



Problem Posing Learning Model For Developing Students' Natural Disaster Responsiveness Characeters in Indonesia (A Case Study in State Senior High Schools in Kerinci)

Dhea Darysyani

Student of Geography Education Master Program
Faculty of Social Sciences, Padang State University, INDONESIA
Email: dheadarysyani14@gmail.com

Abstract

This study aims to develop students' responsiveness character on natural disaster through the implementation of Problem Posing Learning Model in SMA Negeri Kerinci. The research was Mixed Method research. The data was obtained through observation, interview and documentation. Furthermore, the data was analysed by calculating its percentage and scores followed data reduction, interpretation and research conclusion. The results showed that the implementation of Problem Posing Learning Model in developing the character of natural disaster responsiveness has been well conducted. Students' responsiveness character on natural disaster, For example: throwing garbage in its place, planting trees that are beneficial for life requires: knowledge, understanding, appreciation, confidence, awareness and practice, awareness to reduce 5 disaster risks, awareness in investing to reduce disaster risk, eg reforestation to prevent flooding. One of the disaster mitigation efforts in developing natural disaster responsiveness characters can be done by students' response attitude. The result of Geography learning in SMA Negeri 6 Kerinci was 83.621, higher than SMA Negeri 3 Kerinci based on the hypothesis testing. Obtained data showed a significant difference between the school that implemented Problem Posing Learning Model in Geography classroom and the school that did not implement the learning model. Finally, it was found that the implementation of Problem Posing Learning Model in geography learning could improve students' responsiveness character on natural disaster in Indonesia.

Keywords: Problem Posing, Concern, Disaster Response.

Introduction

People use their ability to overcome the difficulties that they face in their lives (Fisher, 2005). While using this ability, people try to find a solution which will enable them to overcome the problem that they encountered. If they have creativity, they solve the problem and even seek for alternative solutions or optimum solutions. Besides, they also try to choose a suitable strategy in the problem posing process (Torrance, 1973 in Elif Esra Ria 2017). Studies related to problem posing research in mathematics education have been conducted in recent years. As a consequence, this topic is considered as an important area of exploration for researchers. Problem posing, among the issues that has been studied by teachers, in recent years, includes either posing new problems in terms of a given situation or re-formulating the problem. Problem posing, which is cognitively more difficult than solving problems, takes place in the field of teaching mathematics as a recently discovered instrument for analyzing cognitive processes (Mestre, 2002). Indonesia is a country flanked by two continents and two oceans. Indonesia is one of the world's archipelagic countries located at the meeting of the world's four tectonic plates, the Euro-Asia plate in the North, the Indo-Australian plate in the South, the Philippine plate and Pacific Ocean in the eastern part of Indonesia. Indonesia is a country that has high vulnerability to natural disasters, such as volcanic eruptions, earthquakes, tsunamis,



floods, landslides, and so on. There are already quite a lot of 257 disasters occurring in Indonesia out of the total 2866 natural disasters occurring in Asia during that period. This means that Indonesia is one of the countries vulnerable to natural disasters. Indonesia is one of the countries with the greatest threat of natural disasters in the world. Terrible disasters, such as earthquakes and Tsunami as if 'very familiar' with life in Indonesia some time lately (Directorate of Volcanology and Disaster Mitigation, Dep ESDM RI, 2005). This is due to Indonesia's geographic position located at the end of the movement of three global plates, namely Eurasian, Indo-Australian, and Pacific. In this condition, Indonesia can not escape from the disaster that happened. The research in order to develop the character of self-reliance of natural disaster through the application of problem posing model in learning, more on the effort to membelajarkan students to have empathy and awareness of the disaster that often struck. Disasters as events or series of events that threaten and disrupt the lives and livelihoods of people caused by both natural factors and / or non-internal factors and human factors resulting in the occurrence of human casualties, environmental damage, property loss, and psychological impacts. Indonesia is also faced with various problems concerning the security of the Indonesian nation due to the occurrence of natural disasters. Many areas in Indonesia are affected by natural disasters (Triutomo, 2011) Prevention and mitigation efforts that can be done to minimize losses both in the form of physical and material. All of these efforts are included in the disaster mitigation section. According to Law no. 24 (2007), "mitigation is a series of efforts to reduce disaster risks, both through physical development and awareness and increased capacity to deal with disaster threats." But the most fundamental thing to do is to develop the right attitude to treat the environment.

