

# Covid-19 Disaster Mitigation E-Module for Elementary School Children: A Preliminary Study

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## ABSTRACT

This research was motivated by the need for innovation to break the spread of the coronavirus for elementary school students. The purpose of the study was to examine efficient innovations in reducing the spread of the coronavirus for elementary school students particularly to first grade students or students in the age of early childhood (ages 7 to 8). This research was qualitative. Data collection tools used observation sheets, interview sheets, and documentation. The results showed that it was necessary to develop a covid-19 disaster mitigation e-module for elementary school students to educate students and reduce the spread of the coronavirus. The implication of this research was as a foundation for developing a covid-19 disaster mitigation e-module for elementary school students.

**Keywords:** *E-Module, Disaster Mitigation, Covid-19, Elementary School-Aged Children*

## 1. INTRODUCTION

The world is suffering from a COVID-19 pandemic. A pandemic is a disease outbreak that spreads simultaneously and occurs in a wide area [1]. This pandemic spreads and affects all people throughout the country. The pandemic will cause a significant increase in disease rates [2]. This condition affects everyone in the world.

The COVID-19 pandemic is an outbreak of an infectious disease caused by the coronavirus [3]. This virus attacks the human respiratory tract, which can cause death [4]. This virus can be transmitted through interactions between humans, through splashes of saliva such as coughing, talking, and through objects contaminated with saliva splashes.

Cases of the COVID-19 pandemic in Indonesia are increasing every day [5]. The updated data as of June 15, 2021, stated that 1,92 million Indonesians were infected, and 53,116 people have died due to coronavirus. This data proves that the COVID-19 pandemic in Indonesia has spread widely. Therefore, it is necessary to find ways to reduce the spread of this virus.

Efforts to reduce the spread of this coronavirus are to reduce direct interactions between humans [6]. This effort is known as physical distancing. Physical distancing is a movement that limits human physical distance [7]. During physical distance, individuals

should avoid going to crowded places, limit direct contact with other people, maintain distance, wash hands and always wear masks outside. This effort is effective in reducing the spread of the coronavirus [8].

However, many people do not carry out this movement well. This situation makes it difficult to stop the spread of COVID-19. Based on a literature review, many people do not carry out this movement because they do not fully understand the dangers of COVID-19 [9][10][11]. People do not know how to deal with the COVID-19 pandemic because of the lack of knowledge about the COVID-19 pandemic. Therefore, it is necessary to educate the public to understand all information about the COVID-19 pandemic, especially for elementary school-aged children.

Children have a high risk of being infected with the coronavirus because they do not understand the covid-19 pandemic. Therefore, innovation is necessary to educate elementary school students about the covid-19 pandemic following their characteristics. Initial research is needed to determine the type of innovation that can be used to educate elementary school students related to the covid-19 pandemic.

## 2. RESEARCH METHOD

This research is development research using a 4-D model, which consists of define, design, develop, and disseminate. This research is in the defined stage as an initial analysis that establishes and explains the needs. This research study is limited to the defined stage by analyzing the learning process in elementary schools. This research is qualitative. Data collection tools use observation sheets, interview sheets, and documentation.

## 3. RESULTS AND DISCUSSION

The findings of this study are divided into several parts as follows:

### 3.1. *Initial and Final Analysis*

The initial and final analysis aims to find out the fundamental problems that occur. The background of this research is the spread of the coronavirus causing the covid-19 pandemic. The world is in an uproar because of the pandemic disaster called the covid-19 pandemic [12]. A pandemic is a disease outbreak that spreads simultaneously over a large area [13]. A pandemic is an epidemic that spreads throughout a country that affects many people [14]. A pandemic will result in an increase in disease rates from normal limits. This disease can occur suddenly.

The COVID-19 pandemic has hit the world. The covid-19 pandemic is caused by a virus called coronavirus [15]. Coronaviruses are a group of viruses that cause disease in humans and animals. Some of these viruses can cause respiratory infections such as coughs, colds, MERS, and SARS. This new type of virus is what causes COVID-19. Covid-19 is an infectious disease caused by a new type of coronavirus [16].

This new type of coronavirus was first discovered in Wuhan City, Hubei Province, China [17]. This virus was discovered in humans in December 2019. Until now, more than 200 countries have been infected with COVID-19 cases with more than 160 million people. More than 3.5 million people have died. There are five countries in the world with the highest cases, namely the United States, India, Brazil, France, and Turkey.

Covid-19 was first reported in Indonesia with as many as two cases on March 2nd, 2020. More than 1.8 million Indonesians have been confirmed positive, and more than 50 thousand people have died. Five provinces with the highest cases of COVID-19 are Riau, Jakarta, Central Java, and West Sumatra.

This COVID-19 infection is caused by a coronavirus. Initially, COVID-19 was transmitted from animals to humans. However, it was recently discovered that this virus can be transmitted between humans. A person will get infected if:

a. Inhaling splashes of saliva from COVID-19 sufferers, either intentionally or unintentionally. This splash can occur through sneezing or coughing.

b. Holding the nose, mouth, and eyes directly without washing hands after handling objects that contain saliva splashes from COVID-19 sufferers.

c. Interacting directly with COVID-19 sufferers [18]

This coronavirus can attack anyone but it will be more dangerous if it attacks the elderly, smokers, pregnant women, and people with weak immune systems, including children [19].

The number of corona cases in Indonesia is increasing every day. This spread is due to the lack of community compliance with the implementation of health protocols. The Indonesian government has implemented physical distancing movements to the community, but they have not fully obeyed these rules [20]. Consequently, many Indonesians got infected and died.

