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Household Digital Literacy in Dealing with Landslide Disaster

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ABSTRACT

On April 1, 2023, Tempurejo Sub-district, Blora District, Blora Regency, experienced a landslide that affected three houses. Several efforts have been made to reduce the occurrence of landslides, namely by making gabions and covering up the riverbank areas that have collapsed with soil. However, it turns out that these efforts have yet to bear fruit, and landslides are still occurring. Landslides in Tempurejo Sub-district have happened in the last few years, and to this day, the land that landslides still frequently collapse. The unpreparedness of households in facing disasters in the current era of social media shows that disaster literacy in formal education and society still needs to be improved. Therefore, one way to prepare households to face disasters is by increasing disaster digital literacy. This research aims to analyze household digital literacy in dealing with landslides. This research was conducted using a quantitative approach with a one-group pre-test and post-test design with a research sample of 52 heads of families. Data collection was carried out using tests with data analysis techniques using descriptive analysis techniques. The results of this research show an increase in household digital literacy knowledge regarding disasters.

Keywords: Landslide, Digital Literacy, Household

INTRODUCTION

Landslides are the most devastating geo-hazard disasters because they cause heavy casualties and large economic losses caused by geological, geomorphological, and climatic conditions [1]. The occurrence of landslides is characterized by the movement of soil masses from higher areas to lower areas due to high rainfall intensity so that soil movement becomes unstable [2]. The danger of landslides has a huge influence on human survival and always threatens human safety [3]. Landslides due to natural phenomena and human actions cause geomorphological changes that cause physical, socioeconomic and environmental losses and affect human life [4].

Blora Regency often occurs of floods, landslides, droughts, and tornadoes [5]. Landslides are ranked fifth out of seven disaster scopes as priorities handled in Blora Regency based on their history. Based on historical data on Blora Regency disaster events in 2009-2020, there have been 60 landslides [6]. In 2021, there were 14 landslides [5] and in 2022, there have been 32 landslides in Blora Regency [7]. The potential for landslides depends on the characteristics possessed by an area [8]. From mid-2022 to early 2023, there have been several landslides. Based on the results of the recapitulation data of the Regional Disaster Management Agency of Blora Regency regarding the occurrence of landslides in Blora Regency from early 2023 until May 22, 2023, it is known that landslides occurred at 26 points of the incident location.

Tempurejo Sub-district, Blora District, Blora Regency, is one of the sub-districts affected by the landslide on April 1, 2023, whose area is passed by the Lusi River. Based on preliminary observations, the landslide area was in a residential area, namely RT 2 RW 2 Dukuh Gulingan, Tempurejo Sub-district, which caused 3 houses to be affected by landslides. The impact of the landslide on the first house was at the back of the house, which functioned as a kitchen collapsed along 4 meters and a soil depth of 1.5 meters. In the second house, the back collapsed with a depth of 2 meters; in the third house, the kitchen and bathroom collapsed as deep as 2 meters. In previous years, there have also been landslides that affected 2 Community Pillars (Rukun Warga/RW), namely RW 1 and RW 2, causing the cutting off of residents' roads and a total of 6 houses affected by landslides from 2016. In 2016, landslides forced residents to flee elsewhere, and some occupied crooked land belonging to the sub-district head. Until now, there is still land movement, so landslides threaten some residents' houses, but they still survive. Efforts have been made to reduce the occurrence of landslides by making gabions and hurling the landslide riverside area with soil, but it turns out that these efforts have yet to yield results, and landslides still occur.

In this digital era, increasing disaster literacy skills is one way to prepare the community to face disasters [9]. Through disaster literacy, people can know they live in disaster-prone areas [10]. Digital literacy skills also foster communication and interaction in everyday life [11]. Digital literacy is part of an individual's ability to find and evaluate information effectively and communicate it with the right technology [12]. Mastery of digital literacy has the same level of importance as the ability to read, write, and count because it can protect themselves from negative and misleading content in the digital world [13]. The ability of individuals to read, to understand, and can use information to make informed decisions and follow the instructions in disaster mitigation, preparation, response, and recovery is a form of disaster digital literacy [14]. Therefore, there is a need for disaster facilities and education for the community through disaster digital literacy [15].

