has conducted interviews with teacher MI Nurul Huda regarding preventing Covid-19 that the school has carried out as a form of socialization. However, schools are experiencing difficulties due to the lack of media to make it easier for students to recognize Covid-19 and its prevention. Therefore, researchers created a Role Paying Game-based Game so that students are more easily educated. There is an interest in elementary school students in recognizing and preventing Covid-19.

Previous research that supports this research, Game "Process" It is hoped that this will serve as a means of socializing the prevention of Covid-19, the

blackbox result is 100% game functionality is running well [1]. Virtual reality educational game introduction and prevention of the Covid-19 virus using the multimedia development life cycle method (case study: early childhood). Application that will be built will convey information regarding the introduction and prevention of Covid-19. The test results of ISO 25010 that have been tried are associated with 15 Respondents if Customize software with 96.11% quality overall output has a "Very Good" [2]. Virus survivor game is an educational game to increase public health knowledge, especially early childhood, so that the body is expected to have immunity to viral diseases [3]. Ultaco games have good quality and worthy of being used as a medium to introduce Covid-19 health protocols to early childhood. This is based on the average score of the assessment the alpha test is 4.48, the beta test score is 3.41, and the evaluation score is final 3.64 [4]. Corona SDK is a simulator that is used to build a special 2 (two) dimensional game for the development of game applications that can run on smartphones based on Android, IOS, Kindle Fire and NOOK [5]. Interactive game design life cycle as proposed software used to develop this game were Adobe Flash and Adobe Premiere [6].

Based on the background, it can be formulated how can develop the implementation of role-playing game based game design for introduction and prevention of Covid-19 in elementary school. The method of the Covid-19 introduction and prevention game was made using an Android-based Role Playing Game Maker MV by creating an exciting and practical introduction and prevention concept that is easy to understand and can be accessed anywhere.

The steps to solve the problem in this research are, Based on the analysis conducted by the researcher, the system used is practical but still in the form of manuals such as print media, educational posters, and pictures. Still, there are additions to the new learning system so that students are more interested, more active, and more responsive in making games. There is still a lack of media to make it easier for students to recognize Covid-19 and its prevention. From the results of observations made at MI Nurul Huda stated that it was difficult to educate students about Covid-19 and its prevention because of the lack of media for socialization. We are trying to develop an alternative to the problems at hand, namely designing an application for the introduction and prevention of Covid-19 using Role Playing Game Maker MV so that it becomes easier for students to recognize Covid-19 and prevent the spread of Covid-19.

2. METHODS

2.1. Sampling technique and number of samples

The sampling method is by taking 25% of the fifth grade students of MI Nurul Huda, namely 15 students.

Purposive cluster random sampling is done by drawing the names of individuals in the population of each class.

2.2. Data collection techniques

Data collection methods used in this study are in the form of observation, interviews, questionnaires and literature study.

2.3. Data analysis technique

To determine the quality of the game has a quality standard, one of the methods used is measuring software quality quantitatively, namely the SQA (Software Quality Assurance) method.

2.4. Product development steps

2.4.1. The waterfall model

The method used in the development of this software uses the waterfall model. The activities in the waterfall are communication, planning, modeling, construction, and deployment [7].

a. Communication

This step is an analysis of software requirements and the stage for data collection by holding meetings with customers and collecting additional data in journals, articles, or the internet.

b. Planning

The planning process is a continuation of the communication process (requirements analysis). This stage will produce a user requirement document, or it can be said as data related to the user's wishes in making software, including plans to be carried out.

c. Modeling

This modeling process will translate the requirements into a software design that can be estimated before coding. This process focuses on data structure design, software architecture, interface representation, and procedural details (algorithms). This stage will produce a document called software requirements.

d. Construction

Construction is the process of creating code. Coding is the translation of a design into a language that a computer can recognize. The programmer will translate the transaction requested by the user. This stage is a natural stage in working on software, which will maximize computers in this stage. After the coding is complete, testing will be carried out on the system that has been created earlier. The purpose of testing is to find errors in the system so that it can correct them.

e. Deployment

This stage can be said to be final in making software or system. After doing the analysis, design, and coding, the user will use the finished system. Then the software that has been created must be maintained regularly.

