



Comparison of Preparedness Levels of High School Students in Facing Disasters in West Java Province

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ABSTRACT

The logical consequence of the natural state of West Java province, prone to disasters, requires humans there to be ready to deal with it. This includes senior high school students who get the material on disaster mitigation in schools and must be prepared to deal with disasters in their respective regions. The critical level of preparedness will minimize the possibility of losing a life. The research objective is to analyze the level of readiness of high school students in West Java province in the face of the three disasters that often occur in each region. The approach in this study uses quantitative descriptive with a survey method. The results showed that the level of preparedness of students in Garut for landslides has a score of 19.00, categorized Ready; the students in Tasikmalaya for earthquake disaster had the smallest value, namely, 18.88, categorized Ready, and the students in Pangandaran district for tsunami had the highest score is 22.32 and categorized Ready. In conclusion, there are significant differences in the preparedness of students in Garut, Tasikmalaya, and Pangandaran District.

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1. INTRODUCTION

Geographically, Indonesia is an archipelagic country located at the confluence of four tectonic plates: the Asian Continental Plate, the Australian Continental Plate, the Indian Ocean Plate, and the Pacific Ocean. This condition provides a potential prone to natural disasters, including the province of West Java. Some natural disasters that often occur in West Java are landslides, earthquakes, floods, droughts, typhoons, tidal waves, fires, volcanic eruptions, and tsunamis. Based on open data from West Java Province, the top three natural disasters that frequently occur until 2022 include: 1) Landslides with 3,232 incidents; 2) Earthquake with 2,583 events; and 3) Floods with 2,315 incidents.

Landslides are disasters that often occur in Indonesia yearly (Naryanto, et al., 2019; Sobirin and Ramadhan, 2022). A landslide is the movement of rock or soil masses due to the earth's force of gravity. A landslide is a disaster that often occurs in West Java. Throughout 2021 alone, the Regional Disaster Management Agency (BPBD) of West Java Province recorded around 2,400 natural disaster events dominated by landslides.

Furthermore, natural disasters with recurring frequency are earthquakes. The BPBD of West Java Province stated that West Java experienced 493 incidents of damaging earthquakes or magnitudes > 5 on the Richter scale from 2012 to 2021 (Open Data Jabar, 2021). Garut, Sukabumi, and Tasikmalaya districts experienced the highest frequency of incidents. Java Island is an active tectonic area with a high level of seismicity, so it often experiences earthquakes (Nia Shohaya, et al., 2013). Earthquakes often occur on Java island due to the subduction zone or subduction zone of the Indo-Australian plate, which infiltrates under the Eurasian plate, thus forming earthquake paths (Akmam, 2011).

This subduction zone is an active seismic zone, so that shallow, medium, and deep tectonic earthquakes often occur in this zone (Akmam, 2011). The latest earthquake that occurred in West Java was an earthquake. West Java, at the end of 2022, experienced an earthquake. On November 21, 2022, Cianjur Regency was rocked by an earthquake with a magnitude of 5.6 at a depth of 10 km. A few days later, on December 3, 2022, Garut Regency was rocked by an earthquake of 6.4 at a depth of 118 km. After that, on December 8, 2022, the city of Sukabumi was rocked by an earthquake with a magnitude of 6.1 at a depth of 104 km.

Data records regarding the natural disasters of landslides and earthquakes in West Java Province confirm that this area is home to several types of disasters. The high number of natural disaster events is caused by several factors, one of which is a better event recording and recording system as technology develops. Therefore, every element of society needs to be prepared to be alert to natural disasters in various regions, including in West Java Province. Preparedness is essential in dealing with disasters that can occur at any time. Preparedness capability is an action that must be possessed by every element of society (Wulandari, 2019), with no exception for students in Senior High School (SMA). Preparedness efforts in the community, especially among children and adolescents, still need to be improved (Ansori and Santoso, 2020) as one of the essential elements of disaster risk reduction prevention activities (Aprilin, 2018).

High school-level students specifically get disaster mitigation material from learning Geography at school. Therefore, the level of preparedness of high school students needs to be known to what extent their preparedness skills are in dealing with disasters that can occur at any time in their respective neighborhoods. Then from these data, it can also be seen the factors that play a role in determining the ability of student's preparedness to deal with disasters.