Character education according Zubaidi (2010) explains that the meaning of character education is an effort to encourage learners to grow and develop with the competence of thinking and sticking to moral principles in life and have the courage to do right despite faced with various challenges, a living human can not be free from problem and challenges. Knowledge of natural disasters such as landslides and floods are important especially given to children who live in areas prone to landslide and flood disaster since landslide and an understanding of flood threats can generate positive impacts in maintaining the environment . In addition, having the disaster responsiveness character is expected to reduce losses and casualties during the disaster. The incoming natural disasters can not be avoided and predicted when they occur. However, losses and casualties can be minimized if the community has knowledge and understanding of the importance of the development of natural disaster response. Based on preliminary observations, students' responsiveness character values such as concern for the environment which can be defined as the obligation to preserve the environment, care for the preservation of nature by maintaining the function of nature itself. For example: throwing trash in place, planting trees that are beneficial to life. requires: knowledge, understanding, appreciation, confidence, awareness and practice, conscious to make a reduction of 5 disaster risks , aware to investing for reducing disaster risk, for example reforestation to prevent flood. One disaster mitigation efforts in developing natural disaster response karakter can be done by way of rehearsal attitude to disaster response to students. Disaster response is an attitude that is aimed at preventing, dealing with and tackling disasters.

Based on the above problems that become One of the causes of students' low responsiveness character values in senior high schools in Kerinci is the asence of character intergrated learning activity in the classroom. Teachers only emphasizes on mastering the knowledge. In addition, most teachers in the learning process only deliver the subject materials trough lecturing and assignments, and in general teachers use very little model in teaching and learning activities. Thus, one of the only things that can be done is to use models and techniques in the learning activities. It is very important to select appropriate models and techniques in the process of learning and integrating values in learning so that can develop the character of learners in the learning process. Many models are used in the process of learning. One of the learning models applied in learning is Porblem Posing. Silver (in Tatang & Uli, 2005) writes that "*Problem posing is central impor-tant in the discipline of mathematics and in the nature of mathematical thinking*" On the other hand Haengami



and maysara Rifqiawati (2011) define Problem Posing as a learning technique that trains students to make their own questions and answer them so the students are expected to be more active to learn, more familiar with variations of the problem and proficient in understanding substance questions given by the teacher. According to Suryosubroto, (2009), problem posing's advantages in learning are: 1) Students can actively participate in learning activities, 2) Educate students to think systematically, 3) Educate students not to be easily frustrated in facing the problem, 4) Students are able to find various solution from the difficulties they face, 5) Bringing certain satisfaction to the students if the problems they made are not able to be solved by other groups, 6) Students will be skilled in solving the matter of teaching material, 7) Students have the opportunity to show ability in other groups, 8) Students seek and find their own information or data to be processed into concepts, principles, theories, and conclusions.

Method

Based on the problems and objectives to be achieved in this research is to see to develop the character of awareness of natural disaster response on the students through the model of Problem Posing learning in SMA Negeri Kerinci District. Based on the problems and objectives of this research, this research used mixed method research. Data was obtained from observation, interview and documentation. Furthermore, the procedure of data analysis are a simple percentage analysis, followed by analysis of data reduction interpretation and drawing conclusions.

