

# Development of Game Recognition Covid-19 Variants, Symptoms, and Vaccinations Based on RPG

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**Abstract:** Technology is required to support the learning process in education, especially amid the present Covid-19 pandemic, which necessitates pupils to study from home. Obviously, online learning between students and teachers requires liaison media as a means of communication to facilitate the learning process, one of which is the introduction of variation, symptoms, and Covid-19 immunization, which many youngsters do not yet comprehend. Therefore, games are required to introduce variations, symptoms, and Covid-19 vaccinations in order to provide students with the necessary information to recognize variations, symptoms, and Covid-19 vaccinations. A game created with RPG Maker MV that features characters. There are six grade levels in the game. To proceed to the next grade level, kids must answer questions within each game. Based on the questionnaire responses using the SQA measure, this game received a score of 83.6 out of a possible 100. Similarly, the feasibility of quality has a value of 82.2. The questionnaire scores varied by 2.4 points, and it was determined that the variance, symptom, and Covid-19 vaccine recognition game was usable. This game can be used as a resource for introducing and preventing Covid-19 among students.

**Keywords:** Covid-19 ,variation, symptoms, immunization, RPG

## INTRODUCTION

The COVID-19 epidemic has affected numerous aspects of society, including health, education, economic, social, and cultural aspects. In the education sector, it affects the teaching and learning system, which was formerly conducted face-to-face in the classroom and is now being replaced by an online learning system or network (online)(Wahidah et al., 2020). In the new average period, offline and online learning each account for fifty percent of the total. The teachers and children in a school have distinct immune systems. Implementing teaching and learning activities in schools necessitates that all school residents have appropriate health conditions. One of the school's students infected with COVID-19 will impact the health of the entire school population. In an effort to prevent the spread of a pathogen that causes an increase in morbidity and mortality, the government began implementing a national COVID-19 vaccine campaign in January 2021(Santoso, 2022).

The Alpha variety was the first, followed by the Beta variant, the Gamma variant, the Delta variant, the Lambda variant, the Kappa variant, the Eta variant, the Lota variant, the MU variant, and most recently, the Omicron variant from Africa(Hartono & Yusuf, 2021). In January 2021, President Joko Widodo administered the first Covid-19 immunization in Indonesia, which was manufactured by Sinovac Biotech Ltd. Although the President of Indonesia has asked the population to be vaccinated against Covid-19, many Indonesians have not yet been immunized. In this topic, there is still a lack of information of the Covid-19 symptoms experienced by each Variant, as well as a lack of education regarding vaccination as a Covid-19 illness prevention method(Amalia, 2021).

The first form was the Alpha variant, followed by the Beta variant. Until recently, vaccination against COVID-19 has been recommended for everyone aged 12 and older(Yakob et al., 2020). The expansion of this target age range is intended to provide broader community protection. Considering the studies and recommendations issued by the National Immunization Expert Committee or the Indonesian Technical Advisory Group on Immunization (ITAGI) on December 9, 2021, regarding vaccination for children aged 6 to 11 years, it has been determined that the administration of COVID-19 vaccination in this age group is safe. And must adhere to predetermined protocols(Suharmanto, 2020). Provision of vaccinations for children aged 6-11 years is governed by the Decree of the Minister of Health Number 6688 of 2021 concerning the Implementation of

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COVID-19 Vaccination for Children aged 6 to 11 Years with the implementation of services adjusted to standards outlined in the Decree of the Minister of Health of the Republic of Indonesia Number 6424 of 2021 regarding Instructions Technical Implementation of Vaccination in the Context of Handling the COVID-19 Pandemic(Nurjanah et al., 2021).

People are more easily exposed to the coronavirus due to a lack of education regarding the symptoms of the covid version and immunization, especially schoolchildren who are still at a high risk of contracting this severe disease. Therefore, it is vital to develop a Game Introduction to Covid Variants, Symptoms, and Immunizations so that students may be better aware of the Covid-19 disease and provide vaccinations to prevent it. Consequently, there is a need for the media to introduce the Covid-19 Variant alongside its symptoms and game-based vaccination instruction. RPG (Role Playing Game) is a type of games in which the player assumes different duties based on a predetermined narrative and a predetermined role. RPGs (Role-Playing Games) are in high demand due to their intricate storylines and pivotal characters. The role in the game will give the player the impression that he is the game's protagonist. The concept of genre has a significant impact on the digital design of a game, taking into account the game's goals and objectives, the nature of its gameplay, and even its own personality. In the learning process, RPG (Role Playing Game) games can also be employed as learning media.

