Students' perceptions of learning processes in schools affected by earthquakes and liquefaction in Central Sulawesi

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Abstract. The purpose of this study is to determine students' perceptions of the learning process in schools affected by earthquakes and liquefaction that occurred on September 28, 2018, in Central Sulawesi. This descriptive study was carried out on July 25 s.d. August 3, 2019. The selected disaster-affected schools were SMP Negeri 10 Palu, MTs 3 Palu, and MTs Al Khairaat Biromaru. The respondents of this study were 30% of the total students in each of these schools. Where sequentially respondents from MTs Negeri 3 Kota Palu, SMPN 10 Palu, and MTs Al-Khairaat Biromaru were 90, 100 and 40 people. The data in this study were obtained through a questionnaire of perception with eight questions. Each question in the questionnaire has four alternative answers. From the results of the questionnaire analysis at the three schools, it was found that students stated the learning process was in the inadequate category. This is due to psychological factors, service, teacher quality as well as poor facilities and infrastructure after the natural disaster. Thus it can be said that natural disasters in the form of earthquakes and liquefaction that occur cause a decrease in the learning process at school when viewed from students' perceptions.

1. Introduction
A disaster is identical to an event that destroys the settlement and the surrounding environment. Several types of disasters that often occur in Indonesia are tsunamis, earthquakes, volcanic eruptions, floods and landslides [1]. Also, disasters disrupt community activities [2]. An earthquake with a magnitude of 7.4 SR that occurred on September 28, 2018, in Central Sulawesi was caused by a shift in the Palu-Koro fault. This earthquake caused damage to several buildings and public facilities, loss of property and thousands of fatalities [3].

According to Laksono [4] that the earthquake disaster which was accompanied by liquefaction and tsunami had caused impacts in various fields and one of them was in the field of education. This caused several schools to be relocated. Besides learning facilities such as laboratories suffered damage. Besides, school education infrastructure is damaged and causes students to lose learning opportunities to the standards set by law. As a solution, then the government and education observers organized learning in emergency schools.

In this study students' perceptions of the learning process at the school affected by the earthquake and liquefaction that occurred on 28 September 2018 in Central Sulawesi Province were described.
2. Methods

2.1. Types of research
This qualitative study uses a survey method and describes students’ perceptions of the learning process at the school affected by the disaster on 28 September 2018 in Central Sulawesi.

2.2. Population and Sample
The population in this study were students in three schools affected by earthquake and liquefaction natural disasters, namely MTs Negeri 3 Palu City students totaling 305 students, 336 SMP Negeri 10 Palu students, and MTs Al-Khairaat Biromaru students with 135 people. The sample in this study was chosen randomly with the provision of 30% of the total in each school. Thus the number of students from each school is 90 people, 100 people, and 40 people, in sequence.

2.3. Data Collection Instruments
The data collection techniques used in this study include questionnaires and interviews. Questionnaires that have been validated by experts used in this study contain statements given scores by respondents.

2.4. Data analysis technique
The technical analysis used in the calculation of the average value. This technique is used to determine the ranking of the final scores on each item of the research questionnaire, the total value obtained is divided by the number of respondents who answered the assessment questionnaire. Equation 1 is used to calculate the average value.

\[
\bar{X} = \frac{\sum x}{n}
\]

where:
\(\bar{X}\): Average value in each question item
\(\sum x\): Total value of all ratings in each question item
\(n\): number of statement items

The interpretation of the average score obtained by Equation 1 is determined based on Table 1.

| Mean Score | Criteria       |
|------------|----------------|
| 3.25 \(<\bar{X}\) \(\leq\) 4.00 | Very Good      |
| 2.50 \(<\bar{X}\) \(\leq\) 3.25 | Good           |
| 1.75 \(<\bar{X}\) \(\leq\) 2.50 | Less           |
| 1.00 \(<\bar{X}\) \(\leq\) 1.75 | Poor           |

3. Results and Discussion

3.1 Results
In this study, researchers identified three schools affected by the earthquake and liquefaction that occurred on September 28, 2018, in Palu City, Central Sulawesi Province. This school identification is done to see whether there is a disastrous effect on the learning process at school. Researchers classified based on the level of damage and then took three school samples that fall into these criteria, namely: SMP Negeri 10 Palu which is located on Squid Road, MTs 3 Palu is located on Dewi Sartika Street, and MTs Al Khairaat Biromaru is located in Petobo Biromaru.
This research was conducted by giving questionnaires to students' perceptions about the effect of the impact of disasters on the learning process. The questionnaire consisted of 8 statements given to students, from the statement items there were four alternative answers. The questionnaire from several statements was made to determine the value of the questionnaire based on the respondent's answer on each statement. In this stage, the researcher analyzed each school that had been classified. In addition to aspects related to the learning process, this study also reviewed aspects of services, facilities and infrastructure, and the quality of teachers as aspects that are expected to explain the learning process.

