Development of Social Science Learning Model for Disaster Risk Reduction School in Disaster-Pried Areas in Wetland Environment Banjar District

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DEVELOPMENT OF SOCIAL SCIENCE LEARNING MODEL FOR DISASTER RISK REDUCTION IN SCHOOLS IN DISASTER-PRIED AREAS IN WETLAND ENVIRONMENT, BANJAR DISTRICT

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ABSTRAK

Penelitian ini adalah Research and Development. Lokasi penelitian di SMP Sungai Tabuk 3 dan Sungai Tabuk 4. Sungai Tabuk merupakan salah satu kecamatan di Kabupaten Banjar dengan tingkat ancaman banjir dan kebakaran hutan dan lahan yang tinggi. Pengumpulan data melalui angket, observasi, dan tes kompetensi siswa. Analisis data dengan uji t. Hasil penelitian menunjukkan 140 guru IPS di Kabupaten Banjar 56,6% telah mengintegrasikan pembelajaran bencana alam dalam pembelajaran IPS, model yang dikembangkan adalah pembelajaran inkuiri ilmiah yang dimodifikasi dari prabencana, kejadian bencana, dan pascabencana. Terdapat peningkatan kompetensi siswa tentang pengurangan risiko bencana, dimana t (hitung)> t (tabel) pada uji coba pertama di SMPN 4 dengan uji coba kedua di SMPN 3. Temuan ini mengarah pada kesimpulan bahwa pembelajaran saintifik dengan inkuiri efektif untuk siswa bencana pengurangan risiko, relevan untuk pembelajaran IPS, relevan dengan peningkatan aktivitas siswa, model inkuiri yang efektif untuk meningkatkan kualitas proses dan produk pembelajaran IPS di sekolah menengah pertama. Temuan penelitian ini berimplikasi positif bagi perkembangan pembelajaran IPS tentang bencana alam di sekolah menengah pertama. Implikasi praktis dari temuan penelitian ini adalah peningkatan kemampuan guru IPS dan sosialisasi model inkuiri untuk pengurangan risiko bencana di SMP.

ABSTRACT

The research location is in Middle School Sungai Tabuk 3 and Sungai Tabuk 4. Sungai Tabuk is a sub-district in Banjar Regency with a high threat level of floods and forest and land fires. Data collection through questionnaires, observation, and tests competence studentss. Data analysis with t test. The results showed 140 social studies teacher in Banjar Regency 56.6% had integrated natural disasters in social studies learning, the model developed was modified scientific inquiry learning frompre-disaster, disaster events, and post-disaster. There is an increase in students competence regarding disaster risk reduction, where t (count)> t ($_{table}$) on trials first at SMPN 4 with trials second at SMPN 3. These findings lead to the conclusion that learning scientific with effective inquiry for students disaster risk reduction, relevant for social studies learning, relevant to increasing students activity, an effective inquiry model for improving the quality of social studies learning processes and products in junior high schools. The findings of this study have positive implications for the development of social studies learning about natural disasters in junior high schools. The practical implications of the findings of this study are an increase in the ability of social studies teacher and the socialization of inquiry models for reductionrisk disaster in Junior High School.

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INTRODUCTION

Natural disasters always occur in various places, all regions in Indonesia experience natural disasters. Natural disasters that occur in various regions in Indonesia are different, generally natural disasters that occur in each region are related to the geographical conditions of an area. Data from the National Disaster Management Agency shows that the disaster events that occurred in Indonesia in 2018 were around 5,611, with the death toll of 2413 people, 11015859 displaced, and around 3490 damage to educational facilities (BNPB, 2019). Natural disasters have caused casualties and material loss. Education is also affected by the disaster, causing damage to educational facilities and many studentss who become victims.

Studentss in disaster-prone areas must be aware of and responsive to the dangers of disasters that occur in their area (Nisa, Putri, Hermanto, Ginanjar, & Nurfadillah, 2019). Children, in this case studentss in schools, are vulnerable and easily exposed to disasters both when a disaster occurs and after a disaster occurs (Proulx & Aboud, 2019).