## LITERATURE REVIEW

### Covid 19 Variances and Symptoms

#### Delta

The delta form of COVID-19, also known as B.1.617.2, is one of the virus's mutations (B.1.617). This variety was detected for the first time in India in October 2020. The Delta variety has spread to 74 nations and regions across the globe, including Indonesia. The Delta version of the virus is more harmful and contagious than the original virus, and it can cause more severe illness. People infected with the Delta form were twice as likely to require treatment as those infected with other variants, according to the findings (such as alpha). The symptoms of the Delta variety of COVID-19 can vary from person to person. Infection with the Delta version of the Coronavirus can also cause a spectrum of mild to severe COVID-19 symptoms. Some individuals who test positive for the Delta variation of COVID-19 have no symptoms, however the majority of those who test positive notice a worsening of symptoms within 3 to 4 days(Santos, 2022).

#### Alpha

The first incidence of the alpha variety was detected in Israel on 22 December 2020; it rapidly spread, with the United Kingdom being home to the majority of strains. At least eighty countries, including the United States, have detected this variation. Several changes on the surface spike protein of the B.117 variety enable the virus to bind to and enter host cells within the body. These variations spread rapidly from individual to individual. Health officials in the United Kingdom report that B.117 is around fifty percent more contagious than the original coronavirus(Syafrida & Hartati, 2020).

#### Beta

It was first identified in South Africa around the beginning of October 2020. Since then, it has been discovered in at least four additional nations, including the United States. B.1351 includes mutations in the spike protein seen in B.117. There are currently no indications that B.1351 produces more severe disease than prior coronavirus variants(Santos, 2022). The impact of this variant's mutation on immunity is one of the key causes for concern.

#### Gamma

Infected Brazilians entering Japan for the first time in January 2021. Late in January of 2021, it was first identified in the United States. P.1 comprises 17 distinct mutations, including numerous important spike protein alterations present in the two variations initially reported in the United Kingdom and South Africa, as well as a number of additional mutations. P.1 is produced based on samples gathered during the surge in confirmed COVID-19 cases in January 2021 in Manaus, Brazil. In the preceding sample, this variation does not exist. P.1 and B.1.351 share a variety of mutations(Santos, 2022). This variation could have an effect on immunity and vaccine efficacy.

#### Kappa

There are two mutations in the viral spike protein in the Indian form. According to the E484Q and L452R double mutations, the resulting value is B.1.617. E484Q is equivalent to E484K, the mutation observed in the South African form (B.1.353) and the Brazilian variant (P1). In the meanwhile, L452R was found in the California virus variant (B.1429). The same was discovered in the German version(Pratama & Tura, 2021). The protein increase permits the virus to enter the body and cause infection. If the virus evades the immune system's

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antibodies or if a vaccine is produced, it can swiftly spread throughout the body. There has been an increase in confirmed coronavirus infections in India as a result of this virus.

### Covid 19 Vaccination

Vaccines are a defensive and cost-effective measure for preventing the spread of COVID-19. To lower the prevalence of COVID-19, the following types of vaccinations are being developed. Vaccination encodes an antigen into the cellular machinery of the host using mRNA. This form of vaccination possesses a genomic structure that is capable of self-amplification, resulting in excessive RNA replication in the cytosol. However, the safety and effectiveness of human mRNA vaccines remain undetermined. The mRNA-based vaccines stimulate the activation of B cells and the cytotoxicity of T cells. The benefits of this mRNA vaccine include the lack of genome integration, an enhanced immune response, quick development, and the synthesis of multimeric antigens (Haq & Prawoto, 2022). This type of mRNA vaccine is mRNA-1273, an mRNA vaccine that encodes the viral spike protein (S) of SARS-CoV-2, which has reached the third phase after intramuscular delivery on day 0 + 28; the mechanism of action of the mRNA vaccine is described below. In addition, Pfizer BioTech's RNA-based BNT162 (3 LNP-mRNAs) vaccine is undergoing its third phase of development. Covid-19 vaccination, regardless of kind, whether mRNA, PicoVacc, subunit, or DNA, is a preventative intervention that must be implemented to decrease and halt the global spread of Covid-19.

