IMPLEMENTATION OF PROBLEM-BASED LEARNING INTEGRATED DISASTER MITIGATION INTO INDONESIAN LANGUAGE TEACHING IN SENIOR HIGH SCHOOL

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Abstract

In the last decade, natural disasters in Indonesia have increased significantly, affecting various sectors, including education. As many as sixty percent of schools are located in disaster-prone areas, so disaster mitigation efforts that are integrated into learning are needed. This study aims to describe the steps of implementing problem-based learning in Indonesian language learning in high school that integrates disaster mitigation material. The method used is a literature study with descriptive analysis of various relevant sources. The results of the study show that problem-based learning has potential to develop students' critical and creative thinking skills in dealing with real disaster problems. The integration of disaster mitigation material in observation, exposition, explanation, procedure, and editorial texts can improve knowledge, writing skills, and disaster mitigation awareness. The learning stages include orientation to the problem, organization of learning, investigation, development of work, and evaluation. The role of the teacher as a facilitator is very important in guiding this process. It is concluded that problem-based learning integrated with disaster mitigation can be an effective strategy in forming a disaster resilient generation in the school environment.

Keywords – problem-based learning, disaster mitigation, Indonesian language, disaster literacy

Introduction

In the last decade, natural and non-natural disasters have increased worldwide and caused serious disruptions to society, as well as casualties, environmental, financial, and economic losses (Lu et al., 2022) . Indonesia, which is located in the Pacific Ring of Fire region and at the confluence of three tectonic plates (Indo-Australian, Eurasian, and Pacific), is geographically very vulnerable to various types of disasters, such as earthquakes, tsunamis, volcanic eruptions, floods, landslides, and droughts (Meilano et al. 2024 , Soetono et al. 2024). Data from the Coordinating Ministry for Human Development and Culture (Kemenko PMK) in 2023 shows that Indonesia is the third country with the highest level of disaster vulnerability, with an increase of 81 percent.

Disasters that often occur in Indonesia have a negative impact not only on physical damage but also the education sector that includes loss of learning time, damage to school infrastructure, and psychological trauma for students (Wulandari et al., 2024; Meilano et al., 2024). Based on data found by Septikasari et al. (2022), as many as 60 percent of schools in Indonesia are located in disaster-prone areas that include 54.080 schools in flood-prone areas, 52.902 schools in earthquake-prone areas, and 1.685 schools in volcanic eruption-prone zones. In addition, the data from Ministry of Education and Culture in 2019 showed that as many as 568.000 students in 5.680 education units were directly

affected by natural disasters (Opabola et al. 2023; Septikasari et al. 2022). This condition shows the need of proactive steps in protecting students and teachers through increased understanding of disaster mitigation.

Based on the various potentials and impacts of disasters described, disaster anticipation and mitigation are very important to protect students in disaster-prone areas. To minimize risks and losses, knowledge, understanding, preparedness, and ability to prevent, detect and anticipate various types of disasters are needed early on. For this reason, students in disaster-prone areas need to learn and deepen their knowledge about disaster mitigation efforts (Hidayat, 2008: 8).

One of the efforts to reduce disaster risk is by integrating disaster mitigation into learning materials in schools. The lack of availability of learning materials about disaster prevention and management in the learning curriculum will affect students' understanding of disaster mitigation. The results of research by Kastolani & Mainaki (2018), entitled "*Does Educational Disaster Mitigation Need To Be Introduced In School?"*, concluded that the importance of designing a learning curriculum that incorporates disaster mitigation values in an integrated manner into several or even all subjects.

In addition, research by Hafida (2018) with the title "The Urgency of Disaster Education for Students as an Effort to Realize a Disaster Resilient Generation", confirms that efforts to increase understanding of disaster must be given to the Indonesian people from an early age considering that Indonesia has a high disaster risk index, and often natural disasters cannot be predicted when they occur. This is supported by research conducted by Kristian & Setyasih (2023: 1-6), entitled "The Urgency of Including Disaster Curriculum at All Levels of Education in Indonesia", concluded the importance of incorporating disaster curriculum into the education system in Indonesia so that students, especially in disaster-prone areas, can be better prepared and responsive to potential disasters. Through a good understanding of disaster mitigation, it is hoped that it can shape the character of students who are responsive to disasters and reduce the negative impacts caused by natural disasters (Rizaldy, 2021: 5).