The district in South Kalimantan Province that has high disaster intensity and is in a high category of disaster-prone is Banjar Regency. Disasters that often occur and are very vulnerable categories are floods and forest and land fires. Banjar Regency is the largest district in South Kalimantan Province. The topographical, hydrographic and climatic conditions in this region vary. The area around swamps and rivers is noted to have the potential for flood disasters. In addition, the presence of hills to the north and east of Banjar Regency affects air pressure and wind speed in the lowlands resulting in very high potential for extreme weather, then hotspots from uncontrolled land management from the community make it easier for forest and land fires to spread (BPBD, 2019) .

This study aims to develop a social studies learning model for disaster risk reduction in schools in a wetland environment in Banjar Regency. In addition, this research also identifies schools in disaster-prone areas in Banjar District, South Kalimantan Province.

Literature review

Disaster is a phenomenon where a trigger, a threat, and a vulnerability are systematically created, giving rise to risk. The meaning of disaster according to Law no. 24 of 2007 is an event or series of events that threatens and disrupts people's lives and livelihoods, which are caused either by natural factors and / or non-natural factors as well as human factors, resulting in human casualties, environmental damage, property losses, and psychological impacts.

Disaster events in South Kalimantan that often occur are floods and forest and land fires. Rivers in South Kalimantan can be the cause of flooding, Moehansyah (2007) said that flooding

will occur when the incoming water (rain) can no longer be accommodated by land (land) in the river basin (DAS) and facilities drainage nature in the watershed, so that excess water can no longer be channeled to storage places outside the watershed, the excess water will result in flooding. Moehansyah (2007) emphasized that the conditions and characteristics of flooding are related to (1) rain characteristics, (2) watershed land characteristics, and (3) land conservation and flood prevention efforts.

Disaster events that regularly occur apart from floods are fires, according to Sadiq (2007), fires experience high intensity during the dry season, as well as by negligent human activity when clearing fields. Kurnain (2007) added that forest and peat fires that often occur in South Kalimantan are caused by natural events and human carelessness. Natural events such as burning twigs and leaves can trigger fires. The factor of human carelessness is the clearing and preparation of land by farmers by means of burning. Other fires also often occur in residential areas, Banjarmasin city almost every time a fire occurs as well as other areas such as Martapura and Kotabaru. Residential fires are generally caused by short circuits, stoves are also a frequent cause of fires. Fire events on land (forest and peat) result in disruption of environmental stability, damage to flora and fauna, disruption of public health, destruction of community economic potential, and disruption of communication.

Floods that occur can have an impact on community suffering (Talaga, 2019). Floods can occur for a variety of reasons, including storm surges, heavy rain, wave overtopping and overflows (Jeon et al, 2018). Floods have tremendous social and economic impacts on any community, including physical damage to property (Bubeck, Otto and Weichsel Gartner, 2017; Thistlethwaite, et. Al, 2020), disrupt livelihoods and impose heavy social and psychological burdens associated with them. with evacuation due to flooding (Thistlethwaite, et. al, 2020). Talaga (2019) argues that floods have given a psychological burden, including the emergence of boredom in refugee camps, stress experienced by family members, children are also stressed because they want to go to school).

Forest and land fires or shortened by karhutlah make us aware that the thick smoke that rises and interferes with our breathing comes from fires that occur in forests and land. Indonesia is a country that has quite extensive forests and land, especially peat lands. When the dry season often occurs fires, the smoke that is generated moves to other countries. So it is often called a global disaster, because smoke carried by smoke such as CO2 can cause global warming.

The peat fires that occurred in Sumatra and Kalimantan in 1997 and 2015 have resulted in heavy haze in neighboring countries such as Malaysia and Singapore. The smoke affects people's health and activities, and air transportation. The area of peatland burned in 1997 reached

2,124,000 hectares (Adinugroho WC, I Nyoman N. Suryadiputra, Bambang H. Saharjo, and Labueni Siboro, 2005).