Based on the results of a survey conducted by Asosiasi Penyelenggara Jasa Internet Indonesia (APJII), Indonesian internet users increased by 2.67% from the previous year, reaching 215.63 million people in the 2022-2023 period. This means that the number of internet users in Indonesia is equivalent to 78.19% of Indonesia's total population of 275.77 million people [16]. Although there are already many internet users, people still have the assumption that disasters that occur due to fate cause weak emergency preparedness and handling efforts in dealing with disasters [17]. Community unpreparedness in facing disasters in the current social media era shows that there is still a lack of disaster literacy levels in formal education and the community due to the lack of priority of disaster literacy as a means of disaster awareness and prevention [18]. Low literacy levels can result in misinterpretation or fatalism of interpretation in the face of natural disasters [19]. Based on this, this study aims to analyze household digital literacy in dealing with landslides.

MATERIALS & METHODS

This research was conducted in Gulingan Hamlet, RW 1 and RW 2, Tempurejo Sub-district, Blora District, Blora Regency, which has a history of landslide disasters. This research used a quantitative approach with a one-group pre-test and post-test design, also called pre-experimental research. The population in the study was heads of households affected by the landslide and residing near the Lusi River in Tempurejo Sub-district, Blora District, Blora Regency, totaling 260 households. The samples in this study were obtained using proportionate stratified random sampling techniques, and samples were

obtained from as many as 52 Heads of Families or representatives. The variables in this study are digital literacy with digital literacy sub-variables consisting of internet searching, hypertextual navigation, content evaluation, and knowledge assembly [20]. Data collection techniques use tests. Data analysis techniques in this study use descriptive analysis techniques.

RESULT

In this research, test questions were distributed to respondents to determine the level of disaster digital literacy in households. Test questions were given to respondents before and after the socialization activities. Measuring digital literacy for landslides in households was carried out using four indicators, namely internet searching, hypertextual navigation, content evaluation and knowledge assembly. The indicators for searching on the internet (internet searching) consist of the ability to operate an internet browser, operate a search engine, and operate primary forms of the internet. The hypertext direction guidance indicator (hypertextual navigation) consists of the ability to explore and maintain a stance when navigating the internet. The content evaluation indicator consists of the ability to search for the information needed, and the knowledge assembly indicator consists of the ability to take advantage of information on the internet.

At the start of the activity, data was collected by distributing knowledge test questions related to digital literacy to respondents who attended the socialization activity. The test results that have been obtained are then processed and analyzed. The results of the data analysis show that the level of disaster digital literacy among households in Tempurejo Sub-district before the socialization was carried out had an average of 48,7%. This result is included in the moderate category. The percentage results of the classification of disaster digital literacy levels in households before the socialization was carried out can be seen in Table 1.

Table 1. Pre-test Households Digital Literacy

Category	Frequency	Percentage
Low	12	23,1
Moderate	30	57,7
High	10	19,2
Total	52	100,0

Source: Results of researcher data processing, 2023

Based on Table 1, the data results show that the level of disaster digital literacy in households is still relatively moderate, with a percentage of 57,7%. This result indicates that as many as 30 households have intermediate digital literacy in landslide disasters. Households that have a high rate of disaster digital literacy levels are only 19,2%, and this shows that only 10% of households have the high category. The remaining 12 households, or 23,1%, are at a low level.

The results of the pretest measurement of digital literacy for landslide disasters in households for each indicator show mixed results. The results of the digital literacy pretest for landslides in households can be seen in Figure 1.