### Game Designing Apps

RPG (Role Playing Game) is a game in which players assume the roles of characters who work together to weave a story. RPG Maker MV is a tool that allows users to create their own RPG-style games. This tool functions admirably as an RPG editing engine, allowing the game to be played without the need for other software (Soemitha et al., 2021). RPG Maker MV is one of numerous game-creation programs featuring two-dimensional visuals. RPG Maker MV output is compatible with Windows, Mac OS, Web Browser, and Android. Android is one of the widely-used operating systems (OS) in use today. Multiple Android versions demonstrate that Android is the most popular operating system.

RPGs created with a tool or game engine, specifically RPG Maker MV. The RPG Maker MV game engine is software that is used to create 2D video games. Numerous game developers have adopted RPGs as a gaming genre (Indah et al., 2021). The growth of numerous RPG genres in Android-based learning games has a good impact on education. RPG Maker is designed with the user in mind and allows novices to create a complete RPG without requiring a day of programming knowledge or a complex programming language. In the RPG Maker game engine, Java and other programming languages are utilized.

### METHOD

The waterfall model was utilized in the development of this program. The waterfall includes the operations of communication, planning, modeling, construction, and deployment. Communication is an analysis of software requirements and the foundation for data collection, which involves holding meetings with clients and obtaining extra data from journals, papers, and the internet. The communication process is continued by the planning procedure (requirements analysis) (Fadlillah & Setyowahyudi, 2021). This step will produce a user requirement document, or data pertaining to the user's desires in creating software, including implementation strategies.

Method of sampling and number of samples is the sampling procedure consists of selecting 25%, or 25 kids, from the fifth-grade population of SDN 5 Tigaraksa. Individuals from each class's population are selected randomly for cluster-based sampling with a specific aim. This study collects data through observation, interviews, questionnaires, and literature review. The SQA (Software Quality Assurance) approach is used to measure software quality quantitatively in order to evaluate whether a game meets a quality requirement (Dirgahayu & Prihantoro, 2020).

### RESULT

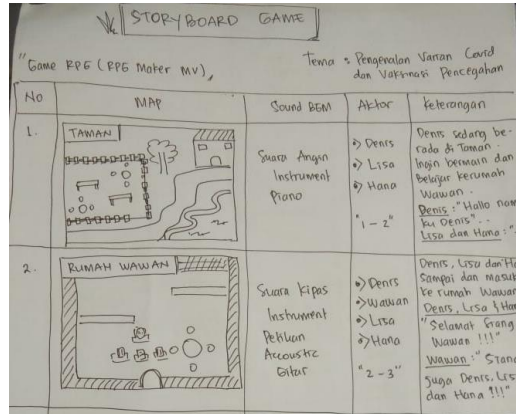
After data collecting and processing, developing the gameplay, and launching the game, game creation begins with creating game assets. The proposed application is the next phase of the ongoing application; it is a proposed problem-solving strategy that can assist in narrowing down the issues that come from the application being studied. The game for teaching COVID-19 variants, symptoms, and vaccinations is an educational game application that serves as a prototype for an instructional medium containing a gameplay-based introduction to the Covid-19 variant, symptoms, and vaccinations. This application's gameplay comprises an introduction to the Covid-19 variant, symptoms, immunizations for Covid-19, and questions concerning Covid-19 to facilitate student comprehension of the virus.

Playing the game is meant to be a game, and it can be done alone or in groups with certain rules, with a definite goal in mind (Retnowati & Rizal, 2021). Learning through games has many advantages, including capturing public attention and encouraging community participation. The purpose of educational games is to

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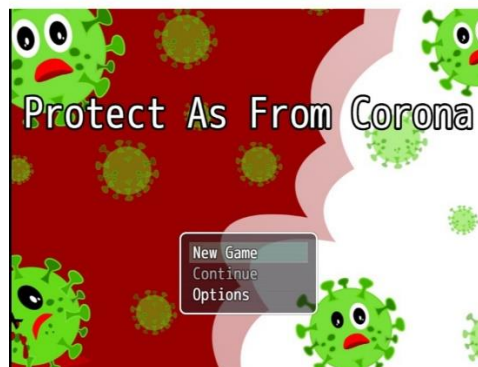


help students learn a specific lesson, improve concepts and comprehension, assist them in honing their skills, and encourage them to keep playing. The significance of the storyboard in the development of multimedia is crucial. Storyboards can be utilized as a tool from the beginning to the end of the production process. A storyboard is a series of images and graphics that are displayed constantly for the initial visualization of an interactive media collection, such as animation files or web interaction.