Disasters are related to nature and human actions, studentss from elementary to high school levels always learn about nature and human actions. The findings show that teacher do not integrate disaster themes (especially those that occur in their regions) in learning. Teacher are trapped in the flow of completeness and textbooks. The 2013 curriculum reminds schools and teacher to develop potential and problems in the regions (Saharjo, Musiyam, Sunarhadi, Prayitno, & Arozaq, 2019).

METHODOLOGY

This research is a research of R and D. Preliminary research to explore the forms of disasters, studentss' understanding of disasters in their area, schools in disaster-prone areas and an overview of social studies learning in schools in disaster-prone areas, was carried out in Banjar Regency, namely the Center for Disaster Management Agency Regions (BPBD) of South Kalimantan Province and Banjar Regency, and in areas where disasters often occur in Sungai Tabuk District.

An overview of social studies learning is obtained through data mining in several schools. Data through interviews and questionnaires to 140 junior high school social studies teacher, to reveal learning conditions, teacher' understanding of disasters, namely: understanding of disasters, causes of disasters, disaster management, integration of disaster events in social studies learning. Throughpre survey compiled a draft social studies learning model with an inquiry model for reduction riskdisaster in junior high. The draft model developed subsequently received Expert Justification (two people) and three social studies teacher.

Model implementation stage is the model development stage, the sample school for the trial is taken based on the willingness of the school, because of the situation and conditions of the Covid-19 pandemic. Schools that are willing to be tested are SMPN 3 Sungai Tabuk and SMPN 4 Sungai Tabuk, provided that they follow health protocols, and the number of studentss in the class is not more than 20 studentss.

The feasibility of conceptual and practical models is carried out by validating the model as a hypothetical model (draft model), its feasibility is tested through expert judgment. The instrument for assessing the feasibility of the draft model is in the form of a Likert scale questionnaire. Furthermore, the draft model was tested in schools.

RESULTS AND DISCUSSION

Natural disasters and social disasters that occur in Banjar Regency are various, namely: Residential fires, drought, landslides, floods, forest fires and land hills and mountains, besides having lowlands consisting of rivers and swamps. Large rivers such as: Martapura River, Riam Kiwa River, and Riam Kanan River flow through Banjar Regency. Mountain circle and hills can result in lower air pressure and wind speed, which can result in extreme weather. Arable land in the area hills and lowlands are attractive to cultivate, so forest and land fires often occur (BPBD, 2019). The characteristics of the area can cause various disasters, the water flowing every place has caused a flood disaster. Overflow of water flows from high areas to low areas, resulting in low areas of water level

Sungai Tabuk sub-district was used as a research location, having a high level of flood and forest and land fires. Threat Index and Population Index Exposed to Forest and Land Fires in Each District in Banjar Regency, it can be seen that Sungai Tabuk District is the dominant class of forest and land fires including high (BPBD, 2019).