The government's role is very influential in achieving student preparedness in dealing with disasters, especially concerning programs implemented in collaboration with schools, such as

counseling about the disaster, providing sustainable disaster simulations, and so on. Differences that are very likely to occur regarding the level of preparedness of high school students in dealing with disasters in their respective regions are fascinating to analyze, especially in the areas that were used as research sites, namely Pangandaran Regency for the tsunami disaster, Tasikmalaya Regency for the earthquake disaster, and Garut Regency for the landslide disaster.

This study aims to analyze high school student's preparedness in dealing with disasters in three districts and three different types of disasters. Furthermore, the factors that cause differences will be analyzed to determine the extent of their role in influencing the differences in the level of preparedness of these high school students.

2. LITERATURE REVIEW

2.1. Disaster

Natural disasters are disasters caused by events or a series of events caused by, among others: earthquakes, tsunamis, volcanic eruptions, floods, droughts, hurricanes/tornadoes, and landslides. Humans always try to read and predict this natural phenomenon, but no one can predict when it will occur (Ansori and Santoso, 2020). Disasters are very closely related to humans, either as a cause or as a victim of a disaster (Isya, et al., 2021). As stated, Kent defines a disaster as a severe disruption of the functioning of society, causing widespread human, material, and losses that exceed the ability of the affected community to cope using only its resources. Humans certainly do not want to be hit by a disaster. Disasters will directly cause a lot of property and life loss. The level of failures that we suffer from natural disasters is caused by the fact that the community lacks information about possible disasters that may occur in their surroundings (Naryanto, et al., 2019).

In other words, communities that are minimally responsive to disasters are the subjects who experience the most losses when natural disasters occur. Ministry of Social Affairs of the Republic of Indonesia defines a disaster as an event or series of events caused by nature, humans, and or both that result in victims of human suffering, loss of property, environmental damage, damage to infrastructure and public facilities and disrupt the life system and people's livelihoods. It can be concluded that a disaster is an event that can cause the loss of both property and life for the victims or the affected area. An event is not called a disaster if it does not cause harm to the people around it.

2.2. Preparedness in Facing Disasters

Preparedness is a mandatory action that everyone must possess because when natural disasters occur cannot be predicted (Wulandari, 2019). Preparedness is part of the disaster management process (Hidayati, 2008). The difference between disaster preparedness and mitigation: "Measures of prevention/mitigation tend to be geared to major policy decisions at government level; also they are usually directed primarily from senior management levels. Preparedness measures, how to wave, tend to be more strongly oriented towards action by individual organizations."

According to LIPI and UNESCO/ISDR, the definition of preparedness is part of the disaster management process. In the current concept of disaster management, increased preparedness is an essential element of proactive disaster risk reduction activities before a disaster occurs. Preparedness is all efforts made before a natural disaster occurs (Hidayati, 2008) therefore, the effectiveness of disaster preparedness is highly dependent on the

knowledge possessed by the individuals who implement it. Especially if they have experience in dealing with disasters, these individuals will have valuable provisions in dealing with disasters (Aprilin, 2018). The importance of preparedness is, of course, related to minimizing the number of fatalities if a disaster occurs at any time. The preparedness of a community or individual is very dynamic, depending on the environmental conditions (Andriani and Wakhudin, 2022). Disaster education is one aspect of ecological life. An enabling environment will enhance the development of preparedness and vice versa, as Kent (1994) stated that disaster preparedness should be seen as an ongoing and active process. Preparedness plans are dynamic endeavors that must be periodically reviewed, modified, improved, and tested.

LIPI and UNESCO/ISDR explain that a community's level of preparedness can decrease at any time as time goes by and with the occurrence of socio-cultural, political, and economic changes in society. To find data on increasing or decreasing preparedness capabilities, capacity in disaster preparedness must be managed on an ongoing basis. This can later be used as a consideration for policymakers, what steps should be taken to increase disaster preparedness. Disaster preparedness can be summed up as a part of disaster mitigation activities, which includes the ability to recognize the type of disaster in the neighborhood where you live, know how to save yourself and save others and prepare what resources are needed during an emergency.

