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DISASTER MANAGEMENT LITERACY IN HIGHER EDUCATION ENVIRONMENT: A STUDY OF STUDENTS AT UNIVERSITAS TIDAR

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ABSTARCT: This study aims to explore the level of understanding (literacy) of Universitas Tidar students regarding disaster management. This research uses survey research methods with a quantitative approach that processes and interprets data in the form of numbers and calculations. The population of this study is active students of Universitas Tidar with a total of 13,176 students. The research sample was 910 students from five faculties at Universitas Tidar, namely the Faculty of Economics, Faculty of Social and Political Sciences, Faculty of Teacher Training and Education, Faculty of Agriculture, and Faculty of Engineering. The determination of the research sample was carried out using the random sampling method. The results stated that the majority of students had a high level of disaster preparedness in the category of knowledge parameters about disasters and resource mobilization, while the parameters of disaster emergency response plans, disaster warning and disaster preparedness showed that the position of disaster management literacy was generally still in the medium category.

Keywords: Disaster Management, Literacy, University Students, Disaster Preparedness Index

1. INTRODUCTION

Indonesia is geographically included in the category of disaster-prone areas [1]. Indonesia is a country located at the confluence of tectonic plates in the world. This condition opens the risk of natural disasters such as volcanic eruptions, earthquakes, and tsunamis [2] as well as non-natural. Each disaster causes different losses depending on the level of environmental, social, and physical vulnerability of each community [3]. Geoportal data from the National Disaster Management Agency (BNPB) [4] shows that there are approximately 2,897 disaster events that occurred from January 2023 to September 18, 2023, with details in Table 1.1 below [5].

Table 1. Number of Disaster Events in Indonesia in 2023

Type of Disaster	Number of events
Flood	868
Extreme Weather	846
Landslides	448
Forest and land fires	601
Tidal Wave and Abrasion	24
Earthquake	23
Drought	85
Volcano Eruption	2
Total Events	2.897

Source : BNPB, 2023

In Table 1, it is known that there are approximately 8 types of disasters that occurred during 2023. Disasters that occur certainly have a variety of impacts on humans, private facilities, and public facilities[5]. Some of them are as many as 200 people died, 4,824,519 people suffered and were displaced, 10 people were missing, and 5,553 people were injured. On the other hand, natural disasters that occurred in 2023 caused damage to homes and public facilities. There were at least 3,360 severely damaged houses, 3,696 moderately damaged houses, and 17,721 lightly damaged houses. Natural disasters caused damage to 339 educational facilities, 313 worship facilities, 52 health facilities, 193 bridges, and 81 offices.

Similar to the national situation, Universitas Tidar in Magelang City can be categorized as a disaster-prone area. The topography around Magelang city is a basin-shaped plateau due to the presence of five volcanoes namely Mount Merapi, Merbabu, Andong, Telomoyo, Sumbing, and Menoreh Mountains. This makes the Greater Magelang area a water catchment area. There are 10 medium to large rivers with a maximum discharge of 2,314 m3 /second in the rainy season. The Magelang city area is also dominated by dense residential areas that are inseparable from fire disaster vulnerability. In 2022 BPBD Magelang City recorded 65 disaster cases, which included 34 high winds, 12 landslides, 3 floods, 4 fires, and 12 other disasters. Currently, Universitas Tidar has 13,293 students with quite busy lecture activities every day. In a situation of disaster vulnerability, ideally students should have sufficient literacy regarding disaster mitigation and emergency response.

Efforts to mitigate disasters continue to be made from the central to regional levels in the form of disaster management. Successful management requires synergy between stakeholders in all sectors, including education units. Disaster mitigation can not only be done through improvements in visible structures (hardware measures) but also through increasing disaster preparedness both individually and organizationally in responding to disasters in order to overcome the damage and impact appropriately [6]. In fact, disaster education needs to be given early in order to minimize the impact of disasters[7,8].

Research conducted by[9] showed that community and government preparedness in West Martapura Sub-district was at a moderate level. Meanwhile,[10] stated that disaster management literacy can increase disaster mitigation capability by 56%.