2.4.2. Proposed Application Design

The proposed application is a further stage of the ongoing application, which is a proposed problem solving that can help and narrow down the issues that arise from the application being analyzed. Game Monster Corona is an educational game application that is a prototype as an educational medium that contains the introduction and prevention of Covid-19 with gameplay. The gameplay presented in this application consists of the opening of Covid-19, prevention of Covid-19, questions about Covid-19 so that students more readily understand Covid-19.

2.4.3. Storyboard

The storyboard has a critical role in the development of multimedia. A storyboard is used as a tool at the multimedia design stage. A storyboard is a graphic organizer; an example is a series of illustrations or images displayed sequentially for initial visualization of a file, animation, or sequence of interactive media, including interactivity on the web. Storyboards are usually used for film, animation, theater, photometric, comic book, business, and interactive media activities [8].

The following is an overview of the Monster Corona game storyboard display for the introduction and prevention of Covid-19.

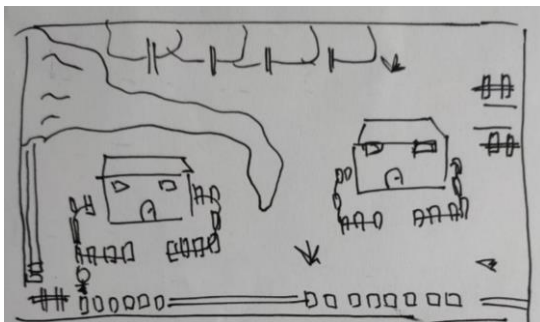


Figure 1. Storyboard early story

Figure 1 of the park map where Hana meets Fera and invites them to go to school together.

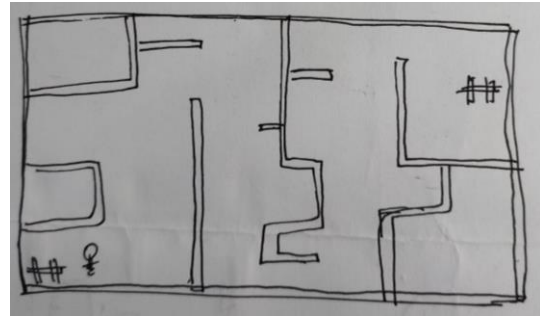


Figure 2. Storyboard map intro

Figure 2 is about Hana having to overcome obstacles before starting the next step.

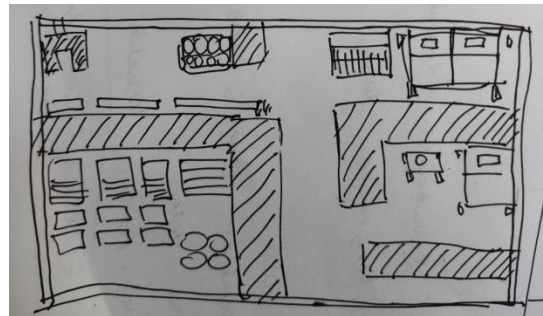


Figure 3. Hana's house storyboard

Figure 3 is about Hana finding and picking up a basket of apples for lunch.

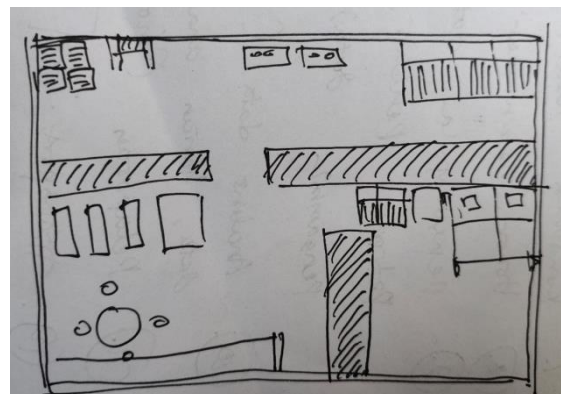


Figure 4. Fera's house storyboard

Figure 4 is about if Hana stops by Fera's house, then Hana will meet Fera. But Fera asked Hana to go to school first.