To address this disaster problem, the Ministry of Education and Culture issued Permendikbud Number 33 of 2019 concerning the Implementation of a Disaster Safe Education Unit Program. In Chapter 2 Article 5 point h, it is stated that disaster mitigation material must be integrated into the national curriculum as an effort to build disaster-safe education units (Pohan et al. 2024; Wulandari et al. 2024; Kemendikbud 2019). In addition, the Head of BNPB Regulation No. 04 of 2012 concerning the implementation of disaster-safe schools/madrasahs explains that the importance of disaster preparedness programs is implemented early, because natural disasters that may occur at any time, (Genika et al., 2023).

Learning from the impact of disasters that occur, the education curriculum in Indonesia is very supportive of integrating disaster mitigation in learning materials, especially in Indonesian language subjects. Text-based Indonesian language learning has the potential to be developed with disaster mitigation material as disaster literacy material for students (Susetyo, 2020). Disaster mitigation literacy should be known by students starting from elementary school to high school level with contextual, simple and easy-

to-understand language (Muslim, 2019). Thus, students cannot only rely on myths in dealing with disasters, but also need reading materials that can be used as a reference in handling personal safety during a disaster.

Learning that integrates subject matter with disaster problems experienced in everyday life can provide students with a lot of experience and may also foster varied ideas in solving problems (Zakiah et al., 2019). Problem-based learning is one form of a scientific approach that is a set of teaching models that use problems as a focus for developing contextual problem-solving skills (Setyonegoro, 2013). Problem-based learning models invite students to train their ability to solve problems so that they can improve their critical thinking skills. Through problem-based learning, students will learn how to use an interactive process in evaluating what they know, identifying what they need to know, gathering information, and collaborating in evaluating a hypothesis based on the data they have collected. The teacher acts more as a tutor and facilitator in exploring, finding hypotheses, and drawing conclusions (Nurdiansyah, and Amalia, 2018).

Researchers who have conducted problem-based learning experiments are as follows. First, Lenga, K.M., et al, with the title Effectiveness of Learning to Write Expository Texts Containing Disaster Mitigation with Video Media for Grade X Students. Based on the results of the study, it can be concluded that learning to write expository text with video media charged with disaster mitigation in the Problem-Based Learning Model is proven to be effective and can improve the learning outcomes of grade X students. The average score of the students' learning outcomes has increased by 23,21 (Lenga et al., 2022).

The second study was conducted by Fatehatun Nikmah and Rahayu Pristiwati with the title Effectiveness of Learning to Present Explanation Text Using PBL and TTW Models Assisted by Animated Video. The results of the study showed that learning to present explanatory text using the *Problem-Based Learning* (PBL) model assisted by animated videos with the theme of natural phenomena was effective. This can be seen from the assessment of the learning process, learning outcomes, and attitudes of students. Thus, it can be concluded that the PBL model is effective in learning to write explanatory text (Nikmah & Pristiwati, 2019).

Based on the results of the application of integrated learning of disaster mitigation material in previous studies, the researchers were encouraged to conduct a study of disaster mitigation learning by describing the steps of implementing problem-based learning in Indonesian language learning. The question in this study is how the steps of problem-based learning in Indonesian language learning integrated with disaster mitigation? The purpose of this research is to describe the steps of problem-based learning in Indonesian language learning integrated with disaster mitigation. This research will provide clear guidelines for teachers in implementing problem-based learning in Indonesian language learning that integrated with disaster mitigation in high school.

Method

This research is a literature study. This research is a type of research that tries to collect data from various literature (Sofiah et al., 2020). The research was conducted by observing and connecting various components between the

contextual approach and the characteristics of the problem-based learning model.

This research is a literature study, with the data collection tool used is documentation. The researcher collected data from various sources relevant to the research topic. Furthermore, adding supporting data in the form of journals, research results, books, and other sources from the internet. The data that has been collected is analyzed using descriptive methods in order to describe the problem being studied (Zakiah et al., 2019). After the data is collected and studied, proceed with data processing. Data analysis was carried out using descriptive analysis. This effort was made to obtain a learning design with a contextual approach using a problem-based learning model.