Education units play an important role in improving the quality of human resources (HR) in a country. If associated with disaster management, improving the quality of human resources is related to how education units are able to improve the readiness of human resources in facing disasters. Research [11] shows that education has a significant relationship to disaster preparedness. Furthermore, disaster-related education can improve individual preparedness, which is crucial in disaster risk mitigation. One of the strategies for successful disaster management is a full understanding of disasters, how people respond during disasters, and what people should do before and after disasters occur. Indeed, this information is summarized in disaster management literacy.

The importance of the younger generation in advancing a nation is significant. Students can bring change for the better. Universities have an important role in developing the character of human resources through the education process for students. Universities can strengthen and improve the quality of human resources, not least in the scope of disaster management. But in some conditions, this literacy process cannot run optimally. Thus, efforts need to be made to improve the disaster management literacy of students. These efforts can be successful if universities know the starting point or position of the current level of disaster management literacy. Meanwhile, until now, there has never been a survey on the level of disaster management literacy of students at Universitas Tidar. Therefore, the formulation of the problem in this study is how the level of disaster management literacy of Universitas Tidar students. The results of this study can be used as input for universities or related governments in order to measure the level of disaster preparedness at Universitas Tidar.

2. METHODS

2.1 Research Design

The study used a survey research method with a quantitative approach that processes and interprets data in the form of numbers and calculations. The population of this research is active students of Universitas Tidar with a total of 13,176 students. The research sample is 910 students from five faculties in Universitas Tidar, namely Faculty of Economics, Faculty of Social and Political Sciences, Faculty of Teacher Training and Education, Faculty of Agriculture, and Faculty of Engineering. The determination of the research sample was carried out using the random sampling method, namely by randomly selecting students to fill in the research instruments used.

Data collection is needed to assess each parameter. The parameters measured include 4

parameters, namely knowledge about disasters (knowledge and attitude-KAP), emergency planning (EP), disaster warning (warning system-WS), resource mobilization capacity (RMC) which refers to [12]. The questions of the survey and the number of items can be seen in Table 2.

Table 2. Number of Items in the Survey Question

No	Survey Question	Number of item
1	Knowledge of disasters	55 item
2	Emergency response plan	19 item
3	Disaster warning	4 item
4	Resource mobilization	5 item

2.2 Data Analysis

Data analysis in this study used frequency tabulation and cross tabulation tables, diagrams and index numbers. The tables and diagrams were used to describe the condition of disaster management literacy in the university environment; while analysis using scoring or index scoring with regard to the weight of each parameter according to the framework developed by[13] was used to determine the level of disaster management literacy.To simplify and make it easier to understand, the index value is multiplied by one hundred. The index number in this study consists of the index of each parameter, namely knowledge about disasters (knowledge and attitude-KAP), emergency planning (EP), disaster warning (warning system-WS), resource mobilization capacity (RMC) on each survey / questionnaire data source.

Thus, the index of each parameter can also be seen. The index of each parameter can be used as input when intervening. For example, if the knowledge index of students is low, then there is a need for socialization or campaigns about earthquakes, landslides, fires, etc. through various appropriate media. Likewise, if the emergency response plan index is low, socialization or simulations on the importance of evacuation, rescue and rescue are needed. The index measurements for each parameter can be seen in Table 3.

Table 3. Index Calculation Formula

Indeks	Calculation Formula
Disaster knowledge index	$\frac{\boldsymbol{Parameter\ actual\ score}}{\boldsymbol{Parameter\ maximum\ score\ (55)}} \boldsymbol{x\ 100}$
Disaster emergency plan index	$\frac{\boldsymbol{Parameter\ actual\ score}}{\boldsymbol{Parameter\ maximum\ score\ (19)}} \boldsymbol{x\ 100}$
Disaster warning literacy	$\frac{\boldsymbol{Parameter\ actual\ score}}{\boldsymbol{Parameter\ maximum\ score\ (4)}} \boldsymbol{x\ 100}$
Resource mobilization index	$\frac{\boldsymbol{Parameter\ actual\ score}}{\boldsymbol{Parameter\ maximum\ score\ (5)}} \boldsymbol{x\ 100}$
Disaster preparedness index	$\frac{\boldsymbol{Total\ Parameter\ actual\ score}}{\boldsymbol{Total\ parameter\ maximum\ score\ (83)}} \boldsymbol{x\ 100}$