**Figure 1. Storyboard opening**

Figure 1 shows the introductory tale and the characters in the game. The original storyboard comprises the interactions between the characters and actors in the game and the maps in the protect as from the corona game.



**Figure 2. Opening game**

Figure 2 is the opening of the game, which contains new games, continuing the game, and options. Students can choose the desired button; if they want a new game, choose a new one. If they want to continue the previous game, choose to continue and options.



**Figure 3. Class conversation**

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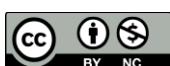




Figure 3 is one of the class dialogues generated by researchers in the programming language in the protect as from corona game application. Dialogues exist in each class; conversations are in the form of material delivered by the instructor actor and numerous students asking questions.



Figure 4. Questions for each class

Figure 4 contains the questions that students must do. After students are given material in each class, students will answer questions to go to the next class. However, if the student cannot answer the question, the student is declared the game over and must repeat the class.

To measure the quality of the Covid-19 variation introduction game, symptoms and immunizations have quality standards. One of the ways utilized is to measure software quality quantitatively, notably the SQA (Software Quality Assurance) method. To build reliable and quality software, it is required to test the software created, and software testing is the process of running the program.

There are eight components in SQA that are utilized to quantify quality quantitatively. From these eight components, a questionnaire will be constructed, which will be distributed to twenty-five students of SDN 5 Tigaraksa who are picked at random. Twenty-five SDN 5 Tigaraksa kids have been assessed for the Covid-19 variance game, symptoms, and vaccination introduction.

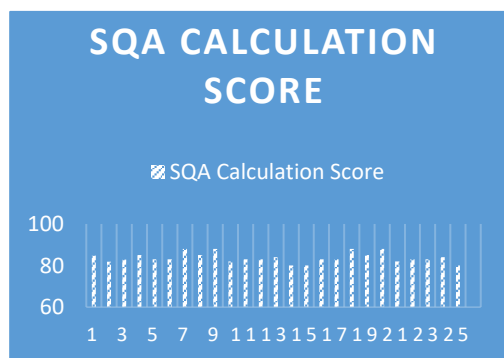


Figure 5. SQA Score

The value obtained from the questionnaire results with the SQA metric is 83.6. While the value of the feasibility of the quality of introducing the covid-19 variant, symptoms, and vaccination game is 80. The value obtained from the questionnaire differs from 2.4, and it is considered that the game of introducing the covid-19 variant, symptoms, and vaccination is feasible to use.

## DISCUSSIONS

Covid-19 has had the most impact on Indonesia. Therefore, government effort and community awareness are vital to stop this virus from spreading. In elementary schools, the best ways to prevent the spread of Covid-19 are to wash hands thoroughly, use hand sanitizers if there is no water and soap, wear masks, use face shields, spray disinfectants, give vitamins as an immune booster, avoid direct contact with other people, and not travel during the pandemic. It's possible to create a pleasurable learning experience for pupils by incorporating educational content into a game. Student engagement and retention can both be improved by using games as instructional medium in the classroom. RPG is a type of game where players take on the roles of characters and work together to make a story. Creators can use the Role Playing Game Maker MV application to make their own RPG-style games with their own creations. This tool is a great RPG editor, allowing you to play the game

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without having to install additional software. Role Playing Game Maker MV is one of a slew of 2-dimensional (2D) game creation tools available. Windows, Mac OS, Web Browser, and Android are all supported for importing and exporting Role Playing Game Maker MV output. Android is one of the most extensively used operating systems (OS) nowadays. Because there are so many different versions of Android, this indicates that Android is a popular operating system.