Finding and Discussion

Indonesian language learning at the senior high school level is designed to be text-based by presenting discourses from various themes as teaching materials in the classroom. With an allocation of 4 hours per week, this subject is very appropriate to be developed by integrating disaster mitigation material. Disaster material can be developed based on the students' disaster experiences. The purpose of this integration is to increase knowledge and skills about disasters, as well as to form disaster mitigation awareness in students. The Indonesian Disaster Education Consortium (2011) states that school is the second place for students to seek and acquire knowledge after home. Therefore, students who have the right knowledge and understanding of disasters will be more prepared and alert in dealing with disaster situations.

Integrating disaster mitigation into Indonesian language subjects can be done through identifying basic learning competencies that support disaster material and disaster preparedness (Setyowati et al., 2021). Some basic competencies, such as observation text, exposition text, explanation text, procedure text, historical story text (Muslim, 2019), and editorial text, are very likely to be developed by integrating disaster mitigation in learning materials.

In observation texts, students can describe disaster phenomena that they witness or experience. In exposition texts, they can explain the causes and impacts of certain disasters, while in explanation texts, students can describe the process of disaster occurrence and mitigation measures that can be taken. In addition, procedure texts can be used to develop guidelines or steps to follow in dealing with disaster situations, such as evacuation or emergency handling. Historical story text can explore disaster events that have occurred in the past and their impact on society, while editorial text can be used to express participants' opinions on the importance of disaster mitigation. The development of this material not only enriches students' learning experience, but also directly supports the broader learning objective of equipping students with the knowledge and skills needed to deal with disasters in the future.

In problem-based learning, there are several important criteria that must be met. First, the problem should be open-ended and unstructured, allowing for a variety of possible solutions. Second, the problem should be of sufficient complexity and challenge to motivate students and engage their interest, while remaining relevant to their prior knowledge of the topic. Third, the problem needs to be contextualized to the students' environment, both in the current and future context, to make it more relevant and applicable to the

students' needs (Sarah L. Stalker, Theresa A. Cullen, 2018).

In addition, problem-based learning has several important characteristics, namely: (1) problem-focused as the core of learning; (2) the students have an active role and responsibility in solving problems; and (3) the teacher functions as a facilitator who provides support during the problem-solving process by students (Setyonegoro, 2013) Based on these three main characteristics, the strategies implemented by teachers focus on: (1) the determination of the theme that will be raised as the topic of the problem that needs to be solved; (2) the design of an effective interaction process in solving problems; and (3) the teacher's ability to supervise and manage learning interactions in the classroom.

The role of the teacher in problem-based learning is different from traditional learning approaches. During the learning process, disaster issues, both in general and based on students' experiences, become the main focus of discussion. The teacher's role in this case includes: (1) proposing problems or organizing students to authentic problems, namely disaster problems in real daily life; (2) facilitating/guiding the investigation of mitigation efforts carried out based on the type of disaster (3) facilitating the discussion of disaster problems; (4) supporting students' learning to find disaster mitigation solutions.

The implementation of problem-based learning in Indonesian language learning integrated with disaster mitigation consist of several stages. Prasetyanti (2016) explains the stages of problem-based learning include: orienting students to the problem; organizing students to learn; guiding individual and group investigations; developing and presenting work; and analyzing and evaluating the problem-solving process. The stages of learning are formulated as follows: first, the introduction, which includes providing motivation, group division, and conveying information on learning objectives to be achieved to students. The second stage is presentation, which includes orienting students to the problem, organizing students to learn, assisting independent and group investigations, developing and presenting work and exhibitions, and analyzing and evaluating the problem-solving process. The last stage is closing, which includes summarizing and conducting tests and homework. All of these stages are illustrated in the following chart 1.

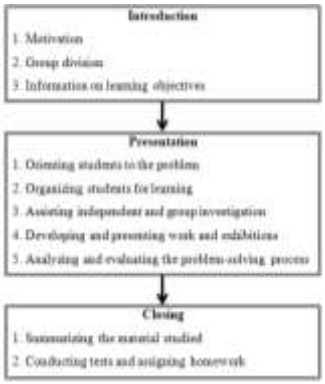

Chart 1. Implementation of integrated problem-based learning for disaster mitigation

A detailed explanation of problem-based learning integrated with disaster mitigation, by utilizing students' disaster experiences as learning resources in Indonesian language learning is formulated as follows.

a. **Observing** (the stage of orienting students to the problem)

The teacher provides apperception and divides students into groups. Furthermore, the students carry out the preparation stage by listening to the disaster experience experienced by the teacher, or observing local disaster-

themed video shows as a concept-building activity.