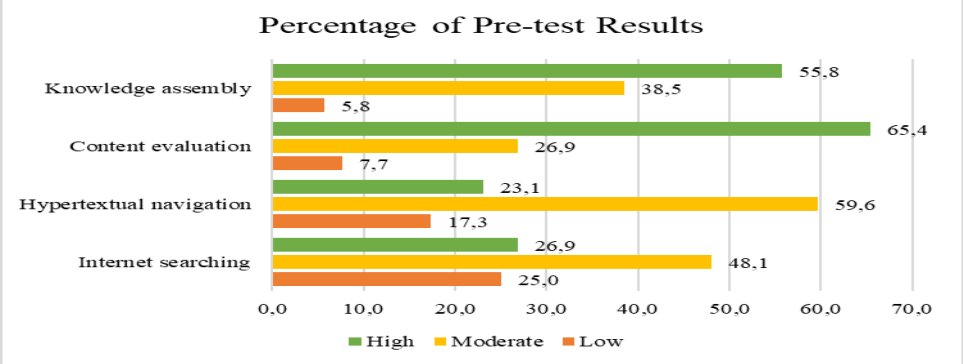

Figure 1. Pre-test Households Digital Literacy
Source: Results of research data processing, 2023

Based on the measurement results in Figure 1, it shows that digital literacy in households varies. Regarding search indicators on the internet, households with high internet searching capabilities are 26,9%, while households with internet searching capabilities in the moderate category are 48,1%, and the remainder, namely 25,0% of households, have low internet search capabilities. In the hypertext directional guidance indicator (hypertextual navigation), households with high ability were 23,1%, households with moderate power were 59,6%, and households with low ability were 17,3%. In the content evaluation indicator, households with high capabilities were 65,4%, households with medium capabilities were 26,9%, and households with low capabilities were 7,7%. In the knowledge assembly indicator, households with high ability were 55,8%, households with moderate power were 38.5%, and households with low ability were 5,8%.

After conducting initial measurements, the next step is to carry out outreach by providing material about landslides, preparedness actions that households can take, and a disaster information provider platform that households can access. After conducting socialization, a posttest measurement was carried out regarding household digital literacy. The results of the data analysis show that the level of disaster digital literacy among households in Tempurejo Sub-district after conducting socialization has an average of 73,5%. This result is in the high category. The level of catastrophe digital literacy in households after socialization can be seen in Table 2.

Table 2. Post-test Households Digital Literacy

Category	Frequency	Percentage
Moderate	14	26,9
High	38	73,1
Total	100,0	100,0

Source: Results of researcher data processing, 2023

Based on Table 2, it can be seen that 73,1% of households have high disaster digital literacy. Meanwhile, households with disaster digital literacy were in the moderate category at 26,9%.

The results of posttest measurements of digital literacy in landslide disasters in households for each indicator show mixed results. The results of the posttest on digital literacy for landslides in households can be seen in Figure 2.

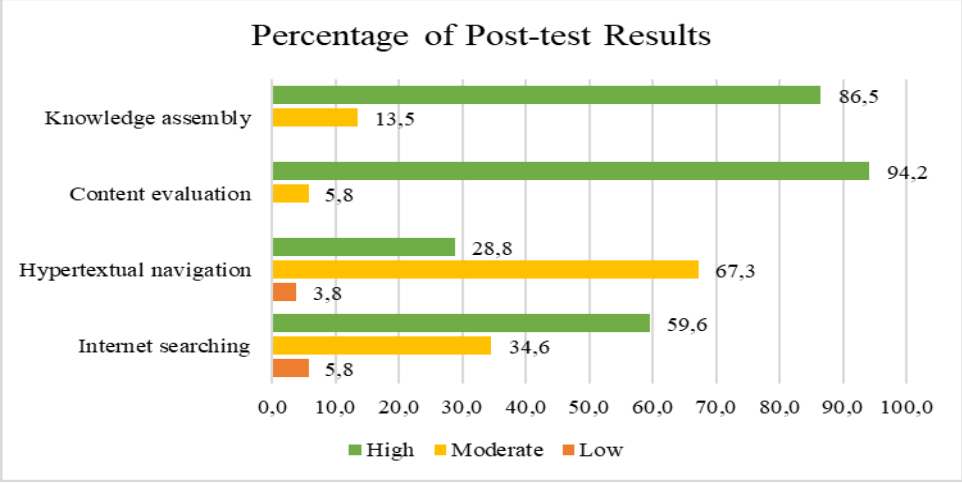

Figure 2. Post-test Households Digital Literacy
Source: Results of research data processing, 2023