Technology is required to support the learning process in education, especially amid the present Covid-19 pandemic, which necessitates pupils to study from home. Obviously, online learning between students and teachers requires liaison media as a means of communication to facilitate the learning process, one of which is the introduction of variation, symptoms, and Covid-19 immunization, which many youngsters do not yet comprehend. Therefore, games are required to introduce variations, symptoms, and Covid-19 vaccinations in order to provide students with the necessary information to recognize variations, symptoms, and Covid-19 vaccinations. A game created with RPG Maker MV that features characters. There are six grade levels in the game. To proceed to the next grade level, kids must answer questions within each game. Based on the questionnaire responses using the SQA measure, this game received a score of 83.6 out of a possible 100. Similarly, the feasibility of quality has a value of 82.2. The questionnaire scores varied by 2.4 points, and it was determined that the variance, symptom, and Covid-19 vaccine recognition game was usable. This game can be used as a resource for introducing and preventing Covid-19 among students.

### CONCLUSION

Using the waterfall approach to conduct research for the Covid-19 variance recognition game, symptoms, and vaccinations, it has been determined that games can provide an overview of fundamental information surrounding the introduction of Covid-19 variance, symptoms, and immunizations. This information is presented in a unique manner so that youngsters can use it to combat the boredom they experience while studying at home. This game is based on a class model that children must pass in order to recognize and comprehend the hazards of covid-19, as well as to educate them how to solve a problem they face. Using RPG Maker MV, educational games based on role-playing games can function as planned.

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### REFERENCES

- Amalia, H. (2021). Omicron penyebab COVID-19 sebagai variant of concern. *Jurnal Biomedika dan Kesehatan*, 4(4), 139-141.
- Dirgahayu, T. (2020). Software Quality Assurance pada Perusahaan Pengembang Perangkat Lunak Skala Kecil dan Menengah. *Jurnal Riset Teknologi dan Inovasi Pendidikan (Jartika)*, 3(2), 283-294.
- Fadhilah, M. & Setyowahyudi, R. (2021). Ultaco Game Development as a Media to Introduce Covid-19 Health Protocol in Early Childhood. *Al-Ishlah: Jurnal Pendidikan*, 13(1). 485-496.
- Haq, N. & Prawoto, B. (2022). Analisa Kestabilan Model Penyebaran Covid-19 dengan Varian Baru. *MATHunesa: Jurnal Ilmiah Matematika*, 10(2), 317-325.
- Hartono & Yusuf, Y. (2021). Tinjauan Molekuler dan Epidemiologi Mutasi pada Virus SARS-CoV-2. *Bionature*, 22(1), 43-49.
- Indah, D. Dewi, C. & Putu, N. (2021). Game Development of "Prokes" to Socialize the Prevention of Covid-19. *Jurnal Ilmiah Merpati*, 9(2), 176-187.
- Nurjanah, R. (2021). Using Adobe Flash-Based Game to Educate Children about Covid-19. *Metathesis: Journal of English Language, Literature, and Teaching*, 4(3). 249-256.
- Pratama, G. & Tura, T. (2021). Meningkatkan Pengetahuan dalam Menghadapi Covid-19. *Jurnal Padma : Pengabdian Kepada Masyarakat*, 2(1), 97-101.
- Retnowati, P. & Rizal, U. (2021). Analisis Perancangan Aplikasi Game Menggunakan Corona SDK Pada Smartphone Berbasis Android. *Expert – Jurnal Manajemen Sistem Informasi Dan Teknologi*, 2(1), 11-20.
- Santoso, A. (2022). Covid 19 : Varian dan Mutasi. *Jurnal Medika Utama*, 3(2), 1980-1986.
- Soemitha, G. (2021). Pembuatan Game Mobile Arcade "Covid Go Away" Berplatform Android. *JIKSI : Jurnal Ilmu Komputer dan Sistem Informasi*, 9(1).
- Suharmanto. (2020). Perilaku Masyarakat dalam Pencegahan Penularan Covid-19. *Jurnal Kedokteran Universitas Lampung*, 4(2), 91-96.

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- Syafrida, S. & Hartati, R. (2020). Bersama Melawan Virus Covid 19 di Indonesia. SALAM: Jurnal Sosial dan Budaya Syar-I, 7(6), 495-508.
- Wahidah, I. (2020). Pandemic: Analysis of Government and Community Planning in Various Prevention Measures. Jurnal Manajemen dan Organisasi (JMO), 11(3), 179-188.
- Yakob, M. (2020). Strategi Pencegahan Penularan Virus Covid-19 Pada Sekolah Dasar di Kecamatan Pante Bidari Aceh Timur. International Journal of Community Service Learning, 4(3).

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