Humans are demanded to be wiser in responding to natural disasters through knowledge and preparedness. The government and schools need to develop disaster preparedness schools because formal education is an effective way to develop students' knowledge and preparedness for disasters (Maryani, 2021). Efforts to reduce disaster risk through education are expected to achieve broader goals. They can be introduced earlier to students by integrating risk reduction education into the school curriculum and extracurricular activities.

3. METHOD

The method used in this research is the descriptive method. Nasir states that descriptive research is a method of examining the status of a group of people, an object, a set of conditions, a system of thought, or even a class of events at present, and the purpose of this research is to make a systematic, factual description, picture or painting. And accurate regarding the facts, characteristics, and relationships between the phenomena investigated. Furthermore, to facilitate data collection in the field, a survey method was used in data collection. Survey research method, as stated by Singarimbun & Effendi that the research method which takes samples from one population and uses a questionnaire as the primary data collection tool is used to make direct observations in the field to find data and its function is to formulate what happened.

4. RESULTS AND DISCUSSION

Comparison of the preparedness of high school students in dealing with disasters in their respective regions after the T-test was carried out, as shown in Table 1. Based on the calculation results in Table 1, it can be seen that there is no significant difference between the preparedness of high school students in Garut Regency and Tasikmalaya Regency because the t-count is smaller than the t-table. Meanwhile, there are substantial differences between Garut and Pangandaran Regencies and Pangandaran and Tasikmalaya Regencies because the t-count is larger than the t-table.

Table 1. Comparison Test Results (T-Test)

Name of School	Address	t-Count	t-Table
Preparedness of High School Students in Garut Regency	Preparedness of High School Students in Tasikmalaya Regency	1,239	2,012
Preparedness of High School Students in Tasikmalaya Regency	Preparedness of Pangandaran Regency Senior High School Students	3,589	2,014
Preparedness of Pangandaran Regency Senior High School Students	Preparedness of High School Students in Garut Regency	3,636	2,014

Source: Primary Data 2022

To make it easier to see the difference in the level of preparedness of high school students in the three districts in dealing with disasters, the results of filling out the questionnaire are then categorized into several categories using a scale of five from Nurkancana dan Sumartana namely very ready, ready, less prepared, not ready, and very unprepared.

The number of question items in the questionnaire that emphasized disaster preparedness was based on Carter's theory dan LIPI-UNESCO/ISDR; after getting some modifications, there were 15 questions. The ideal average (R2) is the maximum score divided by two, namely $30:2 = 15$, and the excellent standard deviation (SD) is determined again by dividing the ideal average by 3, namely $15:3 = 5$. After this calculation, the classification can be seen in Table 2.

Table 2. Preparedness Category

No	Formula	Result	Category
1.	$R_2 + 1,5 SD$	22,5 – 30	Very ready
2.	$R_2 + 0,5 SD$	17,5 – 22,5	Ready
3.	$R_2 - 0,5 SD$	12,5 – 17,5	Not quite ready
4.	$R_2 - 1,5 SD$	7,5 – 12,5	Not ready
5.		0 – 7,5	Very Unprepared

Source: Nurkancana dan Sumartana

Based on the categorization in Table 2, the results of the level of preparedness of high school students for the three districts, namely Garut Regency, Tasikmalaya Regency, and Pangandaran Regency, are set out in Table 3.

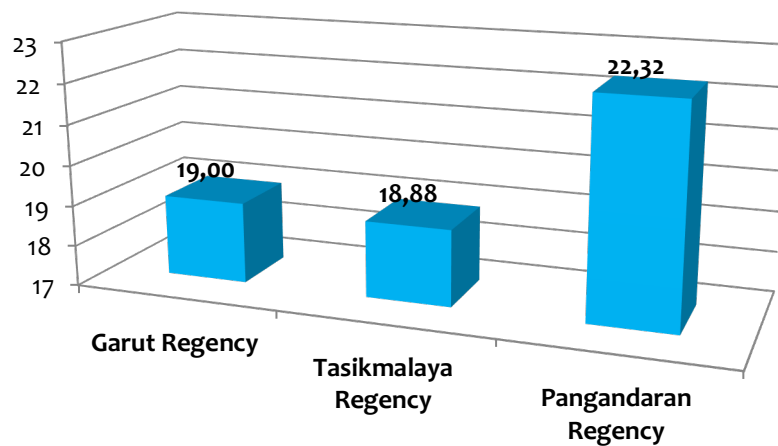
Table 3. Level of Student Preparedness in Facing Disasters