b. **Questioning** (organizing students to learn)

1) The teacher asks about disaster experiences experienced by the students, and types of disasters around them that are in accordance with the learning theme presented, so that they can be used as learning resources. 2) The teacher instructs the students to formulate questions about disaster problems according to the disaster experiences. 3) Students in groups collect all the ideas they have based on their disaster experiences. 4) Students create questions that describe the unknown aspects of the problem.

c. **Trying** (Guiding individual and group investigations)

The teacher instructs students to think about what sources will be used to investigate information about disaster mitigation needed. Then, the students in their groups discuss what sources will be used to research the *learning issue* and determine references in order to find disaster mitigation based on the type of disaster chosen.

d. **Associating** (developing and presenting work)

The teacher instructs students to write their ideas in outlines and then develop them into written text. Activities carried out by the students at this stage, 1) The students in groups collect facts from various sources as materials to be produced in written form with the guidance of the teacher. 2) The students in groups explore *learning issues*, gather new knowledge in the context of selected disaster problems (collection of facts from various sources as arguments) 3) The students summarize the knowledge and information obtained and relate it to the concept of disaster mitigation based on the type of disaster chosen. In the last step, 4) The students write the results of developing information about disaster mitigation according to the type of disaster chosen in language that is easy to understand by paying attention to the use of effective sentences, systematics, and language rules.

e. **Communicating** (evaluating the problem solving process)

In the last step, teachers guide students to analyze and evaluate the process of investigating information and knowledge about disaster mitigation, and evaluate disaster mitigation information written by them on worksheets. The students evaluate, analyze, and conclude the learning process and publish learning outcomes to become disaster mitigation literacy materials for the school community.

By following these learning steps, the students are expected to develop critical and creative thinking skills in identifying, analyzing, and finding solutions to real disaster problems that they experience themselves. In addition, it can help students to develop disaster mitigation awareness and improve their ability to collaborate and communicate with others through various texts produced. Therefore, the expected results of problem-based learning integrated with disaster mitigation can improve knowledge and skills in writing various types of texts, as well as building disaster mitigation awareness.

At the end of the learning process, the published work is not only a source of information for students, but also can serve as disaster mitigation literacy for the school community. Thus, problem-based learning integrated with disaster mitigation can be one of the effective strategies in improving students' knowledge and skills in dealing with disasters, as well as an effort to increase

disaster mitigation awareness in the school community.

Conclusions

The integration of disaster mitigation in Indonesian language learning at the high school level is crucial to improve students' knowledge and skills in dealing with disaster situations. By utilizing students' disaster experiences as learning resources, a problem-based approach can provide relevant and applicable benefits. This approach not only enriches the learning experience, but also helps build students' awareness of the importance of disaster mitigation.

Through the problem-based learning method, students are invited to be actively involved in the process of solving disaster-related problems. In this way, they can practice in identifying, analyzing, and finding solutions to real disaster problems. The role of the teacher as a facilitator is very important in guiding the students during this process, so as to develop critical and creative thinking skills. The implementation stages formulated in this study provide clear guidelines for teachers to implement Indonesian language learning integrated with disaster mitigation. With systematic steps, starting from orientation to the problem to evaluation, it is expected that learning can take place effectively and meaningfully, as well as creating space for students to collaborate and share knowledge in disaster mitigation literacy in the school community, so as to reduce the impact of natural disasters in the future.

It is recommended that the Indonesian curriculum in high schools officially integrate disaster mitigation materials by adding learning materials that discuss disaster topics and mitigation strategies. In addition, cooperation with government and non-government organizations engaged in disaster management should also be established to provide additional resources and information. The use of information and communication technology in disaster mitigation learning, as well as practical activities such as disaster management simulations, can increase the students' involvement and provide valuable direct experience.

This study faced several limitations, including limited resources, both in terms of teaching materials and facilities that support problem-based learning. Variations in students' experiences related to disaster can affect their understanding and engagement in learning. In addition, limited learning time in a crowded curriculum can be a challenge in integrating disaster mitigation. Resistance to changes in learning methods, especially from teachers or students who are more comfortable with traditional approaches, can also hinder implementation. Finally, it may not be possible to evaluate the effectiveness of problem-based learning thoroughly, so further research is needed to assess the impact of this integration on students' disaster mitigation knowledge and skills.

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