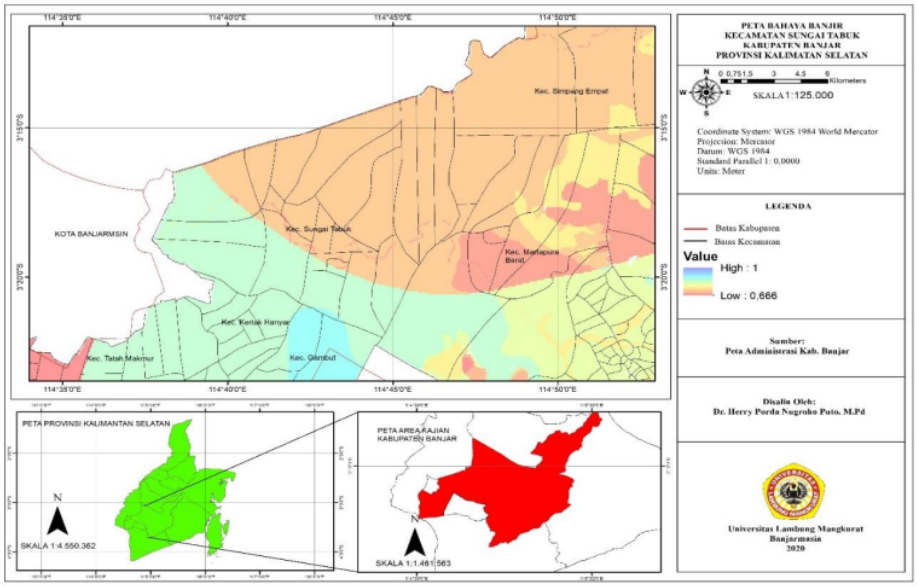

Figure 1: Flood Map of Sungai Tabuk Subdistrict in Banjar District

Figure 1 shows that Sungai Tabuk District in Banjar Regency is a flood area, all areas always experience flooding from low to high levels. This is due to the characteristics of the area consisting of swamps and flowing by large and small rivers.

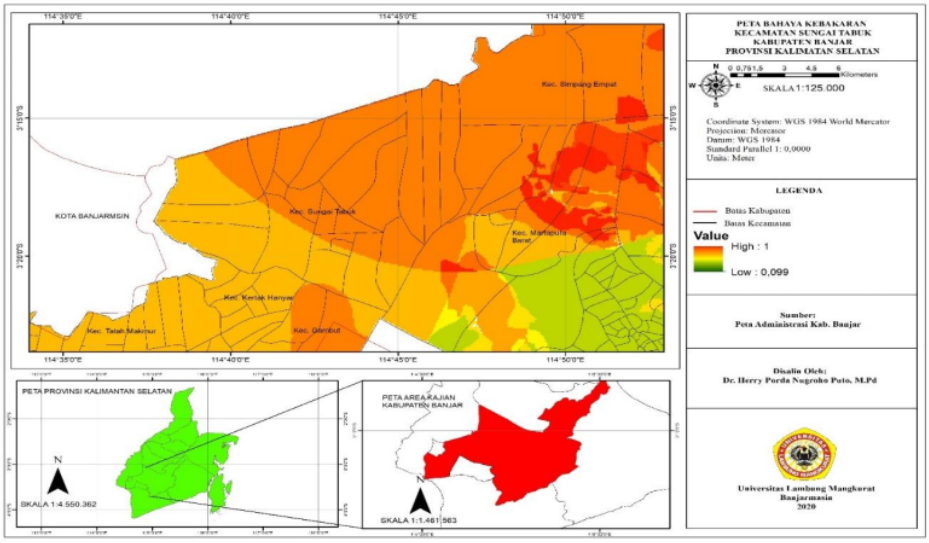

Figure 2: Land Fire Map of Sungai Tabuk Subdistrict in Banjar District

Based on Figure 2, Sungai Tabuk District in Banjar Regency always occurs forest and land fires during the dry season. This incident was caused by the condition of the area which consists of peat soil. Peat soils in the dry or hot season burn easily, because of the characteristics of peat soils that contain piles of wood and organic matter.

140 Social studies teacher have mostly integrated disaster events that occurred in Banjar District, namely 37.2% agree and 56.6% strongly agree. Most of the social studies subject teacher have understood disaster events, pre-disaster, during disaster, and post-disaster. The integration of disaster events is carried out in learning with a scientific approach. Material about disasters in the area is not supported by the form of action, only in the form of learning activities in the classroom.

The learning developed is an inquiry model with a syntax for learning modified inquiry models for disaster risk reduction in social studies learning. Pre-Disaster: asking questions, and proposing hypotheses. Disaster Events: collecting data and testing hypotheses. Post-disaster: draw conclusions.

Figure 3: Simulation of a Learning Model for Disaster Risk Reduction by Inquiry

Figure 3 shows that the disaster risk reduction model is carried out by modifying the inquiry model with pre-disaster, disaster event, and post-disaster stages. Learning activities are carried out in the classroom and outside the classroom. Studentss can learn in the classroom through books, internet, brochures; then discuss solving problems in the classroom and outside the classroom, followed by evacuation practice activities.