Results and Discussion

Character of Natural Disaster Response

Disasters are a series of efforts to reduce disaster risks, both through physical development and awareness and increased capacity to cope with the threat of disasters such as floods and landslides have unique characteristics for each type of material involved (Sadisun, 2005). For this reason, experts have tried to classify the landslide into several types. Differences in classification usually arise due to the difference in base or point of view used, and in general the type of material and the mechanism of movement is the most widely used basis in the making classification. Responsiveness character of natural disaster and actions that always try to prevent damage to the surrounding natural environment and develop efforts to repair the natural damage that already happened. according to Suyanto (2010) states; character education is character education plus, which involves aspects of knowledge (cognitive), feeling (feeling), and action (action), without these three aspects, then character education will not be effective with the knowledge of character is not limited to knowledge alone. A person who has knowledge of goodness may not be able to act in accordance with his knowledge, if not trained (become habitual) to do the good. Student about the awareness of disaster response need in disaster awareness.

Character of responsiveness awareness that can be developed in disaster response, one of them is character Abstinence surrender, is an effort done seriously, with all challenges, obstacles and obstacles Knowledge of disaster can not be used fully as indicator of student have character of disaster response. But in addition to knowledge, also needed a caring attitude (empathy) in the affected victims. Concern for the victims of disaster, can not be separated from the human function as a social creature. As social beings need to have the ability to interact with the environment and the school environment because d in his life always need others to survive One of the disaster mitigation efforts in developing natural disaster response kararkter can be done by training attitude of disaster response to students. Disaster response is an attitude that is aimed at preventing, dealing with and overcoming disaster. With the potential for major disasters, it is necessary to care for disaster response to prevent and deal with disasters. kararkter natural disaster response can be done



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As for the character of the awareness of flood disaster response, among others: 1) Monitoring of land use and site planning to place vital facilities that are vulnerable to flooding in a safe area. 2) Adjustment of building designs in flooded areas should be resistant to flooding and made of terracing. 3) Infrastructure development must be watertight. 4) Construction of retaining walls and embankments along rivers, seawall along storm-prone beaches or tsunamis will greatly assist in reducing flooding. 5) Sediment cleaning. 6) Development of drainage channel construction. 7) Increased alertness in flood plains. 8) Design of flood resistant housing (waterproof material, strong foundation) 9) Increase vigilance against deforestation. 10) Training on flood vigilance such as storage / warehousing supplies, resting / sleeping places in a safe place (high areas).

Disaster response character is the determinant of success in research determination of the success in question is if the character Concern for disaster response students $\geq 75\%$ in high category. The data of the research shows that the average character of the awareness of the response of the disaster reaches the high criterion. From 29 students in the experimental class, 29 students or all have obtained ≥ 70 score. From the data analysis, the criteria of the response character of the response of the disaster is very high, of 90.15%. Given the high level of awareness of disaster response, eating environment will be protected from the danger of the disaster that will happen.

The Development of Responsiveness Character of Natural Disaster Ladder Concern in the Implication of Problem Posing

Education is a very appropriate way to provide an understanding of the character of the awareness of the response to disaster and then foster a response attitude to disaster. In the midst of the potential disaster that threatens, disaster education is absolutely necessary. Schools as an educational institution to be appropriate means to provide knowledge, attitude planting to give birth to disaster response behavior. In relation to disaster management efforts in Indonesia. Education to reduce disaster risk is very important and needs to be socialized to the community so that the victims during the disaster can be minimized. Dissemination of early disaster response education can be done in primary school through model of learning Problem Posing. According to Mulyatiningsih (2012) learning steps with problem posing can be designed as follows: 1) Teacher explain lesson material, then give practice matter enough . 2) Students do the exercises in the classroom then discuss the results together so that students know how to do the right questions. 3) Students are given the task of proposing 1 or 2 pieces of challenging questions and the students concerned should be able to solve them.4) The teacher asks students randomly or selectively to solve their own problems in front of the right class. For example in Japan disaster education has entered into the education curriculum at all levels so that people have a high awareness of disaster response from an early age. Teachers as educators who interact directly with students have a strategic role to socialize educators in the character of care for disaster response. Teachers are expected to have disaster response skills that will be taught to students. The low awareness of the disaster response of Indonesian society especially in disaster prone areas becomes a serious problem considering the condition of Indonesia itself which is prone to various natural disasters.

