

The Impact of Natural Disaster Teaching Module (NDTM) on Secondary Schools Students in West Aceh

Erizar

STAIN Teungku Dirundeng Meulaboh, Indonesia

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Abstract

The Indonesian government has realised the importance of education in these recent days by increasing the investment in education in all fields including English language studies. This study purported to investigate the impacts of the use of Natural Disaster Teaching Module (NDTM) on secondary school students in West Aceh. The population and sample of the study comprised the secondary school students studying in a public school in Aceh, Indonesia. The control group and the experimental group was of equal size, each having 30 students from the 8th grade. The pretest and posttest of the same test was administered on the students in both groups in the beginning and end of the study. The quasi-experimental teaching was conducted during the regular teaching hours of English class. The result indicated that there was a significant difference found between the two group scores as shown in the post-test (0,000 on 0,05 level). This study recommends that, teachers are encouraged to develop their disaster knowledge in order to effectively facilitate English instruction. Moreover, the effect of natural disaster teaching module should be investigated in a variety of learning disciplines in the subject of Physics, Chemistry, Mathematics, Computer science, Indonesian studies, and Islamic studies on the same pattern, and some other variables such as attitude, background status of the student, level of intelligence should be controlled.

Keywords : Natural Disaster, Module, English, West Aceh

1. Introduction

Natural disasters, such as earthquakes and tsunamis, are largely unpredictable. With the advancement of science and technology, early warning systems can be implemented to save people's lives. However, even with advanced systems in place, the impact of natural disasters can be enormous in terms of both loss of life and property, as well as the trauma experienced by the victims, which may last throughout their lives. Nowadays, there has been a significant

increase in the number and variety of disasters happening worldwide, which have caused losses of human life and destructions of property. Many countries throughout the world, Asia and the Pacific in particular, are vulnerable to natural disasters, such as earthquake, tornado, tsunami, flood, volcano, and so forth.

One of the countries which is frequently hit by natural disasters is Indonesia. It is located at three world plates: Eurasia, Pacific, and Indo-Australia. There are a number of natural disasters such as earthquakes and tsunamis which have hit the country and caused deaths of thousand people (Diknas, 2010). For this regard, it is compulsory to make all parties involved in natural disaster education. In 2005, Indonesia ranked the seventh country mostly affected by natural disasters (UNESCO, 2005). The country is at risk to earthquakes, floods, landslides, volcanos, storm and so on.

Aceh is one of the provinces located in Indonesia, which is frequently affected by natural disasters. It is located in the northern part of Sumatra Island. A number of natural disasters occurred in Aceh recently, causing sadness of its people due to deaths and destructions of infrastructures as well as property. For example, an earthquake and tsunami hit Aceh on 26 December 2004, which was considered as one of the biggest natural disasters in the 21st century, killing hundreds thousand people (Sardjunani & Hadi, 2010).

The natural disasters have contributed to the negative impact on the development of all sectors in Indonesia. One of them is the educational sector that causes the process of teaching-learning program not running well. For instance, the earthquake and tsunami that hit Aceh in December 2004 indicated that students were among the most vulnerable to natural disasters. The table below shows the number of students affected by the natural disaster in Aceh and other provinces in Indonesia.

**Table 1.1: Report on Natural disaster damages and losses assessment 2004-2010
(BNPP, 2011)**

Damages of school Facilities caused by natural disaster in Indonesia disaster	Number of schools/education facilities damaged	Damages and Losses (Billion IDR)	Life's losses
Earthquake and Tsunami, 26 December 2004 in Aceh- Nias	2065	1041	45.000 students died /or missing 1.870 teachers died and missing
Earthquake 27 May 2006. Yogyakarta – Central Java	2097	1739	506 students and 36 teachers died
Earthquake 30 September 2009, West Sumatra	1290	6188	235 students and 34 teachers died
Earthquake 12 September 2007, Bengkulu and West Sumatra	1177	2354	25 students died
Flood in Wasior, West Papua	277.9	1451	63 students and 5 teachers died

The history has shown that the needs of children have usually gone largely unmet during disasters. It has been asserted that the needs of children are often excluded from attention during disaster due to their lack of power to voice their concerns and the fact that the majority of disaster professionals do not possess specific child health or child development expertise (Peek, 2008). Shaw and Kobayashi (2001) proposed that there are reasons why students need to learn natural disaster: (1) students are one of the most vulnerable elements of the society; (2) they are the future generation; (3) they can transfer the disaster education to parents and community.

Moreover, the integration of subject matter content (e.g., environmental issues, societal issues, and disaster issues) has generated wide interest in learning English (Paterson, 2010). Disaster education has been employed many immersion schools in the world (e.g., Japan, India, and Bangladesh). The same thing also occurs in Indonesia, in which the government has encouraged the authorities in educational sector to integrate subject matter content into English Language Learning and Teaching (ELLT) (Diknas, 2003).