The first trial at SMPN 4 Sungai Tabuk showed an increase between meeting I and meeting II. This can be seen in the average value of the second meeting> the average value of the first meeting, namely 78.41> 68.08. The second trial at SMPN 3 Sungai Tabuk showed an increase between meeting I and meeting II. This can be seen in the average value of the second meeting> the average value of the first meeting, namely 87.7> 70.6. The results of the t-test for the First and Second Meeting at SMPN 4 Sungai Tabuk with the First and Second Meeting at SMPN 3 Sungai Tabuk are shown in the following table:

Table 1: The t test in the trials at SMPN 4 and SMPN 3 Sungai Tabuk

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Fires 4 – Fires 3	-2.65000	3.82891	.85617	-4.44198	-.85802	-3.095	19	.006
Pair 2	Flood 4 – Flood 3	-19.8000	6.74030	1.50718	-22.9545	-16.6454	-13.137	19	.000

The first trial is shown by t (count)> t (table), namely 3.095> 2.093. The difference in the second trial is shown by t (count)> t (table), namely 13,137> 2,093. This shows that there is an increase in learning with an inquiry model between the first trial at SMPN 4 Sungai Tabuk and the second trial at SMPN 3 Sungai Tabuk. Based on table 1, it can be seen that inquiry activities for disaster risk reduction can be carried out based on disaster stages with an inquiry model.

CONCLUSION

Social studies learning by modifying the countermeasures model in the inquiry model can be used to increase studentss' competence regarding disaster risk reduction. The emphasis that needs to be paid attention to the model is in accordance with the thinking stages of studentss, namely finding problems, proposing hypotheses, gathering information, based on the information that has been extracted, hypothesis testing is carried out, then studentss formulate conclusions.

Studentss' environment must be paid attention to for inquiry learning, facts about environmental conditions that cause disasters, in this case floods and forest and land fires can be a source of information for thinking skills. The following chart is a hypothetical design of a social studies learning model for reducing the risk of floods and forest and land fires in disaster-prone areas in wetland environments.

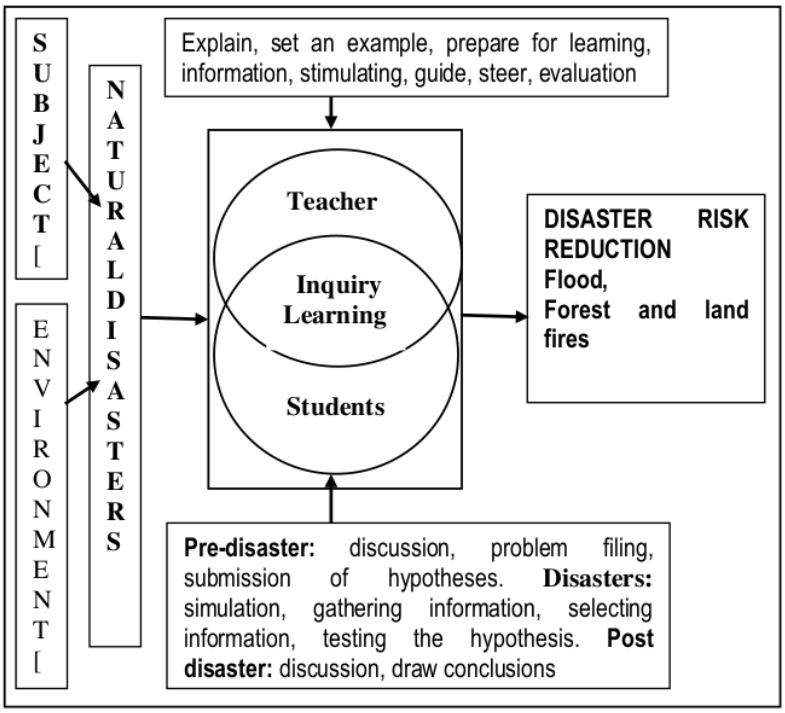

Figure 4: Chart of Social Science Learning Model for Disaster Risk Reduction in Disaster Prone Areas

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