The non-compliance was due to a lack of knowledge of the coronavirus facts [21]. Therefore, it is necessary to educate the public, especially elementary school-aged children who are at risk of being infected.

Innovation must be appropriate and follow the characteristics of elementary school students. Based on the literature review, providing information about disasters will be able to increase public awareness. Providing disaster information can be done by developing a disaster mitigation e-module. This is the reason why the development of the COVID-19 disaster mitigation e-module is essential.

### 3.2. *Student Analysis*

Based on the analysis, the development of the COVID-19 disaster mitigation e-module is indeed necessary. The e-module development must follow the characteristics of elementary school students. Elementary school students are in the concrete operational period [22][23]. This period indicates that the learning process in elementary schools must use concrete objects and real experiences. At this time, students will find it easier to learn by using real objects. Thus, the e-module developed must provide illustrations to help students understand the material.

In addition, the development of e-modules must follow the level of students' mechanistic thinking development [24]. Elementary school students think mechanistically, starting from the process of remembering, memorizing, and thinking logically. Therefore, the e-module developed must have a simple graphic design to help students understand.

In addition, the researchers distributed questionnaires to find out the students' needs for the development of the disaster mitigation e-module. The results can be seen in the following table.

Table 1. Table of Results of the Questionnaires

No	Aspects	Percentage (%)
1	Have you ever learned about disasters? Yes No	25% 75%
2	Have you ever used a digital module? Yes No	0% 100%
3	Do you agree if you use digital modules in learning? Yes No	100% 0%
4	Do you have a smartphone? Yes No	100% 0%
5	Can you use a smartphone? Yes No	100% 0%

From the questionnaire, many students have not learned about disasters. Students have never used the module digitally. Students agree to use the module digitally. Students have smartphones and can use them. In conclusion, elementary school students are interested in using the module digitally.

This data is evidence that elementary school students have been able to use technology simply in industry 4.0. Thus, this COVID-19 disaster mitigation module develops following the characteristics of elementary school students by using technology. Therefore, this covid-19 disaster mitigation module was developed digitally

### 3.3. Task Analysis

Task analysis in this study aims to find out what tasks students will get. Based on the analysis, the tasks given are related to the material included in the digital module

### 3.4. Material Analysis

In general, the material provided consists of the concept of disaster, disaster management, covid-19, and covid-19 disaster management. This concept can be seen in the following picture

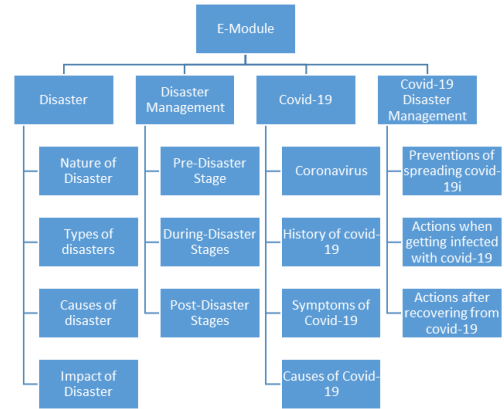


Figure 1. Image of E-module Concept Map

This concept will be used for e-module development.

### 3.5. Instructional Objectives Analysis

This e-module aims to achieve the expected instructional objectives. The objectives in this e-module are divided into two, namely general instructional objective and specific instructional objective, namely:

#### 3.5.1. General Instructional Objectives: Students Can Understand the Concept of Disaster Correctly.

The specific instructional objectives are:

- Students can understand the nature of disasters correctly
- Students can understand the types of disasters correctly
- Students can understand the causes of disasters correctly
- Students can understand the impact of disasters correctly

#### 3.5.2. General Instructional Objectives: Students Can Understand the Concept of Disaster Management Correctly.

The specific instructional objectives are:

- Students can understand the pre-disaster stages of disaster management correctly
- Students can understand the during-disaster stages of disaster management correctly
- Students can understand the post-disaster stages of disaster management correctly

#### 3.5.3. General Instructional Objectives: Students Can Understand the Concept of Covid-19 Correctly.

The specific instructional objectives are:

- a. Students can understand coronavirus correctly
- b. Students can understand the history of covid-19 correctly
- c. Students can understand the symptoms of covid-19 correctly
- d. Students can understand the causes of covid-19 correctly

#### 3.5.4. *General Instructional Objectives: Students Can Understand Covid-19 Disaster Management Actions.*

The specific instructional objectives are:

- a. Students can understand and prevent the spread of COVID-19 correctly
- b. Students can understand the actions taken when getting infected with COVID-19 correctly
- c. Students can understand the actions taken after recovering from covid-19 correctly

Instructional objectives must be achieved by students in using COVID-19 disaster mitigation e-module.

Based on needs analysis, student analysis, concept analysis and instructional objectives analysis, the right innovation to educate elementary school students about the spread of covid-19 are to develop a covid-19 disaster mitigation e-module. The use of modules can improve the quality of student learning [25][26]. In addition, combining modules and technology system also supports the achievement of learning objectives in industry 4.0.

## 4. CONCLUSION

Based on the research results, the development of the COVID-19 disaster mitigation e-module is necessary for elementary school students to educate them to reduce the spread of the coronavirus. The e-module developed is following the characteristics of elementary school students and industry 4.0. The implications of this research can be used as the basis for developing a covid-19 disaster mitigation e-module for elementary school students.

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