Source : Hidayati et al., 2011

Table 4. Index Categories

Category	Index Value
High	80 - 100
Medium	60 - 79
Low	< 60

Source : Hidayati et al., 2011

3. RESULTS AND DISCUSSION

3.1 Demographics

Based on the random sampling technique, a research sample of 910 student respondents was obtained, divided into 5 faculties. Based on Table 5, it can be seen that the total sample amounted to 910 consisting of 665 female respondents and 245 male respondents. This shows that the number of female respondents is twice as many as the number of male respondents. The faculty with the most respondents is the Faculty of Social and Political Sciences with 428 respondents.

Table 5. Distribution of Respondents by Gender and Faculty

Faculty		Agriculture	Economy	Political Sciences	Teacher and Education	Engineering	Total
Gender	F	110	162	284	87	22	665
	M	28	27	144	11	35	245
Total		138	189	428	98	57	910

The second highest number came from the Faculty of Economics with 189 respondents, followed by the Faculty of Agriculture with 138 respondents. The Faculty of Teacher Training and Education and the Faculty of Engineering were fourth and fifth respectively with 98 and 57 respondents. As for the distribution of respondents based on class is presented in Table 6.

Table 6. Distribution of Respondents by Class

		Agriculture	Economy	Political Sciences	Teacher and Education	Engineering	Total
Class of	2020	4	1	38	0	24	67
	2021	3	68	140	59	7	277
	2022	2	77	154	38	26	297
	2023	129	43	96	1	0	269
Total		138	189	428	98	57	910

Based on Table 6, it can be seen that student respondents from the class of 2022 totaled 297 respondents (32.64%), followed by student respondents from the class of 2021 with 277 respondents (30.44%). The number of 2023 respondents only differed by 8 respondents from the 2021 respondents (29.56%). Meanwhile, the 2020 generation respondents only numbered 67 (7.36%).

3.2 Descriptive Statistical Analysis

Descriptive statistics of this study are presented in Table 7, it can be seen that the research sample consisted of 910 respondents. Knowledge of disasters (KAP) has a minimum value of 20, a maximum value of 54, with an average value of 43.69. This shows that there are respondents (students) with very high knowledge of disasters (out of 55 items, 54 items have answered correctly). However, the minimum value of 20 shows that there are respondents with a low level of knowledge of disasters (disaster management literacy in terms of knowledge of disasters at a level of 36.36%).

Table 7. Descriptive Statistics

Keterangan	N	Min	Max	Mean	Std. Dev.
KAP	910	20	54	43,69	4,696
EP	910	2	19	12,54	3,259
WS	910	0	4	3,23	0,767
RMC	910	0	5	3,47	1,526
ALL	910	27	80	62,93	8,037
IDX	910	32,530	96,386	75,823	9,684
KSB	910	1	3	2,30	0,559

Description:
KAP = Knowledge of disasters; EP = Disaster emergency response plan; WS = Disaster warning; RMC = Resource mobilization; ALL = Sum of all parameter items; IDX = Disaster management literacy index; KSB = Level of disaster preparedness..

The disaster emergency response plan (EP) has a minimum score of 2 with a maximum score of 19 and an average score of 12.54. This indicates that all students have a disaster emergency response plan. The maximum score of 19 (out of 19 items submitted) indicates that there are respondents who have a high disaster emergency response plan. However, there are still students with minimal disaster emergency response plans (disaster emergency response plans at a level of 10.53%).

Disaster warning (WS) has a minimum score of 0 with a maximum score of 4 and an average score of 3.23. The mean score of 3.23 indicates that on average students are aware of disaster warnings. The maximum score of 4 indicates that there are students who have high literacy related to disaster warnings. Meanwhile, the minimum score of 0 indicates that there are still students who do not know or even know about disaster warnings.