No	District Name	Mean	Category
1.	Garut	19,00	Prepared
2.	Tasikmalaya	18,88	Prepared
3.	Pangandaran	22,32	Prepared

Source: Primary Data 2022

The results of the tables and calculations state that for the level of preparedness of high school students in dealing with disasters, Garut Regency has an average score of 19.00 and is included in the Ready category. This means that students in Garut Regency are ready to face landslides. Tasikmalaya Regency has the most miniature score, an average of 18.88 and is included in the Ready category, which means students in Tasikmalaya Regency are ready to face earthquakes. Finally, the highest is Pangandaran Regency, with an average score of 22.32, and is included in the Ready category, which means students in Pangandaran Regency are ready to face the tsunami disaster.

A bar chart will be made to emphasize the differences obtained by the three districts, as shown in Figure 1 below.



Source: 2022 Research

Figure 1. Level of Preparedness of High School Students in Facing Disasters

Based on Figure 1, it can be seen from the three districts that high school students in Pangandaran Regency are the districts most prepared to face disasters compared to the other two communities, namely Garut Regency and Tasikmalaya Regency. The difference in the preparedness of high school students between the Pangandaran Regency and the other two Regencies certainly stems from many factors. Based on research data, these factors are caused by class teacher knowledge regarding preparedness, availability of facilities and infrastructure, and socialization regarding disaster mitigation.

So far, preparedness materials have varied, depending on the wishes and readiness of each institution. Therefore the level of community preparedness in an area facilitated by an institution cannot be compared with the level of community preparedness in other regions, which is guided by other institutions so that the preparedness framework. A preparedness framework is needed as a standard to determine what needs to be prepared before, during and immediately after a disaster (Hidayati, 2008).

Differences in student preparedness for disasters are also influenced by the teacher's knowledge (Ansori and Santoso, 2020; Aprilin, 2018). The teacher's knowledge of preparedness, especially the geography teacher in delivering disaster mitigation materials, indeed produces different knowledge products in students' minds. Teachers, as the spearhead of the school, with their preparedness knowledge, play a significant role in supporting students to understand the various aspects needed regarding disaster preparedness (Ayub, et al., 2020).

Another factor causing the difference is the availability of disaster management facilities and infrastructure available at Senior High School in the Pangandaran, Tasikmalaya, and Garut districts. Disaster management facilities and infrastructure can support or, conversely, become obstacles in disaster preparedness (Hidayati, 2018). Disaster preparedness schools require absolute requirements, namely good facilities, and infrastructure, to realize disaster preparedness schools (Ansori and Santoso, 2020) because the facilities and infrastructure in the school environment that were built without heeding spatial regulations were often not ready to face disaster conditions (Aprilin, 2018).

Socialization regarding disaster mitigation is also a factor that causes differences in disaster preparedness among students. Socialization activities and warning simulations involving the community are urgently needed to reduce the number of victims in the event of a disaster (Hidayati, 2018) including students at school. Hakim (Hakim, 2019), in his scientific work

entitled Framework for Disaster Preparedness which was carried out in Bekasi City in dealing with flood disasters, suggested the government actively socialize disaster management SOPs.

The difference in preparedness between schools is also very strongly influenced by factors outside of learning Geography on disaster mitigation materials, even outside of school, as reflected in the sufficiently complete facilities such as tsunami warning alarms, evacuation route banners, disaster simulations, and counseling about how to save yourself from disasters that are often done in Pangandaran Regency. Meanwhile, the Tasikmalaya Regency and Garut Regency are not as complete as Pangandaran Regency in terms of facilities and infrastructure. The worst was experienced by Garut Regency, where the connecting road between sub-districts is also tough to pass because the conditions are damaged, and the terrain is steep, which significantly hampers the rate of information and updates to get to remote areas.

The different levels of preparedness of students from the three districts that were used as research locations, of course, were also influenced by how extensive knowledge about disaster preparedness was as a direct effect of the availability of disaster infrastructure, as well as the amount of counseling about disasters that students had received. As reflected in the research conducted by Firmansyah, Rasni, & Rondhianto (Firmansyah, et al., 2014). This research focuses on students aged 15-18 at Senior High School Al-Hasan Kemiri, Pantil District, Jember Regency. It discusses the relationship between knowledge and student preparedness behavior in dealing with floods and landslides. This research concludes that the more knowledge about disasters and how to deal with them, the higher the preparedness behavior possessed by these students.

