The Effectiveness of Utilizing Artificial in Telligence (AI) Chatbot REPENA (Teens Care For Disaster) In Disaster Education in The Era of Industrial Revolution 4.0 and Society 5.0 in 2023

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ABSTRACT

Indonesia is a country with the second highest potential for natural disasters in the world (IRBI, 2022). The high potential for disasters in Indonesia is apparently not accompanied by Indonesia's ability to face disasters. So inclusive disaster management is needed, namely disaster management that involves all elements of society, including youth groups. Teenagers who live in the era of industrial revolution 4.0 certainly find it easier to obtain information related to disasters by using technology. For example, in the use of artificial intelligence (AI) technology as a means of education, business, trade (buying and selling) and use of services. Therefore, the author was encouraged to create the REPENA Chatbot as a means of increasing knowledge among teenagers by utilizing Artificial Intelligence (AI) technology. The aim of this research is to find out the effectiveness of using Artificial Intelligence (AI) Chatbot REPENA (Teenagers Care for Disasters) technology in Disaster Education among Class Quasi experimental pre post test method with control group with a sample size of 62 people. Statistical test results show that there is a difference in the average knowledge of students who received education with the REPENA Chatbot with a P Value of 0.025. From the results of this research, it can be concluded that increasing knowledge related to disaster education among teenagers using the REPENA Chatbot is effective and has the potential for great long-term benefits.

Keywords: chatbot, disaster, repena

INTRODUCTION

Indonesia is a country with the second highest potential for natural disasters in the world (Maplecorft (2010) in Dwi Bayu Taufiqurrahman). Geologically and geographically, Indonesia's position is between several faults and the presence of many volcanoes further increases this risk, especially earthquakes and tsunamis. This means that Indonesian people are always under threat of disaster, so they must be aware that their region has a high risk of disaster (Karina and Stefani 2020 in Dwi Bayu).

The high potential for disasters in Indonesia is apparently not accompanied by Indonesia's ability to face disasters. Data from (BNPB) shows that the total number of disasters in 2020 was 4,650 disasters. Quoted from CNB news in 2021, Indonesia experienced a loss of 22.8 trillion in the last 10 years recorded by the ministry of finance. Furthermore, the number of people potentially affected is 5,404,239 people who are in potential disaster areas.

Meanwhile, according to (IRBI, 2022) West Sumatra province has a high risk class with a value of 147.36 (high risk class). With the threat of disasters including; Earthquakes, tsunamis,

volcanoes, floods, landslides, droughts, extreme weather, extreme waves and abrasion, as well as forest and land fires. The risk class classification for districts/cities in West Sumatra province is 8 districts/ cities with a high risk class and 11 districts/cities with a medium risk class.

From this data, inclusive disaster management should be required. Namely disaster management that involves all elements of society, including youth groups. Increasing knowledge among teenagers regarding disasters is considered important in disaster management efforts. Teenagers who live in the era of industrial revolution 4.0 certainly find it easier to obtain information related to disasters by using existing social media such as Google, browser, Instagram, Twitter, etc. The technological revolution 4.0 encourages the emergence of the social revolution 5.0 in which the use of the technological revolution 4.0 is carried out as maximally as possible. For example, in the use of *artificial intelligence (AI)* technology as a means of education, business, trade (buying and selling) and use of services.

Artificial Intelligence (AI) technology is one of the technologies that is relevant to this health technology transformation program. So *artificial intelligence* (AI) can also be used as an alternative tool in the field of health technology, especially in the disaster management sector. One of the media that can be used is Chatbot, which is an *Artificial Intelligence* (AI) based program that can stimulate conversation or chat with other users like humans via messaging applications, websites, mobile applications or by telephone (Adamopoulou and Moussiades, 2020) . Chatbots have been used in the world of education as a learning medium (Wijaya, Sarosa and Tolle, 2018) where students can interact with chatbots and help teachers in providing material and quizzes. (Hakim *et al.* , 2019) used chatbots as a medium for midwifery students learning about midwifery terms.

Based on the above phenomenon, where Indonesia in general and West Sumatra in particular are located in disaster-prone areas , the author feels it is necessary to develop a learning media that can increase the potential of teenagers in disasters, namely by increasing knowledge in teenagers.

So a work of innovation related to emergencies and disasters was born by utilizing *artificial intelligence technology* in the form of a chatbot called REPENA (Teenagers Care for Disasters). This work of innovation carries the title Effectiveness of Using Artificial Intelligence (AI) Chatbot REPENA (Teenagers Care for Disasters) in Disaster Education in Class XI Teenagers at Padang 5 State High School in the Era of Industrial Revolution 4.0 and *Society* 5.0 in 2023.

RESEARCH METHODS

The research method used is the Quasi experimental pre post test with control group method. The sample was divided into two large groups, namely 31 people were the control group who received

disaster education using conventional methods (lectures) while the other 31 people were the intervention group who received education using a chatbot.