In the initial stage, the researcher conducted a questionnaire validation as an instrument used by expert validators. The validation results show that all aspects of each question are in a good category so that it is suitable to be used as an instrument. In addition to a quantitative assessment, the expert also gave some comments to improve the contents of the questionnaire, namely: synchronization between the aspects reviewed and the statement given and the questions on the questionnaire was not repeated so that the contents of the questionnaire were more effective and efficient.

The results of the assessment of learning aspects by students at three schools, namely MTs Al-Khairaat Biromaru, SMPN 10 Palu and MTs 3 Palu are presented in Table 2 to Table 4. In each table, the student gives their opinion in Very Good (VG), Good (G), Lack (L) and Poor (P) category.

Table 2. Perceptions of MTs Al-Khairaat Biromaru students in the learning aspects.

| No | Statement                                                                 | Mean Score |
|----|---------------------------------------------------------------------------|------------|
|    |                                                                           | VG | G  | L  | P  |
| 1  | The teacher applies new methods and learning strategies to increase student interest in learning. | 2.60 |
| 2  | The teacher always tries to create a comfortable atmosphere so that students can be more focused on the learning process in class. | 2.20 |
| 3  | The suitability of the material provided by the teacher is by the specified competencies. | 2.18 |
| 4  | The teacher gives special time provided to discuss the subject matter.     | 2.55 |
| 5  | The teacher applies a variety of learning methods (lectures, discussions, SCL, questions, and answers). | 2.53 |
| 6  | The teacher gives assignments in a structured way (papers, summaries, exercises/problem solving, etc.). | 2.70 |
| 7  | The teacher gives feedback (returning assignments) to the assignments given. | 2.38 |
| 8  | The teacher provides exam material and / or assignments according to the subject's competency objectives | 2.35 |

Average Mean Score 2.44

Students' perceptions of aspects of the learning process at the Al-Khairaat Biromaru MTs School affected by the disaster in Central Sulawesi were given 40 students on July 25, 2019. Students' responses to aspects of the learning process related to new learning methods and strategies used by teachers to increase learning interest were good with a value of 2.60 which is in the good category. But according to students' perceptions teachers are still lacking in creating a comfortable atmosphere so students are more focused on the learning process in class. Students also stated that there was no compatibility of the material with the specified competencies. However, students stated that the teacher was still preparing the special time provided to discuss the subject matter. The application of the diversity of learning methods (lectures, discussions, SCL, question, and answer) provided by the teacher is also in the good category. The existence of structured assignments (papers, summaries, exercises/problem solving, etc.) is also in the good category with an average value of 2.70. However, according to students the teacher is still lacking in giving feedback (returning assignments) to the assignments given. Likewise, the provision of exam materials and assignments following the objectives of the specified subject competencies is also considered lacking by students. From these
data, it is known that four aspects are in the lacking category so that on average the aspects of the learning process for this school are in the lacking category (acquisition score 2.44).

**Table 3.** Perceptions of students of SMPN 10 Palu on learning aspects.

| No | Statement                                                                 | Mean Score |
|----|---------------------------------------------------------------------------|------------|
|    |                                                                            | VG  G  L  P|
| 1  | The teacher applies new methods and learning strategies to increase student interest in learning. | 2.46       |
| 2  | The teacher always tries to create a comfortable atmosphere so that students can be more focused on the learning process in class. | 2.33       |
| 3  | The suitability of the material provided by the teacher is by the specified competencies. | 2.18       |
| 4  | The teacher gives a special time provided to discuss the subject matter. | 2.48       |
| 5  | The teacher applies a variety of learning methods (lectures, discussions, SCL, questions, and answers). | 2.28       |
| 6  | The teacher gives assignments in a structured way (papers, summaries, exercises/problem solving, etc.). | 2.22       |
| 7  | The teacher gives feedback (returning assignments) to the assignments given. | 2.30       |
| 8  | The teacher provides exam material and / or assignments according to the subject's competency objectives | 2.54       |
|    | Average Mean Score                                                        | 2.35       |