Conclusion of the research Firmansyah, Rasni, & Rondhianto directly proportional to the results of this study, which stated that high school students in Pangandaran Regency had higher knowledge and experience in dealing with the tsunami disaster and also had a higher level of preparedness than high school students in Tasikmalaya Regency and Garut Regency, who had more excellent knowledge. Lower grades and minimal experience in dealing with earthquakes and landslides.

5. CONCLUSION

There are differences in disaster preparedness between high school students in Pangandaran and Garut and between high school students in Pangandaran and Tasikmalaya. However, there was no difference between the preparedness of Senior High School students in Tasikmalaya and Garut. There is no significant difference between students' preparedness in the Garut and Tasikmalaya districts because the two regions are relatively rarely socialized regarding the disaster.

6. REFERENCES

- Agarry, R. O., Omolafe, E. V., Animashaun, V. O., and Babalola, E. O. (2022). Primary education undergraduates' competency in the use of artificial intelligence for learning in Kwara state. *ASEAN Journal of Educational Research and Technology*, 1(2), 111-118.
- Arfasa, A. J., and Weldmeskel, F. M. (2020). Practices and challenges of guidance and counseling services in secondary schools. *Emerging Science Journal*, 4(3), 183-191.
- Bolaji, H. M. (2022). Information and communication technology as a veritable tool for administrators in university: From teaching perspectives to challenges in education. *Indonesian Journal of Teaching in Science*, 2(2), 183-192.

- Di Fabio, A. (2014). Intrapreneurial self-capital: A new construct for the 21st century. *Journal of Employment Counseling*, 51(3), 98-111.
- Dunn, T. W., Smith, T. B., and Montoya, J. A. (2006). Multicultural competency instrumentation: A review and analysis of reliability generalization. *Journal of Counseling and Development*, 84(4), 471-482.
- Gatta, S. A., and Ishola, N. A. (2022). Effect of cooperative learning strategy on students academic performance in commerce in secondary schools. *ASEAN Journal of Economic and Economic Education*, 1(2), 111-120.
- Lam, S. K., and Hui, E. K. (2010). Factors affecting the involvement of teachers in guidance and counselling as a whole-school approach. *British Journal of Guidance and Counselling*, 38(2), 219-234.
- Lue, M. M., and Riyanto, K. B. (2020). Multicultural social peaceful education through social guidance and counseling services in development of industrial revolution 4.0. *Advances in Social Science, Education and Humanities Research*, 462(1), 241-245.
- Mahfud, C. (2019). Evaluation of islamic education curriculum policy in Indonesia. *Premiere Educandum: Jurnal Pendidikan Dasar dan Pembelajaran*, 9(1), 34-43.
- Newman, R. S. (2008). Adaptive and nonadaptive help seeking with peer harassment: an integrative perspective of coping and self-regulation. *Educational Psychologist*, 43(1), 1-15.
- Nursaniah, S. S. J. (2023). Analysis of science education curriculum for students with special needs in special schools: The curriculum of 2013. *Indonesian Journal of Community and Special Needs Education*, 3(1), 113-130.
- Nweze, T., and Okolie, U. C. (2014). Effective guidance and counselling programmes in secondary schools: Issues and roles in students' career decision making. *IOSR Journal of Research and Method in Education (IOSRJRME)*, 4(4), 63-68.
- Pence, S. T., Roscoe, E. M., Bourret, J. C., and Ahearn, W. H. (2009). Relative contributions of three descriptive methods: Implications for behavioral assessment. *Journal of Applied Behavior Analysis*, 42(2), 425-446.
- Prihantoro, C. R. (2015). The perspective of curriculum in Indonesia on environmental education. *International Journal of Research Studies in Education*, 4(1), 77-83.
- Sadler, D. R. (2010). Beyond feedback: Developing student capability in complex appraisal. *Assessment and Evaluation in Higher Education*, 35(5), 535-550.
- Singh, B. (2022). To study the missing component of higher education: Guidance and counseling. *Knowledgeable Research: A Multidisciplinary Journal*, 1(3), 48-54.