The measurement results in Figure 2 show that the results of the digital literacy posttest in households are varied. In terms of search indicators on the internet, households with high internet searching capabilities were 59.6%, while households with internet search capabilities were in the medium category, 34.6%, and the remainder, namely 5, 8% of households, have low internet search capabilities. In the hypertext

directional guidance indicator (hypertextual navigation), households with high ability were 28.8%, households with moderate power were 67.3%, and households with low ability were 3.8%. In the content evaluation indicator, households with high capabilities were 94.2%, while households with moderate capabilities were 5.8%. In the knowledge assembly indicator, households with high abilities were 86.5%, while households with sensible abilities were 13.5%.

Data analysis was also carried out using the one paired sample t-test method to determine whether there was a significant difference between disaster digital literacy in households before and after participating in the socialization. However, before carrying out this test, first carry out a data normality test. The normality test is carried out using the Scatter Plot method, which is used to see normal data by observing the curve and question points. The results of the data normality test are shown in Figure 3.

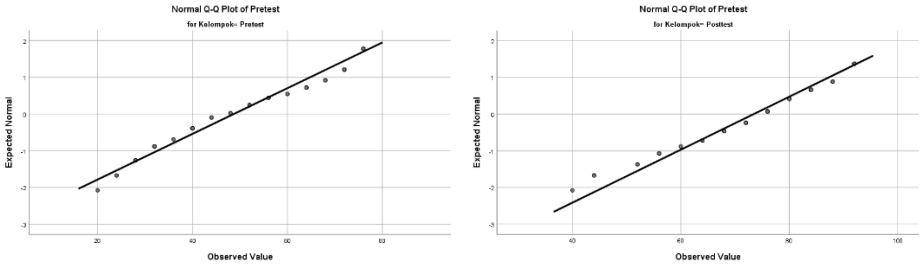

Figure 3. Curve Data Normality Test
Source: Researcher data processing results, 2022

The test results on Figure 3, show that the data is normally distributed because the question points are not far from the curve line. After it was declared normally distributed, a one-paired sample t-test was carried out. The results of the one-paired sample t-test analysis are shown in Table 3.

Table 3. On Paired Sample T-test Results

	Mean	Sig.
Pre-post	-24.769	0.000

Source: Results of researcher data processing, 2023

The test results show that the significance value is 0.000 (<0.05). So, there is a significant difference between the digital literacy level of households before being given socialization and after being given socialization.

DISCUSSION

Nowadays, literacy is an important thing, not only for school children but also in society. Literacy is a step to free the community from ignorance. Literacy skills can help improve a person's understanding of something. The experience you have can be used to utilize the information received wisely, especially in the digital era. The use of digital devices such as smartphones (HP) has become an essential thing in life. A wide variety of information can be easily accessed and shared. Not infrequently, the information that is widely circulating is misleading information that cannot be justified. Misinformation often occurs regarding disasters. Misinformation can cause chaos and panic if the information obtained is swallowed raw.

Even though there are many internet users, people still think that disasters occur because of fate, which results in weak preparedness and emergency response efforts in dealing with disasters. The unpreparedness of society to face disasters in the current era of social media shows that there still needs to be more disaster literacy in formal education and society due to the lack of prioritization of disaster literacy as a means of disaster awareness and prevention. The lack of disaster digital literacy can result in errors in interpretation or interpretive fatalism in the face of natural disasters, which tend to make people feel resigned.

The digital literacy level for household disasters in Tempurejo Sub-district before the socialization was carried out was classified as moderate, with an average of 48.7%. Then, after socialization was carried out, the average increased to 73.5%. This shows an increase in digital literacy knowledge in households. This increase in knowledge can equip households to be aware of information from the internet, always be alert to the danger of landslides lurking in their area, and take proper steps in making decisions. Household accuracy and agility in preparing everything to face a disaster are essential in decision-making [21]. So that when a disaster emergency occurs, households can be independent, not panic, and not depend on aid.