**Table 4.** Perceptions of MTs 3 Palu students on learning aspects.

| No | Statement                                                                 | Mean Score |
|----|---------------------------------------------------------------------------|------------|
|    |                                                                            | VG  G  L  P|
| 1  | The teacher applies new methods and learning strategies to increase student interest in learning. | 2.12       |
| 2  | The teacher always tries to create a comfortable atmosphere so that students can be more focused on the learning process in class. | 2.26       |
| 3  | The suitability of the material provided by the teacher is by the specified competencies. | 2.09       |
| 4  | The teacher gives a special time provided to discuss the subject matter. | 2.23       |
| 5  | The teacher applies a variety of learning methods (lectures, discussions, SCL, questions, and answers). | 2.24       |
| 6  | The teacher gives assignments in a structured way (papers, summaries, exercises/problem solving, etc.). | 2.12       |
| 7  | The teacher gives feedback (returning assignments) to the assignments given. | 2.32       |
| 8  | The teacher provides exam material and / or assignments according to the subject's competency objectives | 2.37       |
|    | Average Mean Score                                                        | 2.22       |

The perception of one hundred students of SMPN 10 Palu towards eight questions related to the learning process was given on July 27, 2019, as shown in table 3. According to students, teachers were still lacking in implementing new learning methods and strategies to increase student interest in learning. Teachers are also still lacking in creating a comfortable atmosphere so students can focus more on the learning process in the classroom. The material provided and the competencies determined are also not appropriate. Teachers are still lacking in allocating the specific time available to discuss the subject matter. According to students, teachers are still lacking in applying diverse learning methods such as lectures, discussions, SCL, and questions and answers. Teachers are also still lacking in giving structured assignments (papers, summaries, practice exercises/problem-solving, etc.). Feedback (returning assignments) to the tasks given is not optimally done by the teacher. Of the eight
indicators available, only the provision of exam material and assignments according to the objectives of the subject competencies are in a good category. On average, the learning process at SMPN 10 Palu is in the poor category.

Table 4 shows that all aspects related to the learning process of MTs 3 Palu according to 40 students who acted as respondents were in the poor category which can be seen from the average value for all aspects of 2.22.

In addition to the learning process also obtained data on student perceptions related to school services, infrastructure and the quality of teachers by students is presented in Figure 1.

![Figure 1. Diagram of students' perceptions of school services, facilities, and infrastructure as well as the quality of teachers in schools affected by earthquakes and liquefaction.](image)

### 3.2 Discussion

The natural disaster that occurred on 28 September 2019 in Central Sulawesi had an impact on the learning process. In this case, three schools have facilities and infrastructure that were damaged so badly that it was inadequate for use. The learning process for the three schools had to be forced to do in temporary buildings/emergency tents. Based on the students' perception questionnaire, it is known that the learning process in MTs Negeri 3 Palu has the lowest learning process aspect compared to the other two schools.

From the results of interviews with students, it is known that the low perception of students on the learning process in schools that have a disastrous impact in Central Sulawesi is caused by factors of facilities and infrastructure, services provided and factors of low teacher quality. Besides, psychological factors are also suspected to be the cause so that teachers and students are less focused on the learning process. The teacher is not able to do the learning scenario according to the lesson plan because it is still traumatized and lacks concentration in teaching. Learning media and limited time allocation also make students tend to get bored with learning activities.

To overcome the low quality of the learning process, researchers argue that independent learning patterns can be applied by students. Where the online learning process for example through a website can be an alternative [5]. Also, learning science using simple media and learning based on natural phenomena around can also be done to improve students' understanding of concepts [6].
4. Conclusion and Recommendation

4.1. Conclusion
From the results of the questionnaire analysis at the three schools, it was found that students stated the learning process was in the inadequate category. This is due to psychological factors, services and facilities are not good after the natural disaster occurred even though the quality of teachers is good. Thus it can be said that natural disasters in the form of earthquakes and liquefaction that occurred on September 28, 2018, in Central Sulawesi had an impact on the decline in the learning process at school when viewed from students' perceptions.

4.2. Recommendations
Researchers suggest that the learning process in schools affected by disasters in Central Sulawesi be given reinforcement and online learning media so that the quality of education does not decline.

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