Students’ result of learning by using *Problem Posing Learning Model* in Improving students’ responsiveness character of Natural Disaster in SMA Negeri 6 Kerinci Regency

Based on the results of descriptive data analysis relating to the results of learning Geography of SMA Negeri 6 Kerinci district using learning model problem posing for the development of carakter care of natural disaster response is obtained by the total score of 2425, the average value of 83.621, the minimum score of 65, the maximum score of 100, score range 35, standard deviation of 10.50, data variant 110,53, 80 mode value, many grade 6 and class length of 6.01. Based on the results of the frequency distribution of data in the table above shows that as many as 3 respondents students (10.34%) are in the average class that is between the interval 77.02-83.01. Then as many as 15 students (37.93%) were below the average class where each of the 6 respondents students (20.69%) was at intervals 77.02-83.01, 4 respondents (13.79) are in grades 71.01-77.01 and 5 respondents (17.24) are in the class of 65.00-71.00. Then there were 11 respondents (44,83%) in the data group above average, ie 2 classes of data each in class 89,03-95,03 there were 7 students (24,14%) and at class interval 95,04-101,04 there are 4 students (13,79%) .Based on the result histogram presented the result of student learning with modelproblem posing to mengembangk character of awareness of disaster response as follows.

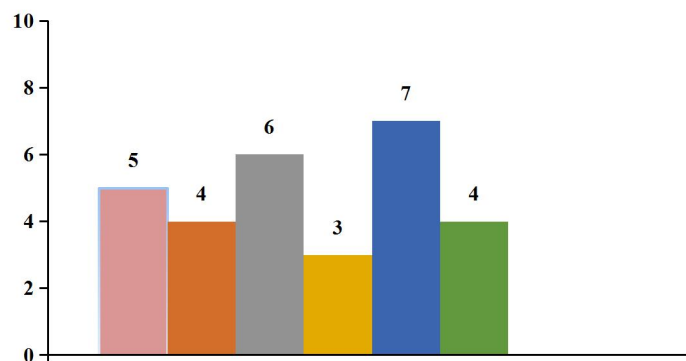


Figure 1: Histogram Data of Students’ result of learning by using Problem Posing Learning Model in Improving students’ responsiveness character of Natural Disaster in SMA Negeri 6 Kerinci Regency

Based on histrogram data of student learning outcomes with learning model Problem Posing for the development of natural disaster response in indonesia tdaapt seen value 71, 77,01,83,01 is below average class, then 83,02 and 89,02 value in class average then 95.03 and 101.04 are in the upper class on average

Students’ result of learning by using *Problem Posing Learning Model* in Improving students’ responsiveness character of Natural Disaster in SMA Negeri 3 Kerinci Regency

Based on the results of descriptive data analysis relating to the learning outcomes of SMA Negeri 3 Kerinci using learning model posing problems for the development of cararkers of natural disaster response responses total score of 2290, the average value of 78.966, minimum score of 65, maximum score of 95, range of score 30, standard deviation of 8.17, data variant 66,75, value of mode 75, many class 6 and class length of 5,15. Based on the results of the frequency distribution of data in the table above shows that as many as 6 respondents students (20.69%) are in the average class that is between the interval 75.30-80.44. Then as many as 14 students (48.28%) were below the average class where each of the 8 respondents (27.59%) were in the interval 70.15-75.29 and 6 students (20.69 %) are in the interval class 65-70,14. Then as many as 9 students (31.03%) are in the data group above average, ie as many as 3 classes of data each in

the class 80,45-85,59 there are 4 students (13,79%), at class 85.60-90,74 there are 3 students (10,34%) and at class interval 90,75-95,89 there are 2 student (6,90%) Based on the result histogram presented the result of learning of student geography Model Problem Posing for the development of natural disaster response kararkter SMA Negeri 3 Kerinci regency as follows.