The digital literacy of households related to disasters is low even though many live close to landslide areas, mainly because of self-motivation. Factors that influence a person's digital literacy competence include personal competence, which can be seen from technical ability in using media and critical understanding in understanding content in the press [22]. Apart from that, another factor is the limited time spent operating digital media, especially smartphones (cellphones), to access disaster news. A habit that is often done is using a cell phone as entertainment until you lose track of time [23]. The low variety of information the public possesses means that they sometimes need more accurate information. This is because the info circulating could be of better quality, so when it reaches the public, it will cause misunderstandings and deviations in the meaning of the news [24]. Integrating new information obtained from browsing the internet is also influenced by the environment in which you live. If the living territory is inhabited by many educated households who understand disasters, integrating information among households will be better, and otherwise [25].

CONCLUSION

Based on the results and discussion, the level of disaster digital literacy in households is moderate. However, after socialization regarding landslides, household preparedness in facing landslides, and platforms providing disaster information, household digital disaster literacy knowledge has increased to a high level. Factors that influence a person's digital disaster literacy are personal competence, access habits to their devices, low variety of information, and the environment in which they live.

Declaration by Authors

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REFERENCES

1. S. He, J. Wang and S. Liu, "Rainfall Event–Duration Thresholds for Landslide Occurrences in China," *Water*, vol. 12, no. 2, pp. 1-17, 2020.
2. J. Juhadi, I. Hidayah and S. B. Nugraha, "Pendidikan Kebencanaan Untuk Anak Usia Dini Dengan Wahana Bermain Taman Eling-Waspada-Siaga (Ews)," *Pendidikan Kebencanaan Untuk Anak Usia Dini Dengan Wahana Bermain Taman Eling-Waspada-Siaga (Ews)*, vol. 24, no. 2, pp. 655-661, 2018.
3. P. Carrión-Mero, N. Montalván-Burbano, F. Morante-Carballo, A. Quesada-Román and B. Apolo-Masache, "Worldwide Research Trends in Landslide Science," *Int. J. Environ. Res. Public Health*, vol. 18, no. 18, 2021.
4. M. Herlina, D. L. Setyowati and Juhadi, "Local Wisdom of Repong Damar for Landslide Mitigation in Way Krui Sub-district Pesisir Barat Regency Lampung," in *Proceedings of the 5th International Conference on Science, Education and Technology, ISET 2019, 29th June 2019, Semarang, Central Java, Indonesia.*, Semarang, Central Java, Indonesia, 2020.
5. Badan Pusat Statistik, "Kabupaten Blora Dalam Angka 2022," Badan Pusat Statistik Kabupaten Blora, Blora, 2022.
6. BPBD Kab. Blora, "Laporan Akhir Rencana Penanggulangan Bencana Kabupaten Blora Tahun 2021-2025," Pemerintah Kabupaten Blora, Blora, 2021.