In Indonesia, the English proficiency of students has been continually declining over the years as shown in the low performance in national examination in their competencies in the use of English (Ministry of Education, 2010). Students have great difficulty in expressing their ideas in the classroom which could also be attributed to the utter neglect of developing their competencies. The development of the students' English proficiency has become the main focus of teachers, educational policy, and educational stake holders who have seen the need to strengthen students English proficiency. They have recognized the need to provide the necessary materials related to disaster education that allows the English class to assume an equal role with other subjects (Msanjila, 2007).

The use of modules is an alternative instructional design for the learning and satisfaction of the students. In English class, the students work on their own and the teacher's role is to guide and monitor the progress of the students in doing their individual tasks. With the use of the modules in English classroom, students work on various activities related to natural disaster issues that are interesting and challenging enough to maintain focus and attention (Cruikshank, 2003).

Considering the importance of having adequate disaster materials for schools in West Aceh, mainly for secondary school students, the researcher is intrigued to develop a Natural Disaster Teaching Module using constructivist approach and to investigate the impacts of the module on secondary school students' English performance in SMPN 1 West Aceh, while for H_0 hypothesis, the researcher assumed that there is no significant difference in the mean score of reading performance of the students in the experimental group and those in the control group in the post-test.

2. Material and Method

The quasi-experimental teaching was conducted in the students' class during the regular class hours, which were scheduled for English class. 30 students A and B of the 8th class from randomly selected schools, Government Middle Schools in Johan Pahlawan sub-district, West Aceh were taken as the sample of the study. The school was selected randomly because the public sector institutions have similar criteria of students' enrolment, evaluation and other facilities (Diknas, 2010).

The teacher carried all of the experimental teaching during the instructional period and acted as the facilitator during the teaching, preparing the materials and discussing any questions asked by the students. In this study, a mixed method design (quantitative and qualitative methods) was used in order to collect data that were analyzed using statistical methods, as well as specific data used to develop the lessons. The pre-test and post-test should be given to the students (Behlol, 2009). The significance of difference between the mean scores of both the experimental and control groups on the scores of pre-test and post-test were tested at 0.05 level by applying t-test (Creswell, 2002).

3. Research Findings

The statistical tools, such as t test, mean, the difference of means, standard deviation, degree of freedom, and Levene's tests, were applied to analyze the data of the study.

H_0 1 : There is no significant difference in the mean score of reading performance of the students in the experimental group and those in the control group in the post-test.

Table 1.2: Group statistics of the mean score of experimental and control group achievers in the post-test

	N	Mean	Std. Deviation	Std. Error Mean
Experiment	30	47,17	5,253	0,959
Control	30	64,97	11,254	2,055

This table shows the means, standard deviations and standard errors of the means of experimental and control group in the post-test. The mean of experimental group was 47,17 and that of the control group was 64,97. Their standard deviations were 5,253 and 11,254 respectively. The standard errors of the means were 0,959 and 2,055. The analysis of this table was used as baseline data to apply t test to observe the results of the study of the experimental and control group on post-test.

Table 1.3: Significance of difference between the mean score of the experimental and control group in the post-test

Type of Test/group	Levene's test		t test				
	F	Sig.	T	Df	p value	Mean Difference	SE D
Ex+Con	14,729	0,008	-7.850	58	0,000	-17,800	2,267

The table shows the difference between the mean score of reading performance of the students in the experimental group and those in the control group in the post-test, which was found to be significant on the t test. The degree of freedom of the two groups were 58 and the mean difference was -17,800 on 0,05 level. The p value was 0,000 on 0,05 level, which was significant. It was proved that there was significant difference between the mean score of reading performance of the students in the experimental group and those in the control group in the post-test. These results were also supported by the studies conducted by Pareek and Rao (2000). They believed that the module based learning resource created interest in learning for the individuals, and as a result they were able to demonstrate higher achievements as compared to the students taught with the textbooks

4. Results and Suggestions

Module is a new strategy for arranging learning experiences in education and it has been receiving much attention. The strategy of learning module has become a part of all level of teaching English. A learning module is a self-package dealing with one specific subject matter/unit. It can be used in any setting convenient to the student and may be completed at the learner's own pace. Sufficient theories and practices are available for the practical application of modular teaching in the classroom. Thus, a study was conducted in order to check the impacts of modular teaching on secondary school students in West Aceh. The findings of this study demonstrated significantly different achievement between the experimental group and control group students in the post-test. This results axiomatically verified the value of integrating natural disaster education into ESL class in Indonesia, specifically in Aceh. Therefore, teachers are encouraged to develop their disaster knowledge in order to effectively facilitate English instruction. When designing and delivering English instruction, teachers should appropriately use the natural disaster module to maximize students' learning experience by presenting both verbal and visual materials simultaneously to construct referential connections.

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