RESULT AND DISCUSSION

The characteristic data obtained regarding experience as a disaster victim and the information obtained about disasters are as follows:

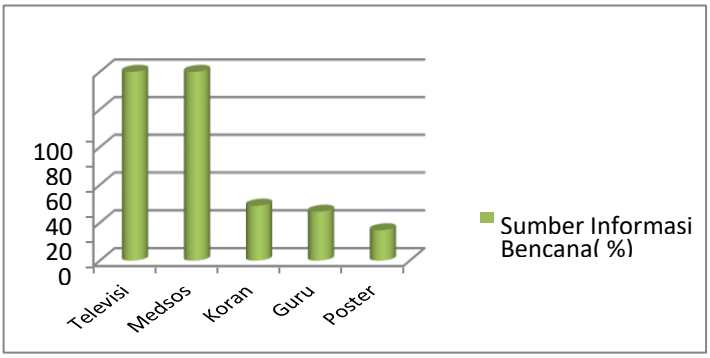

Figure 1. Disaster Resources

All respondents got information about disasters from television and social media, followed by a small number who got information from newspapers (29%), teachers (25.8 %), and posters (16%). Furthermore, the disaster experiences that respondents have experienced are as follows :

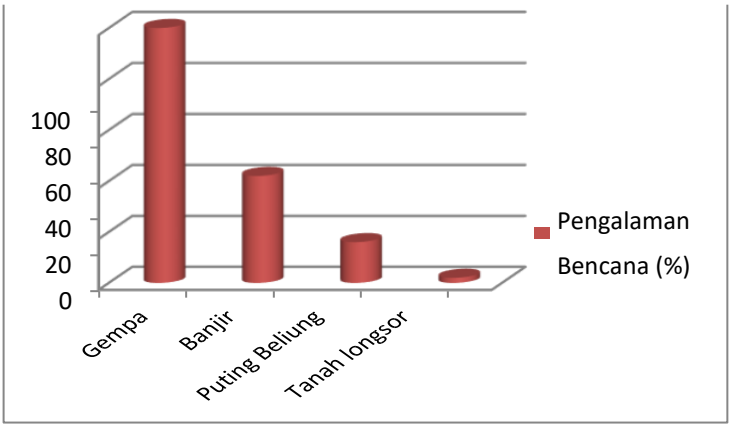

Figure 2. Disaster Experience

All respondents had experienced earthquakes, some had experienced floods (42%), tornadoes (16%), and landslides (2%).

Table 1. Average distribution of respondents' knowledge before and after given education using conventional methods

Knowledge	Mean	elementary school	S.E	*p value*	N
Pre-test	12.2	2,173	0.210	0.00	31
Post test	14.03	1,682	0.302		

The average level of knowledge of students before being given education using conventional methods is 12.2 with a standard deviation of 2.173, while the average level of knowledge of students after being given education using conventional methods is 14.03 with a standard deviation of 1.682. Statistical test results show that there is a difference in the average knowledge of students before and after receiving education using conventional methods with a *p value* of 0.00.

Table 2. Average distribution of respondents' knowledge before and after provided education using the REPENA Chatbot Method

Knowledge	Mean	elementary school	S.E	*p value*	N
Pre-test	12.35	1.795	0.323	0.00	31
Post test	15.19	2.258	0.405		

The average level of knowledge of students before being given education with Chatbot Repena was 12.35 with a standard deviation of 1.795, while the average level of knowledge of students after being given education with Chatbot Repena was 15.19 with a standard deviation of 2.258. Statistical test results show that there is a difference in the average knowledge of students before and after receiving education with the REPENA Chatbot with a *p value* of 0.00.

Table 3. Average distribution of respondents' knowledge based on Disaster Education Methods

Knowledge	Mean	elementary school	S.E	*p value*	N
Conventional	14.03	1.682	0.302	0.025	31
Chatbots	15.19	2.258	0.405		

The average level of knowledge of students who were given education using conventional methods was 14.03 with a standard deviation of 1.682, while the average level of knowledge for students who were given education using the REPENA Chatbot was 15.19 with a standard deviation of 2.258. Statistical test results show that there is a difference in the average knowledge of students who received education with the REPENA Chatbot and conventional ones with a *p value* of 0.025.

The statistical test results above show that there is a significant increase in knowledge scores after students were given education both conventionally and using the REPENA Chatbot, however, when compared between the two methods, there is also a significant difference between the average student knowledge between the conventional method and the REPENA Chatbot , with a higher average knowledge in students who received education with the REPENA Chatbot. So the author assumes that education with the REPENA Chatbot is more effective than conventional methods.

CONCLUSIONS AND RECOMMENDATIONS

Referring to the discussion previously described which is based on essential phenomena related to reproductive health problems, the following conclusions are formulated:

1. Participation in disaster management can be done by increasing teenagers' knowledge about disasters.
2. One of the essential steps that is important to take is providing education to teenagers. Through Chatbot REPENA (Teenagers Care for Disasters) will be a solution that combines narrative material, animated images, educational videos and disaster evaluation games . The design of this application utilizes artificial intelligence (AI) technology which is created in the form of Cahatbot links on various websites which can be accessed for free.
3. Application (Teenagers Care for Disasters) passed a trial using the quasiexperimental pre-post test with control group method to test the effectiveness of using the REPENA (Teenagers Care for Disasters) Chatbot to avoid discrepancies in expected results . In the next stage, researchers will also ask several respondents to provide assessments for the sustainable development of this application.
4. REPENA Chatbot (Teenagers Care for Disasters) has the potential for long-term benefits big. REPENA Chatbot (Teenagers Care for Disasters) can be applied and implemented in everyday life, and can be developed into material for education and circulated to all young people .

It is hoped that the government, health workers, parents and educators can help implement and implement Cahtbot REPENA (Teenagers Care for Disasters) in real terms as a form of efficient innovation in educational media and the formation of superior character in teenagers towards awareness of the importance of knowledge about disasters.

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