Resource mobilization (RMC) is known to have a minimum value of 0, a maximum value of 5, and an average value of 3.47. This indicates that there are still students who lack the ability to mobilize resources during a disaster. On the other hand, the maximum score of 5 indicates that students have a high ability to mobilize resources.

The disaster management literacy index (IDX) has a minimum value of 32.530, a maximum value of 96.386, with an average value of 75.823. Meanwhile, the level of disaster preparedness (KSB) shows a minimum value of 1, a maximum value of 3, with an average value of 2.30. This shows that there are students with a high level of disaster preparedness and there are also students with a low level of disaster preparedness. However, on average students have a moderate level of disaster preparedness.

3.3 Level of Disaster Management Literacy

Based on Table 8, it can be seen that students who are research respondents have various levels in terms of disaster management literacy. The profile of disaster management literacy in the parameters of knowledge about disasters and resource mobilization shows the proportion of students who have a high disaster management literacy index which is more than 50%, while in the parameters of disaster emergency response plans, disaster warnings and disaster preparedness shows the position of disaster management literacy is still in the medium category with proportions of 42.42%, 46.92%, and 60% respectively. On the other hand, this indicates that efforts to improve students' knowledge of disasters are still needed to form a disaster-prepared campus. Disaster education can be provided during the new student orientation period, course inversions, compulsory university courses, or public lectures and seminars [14]. It is intended that students understand disaster-related material so that they can transmit this knowledge and information to their families, neighbors and friends. This is in line with the opinion of[15] that formal education through disaster education in schools and universities plays a role in educating students and college students who will then act as intermediaries who convey information from or become intermediaries between formal education and the community.

Table 8. The Level of Disaster Management Literacy

Disaster Management Literacy Parameters	**Literacy level**	**Faculty**					**Persentage (%)**
		Agriculture	Economy	Political Sciences	Teacher and Education	Engineering	
Knowledge of Disaster	High	91	85	260	40	42	56,92
	Medium	45	97	162	55	14	40,99
	Low	2	7	6	3	1	2,09
Disaster Emergency Response Plan	High	36	25	102	6	19	20,66
	Medium	57	76	179	49	25	42,42
	Low	45	88	147	43	13	36,92
Disaster Warning	High	58	65	199	11	26	39,45
	Medium	62	102	180	57	26	46,92
	Low	18	22	49	30	5	13,63
Resource Mobilization	High	82	106	246	42	35	56,15
	Medium	16	31	63	21	3	14,73
	Low	40	52	119	35	19	29,12
Disaster Preparedness	High	55	45	170	12	35	34,84
	Medium	78	128	241	79	20	60,00
	Low	5	16	17	7	2	5,16

Universitas Tidar, which is located in an area surrounded by mountains, encourages students to have high abilities in disaster warning. Meanwhile, the research results as a whole and in each faculty show that there are still students with low disaster warning literacy. This needs to be a concern for universities to improve the ability of students in

terms of disaster warning in order to improve student preparedness for disasters.

Students' ability to mobilize resources is an important element for universities during a disaster. High mobilization capabilities can assist universities in mobilizing victims during a disaster at any time. This can reduce the number of disaster victims, both injuries and fatalities. The finding in this study needs to be a concern for the campus in improving the ability of students who are still relatively low in terms of resource mobilization.

4. CONCLUSION

Based on the description of the research results, it can be concluded that the majority of students have a high level of disaster preparedness in the category of knowledge about disasters and resource mobilization, while the parameters of disaster emergency response plans, disaster warning and disaster preparedness show that the position of disaster management literacy is generally still in the medium category. The review of each parameter also shows that there are still students who have literacy in the low category both in terms of knowledge about disasters, disaster emergency response plans, disaster warning, and resource mobilization. Based on the results of research in this study, efforts are needed to improve disaster management literacy and student preparedness in facing disasters. A high level of disaster preparedness is needed for a university, especially those in disaster-prone areas.

5. REFERENCES

[1] Hidayati Deny. Kesiapsiagaan Masyarakat. *Jurnal Kependudukan Indonesia*. 2008;3(1):69–84.