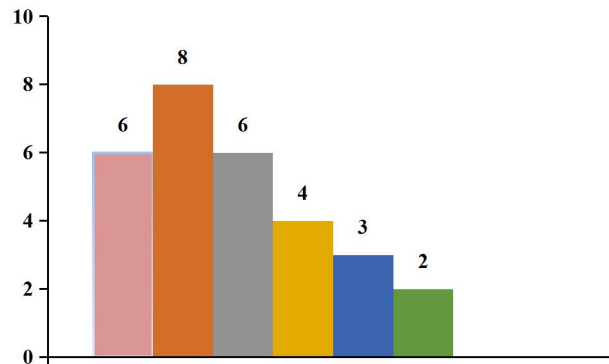


Figure 2: Hystogram of Students' result of learning by using *Problem Posing Learning Model* in Improving students' respinsiveness character of Natural Disaster in SMA Negeri 3 Kerinci Regency

Differences Between Student Geography Learning Results With Problem Posing Model for the development of natural disaster response in Indonesia level SMA Negeri 6 Kerinci And SMA Negeri 3 Kerinci Regency Based on the results of data analysis there is a significant difference between students' geography learning outcomes by using problem posing model Differences in this learning outcomes shows that the problem posing model has a positive effect for the students. This is related to the advantages of this learning model compared with data analysis of student learning outcomes through t-test then obtained the value of t count 5.86. While ttable value at 95% confidence level with ttable value = 1.70. From result of t-test can be expressed with tcount> ttable that is 5,86> 1,70. This means that the independent variable is the application of problem posing learning method significantly influence the dependent variable that is the result of student learning. Thus the hypothesis which states there is a significant influence of problem posing on student learning outcomes geography lessons can be accepted. Judging from the average score of student learning outcomes Model of dizzy problem for the development of natural disaster response character in Indonesia in SMA Negeri 3 Kerinci Regency obtained 78,97 which experienced improvement if applied modelproblem posing for development of natural disaster response character in Indonesia in SMA Negeri 3 Kerinci Regency is equal to 83,621.

On the other hand according to Jocy and Weil (in Rusman 2012) the learning model is a plan or pattern that can be used to form curriculum (long-term learning plan), designing learning materials, and guiding classroom or other learning. improve students' ability in understanding the material for the development of character of natural disaster response in Indonesia that has been given. Students formulate the problem of problem menjadai a simple part so that students easily understand. According to Ngalimun (2013) Problem posing is problem solving through elaboration, that is by reformulating the problem into more simple parts so that understood. According Suryosubroto (2009) one of the learning approaches that can motivate students to think critically at once dialogical, creative and interactive issues posing or filing problems in the form of questions Potential students can be optimal, so that all students can achieve satisfactory learning outcomes in accordance with the characteristics and level of personal understanding they have after through the process of interaction within the group. In addition, learning problem posing is also intended to keep the attention of students to stay focused on the learning process because students are more active in learning. On the other hand, according to Sudjana in Kunandar 2013) the learning outcomes



are the abilities that the learners have after receiving their learning experience. Following Sudjana (2009) reveals that the learning outcomes are the abilities that students have after receiving their learning experience that is the skills and habits, knowledge and understanding, attitude and ideals.

Conclusion

Character of Student's Concern for Natural Disaster Response For example: throwing garbage in place, planting trees that are useful for life. requires: knowledge, understanding, appreciation, confidence, awareness and practice, conscious to make reductions 5 disaster, conscious investment to reduce disaster risk, eg reforestation to prevent flooding. One of the disaster mitigation efforts in developing the natural disaster response character can be done by melatih attitude of disaster response to the students. Disaster response is an attitude that is aimed at preventing, dealing with and overcoming disaster. With the potential for major disasters, it is necessary to care for disaster response to prevent and deal with disasters. karakter natural disaster response can be done by melatih attitude of disaster response to students. Disaster response is the attitude that is shown to prevent, deal with and cope with disaster. Based on the exposure of data and research results and the previous discussion can be drawn conclusion as follows: Average geography learning outcomes at SMA 6 districts of Kerinci is 83.621 higher than SMA 3 district based on testing the hypothesis obtained data obtained significant differences in the learning of geography using the model of Problem Posing for the development of natural disaster response character in Indonesia.

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