7. Badan Pusat Statistik, "Kabupaten Blora Dalam Angka 2023," Badan Pusat Statistik Kabupaten Blora, Blora, 2023.
8. P. S. Ananda, "Analisa Potensi Bencana Tanah Longsor menggunakan Interpolasi Inverse Distance Weighted (IDW) Di Provinsi Jawa Tengah," *Jurnal BATIRSI*, vol. 6, no. 1, pp. 6-9, 2022.
9. E. Labudasari and E. Rochmah, "Literasi Bencana di Sekolah: Sebagai Edukasi Untuk Meningkatkan Pemahaman Kebencanaan," *Metodik Didaktik*, vol. 16, no. 1, pp. 41-48, 2020.
10. R. Afrian and Z. R. Islami, "Peningkatan potensi mitigasi bencana dengan penguatan kemampuan literasi kebencanaan pada masyarakat Kota Langsa," *Jurnal Pendidikan Geografi*, vol. 24, no. 2, pp. 132-144, 2019.
11. S. F. Selegi and K. Aryaningrum, "Literasi Digital Untuk Meningkatkan Kreativitas Mahasiswa Melalui Pembuatan Video Tutorial Alat Peraga Edukasi," *Jurnal Sinestesia*, vol. 12, no. 1, pp. 77-89, 2022.
12. P. Reddy, B. Sharma and K. Chaudhary, "Digital literacy: A review of literature," *International Journal of Technoethics (IJT)*, vol. 11, no. 2, pp. 65-94, 2020.
13. A. P. Santoso, S. Anwar and S. D. Waluyo, "Peran Siberkreasi dalam Meningkatkan Kemampuan Literasi Digital untuk Mencegah Aksi Radikalisme," *Jurnal Peperangan Asimetris*, vol. 6, no. 1, pp. 43-64, 2020.
14. F. Mufit, S. A. Hanum and A. Fadhila, "Preliminary research in the development of physics teaching materials that integrate new literacy and disaster literacy," *ournal of Physics: Conference Series*, vol. 1481, no. 1, pp. 1-12, 2020.
15. Y. Suprapto, E. F. Fasha, D. Liesnoor and E. Suharini, "The Development of Natural Disaster Digital Literacy (DILIBA) Android Based of Students' Understanding at Primary Teacher Education Study Program, Peradaban University," *n Proceedings of the 1st International Conference on Science and Technology for an Internet of Things, 20 October 2018*, 14 April 2019.
16. Y. Nurhanisah, "Indonesiabaik.id," 14 Maret 2023. [Online]. Available: https://indonesiabaik.id/infografis/pengguna-internet-di-indonesia-makin-tinggi.
17. N. B. Sasmito and Prawito, "Faktor Hubungan Kesiapsiagaan Keluarga dalam Menghadapi Dampak Bencana," *Journal of Education Research*, vol. 4, no. 1, pp. 81-91, 2023.
18. Juhadi, N. Hamid, E. Trihatmoko, M. Herlina and E. N. Aroyandini, "Developing a Model for Disaster Education to Improve Students' Disaster Mitigation Literacy," *Journal of Disaster Research*, vol. 16, no. 8, pp. 1243-1256, 2021.
19. P. A. Widhiartha, "Konsep Literasi Kebencanaan: Sebuah Usulan," *Jurnal Pendidikan Non formal*, vol. 20, no. 1, pp. 51-63, 2019.
20. Heriyanto, "Kompetensi Literasi Media Digital Siswa Kelas X Pada SMA Beryayasan Buddhis di Tangerang," *Jurnal Vijjacariya*, vol. 5, no. 2, pp. 17-32, 2018.
21. Y. P. Wibisono and C. H. Primasari, "Pembuatan Pedoman Tanggap Bencana Bagi Warga Padukuhan Surubendo," in *Sendimas*, Yogyakarta, 2020.
22. R. Syah, D. Darmawan and A. Purnawan, "Analisis Faktor ynag Mempengaruhi Kemampuan Literasi Digital," *Jurnal Akrab*, vol. X, no. 2, pp. 60-69, 2019.
23. L. Masruroh, "14 Kompasiana," 22 November 2021. [Online]. Available: https://www.kompasiana.com/luluil14842/619af732c26b774d8914d764/urgensi-waktu-bermain-hp-dengan-kemampuan-literasi-digital. [Accessed 30 08 2023].
24. S. Ati, Nurdien, Kistanto and A. Taufik, "Pengantar Konsep Informasi, Data, dan Pengetahuan," 2014. [Online]. Available: https://pustaka.ut.ac.id/lib/wp-content/uploads/pdfmk/ASIP4204-M1.pdf#:~:text=Dalam%20kelanjutannya%2C%20informasi%20yang%20bermutu%20rendah%20dapat%20menimbulkan,suatu%20gangguan%20terhadap%20sumber%20informasi%20atau%20proses%20transmisi.. [Accessed 30 Agustus 2023].
25. S. G. Marlyono, G. K. Pasya and Nandi, "Peranan Literasi Informasi Bencana Terhadap Kesiapsiagaan Bencana Masyarakat Jawa Barat," *Jurnal Pendidikan Geografi*, vol. 16, no. 2, pp. 116-123, 2016.

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