[2] Suhardjo Dradjat, and Suhardjo Dradjat. Arti Penting Pendidikan Mitigasi Bencana Dalam Mengurangi Resiko Bencana. *Jurnal Cakrawala Pendidikan*. 2015;0(2).

[3] Yulianto Sugeng, Apriyadi Rio Khoirudin, Aprilyanto Aprilyanto, Winugroho Tri, Ponangsera Iko Sarikanti, and Wilopo Wilopo. Histori Bencana Dan Penanggulangannya Di Indonesia Ditinjau Dari Perspektif Keamanan Nasional. *PENDIPA Journal of Science Education*. 2021;5(2):180–187.

[4] BNPB. Rangkuman Bencana Tahun 2023 [Internet]. 2023. https://gis.bnpb.go.id/arcg

[5] BNPB. Rangkuman Bencana Tahun 2023. 2023.

[6] Kimura Reo, Hayashi Haruo, Kobayashi Kosuke, Nishino Takahiro, Urabe Kenshin, and Inoue Satoshi. Development Of A "Disaster Management Literacy Hub" For Collecting, Creating, And Transmitting Disaster Management Content To Increase Disaster Management Literacy. *Journal of Disaster Research*. 2017;12(1):42–56.

[7] Hafida Siti Hadiyati Nur. Urgensi Pendidikan Kebencanaan Bagi Siswa Sebagai Upaya Mewujudkan Generasi Tangguh Bencana. *Jurnal Pendidikan Ilmu Sosial*. 2018;28(2):1–10.

[8] Mujiburrahman Mujiburrahman, Nuraeni Nuraeni, and Hariawan Rudi. Pentingnya Pendidikan Kebencanaan Di Satuan Pendidikan Anak Usia Dini. *JISIP (Jurnal Ilmu Sosial dan Pendidikan)*. 2020;4(2):317–321.

[9] Erlia Devi, Kumalawati Rosalina, and Aristin Nevy Farista. Analisis Kesiapsiagaan Masyarakat Dan Pemerintah Menghadapi Bencana Banjir Di Kecamatan Martapura Barat Kabupaten Banjar. *JPG (Jurnal Pendidikan Geografi)*. 2017;4(3):15–24.

[10] Afrian Ramdan, and Islami Zukya Rona. Peningkatan Potensi Mitigasi Bencana Dengan Penguatan Kemampuan Literasi Kebencanaan Pada Masyarakat Kota Langsa. *Jurnal Pendidikan Geografi*. 2019;24(2):132–144.

[11] Muttarak Raya, and Pothisiri Wiraporn. The Role Of Education On Disaster Preparedness: Case Study Of 2012 Indian Ocean Earthquakes On Thailand's Andaman Coast. *Ecology and Society*. 2013;18(4).

[12] Hidayati Deny, Triyono, Widayatun, and Hartana Puji. Buku Panduan Mengukur Tingkat Kesiapsiagaan Masyarakat Dan Komunitas Sekolah. 2015;(January 2011).

[13] Hidayat Deny. Kesiapsiagaan Masyarakat: Paradigma Baru Pengelolaan Bencana Alam (Community Preparedness: New Paradigm In Natural Disaster Management). *Jurnal Kependudukan Indonesia*. 2008;3(1):69–84. http://ejurnal.kependudukan.lipi.go.id/index.php/jki/article/view/164

[14] Direktorat Jenderal Pembelajaran dan Kemahasiswaan Kementerian Riset Teknologi dan Pendidikan Tinggi. Panduan Pembelajaran Kebencananaan Untuk Mahasiswa Di Perguruan Tinggi. 2019;11.

[15] Hamid Nur, Setyowati Dewi Liesnoor, Juhadi Juhadi, Priyanto Agustinus Sugeng, Wijayanti Nur Rohmah, and Aroyandini Elvara Norma. Peran Pendidikan Formal, Keluarga, Dan Masyarakat Dalam Pendidikan Bencana. *Prosiding Seminar Nasional Pascasarjana UNNES 2021*. 2022;403–409.