3. RESULTS AND DISCUSSION

Coronavirus disease (Covid-19) in 2020 spreads a new type of coronavirus (SARS-CoV-2) whose disease is called Coronavirus disease 2019 (COVID-19). This virus was discovered in Wuhan, China, for the first time and has infected 90,308 people as of March 2, 2020. The number of deaths has reached 3,087 people or 6%, the number of patients who have recovered is 45,726. This positive single strain RNA virus infects the human respiratory tract and is heat sensitive, and can be effectively inactivated by a

chlorine-containing disinfectant. The host's source is thought to come from animals, especially bats, other vectors such as bamboo rats, camels, and civets. Common symptoms include fever, cough, and difficulty breathing. The clinical syndrome is divided into uncomplicated, mild pneumonia, and severe pneumonia—examination of specimens taken from the throat swab (nasopharynx and oropharynx) and lower respiratory tract. Isolation is carried out on patients proven to be infected with Covid-19 to prevent wider spread [9]. The most common symptoms of Covid-19 are fever, fatigue, and a dry cough. Some patients may experience aches and pains, nasal congestion, runny nose, sore throat, or diarrhea. These symptoms are mild and occur gradually. However, some people are infected but don't show any signs and don't feel unwell [10].

Indonesia is one of the countries most affected by Covid-19. Therefore, it is necessary to take government action and full awareness of the community so that the spread of this virus can be suppressed. Strategies that can apply to prevent the spread of Covid-19 in elementary schools are diligently washing hands properly, using hand sanitizers if there is no water and soap, using masks correctly, using face shields, spraying disinfectants, giving vitamins as an immune booster—using a tissue when sneezing and coughing, avoiding traveling during the pandemic, and avoiding direct contact with other people [11].

The game has the meaning of a game; it can be done individually or in groups accompanied by specific rules and has a purpose to play the game. Games also have several benefits as learning media, such as attracting public interest and attention and enabling community participation [12]. Educational games are specifically designed to teach users (students) a particular lesson, develop concepts and understanding, guide them in practicing their abilities, and motivate them to play it^[13]. An educational game is one of the game media that contains the learning materials used to educate and direct students in a fun learning process [14]. Games as learning media can make the learning atmosphere more fun and reduce boredom with information or material conveyed by the teacher to students [15].

RPG (Role Playing Game) is a game where players play the roles of characters collaborating to knit a story together [16]. Role Playing Game Maker MV is a program that allows users to build Role Playing Game-type games with their creations. This program acts quite well as an Role Playing Game editing engine, where can play this Role Playing game directly without adding other programs [17].

Role Playing Game Maker MV is one of the many game maker software available, with 2-dimensional (2D) graphics. Output from Role Playing Game Maker MV can be exported on Windows, Mac OS,

Web Browser, and Android. Android is one of the operating systems (OS) that are widely used by users today. The existence of several versions of Android proves that Android is an OS that is widely used [18].

After doing some data collection and processing, designing the gameplay, making the game started, game creation starts with creating assets for the game [19].



Figure 5. The initial view of the menu

In this display, there are three menus, namely, start the game, continue, and options.



Figure 6. Instructions to continue the game

The figure 6 display contains instructions for continuing the game, tap one finger to move and interact, and tap two fingers to cancel. After that, we introduced the character Hana who wanted to study Covid-19.



Figure 7. Next character appearance

In figure 7, the next character is Fera. Fera and Hana then go to school.



Figure 8. Classroom view 1

Figure 8 contains classroom 1; in the school, it includes materials and questions about Covid-19.

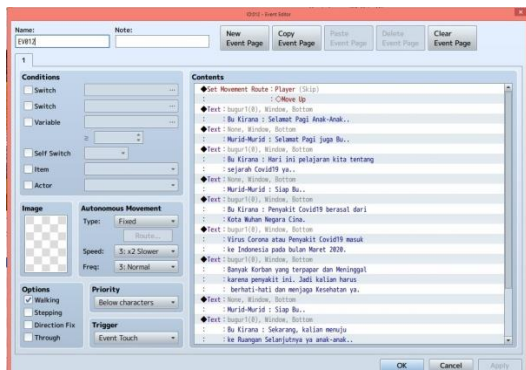


Figure 9. Covid-19 history display

Figure 9 contains the history of Covid-19, including the beginning of Covid-19, the origin of Covid-19, and its spread in Indonesia.



Figure 10. Display of general symptoms of Covid-19

Figure 10 explains the common symptoms of Covid-19, namely fever, dry cough, and fatigue. And also in the teacher figure explaining about fever.



Figure 11. Display questions

In figure 11 is about the questions that students must answer. The question is about common symptoms in people with Covid-19. If students answer correctly, then they can continue to the next class.



Figure 12. The display of fighting with the corona monster

In figure 12, if students have completed all classes and can answer all questions, then at the end, students will fight with corona monsters.

To determine the quality of the Monster Corona game has a quality standard, one of the methods used is measuring software quality quantitatively, namely the SQA (Software Quality Assurance) method. It is necessary to test the software design; software testing is running the program [20].

Table 1. Metric SQA

No.	Matrix	Rating Standard	Score
1	Auditability	Meet the standard or not	0.1
2	Accuracy	Computational accuracy	0.15
3	Completeness	Comprehensiveness	0.1
4	Error Tolerance	Fault tolerance	0.1

5	Execution Efficiency	Execution performance	0.1
6	Operability	Ease of operation	0.15
7	Simplicity	Easy to understand	0.15
8	Training	Ease of learning facilities help	0.15

There are eight components in SQA that are used to measure quality quantitatively [21]. We will make a questionnaire from these eight components, distributed to fifteen students of MI Nurul Huda who are taken at random. The fifteen students of MI Nurul Huda have been tested for the Monster Corona game.

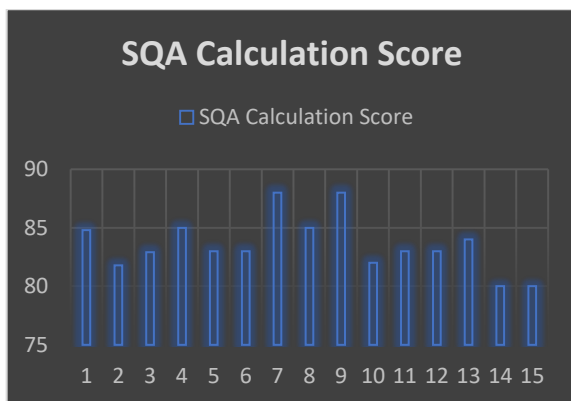


Figure 13. SQA Calculation Score

The value obtained from the results of the questionnaire with the SQA metric is 82.6. At the same time, the value of the feasibility of the Monster Corona game quality is 80. The value obtained from the questionnaire is 2.6 different, and it is considered that the Monster Corona game is suitable for use.

4. CONCLUSIONS

Through the research process that has been carried out using the waterfall method in making the Monster Corona game, the Monster Corona game can provide an overview of basic knowledge regarding the introduction and prevention of Covid-19. This knowledge is given uniquely to be a means of entertainment for children to overcome the boredom they feel while studying at home. This game is realized with a class model that must be passed to recognize and understand the dangers of covid-19 and teach children to solve a problem. Educational games based on role-playing games with Role Playing Game Maker MV can work well as expected.

The product developed has several limitations, including the following, the learning media developed is limited, namely the introduction and prevention of Covid-19 in general. And the characters developed in the Monster Corona game are only limited to a few characters.

5. ACKNOWLEDGMENT

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